UNIVERSIDAD CENTRAL DE NICARAGUA (UCN)

CLINICAL EXPERIMENTS

What cognitive psychotherapies
– like CBT, NLP and Ericksonian hypnotherapy –
reveal about the workings of the mind.
A theoretical analysis over 35 years of clinical experimentation.

Doctor of Philosohpy in Psychology
With a focus in Neurolinguistic Psychology (NLPsy)

Dr. Lucas Derks

2016

*W*hat C*ognitive P*sychotherapies R*eveal*
*A*bout *the W*orkings *of the* M*ind*.

*C*linical E*xperiments*
in
M*ental S*pace

*L*ucas D*erks*

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DISSERTATION

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Assurance Statement

I hereby declare on oath that I have written the submitted Ph.D. Final: “Clinical Experiments. What Cognitive Psychotherapies – like CBT, NLP and Ericksonian Hypnotherapy – Reveal about the Workings of the Mind. A Theoretical Analysis of 35 Years of Clinical Experimentation”, independently and without unauthorized assistance. I have not used other than the named tools and scripts. All used parts of other authors either literally or correspondingly are cited.

Lucas Derks

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Abstract

Background

Some psychotherapeutic schools discribe their techniques in precise step-by-step formats. By using these methods for decades the practitioner recognizes patterns in psychological phenomena that are hard to see in controlled laboratory settings. What does the regarding of such highly structured therapeutic techniques as field experiements reveal about the workings of the mind? In this project the focus is on insights about the role of space in cognition, the mechanisms that make it hard for people to change their beliefs, and the neuro-cognitive mechanisms behind emotional problem solving.

Aims

This research aims at disclosing an area that normally has the status of gray applied knowledge. By linking these notions to research and formulating them in an all emcompassing theoretical framework, a bridge between therapeutic practice and academic psychology is build. This can be profitable in both directions: it may improve clinical work and open new areas for academic psychological research.

Method

A selection of twentyfour therapeutic methods is regarded as experiements. All these methods have been applied for five years up to four decades by a great number of practitioners.
This enabled the researchers to make series of observations based on the application of these methods in private practices and trainings. The great number of cases observed create a stable image. Due to the fact that this all happened in an uncontrolled naturalistic setting with real clients and students, nothing was recorded with standardized measuring tools. This means that this research has to be regarded as qualitative. However all of the methods presented here are open for quantitative effect evaluation and experimental testing.
After looking at the history of development of a certain therapeutic tool it is presented in an algorithm that aims at easy replication. The therapeutic procedure is then regarded as a field experiment. The therapeutic effect is only looked at on face value. However the mental processes that the technique brings about are analysed in detail and result in theoretical conclusions.

Results

The nineteen experimental procedures in part one show how space must be seen as the primary organizing principle in the mind. They also reveal much about the general laws by which people organize their mental space and the behavioural consequenses thereoff. The three tools for changing beliefs that are central in part two give away how conservatism is a logical product of the spatial and neurological build-up of the mind. It is shown how changing one's mind is limited because the locations in mental space where the changes must be made stay often out of reach for the persons' attention. And also because of chains of associations are consolidated in a way that makes them hard to change in the here and now.

The experiment with problem solving in part three shows how concepts become automatically connected in a way that helps to create a usefull model of the environment. When connections fail to come about however, this may turn into an emotional crisis. How such blokkades are solved is shown in psychotherapeutic thechniques that make use of the client's latent potential: resources.

The experiment in part four verifies the basic assumption of the so called social panorama model that, social emotional relationships are created by putting the images of people on steady locations in mental space. Changing these locations alters the socio-emotional meaning of the relationships.

Conclusions

Although regarding systematic therapeutic interventions as field experiments does not fullfill the methodological criteria that psychology has set for itself, it can still be a way to explore yet uncharted territory. The price payed for gaining these often exciting insights, that may leave their fruits in the area of cognitive science and psychotherapy alike, is research without the high status that its content would deserve.

When the findings of this study are fed back into the clinical field, therapy changes from a "word game" into a "space game". And also the trend in cognitive therapies to pay less time and attention to exploring the client's misery and to focuss more on how to create a more fruitfull mindset will only become stronger with the help of these studies.

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List of Clinical Experiments (C.E.)

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List of used abbreviations

APA = American psychololocal association

C.A. = Collapsing anchors

CBT = cognitive behavior therapy

C.E. = Clinical experiment

CPH = change personal history

DSM5 = diagnostic statistical manual 5

EEG = electro encephalo gram

EMDR = eye movement desensitisation reprosessin

FFTC = feed forward theory of consciousness

fMRI = functional magnetic resonance imaging

GGZ = geestelijke gezondheidszorg

ICSC = international conference of spatial cognition

ILMSR = international laboratory for mental space research

IOS = inclusion of others in self scale

MAP = multipath approach to personality

MSI = mental spatial indexing

MSP = mental space psychology

NLP = neuro-linguistic programming

PET = positron emission tomography

REBT = rational emotive behavior therapy

RET = rational emotive therapy

RNA = ribonucleic acid

SOMSP = society for mental space psychology

SocPan = social panorama

TCMT = time code of mind theory

1-D / 2-D / 3-D = one/two/three dimensional

Summaries of the 4 Parts

Part 1: Clinical Experiments in Mental Space.1

This part proposes that *space* be considered the leading concept in psychology. Space is defined as the primary organizing principle in the mind. The mental processes elicited by nineteen distinct spatial psychotherapeutic procedures are taken as informal field experiments: what new insights does each of these reveal about spatial cognition? This study can be seen as the core of the four parts of this paper. It is meant to provide a theoretical background for spatial psychotherapies while nourishing spatial cognition research with clinical evidence and new hypotheses. The main conclusion is that psychotherapy becomes more efficient when the therapist intervenes directly in the full dimensionaly of experience, without this experience being translated back and forth and back in the single dimension of language.

Part 2: Clinical Experiments with Convictions.

The history of belief-changing techniques in psychotherapy confronts us with the phenomenon of conservatism against all odds. How do people maintain irrational, harmful and unrealistic convictions that may ruin lives? What does the technology for changing limiting beliefs in psychotherapy tell us about how the mind structures and conserves its knowledge? Several belief-change methodologies are considered as field experiments. The large number of cases in which these techniques have been used, over an extended period of practice and education are regarded by the author a sufficient basis for drawing conclusions. These conclusions combine elements of spatial/temporal representation and neuroscience.

Part 3: Clinical Experiments with Problem Solving.

In Chapter 3 we encounter the mind/brain as an organ whose basic function is the building of a pragmatic model of its environment. With this principle in mind the question arises concerning how “resources” can have such a healing effect in psychotherapy? When we take the latter at face value, this forces us to draw conclusions about the workings of the brain that are directly connected to experience. The main theoretical element is the “feed forward theory of consciousness” whose basic ideas date from 1986. The integration in this theory of Sinclair’s “Rest Principle Theory” from 1982 continues to yield new insights. These old/new theories provide a rich explanation of how emotional problems are solved in psychotherapy. An earlier version of this article was published in the British NLP journal Acuity in 2016.

Part 4: Clinical Experiments with Love.

This is a research report about an experiment to test whether affective relations are indeed constructed from social images kept in stable locations in mental space. The latter idea is the foundation of a psychotherapeutic toolkit known as Social Panorama that has been in use since 1996. The experiment is an attempt to verify the basic assertion of the social panorama model, namely, relation equals location. The method consists of a pre-post controle group testing along Likert scales for changes in the intensity of the feeling of love as the distance to the image of the beloved is increased. Self-reporting from the participants was taken into account. The results support the role of space in social cognition. The experiment was initiated by the International Laboratory for Mental Space Research (ILMSR) and is also published in the Journal of Experiential Psychotherapy (SPER) in July, 2016.

Preface

I was about fiftheen when I found the purpose of my life expressed in this one line: *"To learn what it means to live in this world in this time."*

This credo opened a wide scope of interests for me; it made me watch every available TV-documentary, it send met to study the Encyclopedia Britannica at random, and it bore me through stacks of old National Geographics. And first and foremost it drew me to reports of expeditions to the mountains of Central Asia, the Arctic, and Latin America, and any new discovery in biology, physics and astronomy. My teachers called me a daydreamer but my friends nicknamed me "prof."

At eighteen, a combination of dyslexia, a low interest in bookkeeping, French, German, gymnastics –and on the other hand a clear talent for drawing– brought me to art-school. Now esthetics was my discipline, although I sometimes called myself an amateur psychologist. Meanwhile, mountaineering became my passion and confronted me with the reality of rock and ice, and also with several climbing scholars of the science of the psyche. At age 26, I gave up my career in art for the full-time study of psychology. Some relatives didn't approve of this. That is why I decided to try to become a better psychologist than the artist I otherwise would have been.

I dreamt of a future as a social-psychology researcher but never considered becoming a therapist. And since in the late 70s many psychologists were complaining about their science being too far from people's real experience, I found a special role for myself: I went on the lookout for what could bridge the gap between theory and practice. Crisscrossing the library of the psychology department I found William James and many inspiring leads into neuroscience, Russian psychology, hypnosis, imagination therapy and Gestalt psychology. In 1977 I stumbled over Bandler and Grinders' first book, "The Structure of Magic 1". Could that bring the science of the mind closer to home? It was structured, pragmatic and focused on interventions in the interface of language and experience. The next book by Bandler and Grinder (1979), entitled "Frogs into Princes," (with the words neuro-linguistic programming on the cover) made me experiment with these tools on friends. And I was stunned: most of it worked as predicted. Therefore I finished my masters in 1982 by writing a research proposal for testing some of NLP's claims.

My background in art helped me to slide into museum research. I was offered several projects about visitor behavior in large exhibitions. Thus in 1983 I really found myself working as researcher in socialpsychology! Four years in museology followed. Even though my surveys were received with enthusiasm, I knew that this was not the real deal. However it proved hard to find a place to do a Ph.D. that matched my scientific curiosity. NLP was still unknown, unconventional for academia and it belonged, if anywhere, to clinical and not to social psychology.

I was nicely surprised by an invitation to teach NLP at an academy for hypnotherapy. And since I believed that when you teach something you must also do it for real, I felt obliged to start a psychotherapy practice. In 1986, I handed over my museum-research to others and became a full-time trainer in psychotherapeutic skills.

Twenty years later I was traveling the world to educate coaches and therapists in a technology which I had begun to develop in 1994: *The Social Panorama Model*. This was a

merger between NLP and social psychology that helps solve relational issues of any type by changing the spatial/social imagery of the clients. An attempt in 1999 to combine the writing of a Dutch book about the Social Panorama with a Ph.D. derailed because of a difference in tempo between my potential promoter and the publisher. This book is now available in 8 languages. But still, when someone asks: "Are you a therapist?" I have no answer and I like to mention the "Boulder Conference of 1949" – about which Wikipedia (2016-01-05) writes:

> The Scientist–Practitioner Model, also called the Boulder Model, is a training model for graduate programs that aspires to train applied psychologists with a foundation of research and scientific practice. It was initially developed to guide clinical psychology graduate programs accredited by the American Psychological Association (APA).

My own idea of what a psychologist is fits this scientist-practitioner concept (Shakow, 1976). While it is a nice position, it has also the disadvantage that you cannot be as devout a believer in one school of therapy as those with other backgrounds can. There is always a voice in the back of your head that goes: "Yes… that sounds great, but show me the research!"

The advantage of being a scientist-practitioner doing psychotherapy with real clients with real issues is a regular confrontation with real processes of real personal change. For pure sang scientists such processes are often less familiar, and when they are aware of them, they may consider these too complex for the lab. Thus, the familiarity with psychotherapy offers the scientist-practitioner the opportunity to gain insights in phenomena that are elusive in other settings. The latter holds for the topics in this study: the role of spatial representations in human behavior, the mechanisms around belief change in psychotherapy and the neurological processes involved in the resolution of emotional issues.

It was in 1997 near Frankfurt am Main that I met with Walter Ötsch and Wolfgang Walker. We shared the vision that social science could gain a lot from a deepened insight in the role of mental space. In 2002 we founded The International Laboratory for Mental Space Research (ILMSR) and have remained in close contact ever since.

Ötsch, Derks & Walker, in 2014.

The ILMSR became the platform for the exploration of therapeutic interventions with mental space as their common element. It is thanks to this cooperation that this book could be written.

Then in 2013 another trojka was launched. Robert Heemelaar, René Koppelaar and the author concluded that *mental space psychology* needed an organization to connect interested professionals. This led to the *Society for Mental Space Psychology*. One of SOMSP's goals is to

create a link between academic research in spatial cognition and the complementary knowledge acquired by the application of spatial psychotherapies, as exemplified by the *Social Panorama* and the *Time Line*. SOMSP wants to connect these two worlds.


Heemelaar, Koppelaar & Derks: SOMSP

In this book mental space takes centre stage. To serve this purpose, these writings need to explore the frontiers of the field while remaining accessable. Only in this way can they help to bring psychology closer to home.

Lucas Derks

Nijmegen, October 2016

General introduction

Most of the clinical experiments presented here are in some way related to Neuro-linguistic Programming (Bandler & Grinder, 1979; Hollander, Derks & Meijer, 1990). The NLP-like methods are not, however, chosen to demonstrate NLP's effectiveness, but because of their highly structured nature, which enables the replication of an identical series of steps with a variety of clients and a diversity of issues. This structured nature is especially attractive to the scientist-practitioner, since the way most NLP-techniques are transcribed makes them especially suitable for clinical experimentation (Derks & Hollander, 1996). While other cognitive therapies may proceed in like manner and may have better evidence based track records, they tend to be formulated in less stringent algorithms.

Thus the question of whether or not the participants resolved their issues as a result of these therapeutic field experiments is beside the point of this book.

This statement may surprise some readers, since effect-research is currently the standard in clinical psychology and hundred thousends of NLP pratitioners would love to see the definitive proof that their method works (best). But here our attention goes to the psychological phenomena that occur during the application of these protocols. We look at what tends to reliably happen whith the participant while these step-by-step processes are used – and what this reveals about the workings of the mind. This approach will be used in three areas of investigation:

1) The ways people construct a model of the world, by putting images in stable locations in mental space. This has been shown to be a very robust phenomenon in clinical work with both the social panorama model and the personal time line.

2) The ways sensible people can block their development by holding on to beliefs that go against their own interest. The focus will be on the moment of formation and the spatial positioning of beliefs. These experiments will follow the history of the development of belief-changing techniques in psychotherapy.

3) How the creation of new associative links appears to be a necessary ingredient of all problem solving, as can be reliably witnessed in the NLP-techniques collapsing anchors and many related approaches.

The information used in this study was gathered during 1) the treatment of clients in brief therapy by the author in his private practice, 2) the observation of seminar students practising therapeutic methods on each other, and 3) the observations of technical demonstrations in seminars.

A conservative estimate of the number of participants included in these studies, calculated over a 35 years period is: 1700 private clients, 3500 observed students and between 3000 and 3600 demonstration subjects.

In the current work, the application of techniques with a strict step-by-step structure is regarded as a form of semi-standardized field experimentation, in which the large number of cases filters out most client, therapist and observer variation. But, apart from the study in part 4, this research must be seen as qualitative.

Of course, in hindsight, more quantitative data would have been preferred. That would probably not influence the conclusions drawn here, but on the other hand, it would have made

everything more convincing. The main reason for the current format is that it was unforeseeable that this clinical work would one day be evaluated as research. But by doing so, it raises fascinating questions and provides also some thrilling answers to them.

Therapeutic tools may give new theoretical insights

My primary motivation for publishing this study is to fill a particular void in psychological knowledge. I speak of a gab that arises, on the one hand, from a tendency of psychologists to prefere controlled laboratory research. To put it in another way, the desire to make psychology a "real" science has steered research towards areas that enable rigorous testing. Following Gregory Bateson (1972), the author believes that this wish among psychologists to be taken seriously has caused psychologists to avoid domains of inquiry beyond the scope of accepted research paradigms. Although the resulting publications fulfill the formal criteria science has set for itself, what is set up in the lab tends to miss the variety and complexity of the phenomena that present themselves in an actual psychotherapy practice. The same fear of being seen as unscientific stands behind a preference for (high tech) instruments for measurement. As a consequence some hard nuts are left uncracked.

On the other hand, the above-mentioned void in knowledge is caused by psychotherapy itself. Evidence based research delivers primarily statistical data, and very little psychological insight. Since the work of Pierre Janet, Sigmund Freud, Carl Rogers, Fritz Perls and many others, psychotherapists have tried to capture deeper psychological principles through case studies. Case studies also fulfill the need for drama, and can sometimes be called literature. That said, they also alow space for contradicting interpretations. Case studies reveal the wide range of world-views, the complexity of the subject matter, and the Babylonian confusion of tongues that holds the field of psychotherapy in its grip.

A science speaks primarily to the world through its publications. The way things are named and categorized contributes to the general status of a field. As far as psychotherapy is concerned, psychiatric diagnostics (DSM5) has a respectable level of precision, status and respect; it appears to be the secret language of initiated experts (Allday, 2011). And thanks to their "classy" medical-biochemical terminology and the names of psychotropic drugs, psycho-pharmaceutical treatments appear far more scientific than talking therapies do (Eveleigh, 2015). But as soon as we look at the literature about psychotherapeutic methods based on therapist/client communication, the coherence is lost and the status of the field drops. Even psychoanalysis lost some of its consistency and glory (Goretti, 2008).

Most psychotherapists use the principles explored in this study on a daily basis. But though the phenomena under scrutiny can be familiar to them, these phenomena remain in a grey area where the definitions are rather nebulous, and the explanations may diverge wildly. Thus the link is weak between the established psychological theories and what psychotherapists use as their frame of reference (Hall, Bodenhammer, Bolstand & Hamblett, 2001; Hansen, 2010). The hope to capture all psychotherapy processes in the sturdy concepts of behaviorism seems to be nearly given up.

The clinical surveys presented here help to answer a series of burning theoretical questions, but these answers are not acquired with the most established of research methods. Our methodology is: if the phenomenon under scrutiny is robust enough, chance plays a minor

role, making statistical testing less pressing. As an analogy: to demonstrate the existence of gravity one only needs to see that a limited number of objects with mass fall back to earth. Gravity is an extremely robust phenomenon that most physicists can believe on the basis of only a few observations. However, gravity waves, the existence of which was recently proven, demand an exquisite experimental set-up and refined forms of statistical testing, to rule out chance in the variation of the very subtle measurements. It is useful to remember that even a robust phenomenon like gravity was overlooked by science for ages just because of its "obvious" nature.

As already noted, the three phenomena, which we are examining here, were, one after the other, recognized in the process of training students and practising psychotherapy. Some insights appeared because the author's habit of putting question marks where others had already put periods. But it was not just the scientist-practioner who came up with these ideas. In fact, it was often the questions posed by students for which the teacher had no ready answers that were most productive: "Why does the feeling of anger change when I move my father-in-law in my mind? Why do we have to go back before birth to change this belief? Why can't we help a client without the activation of resources?"

This process demonstrated to the author that teaching is the best way of learning, especially when an answer is forced out of one's mouth because a student is waiting impatiently for something to appear.

At the end of the day, the question of the efficacy of NLP methods remains relevant. Several studies have been devoted to this matter, such as Ojanen et al. (2004), Stipancic, Renner, Schütz & Dond (2010), Wake, Gray & Bourke (2013) and Konkel (2013) Braganza (2015). For another but related question: "What distinguishes NLP from other brands of therapy?" I would recommand Grimley (2015), Hansen (2010), Dilts & DeLozier (2000), Bostic St. Clair & Grinder (2001) and Derks & Hollander (1996).

Part 1

The first part of this volume is called “Clinical Experiments in Mental Space” in which a series of spatial psychotherapeutic interventions is analyzed as if it were experimental set ups. This long article presents the scientific framework in which mental space psychology is unfolded as a discipline.

The social panorama model came from noticing the strong emotional impact that moving social images can have on people. For instance, people who suffer from shyness can be freed instantly by moving the image of the person they feel shy with, downwards and further away. This gives rise to the hypothesis that the location of social images is critically meaningful.

The social panorama model gives spatial cognition its place in applied social psychology. This model/theory answers the question of how people construct relationships in their mind. The hypothesis is: People construct relationships by putting social images on stable locations in mental space. This idea has led to a simplification in the therapeutic work with relational issues. Currently, psychotherapists and coaches around the globe make use of the social-panorama model and verify this hypothesis on a daily basis.

In part 4 we will also look at the formal testing of the Social Panorama’s central hypothesis: relation equals location. The social panorama is just one example of a much wider psychological reality, which is that the mind is organized on spatial relationships. In other words, the fundamental cognitive faculty of orienting oneself in physical space forms the basis of all (abstract) mental activity. Mental Space Psychology helps psychotherapy to evolve from a language-oriented activity into a space-oriented activity.

Clinical Experiments in Mental Space.

1.1 Introduction

During the last thirty years, the role of *space* in cognitive science became more prominent, as witnessed by a series of publications and congresses on *spatial cognition* (like the 6th International Conference on Spatial Cognition, Rome 2015). Beside a wealth of perspectives on human and animal psychology, these publications and congresses show how little awareness the neuro-scientists, psychologists and linguists involved have of the existence of *spatial psychotherapies*. On their part, the therapists who work *spatially* have only fragmented ideas about what science discovered about *space*.

Most *spatial psychotherapies* were developed in isolation and often before *spatial cognition* became an area of research. This means that spatial psychotherapies are an autonomous development with the utilization of mental space as their common denominator. In this study we explore what new insights this clinical work provides about the functioning of the mind.

The name given to the combined study of *spatial cognition* and *spatial psychotherapies* is Mental Space Psychology (MSP). In brief, MSP investigates how humans orient themselves in the physical world (spatial cognition), how they find their way in their inner psychological universe (by mental spatial indexing, spatial storage, retrieval and imagery) and how space is used in the field of clinical psychology (in *spatial psychotherapies*).

The drive to investigate the role of *space* in psychotherapy and cognitive science in combination stems from the main hypothesis of MSP, which is that *spatial cognition* is the foundation of all – no matter how complex, abstract, problematic, symbolic, concrete or imaginative – thought. In other words, the most basic embodied spatial orientation skills, support (scaffold or ground) everything else that is going on in peoples' minds (Groh, 2014; Tversky & Kessell, 2014; Barsalou, 2012; Richardson & Zednik, 2010; Tversky, 2010; Tversky, Heiser, Lee & Daniel, 2009; Mix, Smith & Gasser, 2009). The logical link to clinical work comes from the observation that in several psychotherapeutic traditions, like "psychodrama" (Moreno, 1951), "family constellations" (Weber, 1994) "the personal timeline" (James & Woodsmall, 1986) and "the social panorama" (Derks, 1996), *space* is in fact the central mode of operation.

Apart from information collected over other paradigms, it is clinical field experiments that provide most data in MSP. Spatial psychotherapies make use of remarkably well-documented and structured interventions. In this study these interventions are used as instruments of discovery. We believe that this unusual approach brings phenomena to light that remain under the surface in more controlled research settings. However, to regard therapeutic techniques as genuine experiments may appear exotic in present day academic psychology. Because of that, we will pay extra attention to the fact that among the various methods for deepening our insight in the role of space in mental activity, clinical research is largely uncharted territory.

1.1.1 Space in psychotherapy

The use of space in psychotherapy means either that,

1) The therapeutic process is choreographed in a 2-D or 3-D manner, and/or

2) That the therapy focuses on the locations where the client's limiting concepts are projected (mental spatially indexed, visualized, heard or felt) in order to move them towards more favorable places.

This implies that the clients either physically move (walk) along marked spots on the floor (or between seats) that symbolize certain personal meanings to them, or that they explore where in their imagination certain critical concepts are seen, felt or heard in order to mentally relocate these on better sites.


Spatially choreographed therapy


Spotting the location of concepts

The primary reason to explore spatial psychotherapies is their supposed powerful effect. This goes so far that some say that, whenever space is included in psychotherapy, miracles start to happen (Grove, 1998; Lawley and Tompkins, 2000, 2002, 2014; Battino; 2006; Hoyt & Talmon, 2014: Derks & Hollander, 1996). Miracles here, means that clients who walked around for years with serious issues find relief within one single two hours session. Thus the logic behind this project is: when we assume that spatial psychotherapeutic interventions have indeed such a "miraculous" impact on peoples minds, this must point to principles that are not yet fully understood. But what kind of principles are we talking about?

1.1.2 Hypothesis

The hypothesis used in this study parallels the view of researchers like Levinson (2003), Tversky (2004), Barcalou (2012), Spivey, Richardson & Zednik (2010), Groh (2014), which is that space must be the primary organizing principle in the mind. In other words, where thoughts/images/feelings/sounds are projected in the psychological sphere in and around a person is what makes them retrievable, understandable, distinctive, and gives them for a large part their cognitive-emotional meaning. In brief: all cognition is spatial in nature.

The probable reason why this is the case, is, that the same spatial cognition that an organism uses to orient itself in the physical world (to know where its body is located in the environment, to find it's way and what it needs) is built upon by all other mental functions (Lakoff & Johnson, 1999; Bergen, 2012; Bailey, 1997; Tversky, 1991, 2002, 2010; Barcalou, 2012; Burgess, 2014). Thus, how we create an embodied simulation of ourselves in our physical environment in our mind is similar to how we map everything else up to the highest levels of abstraction: in our mental space (Groh, 2014).

The greatest challenge in regards to this hypothesis is that what is going on in mental space stays largely outside of awareness: it functions unconsciously. But this unconscious character doesn't make it less fundamental! Luckily, we have reached an age in which psychology can deal with unconscious processes (Zajonc, 1984; Bargh, Chen & Burrows, 1996; Kahnemann, 2013).

In the most common paradigms in spatial cognition lab-research, one manipulates the environment to measure the effects thereof on reaction times, cerebral blood flow, the uptake of blood sugars, eye movements, neural resonance and verbal and/or written responses. But in such set-ups spatial imagery plays only an indirect role (Holms & Mathews, 2010). In the clinical work presented in this study however, spatial imagery is placed centre stage. Such imagery is what therapists deal with on a daily base, but for most researchers it offers a methodological challenge, which has often led them to avoid this area of cognition.

Included in the above hypothesis is the idea that spatial cognition, but even more, so spatial imagery, is a mental background function that neuroscientists primarily locate in the right hemisphere (McGilchrist, 2009; Bishop, 2014) where one finds most visuo-spatial activity. Neural readings here tend to be of lower amplitude (EEG) than those in the more dominant left hemisphere – which sets spatial imagery more or less in the shadow.

There is also another part to this hypothesis: It places spatial awareness at the root of all cognitive development. The collected evidence in spatial cognition research and as presented here from clinical experiments, makes it easy to believe that the organizing power of space must start in the embryonic phase and stays dominant for the first years of life (Barcalou, 2012). Then in teenagers, language begins to overrule space as the scaffolding medium, which eventually causes traditional psychotherapists to mainly "talk" with their clients and seldom look for the locations of the concepts that make up their problems.

Spatial psychotherapies

The daily confrontation with the phenomena on which the above hypothesis is based drove many therapists (intuitively) in the direction of spatial work. And those who also reflect on it (Derks, 2002; Lawley & Tompkins, 2000; Walker, 2011; Varga von Kibéd, 2014) consider it logical that, if all human experience and thus also all human problems are largely spatially encoded, it must be more effective to work in that very medium. In other words, spatial psychotherapy works directly with the 3-D experience of the client.

The combination of intuition and analysis resulted in a collection of psychotherapeutic methods with their own terminology, theory and myths. Since psychotherapies are also commercial products, competition, seclusion and sometimes secrecy make them less accessible for science.

When we mention spatial psychotherapies as one single category, we refer to a class of methods that at first sight may not appear related. And their commonalities are frequently diffused on purpose since competition leads to their proponents primarily emphasizing the differences.

To name some of these methods: The Other Minds Eye (Sargent, 1999), The Feldenkrais Method (Feldenkrais, 1972), Voice Dialogue (Stone & Stone, 1980), Spatially sorted NLP (Andreas and Andreas, 1989; Dilts, 1990; Andreas, Faulkner & McDonald, 1994), Time Line Therapy (James & Woodsmall, 1988), mBIT (McCraty 2003), Clean Space (Lawley & Tompkins, 2006), Game of Gifts (Glaudemans, 2015), Family Constellations (Weber, 1994; Hellinger, 1995; Hellinger & Beaumont, 1998), Structural Constellation Work (Varga von Kibéd, 1995; Varga von Kibéd & Sparrer, 1998), BrainSpotting (Corrigan & Grand, 2013), Time-Lining, The Matrix Model and Semantic Space (Hall & Bodenhammer, 2001), Acceptance and Commitment Therapy (Hayes, Luoma, Bond, Masuda & Lillis, 2006), The Wholeness Model (Andreas, 2014) Metaphors of Movement (Austin, 2010), Spirit Releasement Therapy (Baldwin, 1995), The Social Panorama (Derks, 1996) and we must also include a great diversity of Shamanistic psychotherapies, Ayurverdic psychotherapy, Chakra/Aura/spatial-energy and Holistic psychotherapies.

Again, the reader must take notice of the fact that, many founders of-, researchers of- and practitioners of these schools, almost never mention that their method has the use of space as a central principle.

1.1.3 Phenomena in Mental Space

In their quest for structure, MSP researchers (Derks, Ötsch & Walker, 2011) came to distinguish 10 spatial domains of study:

The brain itself is a physical 3-D structure.

The central nervous system is also a physical 3-D structure.

The body is a physical 3-D structure too.

The awareness of percepts, concepts, memories, imagery and emotions appears in an infinite 3-D sphere in and around the person (often just called here: mental space). Within this "space of all awareness" we find six sub-categories:

a) Bodily whereabouts: navigation and orientation.

b) Time as a spatial construction.

c) The self, as a spatial construction in and around the body.

d) The social world as a panoramic 3-D landscape.

e) All linguistic meaning appearing somewhere in mental space.

f) Spatial metaphors: this is the use of 3-D situations as analogies for (emotional) states of affairs (problems).

In this study we will go on a quest to find psychotherapeutic techniques that intervene in each of the above spatial domains. The methods found will be presented in connection to what we will call "clinical experiments", which are very often the same (or simplified) procedures that are used in spatial therapies. On the one hand these will enable the reader to try things out for themselves and on the other these may inspire new research in the sense of replication of this qualitative approach and also as a reference for the development of quantitative paradigms.

1.1.4 A meta-look at therapeutic effect

All psychotherapy aims at alleviating psychological suffering; and normally psychotherapeutic techniques are evaluated on how well they perform this task and not on what psychological knowledge they generate. Before focusing specifically on the latter, there are several points regarding psychotherapeutic effects that need to be clarified first.

As already stated, most schools of psychotherapy have their own unique theories, philosophies, anecdotes and myths. These tend to support the practitioners convictions about why specifically their techniques must be superior to other approaches. Most therapists are frantic believers in the sovereignty of their unique method. Hans Eysenck (1966) created havoc among therapists with *The Effects of Psychotherapy* – and found later supporters in Jerome and Julia Frank (1993) and several other psychotherapy researchers (Lambert, 1992; Bohart and Tallman, 1999; Hubble, Duncan & Miller, 1999). They all argued on the basis of various research methods that the specific psychotherapeutic techniques contribute little or nothing to the psychotherapeutic result.

The above researchers can be called the "technique sceptics". In Wampold's (2001, 2010, 2015) statistical meta-analysis of which factors contribute to the therapeutic effect, he found unexplained client variables (87%) the therapeutic alliance (8%), expectation and hope (4%) and the therapeutic method (1%). Within the factor expectation and hope it was clear, that the belief the therapist holds about the effectiveness of his/her own method is a significant contributor to the effect – probably because when therapists are convinced of the power of their techniques they will automatically raise consistent positive expectations and hopes in their

clients. But in the end, Colle and Rademaker (2015) argue, the only thing that really counts is whether the client believes that his/her therapist is competent and his or her techniques work.

The above "technique sceptics" help therapists to take a neutral observers point of view on their work-field, but it may overshoot its goal when one comes to the conclusion that what a therapist does technically is close to immaterial (Crits-Christoph, 1997; Cambless, 2002). On the most basic level one could argue, that without techniques psychotherapy would leave the clients entirely to themselves.

Although the class of spatial psychotherapeutic techniques studied here, is selected because of their supposed strong effects, in this study these effects come second. These techniques are regarded here as experiments that aim at acquiring insight in spatial cognition. Thus we will leave the evaluation of the effect of these techniques to others. Here we investigate what they bring to the surface about the spatial structure of the mind.

That is why we will assume here, in a more or less Darwinist manner, that all psychotherapeutic techniques with a record of several years of use, survived, because they benefited an unknown number of clients in some way. Or on a basic level, they allowed an unknown number of therapists to use them to raise or restore hopes in their clients.

The above, of course, is an unsatisfying position for therapists but also for researchers – but it frustrates them for different reasons. The majority of practitioners desire that their own method stand out in an overview as being the most effective, preferably because of its superior technology. Most researchers however, rather want to compare therapeutic methods on their effect in double blind trails and to publish these results in high-ranking journals. Thus to legitimize therapeutic methods on the basis of them just being in regular use for some time, will not satisfy either of these parties.

For the current project to succeed, pleasing therapist or researchers must be forgotten about. The use of spatial psychotherapeutic techniques as discovery tools takes a maximum distance from the science that rules out their potential: thus from the technique skeptics. And beside that, we must free ourselves from all the seductive (ad hoc, new age, super natural) theories used by schools of therapy, and from what these schools consider to be the correct technical procedures and rituals.

To achieve such a radical distancing we found it useful to identify ourselves with something that comes from far away. Here called the "Martian anthropologist".

Martian Anthropologist

Just like Albert Einstein used his thought experiments in physics (as if traveling with the speed of light), we will assume here an Alien perspective on "psychotherapeutic human interaction". That means that we will try to look at it in a way that is as blank and open as we can. In fact this means that we need to be willing to question all our assumptions about which factors count in psychotherapy. Is that hard? Yes. And we must admit that it is close to impossible. So it will only be an idealistic orientation point. But this sheer impossible endeavor has already shown to bear fruits. Our best attempt in looking at psychotherapy from Mars, resulted in a very obvious two-phase structure that was easily spotted through the telescope in almost all effective psychotherapies. This two-phase structure will guide us all through this study. It is a pattern that the majority of terrestrial researchers overlook because of their too close perspective:

Phase one: Have the client imagine and re-experience the emotions and cognitions that form the heart of their suffering (the problem state), to next…

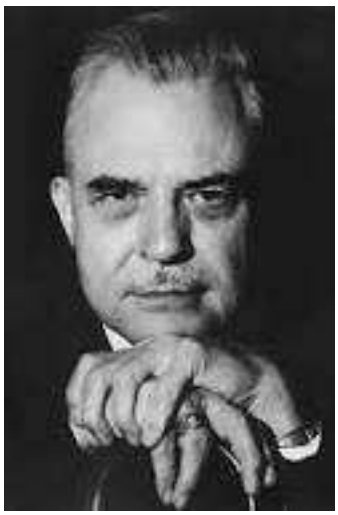
Phase two: …make the client do "something completely different" from what he or she otherwise would do when being in this problem state.

This may sound cryptic at first, but it is supported by numerous "Martian anthropologists" meta-observations of countless psychotherapeutic sessions (Derks, 1988; 2015).

To be explicit: let us suppose for a moment that our client John normally tries to get away from his mental suffering as quickly as possible – which means, he tries to think of other things and wants to experience more pleasant feelings (watch TV, smoke, fiddle with his smart-phone, eat, drink, have sex, etc.). For the therapist to make John do "something completely different" may mean for example that after having him sense his misery for a moment, she makes him continue to attend to his bad feelings as long as possible and even try to intensify these and focus on its very core. The latter is "something completely different" for John. Alternatively, it could just as well be "something completely different" for John when the therapist starts to massage certain body areas, tap on his head or use pressure massage on the soles of his feet, while he is in his problem state. Or the "something completely different" may consist of calling for a helper spirit in order to get some spiritual advice by means of an oracle ritual or it can be "something completely different" to have John move his eyes from the left to the right and visa versa at a high rate. Even a psychoanalytical type of interpretation, in the sense of connecting his current suffering to how jealous he was of his father in early childhood, is something completely different. In a similar way, it can be "something completely different" that his issue is said to be caused by traumas from previous lives, or results from an alien abduction or an infestation with evil spirits. When the latter interpretations are fresh ideas to John, they all could do the job. The "Martian anthropological" observations show that the range of what can be "something's completely different" in all various psychotherapeutic schools exceeds even Martian fantasies. However, when the chosen interventions help to transform the 3-D experience of the problem state, it seems to be most effective.

To give the highest priority to getting the client on an alternative track of mind stands out in the work of legendary hypnotherapist Milton H. Erickson (Erickson, 1967; Erickson, Rossi

& Rossi 1976; Zeig, 1980; Lankton & Lankton, 1983; Walker, 1996). By making "bringing the client on an other track" his highest value must have greatly contributed to the effectiveness of his work (Battino, 2006). Erickson was regarded as a kind of alien in his time, however, 40 years after, many therapists agree that he conceived most elements of modern psychotherapy (Haley, 1976; DeShazer, 1982; Bandler & Grinder, 1979; see also the documentary: Wizard of the Desert, by Alexander Vesely, Noetic film: 2013).


Milton H. Erickson

Anyway, what the therapist makes the client do from his problem state onwards can be at times quite surprising. But however exotic an intervention may appear, for sure the therapist will have a (more or less scientific) explanation for why this type of "something completely different" is exactly the right thing to do in this particular case (Fuller Torrey, 1972).

Although we do not study the effectiveness of spatial psychotherapeutic interventions here, we have chosen them because they seem to have a strong impact on clients: they have a reputation for strong therapeutic effect. But what exactly do we mean by "psycho-therapeutic effect"? Is it a satisfied client? Is it an emotional client? Or is it a satisfied therapist? Or is it a significant measure of change attributable to the therapeutic method in a research report?

1.1.5 Effect and research

A researcher can test the effectiveness of one type of psychotherapy by taking a number of individual clients and measuring the severity of their psychological complaints before and after the application of the method under scrutiny (Hollander & Malinowsky, 2010; Burke, Wake & Gray, 2012). Such a testing procedure can be improved by comparing these results with a similar number of control group clients, that stay untreated (waiting list) or receive an alternative or placebo treatment (Stipancic, Renner, Schütz & Dond, 2010).

NLP is the central inspiration for Mental Space Psychology. But is NLP effective? Just like most forms of psychotherapy, it has been demonstrated to have a considerable therapeutic effect (Hollander & Malinowsky, 2010; Stipancic, Renner, Schütz & Dond, 2010), but this does not mean that it is more or less effective than other brands of therapy. The central problem in comparing the effectiveness of NLP with other kinds of psychotherapy is the variety of techniques that are used under the name NLP, and also that many of these techniques are

similar in nature to the approaches one wants to compare them to (Burke, Wake & Gray, 2012; Grimley, 2015) – one can only compare therapies when they are different, not only in their name or their theory but they need to differ in their procedures.

The comparison of the effectiveness of two types of therapy demands the assembly of groups of subjects that are matched on many variables, among which the type and the severity of their symptoms and the diagnostic categories in which their issues can be distributed. This is a huge undertaking that is only possible with the support of research sponsors, and for NLP it was until now only achieved by the Finnish professor in psychology Matti Ojanen (1996). He could do this because he already had tested several different psychotherapies against each other and thus only had to set up an extra matched group of clients and take them through NLP treatment. The results were positive for NLP.

But as stated, the comparison of the effectiveness of psychotherapeutic methods is also problematic in other respects. Especially in the case of NLP, which is not just one technique but is typically composed of a broad variety of methods. For instance, it would make little sense to compare the effect of NLP with that of EMDR, since this is comparing the effectiveness of a box of tools with one screwdriver. For driving screws the screwdriver will be the superior tool – but what if the toolbox also contains several screwdrivers? For instance, NLP's toolbox contains "the figure of eight" included in the "syneasthesia process" (Hallbom, 1992) and Eye Movement Integration Therapy (Beaulieu, 2003), which show great similarities to EMDR. What are we comparing then? It only makes sense when one picks one technique from NLP (like the phobia-pattern with V/K dissociation) and compares that to significantly dyssimilar tools from other methods (Burke, Wake & Gray, 2012). In brief, what is called a method (like NLP or EMDR) can mean incomparable things.

It is also important to decide what we mean by therapeutic effect. Within the low control, low scientific status situation of a therapeutic practice we may try out different treatments on the same client; just like medical doctors try out different doses and types of medication on the same patient until something works. And also "shopping" psychotherapy clients may do this on their own initiatives: "I have tried many therapies, until I finally found method X to work for me."

The coming into being of psychotherapeutic effect (problem resolution, emotional neutralization and the relief from psycho-somatic suffering) can be understood in various ways. On the most basic level one can say (Erickson, Rossi & Rossi, 1976) that psychotherapy helps the client to "think in a different manner" about their problem than they would do without psychotherapy (Haley, 1976). Erickson said that he had no method, or that he invented a new method for each unique client. That the client also needs to acquire a useful way of thinking, beside just "a different manner of thinking" seemed to have stood out in Ericksons' therapy.

The critical question is: When a therapist makes the client do something completely different once, will that carve out enough of a new mind-track to keep the client from returning to his habitual ways forever? In this study that would mean: Is it true that spatial interventions have the power to make the changes from a single session last?

The client's own estimated level of reduction of negative emotion and the coming to fresh insight and to new, more effective behavior and coping in the future is a more specific operationalization of what constitutes the psychotherapeutic effect. This can best be rated by objective observers or, less reliable, be tested with self-rating questionaires. But filling out these is not a common practice in psychotherapy. When the reader conducts the experiments in these studies, after doing most of them the healing effects may be categorized in the following three ways: it feels worse, it feels no different or it feels better.

The author believes that on a more abstract theoretical level however, such "feeling better" is the result of quite similar mental/neural processes as these are elaborated on in part 4 of this book (Derks and Goldblatt, 1985). These processes can be characterized as:

1) Getting access to latent mental skills (resources) and create new links to these feels better.

2) Coming to emotional neutrality, which enables new links to be formed that feel better.

3) Changing beliefs, getting new insights that enable new links to be formed that feel better.

4) Dissolving limiting concepts in order to open the road to new links to be formed that help to feel better.

Thus, based on the assumptions of the so-called feed forward theory of consciousness as is written about extensively in part 3 (Derks and Goldblatt, 1985; Derks 1989, Derks & Sinclair, 1990; Derks & Sinclair, 2000), new links are always what helps to resolve psychological issues and are primarily experienced as better feelings. Thus one can equate the creation of new mind tracks with the formation of new links, which makes the client feel more relaxed, self-assured, complete and sane. Thus, in a very brief format, effective psychotherapeutic intervention means: activate the client's problem state to then enable the client to create new creative links with the help of "something completely different". The new links will bring the desired effect in the shape of reduced negative emotions, useful insights, improved coping and more effective coping and behaviors.

1.1.6 Research method used in this study

In the current study, we will describe 10 areas of spatial cognition. Then we will investigate psychotherapeutic methods that intervene in each of these areas of spatial knowledge. These procedures of intervention are presented in detail. Then the estimated numbers of trials and participants will be given. Also the circumstances under which the experiments took place will be described. Next there will be an overview of the specific observations made around the application of these procedures. And finally, theoretical conclusions are drawn about what these clinical experiments reveal about the workings of the mind and in this chaper spatial cognition in particular.

The author gathered a large part of the mental space data included in part 1 of this volume over a 20 years period. About half of the data stem from colleague therapists and their clients. Finally it was also the author, in the role of observer/ researcher/ practitioner who drew conclusions about what he observed (Eells, 2007).

Some methodologists will call this approach "participant-observation" (DeWalt & DeWalt, 2002) or even "action-research" (Lewin, 1935; McTaggart, 1996). In the recent past, this type of research was approved of by, the "scientific forums" in anthropology and sociology. But in present day psychology such qualitative methods are mostly frowned upon (Rahman, 2008).

It is relevant to mention that the research method used in the current study is nearly identical to the one on which the whole of psychotherapy was founded – if we consider the works of Janet, Breuer, Freud, Jung, Wolberg, Perls, Rogers, Erickson, Wazlawick, Ellis, Beck, Satir, Gentlin, Moreno, Assagioli, Young, Farralli and Nagy, to name a few, as meaningful. The techniques tested by these groundbreaking therapists were probably a little less structured than the ones in the current study.

Over the last decades quantitative effect evaluation research became the leading position in academic clinical psychology (Kendall & Comer, 2010). Even though adequate quantitative evaluation studies help to judge the extent and duration of therapeutic results – things that seem the priority of policy makers and health care financers – it does not in the least provide insight in the underlying mechanisms. Without this type of insight all therapies remain "black boxes". They just consist of a variety of "something completely different" of which only the proportion of success with a certain type of diagnosis, the mean number of treatment hours and the expected duration of these effects are known.

As a result, the high value that is given to empirically tested (evidence based) psychotherapies has helped to marginalize the rich and varied toolbox of NLP (Grimly, 2015) but brought its unofficial offshoot, EMDR, to become the governmentally supported preferred treatment method for trauma's in the Netherlands (Van der Velde, 2003; GGZ, Netherland, 2007). However, apart from EMDR's successful marketing strategy, we must consider that its success in academia comes from EMDR's above average effect scores, and the solid experiments that were easy to replicate. This replication works well because EMDR consists of variants of one single procedure. But even more important, EMDR can be applied in a standardized way by trained therapists, by trained students or even by computers. Despite all the statistical evidence for its effectiveness, the mechanisms by which EMDR's results come are barely understood. The main hypothesis is that a task that interferes with the reconsolidation of traumatic memories causes the therapeutic effects (Hout & Engelhard, 2012). This view comes close to the "something completely different" observation in this study. It is probably correct, but not very specific.

Identical methodological discussions pop up in organizational psychology. Business consultants may measure the rise in productivity in an organization after a restructuring, but the psychological effects causing these changes cannot be understood that way. For instance "Appreciative Inquiry" (Masselink, 2013) is a qualitative research tool that may deliver such insights but fails to satisfy the desire for numbers. The same holds for the method "Grounded Theory" that Grimley (2016) applied to understand the role of NLP in the world. This inquiry goes beyond the growth in participants attending NLP seminars and the income of certified NLP-trainers. In these qualitative approaches, the interviewer is also the one who draws the conclusions; and what is even less objective, the researcher is part of the group of professionals under scrutiny. In the current study, the author is in a unique position to do this research, but

not in the position to organize it in a more objective way. The discussion about the reduced validity of research in which the scientist is also creating the changes he measurers, was initiated by Lewin (1946) who also saw the advantages of this kind of fact finding. He wrote:

> The research needed for social practice can best be characterized as research for social management or social engineering. It is a type of action research, a comparative research of the conditions and effects of various forms of social action, and research leading to social action. Research that produces nothing but books will not suffice. (p. 35)

What gives a project like this legitimacy most, is that the formulation of a new hypothesis, is, always will be and always was, a necessary and genuine part of science. The formulation of a hypothesis is part of Popper's (1963) circle of inquiry. It appears that over the last decades the value of testing and retesting existing hypotheses seems more appreciated in science than the formulation of a new hypothesis. However, without new hypotheses, science comes to a halt.

Another reason to use the method at hand is that most of the techniques described here are not limited to specific diagnostic indications. Several can fit to "any psychological issue" (as for instance the Wholeness Process does). However the therapist needs some skills, like rapport-skills, listening-skills and observation-skills to make the technique work on a particular client. For that reason it is hard to standardize the presentation of the technique on a computer screen or from a taped voice or even through a written protocol. One can compare this to playing a certain song on a musical instrument. The musician must possess basic musical skills to make what is written down in bars and dots, work as a song to a listener. Automated music usually lacks the potential to touch the listener in the same way as a hand played instrument.

As stated before, most research into psychotherapy aims at evaluating its effect in contrast to no treatment, placebo therapy or other therapeutic methods. However and once more, the conclusions drawn from the clinical experiments below are not about the therapeutic effect but about what they tell about the role of space in the psyche.

1. 2 Brain Space.

Donald Hebb (1949) postulated the idea first, than Sir John Eccles (1970) explored it in more depth until Dietrich Lehmann (1990) tried to bring it to its finesses:

> The atoms (elements) of thought consist of *temporal and spatial* patterns of activated brain cells that may extend their connections into the entire central nervous system.

This implies that on the most basic level, everything we think is a spatial pattern and every alteration in our thinking must be reflected in a change in spatial (and temporal) neural activity in the brain. Patterns of thought, like for instance some piece of reasoning, are made out of series of these temporal spatial groupings of activated neurons that Hebb called, cell assemblies and later were also named neural networks or brain electric microstates. These spatial networks succeed each other in chains that follow 3-D pathways through the neural tissue. These spatial streams of thought tend to run from the perception areas through the association areas into the motor areas (Milner, 1991). But what does that mean for psychotherapy?

When for instance a psychotherapy client makes a good step forwards in a session, this must coincide with 3-D events in his brain tissue: in its synapses, axons, dendrites, and in the mitochondria and the RNA in the nuclei of the neurons involved. On the microscopic level it must be the 3-D molecules of neurotransmitters that set electric impulses in motion that then move along the wiring of the neurons in the 3-D space of the brain (see also part 3).

Thus on the level of networking brain cells, all psychological activity, including all problem-connected activity is spatial, and the same must hold for all solutions to these problems. This implies that on this micro- and macroscopic level all effective psychotherapy must in some way change the spatial activity patterns in the brain (Derks & Goldblatt, 1985).

But there is also more specific space related neural activity involved.

For long, neuroscientists have been searching for the sites in the brain where certain cognitive functions take place. During the last decades specialized groups of neurons like, place cells, head direction cells, boundary vector cells (Burgess, 2002) and grid cells, were identified (mainly in the hippocampus), which seem to form the hard-wired basis of spatial orientation (O'Keefe, 1976; O'Keefe and Nadel, 1978). Thus if it is true, as now many spatial cognition researchers believe, that orientation skills forms the foundation of all mental activity, one can expect these specialized navigation cells to be active during psychotherapy as well.

In the psychotherapeutic literature one frequently read speculations about neural mechanisms but there is little mention of the role of the brains orientation centers. However, many therapists are rather skeptical about what neuroscience will offer for their work. The reputed therapist Steve Andreas (2014) for instance states: "psychotherapy can do completely without neuroscience". Maybe he is right when it comes to the direct therapeutic application of neuroscience in psychotherapy, but for our current purpose, where psychotherapy is a form of experimental data gathering, the question is turned around: what can psychotherapy tell us about neural-cognitive processes? And what reveals such therapy about the functional anatomy of the brain?

A major obstruction to relating spatial therapeutic interventions to the functional anatomy of the brain comes from the brain being positioned "all wrong" in the skull. That means that what is experienced on our left is represented on the right side of the brain and visa versa. And also, what we see in front of us is processed by neurons in the back of our head. The brain is largely positioned upside down: with the cortical connections to the body on its top. Evolution must have had a good reason for that but it makes envisioning where something should happen in the brain when a certain therapeutic change is made very complex. Neuroscientist accept the idea that where something is experienced in space relates to a location in the cortex in the so called "where stream" (Milner, 1991). This means that the relation between the experienced location and the place of the related brain activity must exist, but the measurement thereoff is yet too hard. And it is formost difficult because fMRI scanning asks for the repetition of a task and the statistic analysis of such a sample, while therapeutic changes are normaly restricted to unique events.

Although the relation between brain activity and spatial experience is complex, some spatial psychotherapists claim their work impacts specific brain structures like the right hemisphere, mirror neurons, medulla oblongata, the amygdala or the brain stem. But it seems that when these therapists mention brain structures, their models of the brain usually are rather static, and their mentioning of brain structures seems more aimed at elevating the scientific prestige of their method than explaining the mechanism involved. This is understandable, since the status of psychotherapy in society and science is rather low, but that of neuroscience pretty high.

1.2.1 The continious focus on one spot

Let us illustrate the above with an explanation for the neural mechanism behind the "Brainspotting" method as provided by its founders Frank Corrigan and David Grand (2013).

> Brainspotting is a psychotherapy based on the observation that the body activation experienced when describing a traumatic event has a resonating spot in the visual field. Holding the attention on that Brainspot allows processing of the traumatic event to flow until the body activation has cleared. This is facilitated by a therapist focused on the client and monitoring with attunement. We set out testable hypotheses for this clinical innovation in the treatment of the residues of traumatic experiences. The primary hypothesis is that focusing on the Brainspot engages a retinocollicular pathway to the medial pulvinar, the anterior and posterior cingulate cortices, and the intraparietal sulcus, which has connectivity with the insula. While the linkage of memory, emotion, and body sensation may require the parietal and frontal interconnections – and resolution in the prefrontal cortex – we suggest that the capacity for healing of the altered feeling about the self is occurring in the midbrain at the level of the superior colliculi and the periaqueductal gray.
> (https://brainspotting.pro/files/corriganandgrand2013medhyp80759-766.pdf : 2015-06-06)

The "Martian anthropologists" analysis of Brainspotting is: When the client re-experiences a trauma, thus when the client is connected to the bodily stress of the problem state

(Martian anthropologist phase 1) the "something completely different" (phase 2) in Brainspotting consists of having the client remain focused on the location in mental space where his/her eyes were aiming at during retrieving the traumatic memory. Without a therapists request to keep the eyes fixated on this spot, the eyes would probably move away before the client gets emotionally involved. Then in Brainspotting one keeps the client focused on the same location in mental space until he or she finaly start to relax.

Even if Grand and Carrigans' description of the neurological structures involved during the use of their method is correct, it is still arguable whether this pattern of activity is unique for Brainspotting therapy. It may be that in most effective trauma interventions (NLP, EMDR, CBT), the same brain structures are involved. The prolonged eye fixation in Brainspotting may help to induce a trance state that by itself already facilitates the finding of resources. By keeping the eyes fixed on where the traumatic images are located in mental space, the accompanying trance will automatically enforce a hypnotherapy-like search for a solution (Lebois, Papies, Gopinath, Cabanban, Quigley, Krishnamurthy, Barrett & Barsalou, 2015). Additional suggestions in the direction of potential resources will amplify this effect.

Brainspotting's primary contribution to psychotherapy is the clinical application of the general phenomenon of spontaneous eye fixation during traumatic memory retrieval – apart from where in the brain these processes take place.

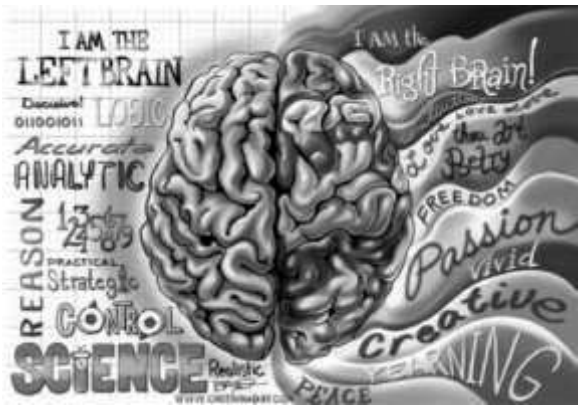
1.2.2 The switching from left to right and visa versa.

The fact that a brain is a material object, that one can see, touch, cut, measure, weigh, coagulate, shock, chemo-electro-magnetically influence and scan, while it is actually doing some thinking, seems much more appealing to scientists and the public than the vague investigation of spatial subjectivity. But neuro-cognitive science cannot do without studying subjectivity too, as the Italian neuroscientist Vittorio Gallese (ICSC Rome, 2015) stated: "Only a trans-disciplinary approach will bring neuro-cognitive science further. We can scan everything we like… but why do that?" The fixation on functional neuro-anatomy has indeed taught us a lot but also blocks a deeper understanding of how humans really think. If we only know where in their brain people think some type of thing, it does not necessarily tell us more than that. Just like knowing where a person lives does not necessarily make him a friend. And Gallese continued: "A mirror neuron (Gallese's most recognized contribution to science) can do nothing on its own. In the brain, everything is connected to everything, so nothing really happens only in one spot alone." So the question comes up: When we know where in the brain a concept is activated, can we relate to where in mental space a person experiences it?

It has been in neuro-psychology, where one works with patients with disrupted brains, that the significance of the brain having two hemispheres, that both have a different way of thinking, has been a central focus for 150 years (Wernicke, 1878; Gazanniga, 1970/2015; Bishop, 2014). So, how does spatial psychotherapy relate to the hemisphers?

In the 1970s the cognitive differences between the hemispheres were central in a mayor wave of research (Gur & Gur & Marshalek, 1975). All human behavior and cognition could in

some way be related to these phenomena. No area of cognition was left out. Everything people did was evaluated on how this related to the division of labor between the two halves of the brain (Bakan, 1978). The whole idea fascinated the audience and became hype in popular science. In the 1980s the workings of many new-age psychotherapies were explained by how such a method activated the more creative right hemisphere or helped to improve the connection between the two sides of the brain, to stimulate more integrated thinking. For instance, in the development of the now reputable EMDR-therapy (Shapiro, 1995) enforced hemispheric integration was an explanation for why the left-right eye movements made sense, and this once was presented as the core of this method (Hout & Engelhard, 2012; van der Kolk, 2014).



The hemispheres in the 1980s

And Bandler & Grinder (1979) wrote that the right hemisphere houses the unconscious mind. And they described how a therapist could help to change that very hemisphere by speaking into the opposite ear or leading mental images to the left side. But after these waves of popular new age publications on hemispheric differences, and their therapeutic meaning most psychotherapy researchers shied away from this theme.

But a few researchers continued this queste, and beside the fact that the right side of the brain proved bigger and heavier, they also found neuro-chemical differences, such as that the right side is more sensitive to drugs, the left side houses more dopamine receptors and the right side is more sensitive to noradrenaline. They also made EEG measurements showing that the amplitude of the brainwaves in the point of the left hemisphere tends to be the highest found in the entire brain. This peak activity however, is limited to a relatively small area. Some call this the left-prefrontal pole, which seems to dominate the rest but also gets quickly exhausted and has much to do with controlled thinking (McGilchrist, 2009).

After the euphoria of the discovery of all the different localized functions scientists started to see that the lateralization of these functions was not uniform for all people, but varied in an unexplainable way. Whitehouse and Bishop (2012) experimented with Doppler scanning and came to the following conclusion:

> Verbal and visuo-spatial abilities are typically subserved by different cerebral hemispheres: the left hemisphere for the former and the right hemisphere for the latter. However little is known of the origin of this division of function. Causal theories propose that functional asym-

metry is an obligatory pattern of organisation, while statistical theories maintain this is a reflection of independent, probalistic biases. The current study investigated lateralisation for language production and spatial memory using functional Transcranial Doppler in 75 healthy adults (45 right handed, 27 left-handed, 3 ambidextrous). The majority of participants had language abilities lateralised to the left-hemisphere and spatial memory to the right hemisphere, while around one-quarter of participants had these functions lateralised to the same hemisphere. No participants showed the reversal of typical organisation. The findings are consistent with a statistical view of functional asymmetry, in which hemispheric biases for verbal and visual functions reflect probabilities relating to independent causal sources.
(www.ncbi.nlm.nih.gov › NCBI › Literature › PubMed Central (PMC))

So it is not just genetically fixed functions on the left and on the right. The conclusion is that there are differences between the left and right hemisphere; but the factors causing this are as yet unknown. It can be hypothesized that inate differences in the levels of dopamine and noradrenaline receptors cause this variation in left and right cognitive development.

The current impression is that this difference (in neuro-transmission) generally results in a left side that is specialized in focused, detailed representation, while the right side holds the big picture in the background. For mental space psychology this impression supports the idea that it is the right hemisphere that is more involved in spatial cognition and social relationships. It can recognize emotional expression, jokes and metaphors better than the left side that however can better argue, organize, schedual, calculate, structure and talk.

In mental space psychology (MSP: see also awareness space further in this part 1) it is hypothesized that the left hemisphere operates in the area of space straight in front of the person: clearly distinquishable representations fill an elongated one meter wide cone-like space that extends from the vocal chords area in the neck and over the whole head up to about 5 meters away in the center of attention. This area has vague boudaries and is surrounded on all sides by the space used for representing the broad and general background concepts of the right side. This right hemispheric mental space also includes the whole body and goes to about 3 meters behind the person up to 15 or more meters in front and 10 meters up and to the sides (this space also includes the past, the future and the social panorama, see futher in this part 1). So the left side is more the head and the center of attention while the right side is includes the body and a wide area around that. The exact make up of these two nested spatial areas can vary for each individual. The today popular way of calling some people left-brainy and others the opposite may form a real dimension in personality, which is supported by research into personality disorders (McGilchrist, 2009) and offers a promising perspective for spatial psychotherapy. If it were possible to make the left and right mental spaces visible, we could build a model of personality pattrens on that. We may expect that the mental space of people with a diagnosis like “Asperger autism” may show a relative small difference between the mental spatial areas couvered by their hemispheres: they may posess two hemispheres of left-side qualities. And in the science fiction of Mental Space Psychology it is probable that how peoples’ hemispheric mental spaces are interrupted, distorted or similar or dyssimilar to each other will once be a usefull correlate of personality.

However, for psychotherapists, brain research into personality disorders up to now has created more obstacles than help. This happens by suggesting that "personality-disorders" are caused or linked to too low/high levels of certain neurotransmitters or malfunctioning neurological hardware, while pointing at high-tech brain research (Eveleigh, (2015). The main problem is that a focus on neuro-physiological causes suggests that psychotherapy, which is more like debugging the mental software than replacing broken processors or missing chemicals, will not help with personality issues. Brain research in this manner disqualifies psychotherapy while at the same time promising more than it can deliver so far.

However, it is also undeniable that the hardware must play a role in personality. How should a psychotherapist deal with the findings from neuroscience that in schizophrenia, borderline and Asperger-autism the left hemisphere seems to dominate the right one in a more than standard fashion (Baron-Cohen, 1991; McGilchrist, 2009)? Will the composition of a person's left and right hemispheric mental spaces indeed provide an answer here?

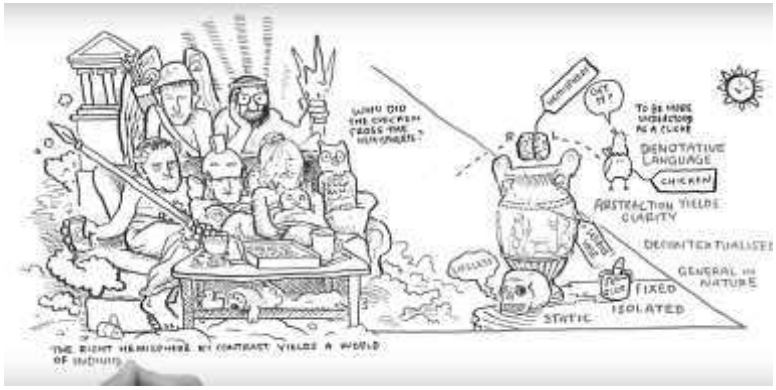
Before such speculations become scientific facts MSP can at least rely on the findings that specialized cells in the limbic system support the visuo-spatial functions. Spatial and social cognition is predominantly found in the right hemisphere. And it must be the latter function that spatial psychotherapies influence most. This then brings us to the fascinating view that spatial psychotherapies must work mainly on the in 3-D represented problems that exist in the larger awareness field of the right hemisphere and that normally functions in the background (unconsciously). Is their direct impact on the right side of the brain what gives spatial psychotherapies their power in comparison to other (left hemispheric) "talking about" approaches?

From this perspective it seems that traditional "talking therapies" slow everything down (Tonti & Gelo, 2016), since the verbal addressing of the client's right hemispheric 3-D issues forces these to be transcoded to the other hemisphere first where they become compressed (over grammar) into 1-D language (Lakoff, 1987). Thus the client must first translate his 3-D problem from his general and broad thinking right hemisphere to the narrow 1-D of the left. Next he will express this language to the therapist, who in her turn receives it in her left hemisphere. To empathically understand the client's problem, she needs to trancode it into 3-D so it can be understood by her own right hemisphere. From this 3-D reconstruction the therapist will come to some response that, may ask for a similar transcoding back to 1-D. This process introduces too many (grammer) steps of back and forth transcoding and possible errors, which reduces the speed of change.

McGilchrist (2009) refueled the fascination for the hemispheres in a beautiful way, which also makes it interesting for psychotherapists again. He not only paints a picture of how a damaged hemisphere may cause behavioral and cognitive problems, (which probably cannot be improved by psychotherapy) but also how skewed intact minds may come to act weird or genial. And he expands this topic to the (western) cultural tendencies to value the capabilities of the left side of the brain over the other – and he looks at the trouble this causes in society (below an image from his recent animation video on YouTube). McGilchrist builds on 50 years of research and implicitly makes a case for a psychotherapy that also takes these left-right differences into

account. By including the difference of the left and right area of awareness space, as we will do in this book, a more direct key to change-work is constructed.

If indeed most visuo-spatial intelligence sits in the right hemisphere, this must have important implications for spatial psychotherapies that make use of this mode of thinking. Should the therapist activate the right hemisphere by just addressing it? “Hallo right side I should like to talk specifically to you now…” Were Bandler and Grinder (1979) right with their “stereophonic” approach? Or are there other ways to tackle this?



The hemispheres in 2009

After the fascination about left and right among psychotherapists had waned in the 90s, a clear practical tool for using the difference in cognitive activity in both hemispheres was developed by Allen C. Sargent (1999) and formulated in a book entitled: “The Other Mind's Eye: The Gateway to the Hidden Treasures of Your Mind.”

Sargent gives the following steps as an outline for his technique:

> Step 1 - The first step is the understanding of the concept of the External Dominant Eye. If you look at a spot about 20 feet away with your head facing straight, focus on a spot and simply point at it from the center line of your body. Close one eye and notice if your finger is still directly on the spot. Switch back and forth from one eye to the other and then open both eyes. Can you see the difference?
>
> Step 2 - Get an internal picture of a person or event.
>
> Step 3 - Note the specific qualities of the image - Visual, Auditory, Kinesthetic and Emotional.
>
> Step 4 - Notice or get a sense of which internal eye you are using to see this picture.
>
> Step 5 - Now, in a way that works for you, shift so that you are now seeing that person or event with your other internal mind's eye.
>
> Step 6 - Note any changes in the way this second image is represented - Visual, Auditory, Kinesthetic and Emotional. (p. 44)

1.2.3 Clinical experiment 1: Switch Hemisphere

1) Find a memory or a future situation (an issue) that when thought of raises negative emotions and think of it until these emotions are clearly sensed.

2) Imagine that your mind is a car. When you think of the emotional issue, are you sitting behind the wheel or in the passengers seat?

3) When you believe you know from what side you are thinking of the issue, then do the following: Imagine opening the door of the car (brain) getting out and walking round the back to the other side of the car (brain) and then get in and sit down in the other side.

4) Now think of the issue from the other side of the car (brain).

5) Notice the difference in the quality and intensity of the emotions.

1.2.4 Observations:

The adjusted (metaphorical) procedure presented above, tries to compensate for the lack of guidance in Sargents' step 5. This technique was applied by the author on therapy clients in his practice and in demonstrations with workshop participants for almost 18 years. An estimated 70 percent of the approximately 50 individual clients showed a reduction in the intensity of negative emotions of their problem states. From the about 200-plus that were taken through this technique within a group context – where the participants followed the instructions in parallel as a group – the number of positive therapeutic results appeared to be much lower (maybe 40 percent).

This technique works fast (5 minutes) and is easy and elegant. Beside that, its effects appear in an un-spectacular and un-dramatic way: there are no sudden bursts of emotional expression. About one in twenty may have a fit of laughter, where others may just display smiles. This lack of "emotional fireworks" may be one of the reasons that the method remained unnoticed by the larger public.

Most of the participants can, when asked, report some awareness of the specific difference between the left and right hemisphere. But these seem to be the kind of low intensity sensations that keep up the doubt about whether it was really there.

The set up of this experiment suggests that the problem was experienced predominantly from one side of the brain, a suggestion that seems to fit easily to most of the participants' experiences and expectations. Without any explanation, most participants seem to understand that, it is this one side that was causing the problematic emotions with its limited view (Duba, 2000). The logical question, whether the problem states were more experienced on one side of the brain in particular, remains unanswered up to present. No tendency can be reported yet (like the expected right side).

The participants understood the lateral-shift instructions easily. This may imply that this procedure grasps a concrete spatial phenomenon of the mind or is easily recognized because of the common knowledge about the hemispheres. The "something completely different" of shifting one's attention to "the other mind's eye" seems an efficient technique to make different views available that in a substantial number of cases helped to resolve or neutralize the emotional issue.

The car-brain-metaphor, which is not used in Sargents' work, has some side effects. A small number of the participants became caught in the implicit "control" meaning of sitting behind the steering wheel. That went in either direction. Some found relief by letting go of control by becoming a passenger, whereas others did the opposite. One participant got stuck with the metaphor, because she found herself in the middle between the two seats. Another found the driver's seat occupied by someone else.

Many participants spontaneously reported a shift from foreground- to background perception or vice versa after doing the above experiment: in the sense that the issue became further away, vague, dimmer, smaller or the opposite. When the latter happened, they often reported having received a more appropiate view, which enabled them to cope with the issue that caused the problem state.

1.2.5 Conclusions

In the above experiment in mental space, we get hints about the difference in functional awareness between the left and the right hemispheres. The detailed knowledge in the foreground seems to be housed in the left side, while the big picture in the background is more dim and vague on the right side. When the above method would realy be reliable, it would be the primary tool to investigate the difference between the areas of mental space couvered by the left and the right side of the brain. For this one could plot the locations of specific images in relation to their source hemisphere. The hypothesis in this MSP study is that the left hemispheric space includes the head and goes straight forwards and is surrounded by the much wider sphere that belongs to the right side. Many forms of therapy, like mindfullness, make use of putting the client's attention towards the body. This may automatically result in a shift towards right hemispheric awareness. Maybe the wide-angle eye-movements in other techniques (like EMDR) imply a hemispheric shift to the right as well.

The biological advantage for humans (and many other species) of having different qualities of cognition in their hemispheres must be that, it foremost helps to combine a "big picture" with a "detailed focus" (Fehmi & Robbins, 2008). The "big picture" delivers the contextual information in which the details get their meaning. If a person were only to have one type of these forms of cognition available, this may cause them to live either in a broad unspecific harmonious universe (if it were only the right hemispheric mode) or in a world of contrasts and conflicting details where words can be taken to be realities and everything is out of context (if it were only the left hemispheric mode).

The question of whether this sensation of a shift in lateral brain activity is only the result of suggestion or whether it constitutes a real human capacity, can probably only be answered when this experiment is combined with neuro-imaging or other correlates of hemispeherical activity.

If it is true that a low level of right hemispheric activity is often found in people who are diagnosed as Asperger autists (Baron Cohen, 1991) and in some that are seen as schizophrenic (McGilchrist, 2009), a psychotherapeutic technique that helps to influence this dimension could open new possibilities.

1.2.6 Deeper into brain space

The human "brain space" not only shows a division over its medial-line, in two halves, but also in its central versus outer structures or vertical structures: like in the distinction between cerebral cortex, mid-brain and brain stem. As far as it is really possible to sense the difference in the activity between the left and right hemispheres, as suggested that this is maybe the case in the previous experiment, the vertical dimension seems to be even less accessible for subjective experience. However, "deep inside I know…" may signal in this direction. But the same "deep" can also point at bodily sensations: "deep in my heart" or "deep in my gut".

The author knows people who rapport they can sense thinking processes taking place behind their forehead. Others said they sense that they can control (visual) thought-processes from the back of their brain to the fore. But it appears that what happens in the center of the brain is normally beyond awareness. Even the headache after drinking a cold liquid too fast, called "brain freeze" (sphenopalatine ganglioneuralgia) is according to neurologists only a contraction of the blood vessels that lead to the brain but not a pain in the pituitary gland.

The drive to discuss the vertical dimension in "Brain Space" is that some therapists argue that "real" and "deep" and "permanent" emotional and personality change needs the involvement of the lower parts of the brain: like the brain stem for instance (Payne, Levine, & Crane-Godreau, 2015). These therapists tend to often equate "cortical" (on top of the brain) with "cognitive" and consider this cortical/cognitive not good enough for permanent and "deep" changes especially when traumatic experiences are involved. In their clinical work they may aim at the limbic system, as witnessed in methods like "Limbic Coaching" (Sylvia Kurpanek: www.limbic-coaching.com) and "Relation Oriented Meridian Based Counseling and Coaching" ROMPC (Thomas Weil: www.rompc.de). If psychotherapy could indeed selectively influence the deeper structures of the brain, this might be of great theoretical meaning for cognitive science and spatial cognition as well.

For a Martian anthropologist with an interest in the history of psychotherapy it may be obvious that psychotherapists have always used the word "deep" in contrast to "superficial". And also that it is generally assumed that deep changes are better than superficial ones. Superficial is often ascribed to the therapy of the competition, whereas one's own method is deep and results in lasting effects.

Within the field of psychotherapy one may find the following type of polarities between "deep" and "superficial":

Table 1: deep v.s. superficial

deep	superficial
- strong and lasting results.	- brief, faint and no lasting results.
- treating causes.	- treating symptoms.
- making "real" changes.	- making "fake" changes.
- deep hypnotic trance is used.	- only wake state chatting is used.

- deep regression to childhood or previous lives or previous generations.	- just looking at the here and now and the future.
- deep intense emotions are expressed without any humor.	- little tears, but much laughter is combined with logic, humor and concrete examples.
- confrontational and hard.	- soft.
- deep brain and body structures are thought to be involved, like the gut, brainstem and the limbic system.	- cortical structures are involved in which cognitive processes take place.

In the 1970s and 1980s the difference between "deep" and "superficial" was also connected to the horizontal dimension of the hemispheres: where the right side of the brain was believed to be the place for "deep" changes.

The question now is, does psychotherapy reveal something about the functional anatomy of cortical versus more centrally located brain structures?

The belief that emotional change depends on changes in the limbic system (hippocampus or amygdala) largely stems from brain scan (neuro-imaging) observations, in which emotional- and memory activity coincides with a significant increase in blood flow in these structures. This brought some people to the conclusion that emotions are stored in the limbic system and that emotional, traumatic, memories can only be changed by including these "deep" parts of the brain (Payne, Levine, & Crane-Godreau, 2015).

Such a view automatically degrades all more "superficial" (cortical) approaches, because of their supposed incapacity to cause permanent change. Only once someone compares effective- with ineffective therapy and proves its correlation with for instance exclusive limbic activity, will the above probable sounding beliefs become credible.

Emotionality and brain area was reviewed by Phan, Wager, Taylor, & Liberzon (2002):

> Neuro-imaging studies with positron emission tomography (PET) and functional magnetic resonance imaging (fMRI) have begun to describe the functional neuroanatomy of emotion. Taken separately, specific studies vary in task dimensions and in type(s) of emotion studied and are limited by statistical power and sensitivity.
>
> By examining findings across studies, we sought to determine if common or segregated patterns of activations exist across various emotional tasks. We reviewed 55 PET and fMRI activation studies (yielding 761 individual peaks), which investigated emotion in healthy subjects. Peak activation coordinates were transformed into a standard space and plotted onto canonical 3-D brain renderings.
>
> We divided the brain into 20 non-overlapping regions, and characterized each region by its responsiveness across individual emotions (positive, negative, happiness, fear, anger, sadness, disgust), to different induction methods (visual, auditory, recall/imagery), and in emotional tasks with and without cognitive demand. Our review yielded the following summary observations: (1)

> The medial prefrontal cortex had a general role in emotional processing; (2) fear specifically engaged the amygdala; (3) sadness was associated with activity in the sub-callosal cingulate; (4) emotional induction by visual stimuli activated the occipital cortex and the amygdala; (5) induction by emotional recall/imagery recruited the anterior cingulate and insula; (6) emotional tasks with cognitive demand also involved the anterior cingulate and insula. This review provides a critical comparison of findings across individual studies and suggests that separate brain regions are involved in different aspects of emotion. (p. 334)

The urge to draw clinical conclusions from brain-scan research is strong within neuroscientific circles. Although the neuro-imaging methods can spot the brain area with an increased blood flow in a reliable way, it does not automatically reveal the cognitive activity that is going on in that region. What is happening on an active peak-spot might even be of an inhibitory nature. In that case a scan may show the blocking mechanism of the very cognitive process that one looks for. In other words, conclusions about where in the brain a certain cognitive/emotional activity takes place can be drawn too quickly in relation to the processes in psychotherapy.

It is important for a psychotherapist to know that everything in the brain is connected with everything else and that brain scans as a tool appear too slow and inaccurate to pinpoint the location that is affected by a psychotherapeutic intervention. Thus, it is questionable if the limbic system can be excluded or included on purpose by the interventions of a therapist. We must remember that the central parts of the brain were at one time during our evolution a complete brain by themselves. This logically implies that all mental functions that a creature normally needs must be in a part still processed by the limbic system and the brain stem. It appears that these structures have more “read only memory (ROM)”: fixed systems for certain tasks (like body temperature or also spatial orientation). The cerebral cortex is far more “writable (RAM)”. This must mean that a statistical analysis of the blood flow during a certain task results in more significant results in the limbic system than in the more variable cortex. Question: Does a therapist who uses enhanced emotional expression (crying) or meditation on somatic experience (Payne, Levine, & Crane-Godreau, 2015) as his way of making the client do “something completely different”, necessarily change the client’s “deeper” brain structures any more than a colleague who reaches a result with just chatting and joking? (See also part 3 for this theme).

1.3 Central-Nervous System Space

The central nervous system is a 3-D spatial structure that connects the brain with the body its organs and senses. Over the last 40 years, neurological research revealed great populations of neurons around the gut (Gershon, 1998) and the heart (Waytz, 2010). Some have suggested that these cells are similar to those found in the brain but others deny that. These findings gave way to speculations about the so-called second- and third brains, and intelligent processes taking place in and around these organs. The supporters of this view, point at natural language and poetry where they found countless examples in which the gut and the heart are portrayed as important centers of experience and cognition. Until recently, most neuroscientists have taken these expressions as metaphorical: as a manner of speech that described processes that in reality are brain based. Now the idea of intelligence housed around the major organs was seen as probable (Waytz, 2010). If psychotherapy can selectively activate the intellects in various centers (locations) of the nervous system, this would mean a revolution in psychology.

"mBIT" is a therapeutic approach that stands for Multiple Brain Integration Techniques: the multiple brains are that of the heart, the head and the gut (Oka & Soosalu, 2012). "mBIT" is building on the classic NLP-skills and makes use of a breathing method when it comes to accessing the information from the Cephalic Brain (head), the Cardiac Brain (heart) and the Enteric Brain (gut) separately (McCraty 2003).

The gut-brain is said to deal with identity, self-preservation and mobilization (Oka & Soosalu, 2012). That also means that courage is something that stems from the gut, which matches popular expressions. Logically, the gut intelligence might be an extension of digestion, which other experts say is a highly intelligent neuro-biochemical process. If this is the case, then "liking" and "disliking" might well be its major output (Gigerenzer, 2008).

The heart is said to rule over compassion, relations and values. And beneath all of that, we hear spectacular reports about people who received personality traits from the donor along with their transplanted hearts.

Bunzel, Schmidl-Mohl, Grundböck & Wollenek (1992) questioned 47 heart-transplant patients. Among these 79% stated that their personality had not changed at all postoperatively. However, these patients showed massive defense and denial reactions, mainly by way of rapidly changing the subject or making the question ridiculous. Fifteen per cent stated that their personality had indeed changed; not because of the donor organ, but due to the life-threatening events. Six per cent (three patients) reported a distinct change of personality due to their new hearts. These incorporation-fantasies, forced them to change their feelings and reactions and accept those of the donor. Verbatim statements of these heart transplant recipients show that there seem to be severe problems regarding graft incorporation, which are based on the age-old idea of the heart as a centre that houses feelings and forms the personality.

Also included in popular and ancient wisdom, is the special connection of the heart to love and passion and through that connection, giving directions people should take on in their lives: "Just follow your heart". In natural language we hear that the gut and the heart express themselves over the kinesthetic channel in the form of heart- or gut feelings. In therapeutic practice these feelings are a recurring phenomenon: recently some psychotherapists have

started to take the intuitions that the central nervous system signals through its main organs more seriously.

Psychotherapeutic interventions aimed exclusively at the heart can be found under the name Heart Coherence (McCraty, 2003; see also HeartMath Research Center). In this method breathing is used to regulate the heart rate and its pumping quality. The client must pay attention to this organ while inhaling and exhaling in a prescribed manner. Also biofeedback tools are used to improve the client's influence over his autonomic nervous system. Heart Coherence is also used as a psychotherapeutic "something completely different" on its own – and used as such, it might be comparable to meditation trainings like Zen, mindfulness, or self-hypnosis, where concentrated breathing brings the client to an altered state of consciousness that, in itself, increases the chances of resolving personal issues (Lebois, Papies, Gopinath, Cabanban, Quigley, Krishnamurthy, Barrett & Barsalou (2015).

The relevance of higher cognitive activity and the connection, disconnection or conflict between head, heart and gut, is best known from decision-making and dilemmas: "My head says yes but my heart says no."

In NLP (Jacobson, 1986) there exists the idea that "congruent decisions" involve an agreement between all "parts" of the person. When there is no doubt left in a person, he or she can act with full commitment. Whether the conflicting parts involved are defined as concrete brain centers, cognitive constructions, personality parts, internalized aggressors, brain hemispheres or other parts of the central nervous system seems immaterial for the therapeutic procedures followed (Bandler & Grinder, 1982). Conflicting parts are often spatially distinguished, by localizing them at different spots in mental space (imagined on different seats or on the hands) and there is no reason why they should not be symbolised as the body's organs and located at where the client believes these organs are situated. This type of parts-work has a long history in the practice of shamans (where the parts are spirits), hypnotherapists (who refer to alters or ego-states) and NLP-ers (who refer to "parts").

During the past decades it has not been uncommon to have psychotherapy clients communicate with their younger or older selves, immune systems (Dilts, 1990), hormones, cancer cells, breasts, ovaries or leucocytes (Spiegel & Bloom, 1983). Thus psychotherapy with "parts" may probably work just as well when the symbols chosen are called brain, heart and gut (Durlinger, 2009). But the big question is, can one isolate the intelligence of a single organ and make use of its knowledge separately from that of other parts of the central nervous system?

Clinical experiment 2: Head, heart and gut.

1) Think of a dilemma about something that must be decided; like buying a new item, choosing a holiday destination or leaving one's job or partner.
2) Create relaxation through your breathing rate and depth.
3) Now formulate only one side of the dilemma as a clear positive statement: "I will do X".
4) Now put your dominant hand on your heart and repeat the statement while sensing your heart feelings about it. Is your heart in full agreement or is there

some doubt? Scale the measure of doubt felt on a 5 point scale. 0 = fully disagree… 5 = fully agree.

5) Now put your dominant hand on your forehead and repeat the statement while sensing your head about it. Is your head in full agreement or is there doubt? Again use a 5 point scale.

6) Now put your dominant hand on your belly and repeat the statement while sensing your gut feelings about it. Is your gut in full agreement or is there doubt? Again use a 5 point scale.

7) Now explore the content of the doubt from each center.

Observations:

The author has used this procedure mainly in seminar-groups. Approximately 110 participants were observed while doing this in pairs. The author also used this method on a handful of therapy clients who were facing dilemmas. All subjects easily understood this experiment and it seemed to be fun for them too. Surprise and excitement about the responses that came up and that could be attributed to the 3 different organs was frequently reported and witnessed.

The hand on the heart helped to feel its beating: no mention was made of using heart frequency or intensity as the hearts signal for agreement, although this would be logical. Moreover the participants reported “intuitive impulses” coming up as the hand was placed on the location of the organs.


Concentrating on the head-brain

All participants were able to scale the level of agreement of an organ on the 5 points scale. Most striking were the observations of participants who at first didn’t know what to look for or what to feel, and then, when their hands were on the location of the organ for some seconds, seemed clear about the signals they received. This resulted in groups of people that were convinced that they could communicate separately with their heart, gut or head.

Since the experiment had only a diagnostic goal, there were little or no reports of problems solved by this method. However, when the participants started to search for the “positive intention” of a disagreeing organ, some reported great steps in the direction of a solution of their dilemma.

Conclusions:

Whether this experiment shows the value of the spatially sorting of personality parts as "something completely different" in general, or whether this is actually a way to mobilize the wisdom of the organs, remained difficult to say. That it offers a useful alternative approach to inner conflicts is without any doubt. It is a useful "something completely different" when clients are stuck in a dilemma.

A great advantage of this approach is that it matches the distinctions (head, heart, gut) that many people use spontaneously. Compared to the ones of Psychoanalysis (id, ego and super ego) or Psychosynthesis (Lower Unconscious, Middle Unconscious, Higher Unconscious, Field of Consciousness, Conscious Self or "I", Higher Self, Collective Unconscious, or the Chakras) the above distinctions are more natural, and maybe at a similar pragmatic level as the successful distinctions of Transactional Analysis (parent, child and adult).

It seems important that, the clients take notice of the scientific fact that the chosen 3 locations in the body hold high concentrations of the central nervous system's neurons. This comes close to Chakra-healing – where the old tradition and the choice of a more elaborate set of locations, adds to the perceived credibility of that system.

Where the fully free and variable naming of parts (as is used in NLP and Voice Dialogue) is not appropriate, the heart, gut and head can be used as an easy alternative. The primary assumption in this approach is that the problematic conflicts are going on between the head, heart and/or gut. When a client believes that their inner conflict is within the head, heart or gut, then such a conflict must be addressed differently.

The use of the heart, head and gut distinction, suggests that these organs can deliver their own unique input to help decide about an issue. Whether this means that the local intelligence of central nervous system can be tapped in this way is hard to tell. Doubt about this comes from the ease by which similar effects are elicited with parts-work done by other forms of psychotherapy. The ease by which most clients can be brought to communicate with any type of part, body part or organ, and also that such a part can be "spatially anchored" (=projected at a location in mental space) in the space of the body, makes it hard to decide about how specific the head, heart, gut locations really are.

The above experiment adds weight to the insight that people can solve any type of confusion, by first distinguishing between the concepts (metaphors) involved and than putting these on separate locations in mental space: also known in NLP as spatially anchoring or spatial sorting. This may be a universal principle in (spatial) logic (Bandler & Grinder, 1982; Varga von Kibéd, 2014, in the YouTube video, Mental Space Psychology).

1.3.1 Twirling emotions in the central nervous system

As stated in the beginning of this chapter, most forms of psychotherapy can be divided into two phases: 1) bring the client in contact with the emotions and thought-patterns that are central to his or her problem state, and next 2) let him or her do "something completely different".

In NLP one uses the term “pattern interruption” for interventions that withhold the client from repeating their habitual behavior. What from the Martian anthropologists perspective is a “something completely different” can just as well be called a “pattern interruption”.

Setting a goal, a standard procedure in NLP (Bandler & Grinder, 1979) and Outcome Focused Therapy (De Shazer, 1989), has proven to be a very fruitful form of “something completely different”. It interrupts the client in his habit of complaining about what and why things are wrong with him or her. Goal setting forces the client to create a fresh and motivating perspective that also gives a preview of a possible solution. The images that belong to the goal will be projected somewhere in mental space (in awareness space, on the future timeline). But oracle reading, tapping on the face and body, and various “energy procedures” may just as well interrupt the habits and help in a more indirect manner to create similar guiding images. All manners of pattern interruptions may heighten the chances of the client finding some fresh inner resources that contribute to his or her healing.

When it comes to the central nervous system as a 3-D spatial structure, we need to mention the recent wave of so called “emotional spinning” techniques. It seems they were initiated by Richard Bandler (1999; 2008) but elaborated on by other leading NLP-trainers. For instance, Tim and Chris Hallbom (2008) created “Dynamic Spin Release” and (Nick Kemp &) Steve Andreas (2010) was experimenting with changing the direction in which emotions spin through the body.

The general structure of all “emotional spin” techniques is: 1) Get the client to step into his or her problem state. 2) Have the client analyze where the emotion is felt in the body and in what direction the emotion is spinning. 3) The client must then reverse the direction of the spin.

On a more detailed level we can see 3 different types of spinning in use:

The small spin. The emotion is regarded as a circular channel that runs through the body and has spinning walls. It is more like the funnel of a tornado that may or may not loop into it self (Bandler, 2006). The direction of the spinning in the walls of the tube is the focus of the technique. Thus the direction of the spin in the tornado is reversed.

The large spin. The emotion is regarded as a circular stream moving in a certain spinning direction through, often, a large part of the body (Andreas, 2010). It is more like the gulfstream in which the body is the oceans. What is redirected is this broader stream.

The externalized spin (Hallbom and Hallbom, 2008). The spinning emotion is taken outside of the body to spin at a location in mental space. The emotion spins like a moon at a distance from its mother planet (the body). The intervention makes the moon turn in the other direction. Next the speed is increased until the image dissolves to make place for something useful (a symbol that reveals some wisdom to the client) called “the gift”.

On Youtube Bandler explains how the spinning nature of emotions results from how the central nervous system weaves through all body tissue. Emotions keep on going because the nerve cells feed forward over their synaptic links onto themselves in a circular manner. If this

were the right explanation, it is interesting to consider how the neuro-congenital spin direction can be turned into its opposite by means of a verbal suggestion.

Just like all other kinds of "something completely different" the redirection of spiraling emotions must have helped clients in many instances with serious issues, to have allowed it to survive on the market of psychotherapeutic interventions. Therapists always provide their audience with stories of miracle cures, and may use all levels of science as a validation of their specific approach. However it is still unclear whether the spiraling characteristics of the central nervous system, of atoms or of everything in the universe is the right explanation here, or that these methods just offer an acceptable pattern interruption for suggestible clients.

For spatial cognition the spinning and spiraling emotions show something of the flexibility of spatial imagery. Maybe the therapist uses the same qualities of spatial imagination that Nikola Tesla used when he was imagining running electric engines.

1.4 Body Space.

Since during the waking state the experience of having or being a body runs continuously in the (right hemispheric) background of experience, people tend to be only aware of exceptions to these habituated sensations: like pain, itch, imbalance and the like. The regular awareness of the body, visual, tactile and proprioceptic, functions as a calibrated benchmark. It is a reference that gives size, weight and scale to everything we encounter, and among all of that, it provides us with the subjective measures of space. This is so obvious that it was easily overlooked by science, however hard Kant (1781), Hermholz (1867) James (1890) and Tolman (1948) tried to make it a scientific centerpiece.

The body is a three-dimensional structure in which the 3-D nervous system connects everything to a 3-D brain in such a way that the body can be moved around in the 3-D universe. With the help of Antonio Dimásio's "Descartes' Error: Emotion, Reason, and the Human Brain." (1994), the link between brain and body, and its implications for cognition were drawn to the fore in neurology, psychology and philosophy. The so-called "Embodied Cognition Theory" (Lakoff & Johnson, 1999; Bergen, 2012; Groh, 2014) states that bodily experience forms the basis for the development of all cognitive functions. This means that all we know is learned on the basis of us becoming capable of nourishing and moving our body through space. Basic body experiences in the womb and early childhood become the foundation for even the most sophisticated cognitive strategies. For instance, finding our balance in early childhood can be the prototype for a balanced life style in adulthood (Lakoff & Johnson, 1999). Psychotherapy that focuses on the body (space) may give a deeper insight in how embodied cognition realy is.

Although most modern cognitive scientists agree on the relation between bodily experience and cognitive development, only a few know that several schools of therapy exist that are founded on this assumption. For instance, the Institute for Neuro-Physiological Psychology (INPP) was set up in 1975 by the British psychologist Peter Blythe Ph.D, who researched the effects of immaturity in the functioning of the central nervous system on learning outcomes, emotional functioning and behavior. Recently, Blythe's spouse, Sally Goddart Blythe, has created diagnostic tools and related treatment programs. She follows the idea that it is a series of brain stem reflexes that pushes the bodily development of an infant. Sally Goddart Blythe writes:

> At birth, a baby has minimal control over voluntary movement. Reflexes provide stereotyped reactions to certain stimuli in the early weeks but are soon transformed into more advanced motor skills. Early reflexes also provide training for many aspects of later functioning. (www.inpp.org.uk, September 2015)

A child needs to exercise these reflexes until higher (cortical) motor centers take over. Then it can learn more varied behavior, which take it beyond these primitive reflexes. But if it stays limited by one of these reflexes it may show a variety of symptoms. INPP's diagnostic tools can test for which primitive reflexes are not yet overcome. Then Goddart-Blythe uses specially designed programs of physical exercises and games to enable the child to make the next step. In this way she treats reading problems, writing problems, dyslexia, dyspraxia, attentional deficit disorder, Asperger syndrome, anxiety and panic disorder.

What Goddard Blythe (2012) calls the tonic labyrinthine reflex should be turned into controlled motor-activity at about three and a half years of age. If this reflex persists beyond this time, it is sometimes associated with: postural problems, elevated or lowered muscle tone, a tendency to walk on the toes, poor balance, orientation and spatial difficulties, oculo-motor problems and visual perceptual problems that affect reading and writing and also seem to cause a dislike of physical activity.

This form of diagnostics is based on case studies. How general and absolute these cause effect relations are is hard to say on the base of the given evidence. But Neuro-Physiological Psychology (INPP) offers a more detailed structure to how "embodiment" might work. And within all of that it may also clarify how a person learns to conceive of space.

A related developmental therapy is called "Sensory Integration" (Ayres, 2005). This binds a solid theory, diagnostic tools and a therapeutic method (occupational therapy) that on a deep level matches the current "embodied cognition" movement. Jean Ayres stimulates the senses of her mostly young clients in very creative ways, to help them to coordinate their sensory experience. Ayres, for instance, works at the integrated visual, auditory, kinesthetic, vestibular perception of space by letting children play with cardboard boxes to construct huts and hidings and to playfully crouch away in them.

Sheets-Johnstone (2010) argues that it must primarily be movement that creates the experience of space and as such forms the underpinning of spatial cognition. The Russian psychologist Aleksandr Romankovich Luria (1973) expressed a similar view. He believed that it must be during the embryonic phase that the space around the body is explored – which also matches the current ideas about embodiment in cognitive science (Barcalou, 2015; Lakoff & Johnson, 1999).

Thus the formation of the concept of space itself starts within the womb, as the embryo swims and exercises semi-weightlessly around between its outer walls. The embryo is automatically pushed by its reflexes to make stereotypical rhythmic movements (Goddard Blythe, 2012) of the type that pregnant mothers can sense. And it seems logical that the preverbal distinctions between "controllable" and "uncontrollable", "in" or "out" and "here" and "there" may constitute the roots of the concept of space. And since the eyes, nose, mouth and tongue are at the "front" it is easy to distinguish this side from the "back". Once born, gravity starts to help create the distinction between "up" and "down". However "left" and "right" may remain a tough one for a lifetime (van der Ham & van Stralen, 2015 (CISC Rome 2015)).

Thus moving around with one's body helps to create a number of very fundamental spatial concepts (Johnson, 1987; Tversky, 1991; Lakoff and Johnson, 1999; Bergen, 2012).


Barbara Tversky

The body stands in the foreground when psychotherapists let their clients "focus" on where they sense something. The kinesthetic part of a problem state is always felt somewhere and in all kinds of other qualities as well, like weight, temperature, pressure or movement

(Gentlin, 1978). Therapists and clients alike use the kinesthetic mode of experience as their reference for therapeutic progress and the location of problematic feelings is often part of that. For instance, if the bad feeling moves downwards from the head to the belly, this may be experienced as a sign of progress (Payne, Levine, & Crane-Godreau, 2015). Although in general, it can be enough to know whether the clients feels better or worse, the location of these feelings can be meaningful (Bandler, 1986).

Eugene Gentlin (1978) developed the so-called "focusing" method. Historically this form of psychotherapy came up at the beginning of many modern approaches, of which NLP is best known. Finding the spot where a so-called "felt sense" is located in the body, is the standard first step in focusing. From there the client is often asked to make creative associations with related concepts, memories or metaphorical images. These are mainly auditory and visual, but generally do appear somewhere in awareness space outside of the body. That is why therapists who practice "focusing" become familiar with many aspects of mental space. But they often tend to reduce themselves to the kinesthetic side of spatial awareness, and see the visual and auditory parts as instrumental to that. The value in psychotherapy of having the client pay attention to the locations where problem-feelings are sensed cannot be over estimated.

The theoretical perspective that all cognition is embodied, is found more implicitly in oriental martial arts, and more explicitly, in the Feldenkrais method (Feldenkrais, 1977; Ernst & Canter, 2005; Keatz, 2014). This educational type of psychotherapy uses body exercises as its preferred "something completely different" for solving physical and mental issues: one can say that in Feldenkrais therapy all issues are regarded as psychosomatic. This therapeutic approach builds to a high degree on the unity of body and mind (Hoffman, Schneider & Haberzettl, 1996; Keatz, 2014). The same concept of oneness is present in many oriental (Buddhist) healing practices and also in NLP and approaches that call themselves "holistic".

Body movement in the shape of dancing, running, juggling, balancing, jumping and climbing have all been used as a way of "something completely different" in various psychotherapies. A good example is found in John Grinder's so called "New Code NLP" (Grinder & DeLozier, 1987; Bostic StClair, & Grinder, 2001). For instance, the therapist has the client first access his/her problem state and then do a ball throwing and catching game with him/her. The incompatibility of physical play with worrying makes it a great pattern interruption.

One can find great analogies in sports for body space. Rock climbers report that their sport is all about making 3-D moves that at first seem unconceivable: "It is trying the impossible with one's body." To get up a difficult piece of rock, a climber needs to discover how to move and balance his limbs and torso by creative experimentation and also through social copying. At the limit of their skills, climbers must be with all their senses in the present and have very little capacity left for inner imagery or dialogue. When a climber is bothered by some kind of personal issue, he will not come far up a climb. That is why most successful climbers train themselves to get into and stay in very lighthearted states of mind (Mehlhorn, 1999). An activity like rock climbing is incompatible with a problem state like depression. But when a person is already in a problem state, (easy) climbing can work as a "something completely different" (Mehlhorn, 1999). We see this also for others with boxing, tennis or playing golf etc. Also yoga teachers tend to proclaim that breaking the boundaries of ones habitual movements is more than just a metaphor for overcoming mental limitations. In other words, when psychotherapy aims at bringing the client on other tracks of mind, this may as well start by having him or her make some new moves in space.

Clinical experiment 3: Writing in Space.

This experiment was re-designed by the Canadian Feldenkrais practitioner David Keatz in 2015. It is important to know that most Feldenkrais exercises are done on the floor. This redesign makes it usable in a sitting and standing position.


David Keatz

Preparation:

1) Sit on the tip of your seat. Draw slowly 4, 20 centimeters wide circles with your nose in the air. First clockwise and then anti-clockwise.
2) Next, write your name with your nose in the air with the letters on the same spot in space.
3) Pick a psychological issue and name it with one single word.

Continuation:

4) Open yourself for experiencing the negative feelings that belong to this issue: step into the problem state.
5) Sit on the tip of your seat and put both your hands, fingers locked, behind the back of your head with your elbows pointing forwards.
6) Write the word you chose to name the issue in the sky with both elbows (as parallel pens) pointing forwards.
7) Write it with large letters. Do the same again but very slow. Do it one more time standing and also with an even larger letter-height (of 50 centimeters high). Repeat this twice and very slow.
8) Now observe while you do it again for the 3rd time, where you experience any kind of obstruction in your movement. Then focus on these obstructions.

Evaluation:

9) What do these obstructions in movement tell you about your psychological issue?
10) Test the effect of this exercise on the intensity of the feelings about your issue.

Observations

The participants in this clinical experiment are confronted with something that can be physically demanding. Since the procedure starts with easy moves, that break the ice, most completed the whole exercise, although some were muttering and complaining. The writing of large letters in the sky with your elbows, with your hand folded behind your head, forces your whole

body to take part in the movement. Doing this standing also demands something extra to keep your balance.

Writing in space

One can say that in most therapeutic settings, this technique is a great interruption of the expectations and thus a strong kind of "something completely different". The five individual clients with whom the author used this approach all reported a betterment of their problem states. And within seminar groups of all in all 55 participants there were 8 who reported that they had entirely overcome their original issues.

The using of the *word* for the issue, as the one to write in the sky, caused the participants to stay aware of (stay connected to) the problem state during the entire exercise. This aims at optimizing the chances for the client to find new creative links in connection to their issue during this procedure.

Conclusions

Since this technique forces the clients to create 3-D body movements that they probably never made before, chances are these will elicit some new mental (motor) tracks. Whether the type of movement is really relevant for the solving of the issue is hard to tell, but it does not seem to be a very critical element. One may compare the unspecific nature of this intervention to that of EMDR (Hout, & Engelhard, 2012).

Bandler & Grinder (1979) claimed that people make specific eye movements during the search for memory content (they stare up or down or left or right while searching for the answers to a question). Research into Conjungate Lateral Eye Movements (Gur & Gur, 1975) had already shown a connection between hemisphere related cognitive activities and where the eyes moved. Dilts et al. (1979) observed how the direction of the head and also the related posture seemed to contribute to the effect of such mental searching activity. People may orient their entire body towards where their eyes are staring while searching for an answer.

In brief, eye movements (stares and gazes), hand gestures and head turns supported by body postures may be a spontaneous epiphenomenon of the search for answers (Tversky, 2005). It is hypothesized that answers may be found in that way because of the "mental spatial indexing" of knowledge.

The expression "spatial index" stems from the software industry where it is used in exactly the same sense. Mental spatial indexing (MSI) means that information is linked to specific locations in the imaginative sphere around the person: in awareness space. Movements, gestures and gazes help to store and also retrieve spatial indexed information in mental space. Thus

the movements made in this experiment could have helped the participants to get access to latent information stored in unexpected locations in their mental space. This enables the creation of new creative connections through these unexpected finds.

Thus unspecified, undirected eye, hand, head and body movements may help to access answers (resources) in an almost random fashion. These movements accompany thinking processes, bringing some spatial cognition researchers to believe that thinking equals movement and action (Barcelou, 2015). However when the search is directed because of its link to the problem state – in this instance the *word* for the issue functions as a conditioned stimulus for the problem state – the search may be guided by that word and be more effective (Derks & Goldblatt, 1985).

The focusing on one's body awareness in the problem state (Gentlin, 1977) is in itself already a strong "something completely different," since most clients prefer to attend to other things than the exact quality of their negative feelings.

Body oriented psychotherapies can be based on a great variety of theories and philosophies. Only a few focus on the concept of space; most use metaphors of energy and vital powers. Movement in space is what happens anyway when one moves his or her body. However, when looked at from the perspective of MSP, interventions like chakra stimulation, acupuncture and martial arts-like exercises, all are spatial activities. They all may be used as "something completely different" on top of a problem state. The more the bodily "something completely different" can be kept relevant for finding a solution to the issue, the more effective such a therapy will probably be.

The use of bodily "something's completely different," which enable the clients to search for answers that are spatially indexed in their mental space, may be even more effective. The left-right eye movements of EMDR (Shapiro, 1984), and the greater variety of eye movents in Eye Movement Integration Therapy as developed by Steve and Connirae Andreas (Beauliue, 2003) help to find (stare at) spatially indexed information in a more or less random fashion. However, it must be quite possible to guide the client's eyes to the spatially indexed locations of certain resources, after the therapist has first observed where these locations are (Bandler & Grinder, 1979; Corrigan & Grand, 2013).

1.5 Awareness Space.

Although the brain, the central nervous system and the body can be called 3-D material objects, this does not hold for *awareness space* since this is in no way a tangeble spatial thing like the other three are. The subjective experience of space however has fascinated philosophers (Kant, 1781) and psychologist alike (James, 1890). To get grips on something as this nothingness filled with ideas, science was first looking for its relevant demarcation lines. In this chapter and the next, we will see that psychotherapy can contribute new and sometimes revolutionary insights to psychology.

What spatial cognition researchers call *peripersonal space* (Elk, 2014; Trojan, 2015), is the zone around the body that a creature regards as belonging to it. “Step back please, you are invading my personal space!” This concept came up while exploring the responses of single cells in the motor cortex to changes in the visual field (Rizzolatti & Gentilucci, 1988). There were cells that seem to protest when something or someone crosses the boundary of peripersonal space as if these neurons were guarding the self/not-self distinction.

When a person holds a tennis racket or a gun in his hand, his peripersonal space may be expanded along with a sense of power. A related concept about this is “affordance space” (Borghi, Flumini, Natraj & Wheaton, 2012). This term is used for an area of space that is also considered to exist around the person. The affordance space is the sphere in which the person beliefs they can exert influence over objects and people: it is the space in which he or she thinks to be capable of changing something. The so-called “affordance landscape” is the area of potential influence in the physical world (Chemero, 2003) by reaching out, walking towards or commanding others to do something. Researchers can introduce physical limitations (like a glass barrier) in the environment of a person (or animal), and check whether it still reaches out to a desired object (Rizzolatti & Gentilucci, 1988). In this manner one can for instance try to measure the dimensions of the affordance landscape.

The above search for behavioral and neural correlates for the experience of space has functioned as the conceptual basis of spatial cognition theories (Dolins & Mitchell, 2010). In this chapter another side of spatial experince is put central: how all manner of concepts are thought of at locations in the space around a person. Now, many scientists who accepted the idea that our model of reality is constructed in the space around us may say that, “people *externalize* their world”. The verb *externalize* however suggest an inward-out activity, as if the model of the word was in the center (brain) and than placed at a distance. This idea leads to false theories. Since it may cause one to look (in vane) for how this externalization comes about.

The author beliefs that there is not such a thing as externalization on the base of research that shows that in perception and memory (imagery) the same neurons become activated in the mind/brain (Bennett & Hacker, 2001). This suggests that the spatial representation of the world must arise from the unity of perception and memory (imagery). Thus, primarily, things that are perceived somewhere in space become automatically re-experienced on the same spot. How spatial perceptions becomes generalized and modifyed to create a usefull 3-D model of reality is the subject of this chapter.

1.5.1 Mental Spatial Indexing (MSI)

Thus, Since reality is 3-D the mind simulates it automatically in the same spatial manner. In this study, the imaginary space in which a person re-creates the dimensions of reality, is what we call “awareness space” and it functions as the 3-D blackboard of the mind. This “aware-

ness space" is theoretically composed of two areas: a smaller one that belongs to the left hemisphere that is surrounded by the much larger spatial volume created by the right half of the brain. The area of the left-brain tends to include the head but not so much the rest of the body and will have its highest density of awarness in the center of attention, right in front of the person. The right hemisphere has awareness of a lower level of intensity that may extend from the body into infinity. Both these areas together represent a person's model of the world.

The main problem with *awareness space* is that what is represented there, and even more important, where that is located, stays largely below the threshold of consciousness. And that seems more so for the area connected to the right side of the brain. Thus, people are only partly aware of the content of awareness space and even less about the locations where this content is stored. Researchers can only gather information about the objects and locations in awareness space by means of special questioning and observation methods. A way to do this is ask the participant to respond to questions just by using their "first impressions" or "intuitions". For instance: "Without realy thinking about it, point at where you have a sense of your mother." Besides by such questioning, spontanious gestures and gazes that accompany speech seem the most reliable sources of where concepts are located in the mental space of a person. Núñez & Sweetser (2006) formulate this in the following citation:

> Spatial structure is in one sense directly represented in gesture; that is, it is represented in the same medium, space. In another sense, however, the speaker's construal is paramount in this as in other aspects of linguistic and gestural representation. Haviland (1993), for example, described a speaker of Guugu Yimithirr (a native language from Australia), who in retelling a story of a boat capsizing, automatically adjusted his gestural patterns to match the actual "absolute" compass orientation of the boat's motion in the actual event. Most English speakers would not do this, which may be connected with the fact that English does not normally use absolute spatial coordinates for everyday location of small objects in the immediate environment. In Guugu Yimithirr, unlike English, one would not be able to say that the mug is next to, or in front of, the speaker; one would have to say that it is east, or north, of the speaker, or whatever the appropriate direction might be (Levinson, 2003; Majid et al., 2003). (p. 20)

Gestures and glances may thus show where, an idea has been located by a person in awareness space. However, the same gestures and glances can communicate to others where in their turn to put their own versions of these concepts in their own mental space. In the work with the social panorama one encounters many instances where the location of a personification in a group of people is quite identical. They seem to copy where to put an idol, anamy or family member. This type of non-verbal spatial communication must be very influential – but is not so easy to catch in an experimental paridigm (see part 4).

Although concepts will always become located somewhere without any intentional action of the subject, the moving of a concept or the intentional locating of a concept is a mayor activity in what we normally call "thinking". We have come to call the processes by which a concept becomes represented at a certain location in awareness space, "mental spatial indexing". When we consider space the primary organizing principle in the mind, mental spatial indexing is the process by which cognitive structure comes about.

"Spatial indexing," is a term from computer science, which describes a way to create a human/computer interface. In Wikipedia (6-4-2016) we read:

> Spatial indices are used by spatial databases (databases which store information related to objects in space) to optimize spatial queries. Conventional index types do not efficiently handle spatial queries such as how far two points differ, or whether points fall within a spatial area of interest.

Most present day computer operating systems can make use of spatial indexing (Google Earth, Google Maps, Apple Maps). In the best examples a collection of icons is represented in a 2 or 3 dimensional way on the screen. When the user clicks on the icon, or in the case of a touch screen, touches the icon, the files of information that are indexed there become available on the monitor.

In the mental-space-psychological form of spatial indexing the "icons" are often below the threshold of consciousness, but logically they must exist in the form of some kind of fragmented mental images (in part 3 called *partial activations* of cell assemblies). One can compare this situation to a person who is in front of his touchscreen, without being able to seen the icons, but since the person knows by heart where to touch, he can still access the files from the screen. It is by gesturing at the location or gazing in the direction of these unconscious images (icons) that the information linked to that in the neural tissue becomes re-activated in the mind's "working memory". Somethimes it takes extra attention, focus, on the area in the visuo-spatial field, to wake up the spatial indexed files. A person looking for a name or word may first gesture and gaze in certain directions. "What is that called…" (The person now makes searching gestures) "Ah yes…". The person's hand or fingers seem to "mouse click in the air" on the location in awareness space to access the idea.

Mental spatial indexing, in the sense of storing and then re-accesssing a concept (mental file) on a location in mental space, can all happen without any consciouness. It appears that a person can think of something (their loved one, see part 4) and next stare and gesture at the location where the loved one is experienced in mental space, without being aware of doing this. At other times a person begins to stare at the location to next come up with an idea about their loved one.

We can relate this activity to *spatial-* and *selective attention*. The attentional system seems to work from the frontal cortex in the direction of the visusal cortex and amplifies concepts that are already activated, but are still below the treshold of consciousness (Hopf & Mangun, 2000). What may trigger attention is written about in part 3. But logically speaking the attentional mechanism jumps in at the moment more intense controlled thinking is needed to solve a problem.

There exists a classical link between visuo-spatial thinking and paying attention to regeons of the visual field (Posner, 1980; Vecera & Rizzo, 2003). In Wikipedea (23-6-2016) there is a page devoted to visual spatial attention, it defines this subject:

> Visual spatial attention is a form of visual attention that involves directing attention to a location in space.
>
> Spatial attention allows humans to selectively process visual information through prioritization of an area within the visual field. A region of space within the visual field is selected for attention and the information within this region then receives further processing. Research shows that when spatial attention is evoked, an observer is typically faster and more accurate at detecting a target that appears in an expected location compared to an unexpected location.

The verbal and non-verbal behavior underlying spatial representation (the storage and retrieval of information on the basis of locations in mental space) was described in detail by Barbara Tversky in a series of studies and overviews dating from 1991 to 2015. She created the

term *spraction* for spatial actions that coincide with spatial cognitive processes. Tversky (2015) developed a great understanding of the unconscious qualities of what is represented in mental space:

> Space: Distance, Place and Direction Place in space also conveys meanings that find agreement in production and comprehension. Distance in space is used by people to represent distance in space in maps and to represent distance in time, preference, quantity, and more in graphs. Children spontaneously use order and distance in space to represent order and distance in time, preference, and quantity (e. g., Tversky et al. 1991). In addition to distance and order, children and adults agree on mappings of abstract concepts to direction in space. They map increased quantity and increased preference upwards. To go up means overcoming gravity, which entails strength and power and health and money. Upwards in space is typically associated with everything good, as supported by production and comprehension in children and adults (e. g., Schubert and Maass 2011; Tversky et al. 1991). These correspondences appear in language as well. We say we've grown close to someone, or far apart. We say someone's on the top of the heap or has fallen into a depression. Reading order also confers directionality to space, in particular to the horizontal, with increases in preference, quality, quantity, power, strength, and more conforming to reading order (e.g., Schubert and Maass 2011; Tversky et al. 1991). Place, proximity, and direction in space are powerful influences in graphics and in life; taller people, whether men or women, have higher-paying jobs (e. g., Egoff and Corder 1991) (p. 111)

In the previous chapter we already implicitly mentioned the role of "mental spatial indexing" (MSI) in psychotherapy. There are good reasons to believe that the awareness of how people store and re-access information over MSI must date back to shamanistic practices from the stone-age. In modern times its therapeutic use was first described by NLP-therapists (Bandler, 1986; Derks, 1997; Hallbom, 1995) who found that their clients focused their eyes at certain locations in mental space while they explored particular (traumatic) memories. Before that, Bandler & Grinder (1979) had already observed that memory retrieval coincided with eye movements, that they associated with the getting access to information in different sensory modalities. However, when researchers could not verify Bandler & Grinders' (1979) so called "eye accessing cues" (Heap, 1986), this helped to discredit NLP in the circles of academic clinical psychology up to the present time. Besides the "eye accessing cues," Bandler and Grinder and their co-developers of NLP also recognized the nonverbal behavior of gazing and pointing and gesturing as signs of memory retrieval. After Bandler's general approach to sensory qualities in imagination came to the fore, James & Woodsmall (1986) described the particular case of the subjective construction of time. The spatial qualities they placed centrally in this work, was a linear structure: The Personal Time Line. In the work with time, it was people that were "looking to the past" or "staring at the future" that helped therapists to notice the non-verbal signs (Jacobson, 1986). In NLP this became the prototype for the clinical exploration of awareness space (Derks, 1994).

That speech-accompanying gesture seems a primary source of information when it comes to mental spatial indexing, is supported by what Núñez & Sweetser (2006) have so nicely summarized:

1. Universality: Speech-accompanying gesture is a cross-cultural universal (Iverson & Thelen, 1999; Kita & Essegbey, 2001; McNeill, 1992; Núñez & Sweetser, 2001).
2. Largely unconscious production: Gestures are less monitored than speech, and they are to a great extent unconscious. Speakers are often unaware that they are gesturing at all (McNeill, 1992).

3. Speech–gesture synchronicity: Gestures are coproduced with speech, in co-timing patterns that are specific to a given language (McNeill, 1992).
4. Gesture production with no visible interlocutor: Gestures can be produced without the presence of interlocutors; for example, people gesture while talking on the telephone, and in monologues; congenitally blind individuals gesture as well (Iverson & Goldin-Meadow, 1998).
5. Speech–gesture co-processing: Stutterers stutter in gesture, too, and impeding hand gestures interrupts speech production (Mayberry & Jaques, 2000).
6. Speech–gesture development: Gesture and speech development are closely linked (Bates & Dick, 2002; Goldin-Meadow, 2003; Iverson & Thelen, 1999).
7. Speech–gesture complementarity: Gesture can provide complementary (as well as overlapping) content to speech content. Speakers synthesize and subsequently cannot distinguish information taken from the two channels (Kendon, 2000).
8. Gestures and abstract metaphorical thinking: Linguistic metaphorical mappings are paralleled systematically in gesture (Cienki, 1998a; McNeill, 1992; Núñez, 2006; Núñez & Sweetser, 2001; Sweetser, 1998a, 1998b). (p. 20)

During communication, the sender will show non-verbally where he or she has located certain concepts in awareness space. The listener receives these signals as suggestions to where to locate the same concepts in their own awarenss space. In that way people may copy their spatial structures. Logically speaking, we must distinguish between the mental spatial indexing at the moment of retrieval and the mental spatial indexing at the moment of storage: but as stated at the start of this chapter, the unity of perception and memory (imagery) makes such a distinction less pressing.

To understand the non-verbal signs of MSI, one needs to see this in the light of how it may differ along with the state of consciousness of the subject. A fully awake subject will do the classical NLP-eye accessing cues including pointing and gesturing, while they retrieve information. As relaxation increases the pointing and gesturing will be reduced and eventually stop. In the case of deep relaxation (deep hypnotic trance) no other signs can be seen than saccadic eye movements during a forward stare (often behind closed eye lids).

In the non-verbal behavior of therapy subjects, the mental spatial indexing at the moment of retrieval and the moment of storage are generally followed by quite similar markers: like nodding and saying “Yes” or “Okay” or an equivalent of that. Also therapists use a similar non-verbal behavior when their client points out the location of some event in space for them: Okay, thus primary school is over there…”.

All in all this resulted in the idea that clients (people in general) carried their model of the world with them as a landscape of mental spatial indexed information. Hall & Bodenhammer (1999) started to call this “the matrix” or “semantic space”. Derks (2002) explored the social aspect of MSI, in his Social Panorama Model, in which the locations of the representations of people are the central subject matter. From the perspective of mental spatial indexing, the representation of a person (called personification, Derks, 2002, 2006) is a file of knowledge and assumptions about that individual in which the image – that is often no more than a caricature – functions as the icon; by naming the person or looking or gesturing towards this unconscious icon the information about a person can be activated.

All of the above explorations lead to the predominant idea in mental space psychology, which is that all that is happening in the mind is happening "somewhere". Exactly this very principle, that everything people are aware of has a location, was long overlooked in the history of psychology (Jaynes, 1976). And then, after this view was finally accepted, it took a change of paradigm to grasp its implications for psychological functioning (Walker, Derks & Ötsch, 2009).

As already stated above, the explanation for the coming into being of "awareness space" is that everything in the universe is located somewhere and that the psyche automatically simulates this spatial nature out of the necessity for the organism to survive within its 3-D environment.

When regarded this way, awareness space is primarily a neuronal copy, or model of physical space. At the start of the development of an organism, real objects are probably only represented on the locations where they appeared most in physical space and then relative to the position of the organism (Milner, 1991). Repeated perception of the same real objects in the same positions leads to generalized ideas about the stability of the social and material universe (Derks, Ötsch &Walker, 2014). In other words, where things are located in reality leads to where they become represented in the mind. This we may call automatic and unconscious mental spatial indexing: concepts become located by unintentially matching their location with where they are situated in reality. Spatial psychotherapies help clients to rearrange the spatial landscape of (abstract) concepts in an intentional way. Over conscious actions of relocation, concepts may receive a better place. We could call the latter intentional mental spatial indexing.

However, the mapping of the locations of real objects can be extended to similar mappings of abstractions and mental constructs that have little or no roots in physical reality (Tversky, 2010). In other words, the spatial representation of reality can be extended to a similar representation of generalizations, fantasies and abstract images (Derks, Ötsch & Walker, 2014).

"Where" an object is represented in mental space has great implications for an organism: it enables it to navigate in order to have food, shelter and partners (Dolins & Mitchell, 2010). Representing things on a mental (mental spatial indexed) location helps to find stuff, and it has the same function and priority for the representations of non-physical items in the mind. And there are good reasons to believe that a large part of the emotional meaning of "something," is encoded in the place where this "something" is mental-spatially indexed (Derks, 2006).

Clinical Experiment 4: An emotional neutral object

1) Look around and pick some emotionally neutral item from your environment: maybe a light bulb, a baking glove, a banana or a sock.
2) Close your eyes and find the location in your mental space where you think of this particular item.
3) Now move the image of the item into the center of your visual field; move it to 15 centimeters in front of your nose and enlarge it to 3 times its real size.
4) Evaluate the emotional impact of these steps.

Observations:

This is one of the easiest experiments in this study; it can be executed with groups of participants under the guidance of the experimenter. The neutral objects chosen can be small or large. For instance when a person picks the wallpaper on the wall, this may have a strange effect, because by bringing it very close, only details can be spotted. But when a person takes a dustbin in mind or a seat, the effects can be more predictable.

This experiment was repeated with 23 groups over a period of 5 years with approximately 310 participants. It took no longer than 5 minutes to do, although the listening to the various responses of the participants could take more time. The majority reported that the object lost its emotional neutrality to them and became interesting, disgusting, fascinating or desirable. There were always some participants who started to hate the objects as a result of the exercise. A common observation was, that nobody stated that their attitude to the object had not changed.

The participants were often surprised that such a small experiment could have such a clear impact.

Conclusions:

This experiment can immediately clarify the importance of location in awareness space. It demonstrates some general phenomena that can be seen as laws of mental space:

A mental object (image) gains emotional impact when it is placed more centrally, closer and higher in the visual field – and vice versa.

This rule harmonizes with a host of clinical observations. When a person is stuck in a problem state, and the negative feeling becomes unbearable, a natural coping impulse seems to be "putting it at a distance" (Thomas & Tsai, 2011; Davis, Gross, & Ochsner, 2011; Walker, 2014). This "putting it at a distance" may literally mean moving the image that belongs to the problem further away, but the movement maybe also sideways and/or downwards. By placing it at a greater distance the image will lose emotional impact, which will provide the person with room to think of something else. At times such, "putting it at a distance" can be a lifesaver (Ayduk & Kross, 2010).

Another spatial way of coping is "distancing oneself". This may mean that the person envisions moving away from the image that is connected to the problem state. In a way this is "zooming out" mentally. "Putting it at a distance" and "distancing oneself" are two ways to achieve the same result (Bandler, 1986; Davis, Gross, & Ochsner, 2011). However the action takes place at the other end of the line of action; John can imagine the tiger moving away from him or imagine him moving away from the tiger. The experienced distance can be identical in both cases: to John this provides a feeling of safety.

Yet another but related spatial strategy is "stepping out of oneself" (Bandler & Grinder, 1979). For this, the person visualizes him- or herself with the bad emotions and the hard to cope with imagery. Then the person gets out of his body as if he or she were looking at somebody else having the problem. In clinical psychology one speaks of dissociative symptoms, when this "stepping out of oneself" results in a permanent disconnection from the self that in most cases started with a traumatic event. Once such a relation to the issue is established, it may remain like that for the rest of a person's life, causing dissociated states of mind (Nijenhuis, van der Hart & Steele 2004; van der Kolk, 2014).

These three different forms of spatial coping (putting it at a distance, distancing oneself and stepping out of oneself) should be among the first things a clinical psychologist learns at university – compare them with Freud's mechanisms of defence. All these three spatial coping strategies can leave their mark on the psyche of a person when used on a permanent basis. In fact they are all forms of "incomplete coping", since the client has only achieved a reduction in the emotional impact of his issue by this means but is still not capable of dealing with the problem stimuli. However, when seen as only a half way solution, these spatial strategies will give a strong direction to the therapeutic process. In fact therapy will most often mean the completion of the coping in which the client learns to deal with the issue definitively.

Wolfgang Walker (2006) studied the spatial coping patterns in traumatized clients. Their symptoms are often related to how the incomplete spatial coping has disrupted the coherence in their mental space. Their awareness space becomes split up and broken at the cost of the unity in their personality and also their experience of the continuity of time – which is connected to their life history (Hilgard, 1977; van der Kolk, 2014). In addition it may lead to a disruption of their image of the social world too, causing them to maintain problematic relationships which appear as "bi-locations" (double representations) or "shared-locations" (combined, mixt up representations) in their social panoramas (Derks, 2002).

Forms of incomplete spatial coping:

1) Putting it at a distance
2) Distancing oneself
3) Stepping out of oneself

Putting it at a distance is the least pathological way of incomplete spatial coping since it leaves the position of the person in mental space intact. It helps to reduce the limiting effect of arousing stimuli on the creativity of the person. To get away from the "emotional noise" can be a good step towards problem solving. That is why "putting it at a distance" has been used as a sort of cornerstone "something completely different" in many types of psychotherapy like NLP, any kind of Imagination Therapy, Mindfulness and also in oriental traditions (Bandler & Grinder, 1979; van der Kolk, 2014; Payne, Levine, & Crane-Godreau, 2015).

Stepping out of oneself and taking on the observers position, (camera position in RET, visual-kinesthetic dissociation in NLP), is also a type of spatial "something completely different" and it has proven to be highly effective in bringing problems to their conclusion. But it can only be used for a permanent resolution if the distancing from the self is only taken on during the therapeutic intervention as a part of the techniques used. Thus, eventually, the client must get back into his original "self position" and become capable of dealing with the (traumatic) issue from direct confrontation.

1.5.2 To where in mental space are you looking?

The moment of origin of spatial psychotherapies, in which mental spatial indexing is the central tool, lies in the middle of the 1980s. It was when Richard Bandler (1985) introduced his concept of "sub-modalities": he analyzed the sensory qualities of the experience of his client in more detail than anyone had done before. Among these sensory qualities "location" stood out as very influential. Thus for the development of mental space psychology this was a milestone. We already mentioned (in relation to Brainspotting) that the position in mental space where a client keeps their eyes focused (stares), at the moment he or she thinks of something (problematical, traumatic) helped to discover the phenomenon of "mental spatial indexing". This staring at some critical location in mental space was also independently discovered by the Dutch therapist Henk Hoenderdos (1994), who called it "Focal-Points". The application of mental spatial indexing in trauma therapy is also present in a technique called "Synesthesia Pattern" developed by Tim Hallbom (1995). Currently it has found its way from Neuro-linguistic Programming to the more academic style of psychotherapy that is an offshoot of EDMR (Shapiro, 1995) called "Brainspotting" (Corrigan and Grand, 2013) – a method already mentioned when we discussed how it's founders use neurological explanations.

1.5.3 Eye-tracking devices show mental spatial indexing in the lab.

Today there is more evidence for the consistent link between where the eyes stare in mental space and the cognitive content a person is thinking of. The following compendium stems from Spivey, Richardson & Zednik (2010):

> Altmann and Kamide (2004) showed concrete evidence for this kind of overlay of a dynamic mental model on a viewed scene by tracking people's eye movements while they listened to spoken stories and viewed corresponding scenes. In one of their experiments, participants viewed line drawings of two animate objects and two inanimate objects for five seconds, e.g. a man, a woman, a cake, and a newspaper. Then the display went blank, and the participants heard a sentence like 'The woman will read the newspaper'. Upon hearing 'The woman,' participants conspicuously fixated (more than any other region) the blank region that used to contain the line drawing of the woman. Then, upon hearing 'read', they began fixating the region that had contained the newspaper, more so than any other region. Thus, the memory of the previously viewed objects maintained its spatial organization, and the internal mental model (with its corresponding spatial arrangement) elicited eye movements to appropriate external blank regions of the display when their associated objects were inferable from the content of the speech stream.
>
> Altmann and Kamide's (2004) next experiment demonstrates how we might overlay a *dynamic* mental model onto the static viewed scene. Participants viewed a scene containing line drawings of a wine bottle and a wine glass below a table, and heard 'The woman will put the glass on the table. Then, she will pick up the wine, and pour it carefully into the glass.' In this situation, the mental model must change the spatial location of some of the objects, but the line drawing that is being viewed does not change. Compared to a control condition, participants conspicuously fixated the table (the *imagined* new location of the glass), while hearing 'it carefully', even though the word 'table' was not in that sentence. This finding is consistent with the idea that an internal spatial mental model, constructed from linguistic input, can be interactively 'overlaid' onto an actual visual scene, and thus internally generated images and afferent visual input are coordinated in a two dimensional spatial format of representation that elicits corresponding eye movements. (p. 26)

And some pages later they continue:

> For example, in a series of eye-tracking experiments examining how people tend to exploit spatial locations as 'slots' for linguistically delivered information, Richardson and Spivey (2000) presented four talking heads in sequence, in the four quadrants of the screen, each reciting an arbitrary fact (e.g. 'Shakespeare's first plays were historical dramas. His last play was *The Tempest*') and then disappearing. With the display completely blank except for the lines delineating the four empty quadrants, a voice from the computer delivered a statement concerning one of the four recited facts, and participants were instructed to verify the statement as true or false (e.g. 'Shakespeare's first play was *The Tempest*').
>
> While formulating their answer, participants were twice as likely to fixate the quadrant that previously contained the talking head that had recited the relevant fact than any other quadrant. Despite the fact that the queried information was delivered auditorily, and therefore could not possibly be visually accessed via a fixation, something about that location drew eye movements during recall. Richardson and Spivey (2000) suggested that deictic spatial pointers had been allocated to the four quadrants to aid in sorting and separating the events that took place in them. Thus, when the label of one of those pointers was called upon (e.g. 'Shakespeare'), attempts to access the relevant information were made both from the pointer's address in the external environment and from internal working memory.

> Richardson and Spivey (2000: experiment 2) replicated these results using four identical spinning crosses in the quadrants during delivery of the facts, instead of the talking heads. Participants seemed perfectly happy to allocate pointers to the four facts in those four locations, even when spatial location was the only visual property that distinguished the pointers. Moreover, in the 'tracking' condition (Richardson & Spivey 2000: experiment 5), participants viewed the grid through a virtual window in the center of the screen. Behind this mask, the grid itself moved, bringing a quadrant to the center of the screen for fact presentation. Then, during the question phase, the mask was removed. Even in this case, when the spinning crosses had all been viewed in the center of the computer screen, and the relative locations of the quadrants implied by translation, participants continued to treat the quadrant associated with the queried fact as conspicuously worthy of overt attention. In fact, even if the crosses appear in empty squares, which move around the screen following fact delivery, participants spontaneously fixate the square associated with the fact being verified (Richardson & Kirkham 2004: experiment 1).
>
> Results like Spivey and Geng's (2001; see also Antrobus, Antrobus, & Singer 1964; Brandt & Stark 1997; Demarais & Cohen 1998; Laeng & Teodorescu 2002) provide a powerful demonstration of how language about things that are not visually present is interfaced with perceptual motor systems that treat the linguistic referents *as if they were present*. As a result, a person's eye movements can virtually 'paint' the imagined scene onto their field of view, fixating empty locations in space that stand as markers for the imagined objects there. (p. 28)

The research findings from linguistics are based on short-term memory tasks. During psychotherapy the locations of long lasting memories are the ones that are most relevant. The hypothesis used in MSP, is that the locations of the memories of traumatic events or also broad generalizations (beliefs) are produced by the same mechanism. Their mental spatial indexing comes about by the same need to structure one's thoughts (Derks, Walker & Ötsch, 2014).

The skill of noticing the point where a client fixates his eyes, at the exact moment this person is emotionally connected to the problem state, has proven to be a very useful skill for therapists. Once this fixation point is noticed, the location of the problematic image in mental space can be defined.

Clinical experiment 5: Moving an emotional laden image.

1) Think of something that is worrying you. As you experience the feeling of worrying, then explore with your partner: "Where do you visualize the image that makes you worry?"
2) Have your partner spot the exact location (distance, direction, elevation and size) of the image in mental space.
3) Next your partner helps you to find a better location for this image. The image is moved by "grabbing" it first and then taking it further away or closer, from the left to the right or from below to higher up.
4) The intensity of the sensed feeling of worrying is what guides the movement until a better location is reached.
5) The question is: can the image stay there? Or is something important lost by doing this?

Observations:

This experiment has been used for 23 years as a regular exercise in a training program (IEP NLP practitioners, Netherlands) in which an estimated 375 participants have taken part. Beside this sample of experience, the technique was also used in a post-doc training for dentists (ACTA, University of Amsterdam, between 2000 and 2016) with an estimated 110 participants.

The same principle has been used in clinical practice by the author and many of his colleagues in countless therapy sessions.

Because the experiment follows the feedback that the subject provides about the intensity of the negative affect, the tendency is that almost all subjects end up with a more positive experience: since an improved feeling is the criterion to stop. That is why this procedure has a high rate of therapeutic effect. However, there is no follow up material that shows whether this effect remains outside the experimental context.

The simplicity of the procedure is what strikes most participants. Next come the unmistakable emotional shifts as a result of the suggestion to move the problem image.


Moving an emotional image

Another important observation is the relative silence in which this experiment takes place. The participants appear to be fully absorbed in the activity, and seem to know exactly what they are aiming for and do not need to negotiate or discuss much. The feedback, about emotional changes in reaction to moving the image may just be given by gestures, facial expressions or a nod or shake of the head.

Problematic images tend to be located in a 45 degrees sector in front of the participant at a distance between 1 and 6 meters. The larger part of these problematic images appears below eye level. There seems to be no clear left-right prevalence of problematic images. A small proportion of the participants find the problem image within, or very close to their bodies. Moving these last images can be just as effective in changing the emotions as of those at more distance.

It is harder to generalize about the locations the images need to move to, in order to lose their negative emotional influence. The most obvious changes follow the general rules of the emotional impact of objects in mental space. However logical that may sound, it was not so clear in the observations.

Conclusion:

Mental Spatial Indexing (MSI) was introduced earlier as the main way in which a spatial model of the world comes into being. It constitutes a fast and flexible process that helps people (and animals) to distinguish and remember concepts (percepts, memories and imagery in all senses). The process is so common, that it normally escapes attention. A gaze, a hand or finger gesture or a nodding can single out a specific location in mental space, and associate it (by classical conditioning) to some idea for spatial storage. A similar gesture etc. can later help to retrieve the information that was stored under this spatial label. For instance, a teacher may state to his class, while pointing one meter in front of his belly: “The exam will be hard”. If he has done that

once, thereafter a subtle gesture may suffice for bringing the examination back in the minds of his students thus communicating on the basis of mental spatial indexing.

In this example, it is the teacher who initiates the mental spatial indexing. But we must assume that the same type of phenomenon is produced by people themselves all the time (Tversky, 2015; Varga von Kibéd, 2014). They make use of a location to help themselves to distinguish the one concept from other and also make it retrievable by indexing it in their awareness space. Now they only need to look, point or gesture at this spot to remember the concept catalogued there.

David Keatz (2015) points out how in a way MSI makes people use a natural non-verbal sign language that is not so far off from the sign language deaf people apply. It consists of spatial simulations that are made visible with the hands and facial expressions in the immediate space in front of the speaker. Keatz refers to Oliver Sacks classic book Seeing Voices from 1989.

The experiment above shows that mental spatial indexing follows a kind of super structure or one could say syntax. What this means is that where a category of information is located in mental space is not random, but may follow meaningful principles. Primarily the general laws of mental space apply: thus the more central, closer and higher something is located, the more emotional impact it will have. Things of great value and with high priority will be spatially indexed high, central and close. Things that have a to big emotional impact may be placed further away, lower down and out of the center of the visual field. Things further away in time are located further away from the body in the center of mental space.

Also the amount of attention that is given to a category of information can be influenced by its location: when information is mentally spatially indexed at the back of the person, it might be out of sight and out of the persons mind altogether. The opposite, when it is located straight in front, will give it a kind of permanent subliminal presence.

Just like in any library, the concepts in mental space will be placed according some categorical logic. In a library old books may be stored on the one end of the shelves, the newest ones on the other end. There are categorical ways to spatially index memories and information: best known are chronological or based on social importance. The personal timeline, as will be discussed in the following chapter, can be seen as a chronological way of mental spatial indexing of memories and future projections. The social panorama is MSI on the basis of the value of relationships with people. These two categorical dimensions in the spatial catalogue of the mind have proved empowering to the work of psychotherapists: in the shape of Time Line Therapy (James & Woodsmall, 1988), family constellations (Weber, 1996) and in the Social Panorama Model (Derks, 2002, 2006).

From the moment a therapist knows where in the mental space of the client a problem image is located, it becomes a matter of choice: what is the “something completely different” that the therapist favors to make the client do? If the therapist notices the location of the problem concepts and is familiar with spatial psychotherapies, the intervention of choice will very probably be a spatial one. When the therapist concludes the issue is relational, the choice may be the Social Panorama. When it deals with planning, motivation or personal presence, but also with depression and trauma, the personal timeline can be the weapon of choice. The author sees five alternative routes of spatial intervention:

a) Keep the client’s full attention fixed to the precise spot where the eyes focus in the visual field after accessing a traumatic experience. Since the client will normally prefer to move his or her attention away from this “painful” location. But to keep the clients’ eyes focussed here takes communicative skills on the side of the therapist. In Brain-Spotting (Grand, 2010) the therapist supports the client in maintaining his gaze and

then "commits" the client to solve the issue with his available coping abilities and some helpful additional steps.

b) By keeping the client's attention at the precise spot, a searching process for analog memories – that goes backwards in time – will be set in motion. This brings the client to his earliest memories of this kind of event. Finding a resolution can be left to the natural flow of the client's coping skills, however finding the spot and the early memories can also be followed up by a search for the limiting beliefs that were concluded from the traumatic events. Then techniques for belief change can be used (Re-Imprinting, Dilts, 1986; Synesthesia Pattern, Hallbom, 1995; Pre-Conception, Derks, 2010) (see also part 2).

c) When the image that is the core of the problem state is identified and located, eye movement therapy can be applied, like EMDR (Shapiro, 1984), or Eye Movement Integration Therapy as developed by Steve and Connirae Andreas (Beauliue, 2003). As a related method, the spot found in the visual field can be chosen as the heart of an imaginary figure of eight. The eyes of the client then are led to follow this figure of eight, in order to enhance the chance of finding useful connections (Hallbom, 1995; Derks, 1997).

d) From having found the spot of fixation and the critical image that is located there, the so-called visual swish (McDonald, 1997) can be applied. In this method the problem image is linked to a future fantasy about the client's self, in which she/he envisions him or herself as someone who can easily cope with the issue.

e) After allocating the problematic image it can also just be moved to a more comfortable location by direct suggestions to the client to do so.

The experiment above is rich source of information about the spatial foundation of mental activity. It also shows one good very reason for the existence of spatial psychotherapies; and that is that it reduces the time spent with "talking about and reflecting on" in favor of immediate alterations in the way the problematic cognitions and emotions come about.

From where in mental space are you looking?

The sphere of awareness-space extends around a person's body – logically one would expect the experience of the self must be located in its very center with the rest of the world being regarded from there as a kind of panoramic landscape. However, it is not only the occurrence of the so called "out of the body experiences" (Mavromantis, 1987; Marselli, 2015) that shows it is not always so simple. The self is a complex spatial experience.

In 2006 the New Zealand based NLP-trainer Richard Bolstad demonstrated on the first IN-congress in Potsdam, Germany, the multiple distancing from the self: "Who is the *me* that is aware of the *me* here, and who is the *me* that regards that *self*, etc?" and that about 6 times over. Such a multiple distancing from the self led to a very disconnected state of consciousness that enabled the client to let go of his problem state (and everything else). Bolstad explained that he had modeled this procedure from oriental teachers. Bolstad & Hamblett (1999) wrote about these sources:

> Like Krishnamurti, other teachers have recommended the seeker enquire first and last into who they are. In his Dharma talk on One Mind, fourteenth century Rinzai Zen master Bassui

says: "If you would free yourself of the sufferings of samsara, you must learn the direct way to become a Buddha. This way is no other than the realisation of your own Mind... (…) To realise your own Mind you must first of all look into the source from which thoughts flow. While sleeping and working, standing and sitting, profoundly ask yourself, *What is my own Mind?* with an intense yearning to resolve this question. This is called *training* or *practice* or *desire for truth* or *thirst for realization*. What is termed zazen is no more than looking into one's own Mind." (Kapleau, 1989)

The great twentieth century Hindu teacher Ramana Maharshi also focused his entire method on this one question, *Who am I?* He says: "In this method, the final question is the only one and is raised from the very beginning... (…) Since every other thought can occur only after the rise of the "I" thoughts, and since the mind is nothing but a bundle of thoughts, it is only through the enquiry, *Who am I?* that the mind subsides. Moreover, the integral "I" thought implicit in such enquiry, having destroyed all other thoughts, itself finally gets destroyed or consumed, just as a stick used for stirring the burning funeral pyre gets consumed." (Osborne, 1996, p. 131)

Also based on Ramana Maharshi and oriental philosophies, meditation practice and aided with the NLP concepts of *core states* (Andreas & Andreas, 1994), *sub-modalities* (Bandler, 1986; Andreas & Andreas, 1989) and *perceptual positions* (Camaron-Bandler, 1984; Grinder & DeLozier, 1987), Connirae Andreas developed a procedure she called the *Wholeness Process* (Andreas, 2015). The spatial phenomena Andreas works with in this approach are the locations *from where* a person is aware of critical concepts. She calls these spatial positions *"I" locations*.


Connirae Andreas

A metaphor for the *"I" locations* in Andreas' work can be found in filmmaking. An *"I" location* is like a camera position. During the shooting of a movie scene, more cameras can be used simultaneously to capture the events from different angles. In real moviemaking, cameras are normally placed in such a way that they do not have each other in sight. But in awareness space, the *"I" positions* seem to do exactly that: they focus on each other. In fact these "I" cameras are positioned in such a way that the one films the other and that one the next and so on. It is like a series (a zigzagging line) of cameras that are recording one another at the same moment in time.

In Andreas work, the *"I" positions* are generally found within, around and at greater distance from the body. The core of the method comes from noticing that the *"I" positions* are sustaining each other. The *"I"positions* further away have a conserving, stabilizing influence on the *"I" positions* that are closer to the body. By means of this sustaining force, problematic concepts (bliefs) become resistant to change. In this way a chain of *"I" positions* can consolidate a certain problem related concept from far away in mental space. Thus a problem state is kept steady over the conservating force of a series of interconnected *"I" positions*.

A hypothesis about this phenomenon is that,*"I" positions* are neurologically linked with each other in a way that follows a person's cognitive development. In this view, the *"I" position* at the far end of the chain, is the oldest concept, dating maybe from early childhood.

Thus, a chain of such *"I" positions* can consolidate a problematic concept from the past into its disturbing activity in the present. The technique of the wholeness Process aims at dissolving the chains of *"I" positions* from its far away (early childhood) end inwards, and by that reliefing the client from a currently constraining issue.

By special questioning techniques such a chain of *"I" positions* can be followed back from the close to the body problem concept to its origin further away in mental space. The search follows a structure of locations that at times may zigzag through mental space.

The therapeutic effect of the Wholeness Process arrives from a major discovery, which is: That the first (or earliest, furthest out or oldest) *"I" position* is in itself not consolidated by other *"I" positions* (earlier ones) and is very open to let go its boundaries. The instruction for this transformation comes as a sort of invitation to this primary *"I" position*: To relax and dissolve in the greater field of awareness.

Thus the therapeutic quality of the *Wholeness Process* stems from using this unique property of chains of *"I" positions*: that they can be dissolved from their earliest origin (=last found "I"position= furtherst out "I"position) over the intermediate *"I" positions* to the present problem concepts (closest "I"position). Metaphorically it works like a line of Roman foot soldiers that cover each other's backs. When you attack them from the front, they are unbeatable. However, if you first attack the last one in the row, the rear man, who has no one to back him up, he will be easily conquered. Then the next one in line becomes just as vulnerable without a back up and can be subdued with ease. Then the entire line of warriors up to the front man (the problem concept, the closest "I"position) may be beaten that way.

This subtle form of "something completely different" of the *Wholeness Process* helps to free the person from the rigidity of the cognitive structure that underlies his or her problem.

Clinical Experiment 6: Unlocking "I" positions.

1) Think of a psychological issue that is limiting you. Make it your actual experience by stepping into the state of having the issue. Make sure you feel the uneasy feelings that go along with that. Explore the sensory qualities of this experience. Make sure that you know exactly where these sensations are located in mental space.

2) Now explore from which position, spot, location you are aware of this issue and its sensations?

3) Explore the sensory qualities of this spot. We call it the first "I" location.

4) Now explore from which position, spot, location you are aware of this first "I" location?

5) Explore the sensory qualities of this spot. We call it the second "I" location.

6) Now explore from which position, spot, location you are aware of this second "I" location?

7) Repeat this process until there are no further "I" locations found.
8) Invite the last found "I" location to relax and dissolve in the wide field of awareness. Give this some time.

9) When the last found "I" location is dissolved, do the same with the previously found "I" location. And continue this until all "I" positions are dissolved including the location of the problem.

10) Explore the impact of this process.

Observations.

With great integrity, Connirae Andreas (2015) inspires the participants in her workshops to try this original "something completely different". The fact that she refers to Buddhism, Zen and Hinduism, is not crucial for the appreciation of the Wholeness Process. She deals with this semi-religious, spiritual background in a typical NLP manner, with respect but without giving it a holy-authority. Andreas is not presenting herself as a new Guru, nor is she promoting any other Gurus. She presents herself as someone who by trial and error came to understand a psychological principle that was maybe already successfully applied by Guru's for millennia.

Over the last 3 years Andreas gave a series of workshops in the western world and also produced several videos, a website and interviews that help to spread her method (www.WholenessProcess.org). The author practiced the Wholeness Process with workshop participants and real therapy clients. From the 36 cases, 34 were effective in reducing the intensity of the problem state.

The instruction to the client to invite the last found *"I" position* to dissolve did not result in forgetting it. Also its original location was well remembered afterwards. So the implicit suggestion of concepts becoming erased by this method was not supported by the experience of the participants who were asked about this. But nearly all of them expressed that they felt a clear alleviation of their symptoms. Some mentioned deep insights in the origin of their issues and the ability to distance oneself more from childhood events.

The technique usually takes about 25 minutes. None of the participants displayed strong emotions during this work.

The search for the *"I" positions* is the technical bottleneck. One needs to find the spot where a purely psychological object is located in mental space. However, even naïve therapy clients, with no experience in mental spatial psychotherapies, could accomplish this without needing much of an explanation. That means that there is enough of an intuitive match between this work and people's regular experience. As soon as clients have understood what is looked for, they tend to easily search and find the next *"I" position*.

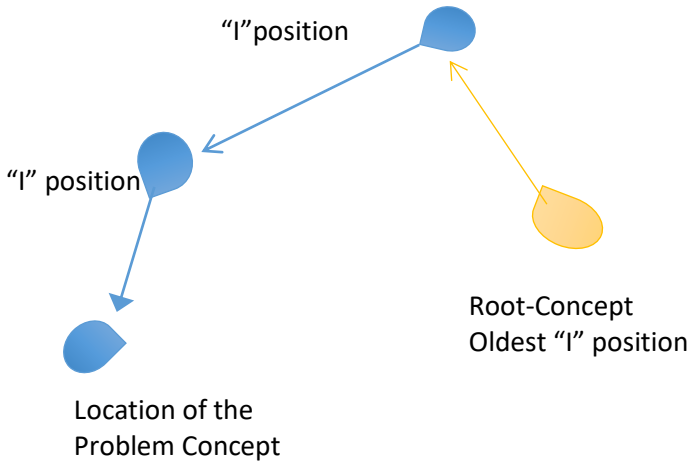
Conclusions:

The Wholeness Process in general, and the above limited version in particular, bring up several very challenging theoretical considerations.

Primarily: The sensations of the *"I" positions* are of an "intuitive" nature. That means that they are faint and vague and can only be found in a trance-like state. In most of the spatial psychotherapies written about here, the locations of the sought for concepts in mental space are found in a similar manner: by closed-eyes-relaxation with an open mind for whatever comes up. That such locations must exist is already implied by the suggestive questions used: "where is the location of…" But however suggestive these requests seems to be, once the location of an *"I" position* is found, during the Wholeness Process, the participants become ever more certain about these whereabouts. The same holds for locations of memories on the time-line and the images of people in the social panorama: vague at first, solid in the end.

To most psychological researchers data as difficult to verify and quantify as the locations of the *"I" positions* is a nightmare. However, in the tradition of the social panorama model, one can describe the locations in estimated measures: like for instance, 4 meters away at 9 O'clock, 3 meters above eye level. In that way a researcher could create a plotted sample in 3-D of chains of *"I" positions*. However, in the tradition of the clinical experiments in this paper, the observing of a number of participants responding to questions like "from which position, spot, location are you aware…" helped the author to conclude that here is more than what comes from the implied suggestions alone. This was a reason to take the phenomenon of *"I" positions* very seriously, and by doing so, several challenging hypotheses popped up.

The main subject matter in spatial cognition research is composed of visuo-spatial background cognition, of the type that enables a person to find his way around in an unconscious/automatic manner – which may switch in to consciousness when the person gets lost. This type of knowledge seems to be mostly housed in the right hemisphere (McGilchrist, 2009; Bishop, 2012). A first neurological question is: is the wide, vast, broad and general 3-D sphere of awareness that Andreas mentions in her work, located in the right hemisphere or even, *is* this area of space the right hemisphere? And if so, is the Wholeness approach a way to relieve people from limiting concepts stored in the right side of the brain?



Another question that leads to neuroscience is: Is what the Wholeness Process shows, a spatial version of another property of the mind that the author has already explored in more detail over a longer period of time? Is what comes to the surface similar or identical to the phenomenon that is discovered in the work with limiting beliefs? (see part 2) In that work older beliefs seem to preserve and protect related newer ones, which makes the newer ones hard to revise. Which makes people act stubborn and conservative. Are the *"I" positions* doing the same thing? In other words, must we regard a chain of *"I" positions* (concepts), as a 3-D chain of beliefs that conserve each other according to the Time Code of Mind Theory? (Derks, 2010; 2016). If this hypothesis is correct, then the Wholeness Process shows how beliefs (concepts) are connected to each other in a spatial way, where the earlier formed concepts consolidate the later formed ones over extended links.

From the Russian developmental psychologist Vigotsky (1978) came the general and easy to accept notion that people cannot learn something new without it being grounded on (linked to, attached to, associated to) some earlier learning. This idea is also at the root of the embodied cognition or grounded cognition theories (Barsalou, 2016). These theories say that

the earliest embryonic neural connections form the basis of all other learning. However, the alternative shown by the Wholeness Process is that, there must exist unsupported, unconnected, unlinked, "root concepts" hanging in the space around a person; concepts that form the foundation on which other learnings can develop but that by themselves are not connected to earlier knowledge. A challenging idea that we will return to in part 2. For the moment we also will present these conclusions here in the framework of awarenss space.

In clinical trials with limiting beliefs (see part 2), it appears that the mind links the one learning to the other in such a way that the older learning consolidates the newer; such that a newer learning cannot be erased or changed because the earlier concept protects it against that. This view helps to understand the stability but also the rigidity of concepts and beliefs: conservatism. This view provides an explanation for why the revising of ones beliefs can be so hard: they are conserved and steadied by the older ones (James, 1890; Derks, 2016).

In the feed forward theory of consciousness (Derks & Goldblatt, 1985; Derks, 2015, see part 3) one can find a neurological hypothesis that may explain why older concepts prevent the erasing of later ones. It is all in how these concepts are linked together in the shape of chains of cell assemblies. A problem concept that one might want to erase, is according the feed forward theory the last (most recently created) in a chain of associations. According to this theory, a problem concept is a problem, just because it is only backwards connected and misses a forward link (see part 3). The problem concept at the end of a chain is consolidated by the cell assembly that preceeds it.

According to the logic of the feed forward theory, the erasing of such a not forward linked (stuck, problem) concept (cell assembly) that is at the end of the chain will make the one before it the new problem concept. But this is pure hypothetically, since the wiring of the neurons of a cell assembly seems to prevent such an erasing of the last concept in the chain: it can only be temporary weakened by prolonged over use, by temporary extinction (Sinclair, 1983) (see also part 3).

The *feed forwards theory* leads also to the idea that a cell assembly in a chain of such networks, is consolidated by the inhibition coming back from the next in the chain. When however, a problem concepts is at the end of a chain of associations, there is no next one to consolidate it. Thus the feedback inhibition from the next in a chain of concepst cannot be the consolidating force seen in the Wholeness Process.

When the consolidating force seen in the Wholenesss Process has an inhibitory character, it must be feed forwards inhibition that solidifies the forward links. In brief: it must be feed forward excitation and feed forward inhibition that run forwards from the one cell assembly to the next, but only feedback inhibition runs backwards: as a ghost-rider against the stream of the neural traffic. This feedback inhibition helps to consolidate the neural connection between two cell assemblies after they were formed (used) (Sinclair, 1983). A successful association from the one concept to the other will thus be strengthened by feedback inhibition.

The *feed forward theory* also describes the type of inhibition that the neurons of a cell assembly apply to each other. This type of very local inhibition solidifies the synaptic links between the units of the assembly (Derks & Goldblatt, 1985). All in all, this means that a concept (a cell assembly) is held together and in place by various forms of inhibition – besides of course its excitatory connections.

When one applies these notions to the Wholeness Process, the suggestion to "relax and dissolve" that is aimed at an *"I" position*, may be seen as an instruction to let go the inhibition that is consolidating this concept. If we take the experience of the participants seriously, i.e. that

the suggestion to "relax and dissolve" has an effect, this implies that the feedback inhibition and the inhibition that maintains the integrity of a cell assembly can be intentionally influenced.

Thus, when we take the Wholeness Process at face value, this implies that the inhibition that consolidates a root concept (=last found "I" position) can be intentionally reduced or stopped. At that moment the root-concept will lose its inhibitory scaffolding and falls apart.

The Wholeness method suggests that it is only possible to intentionally reduce the inhibitory activity within unsupported cell assemblies (root concepts). The suggestion is aimed at *"I" positions* that themselves have no other *"I" position* to steady and protect them. The suggestion to "relax and dissolve", may work as the "command" to let go the inhibition that holds that concept together.

How weird is that? Not so very, considering that a lot of cognitive processes can only be understood as a result of intentional changes in inhibitory activity, of which repression is the most infamous among therapists (Singer, 1990). The prefrontal cortex houses control centers that have the capacity to stop, hold and repress thought processes, probably throughout the brain, by applying inhibitory influence to them (Payne, Levine, & Crane-Godreau, 2015). This is what *will*, volition and controlled cognition must be largely made of. The inhibited concepts are not just temporarily repressed; but may stay that way because of a learning process: learned inhibition. Munakata, Herd, Chatham, Depue, Banich & O'Reilly (2011) write about this:

> Computational models have also demonstrated how transient activation of specific items in memory can lead to learning effects that mimic inhibitory processes. For example, if a NT target is activated by a cue, then deactivated through directed inhibition, this results in a long term depression for the synaptic connections for the NT target item, making it more difficult to activate. This learning account opens an important new dimension in thinking about inhibition as occurring via long-term changes to the strength of the representation itself. (p. 456)

Within a brain that is steered and controlled by (dorsal prefrontal) inhibitory processes, the intentional reduction of the inhibition that keeps a concept stable may be a normal phenomenon.

The area of research that such a hypothesis opens is immense: it delivers the direct connection between thought/reason and the neural-substrate (Derks, 1986; 2015).

A second conclusion from observing the Wholeness Process is, that after "dissolving" the root-concept, it is also possible to let the next concepts in line dissolve. When the root concept is dissolved, it enables the participant to dissolve them the one after the other until the problem concept finaly also is dissolved. If these conclusions are justified, this holds a promise for a new way of doing change work.

When we regard all cognitions as forms of belief – as representations of what a person thinks is going on in the real world, than this calls forth another conclusion. This third conclusion can be that the structure of interconnected *"I" positions* shows how a series of re-specified beliefs form a spatial pathway in awareness space; because this is what the Wholeness Process shows time and again. Participants tend to find 4 or 5 interconnected *"I" locations* in mental space: that hover like the atoms in a molecule in the space around them – mainly at the side and behind them. More specifically, they are like a small swarm of steadily hovering camera-carrying drones that keep eachother in sight.

Connirae Andreas also considers the zigzagging pathways between the *"I" positions* to be a result of how the subject has created several new perspectives on the same issue during his

lifetime. Every time a new *"I" position* came into being the ideas that made it up were reconsidered. She proposes that it is the person's spatially coping (putting it at a distance, distancing oneself or dissociating) that results in the *re*-mental spatial indexing of the concepts.

Thus, a person may have a certain belief located close to, or in, his body as long as he still fully believes it. Now something happens, that forces the person to review this belief. He does that by putting it at a distance to re-evaluate it. Next, he will create a new version of that belief at a distance. When he wants to assume this new belief, he may draw it close and maybe into his body. The old re-evaluated belief then stays at a distance. When he repeats this over the course of a number of years, he has several interconnected positions for related beliefs.

In this regard we must look again at the forms of incomplete spatial coping, that were written about earlier:

1) Putting it at a distance,
2) Distancing oneself,
3) Stepping out of one self.

These mental moves can be part of how a person relocates a problematic concept. The trace of *"I"positions* in mental space that is followed back with the Wholeness Process, could be a result of a series of ineffective spatial copings in the course of a life time.

In the technique of the Wholeness Process, the search for the *"I" positions* is facilitated by adding some (sensory) substance to them before searching for the next in line. The hypothesis that the series of *"I" positions* follows the development of the person backwards in time, is in accordance with The Time Code of Mind theory (Derks, 2016). In part 3 we will look at the same phenomenon again.

This is fascinating as it shows the possibility of tracing back the formation of a belief in the course of someone's development, as a spatial pathway with several discernable stages. Again, that would indicate that every *"I" position* is a recapitulation of an older belief of which the original becomes mentally spatially indexed further away from the center but also further away on the past time-line (see part 2).

1.5.4 Depression in mental space

When Andreas (2014) introduced the Wholeness Process, she did not so much present it as a form of spatial psychotherapy but more in the context of oriental meditation. She also brought it as a way to get rid of *the ego* (and to get into a state of *no-self*) and to also maybe become *enlightened*. From the NLP-tradition of listening in a literal manner, one would expect that "enlightenment" must be an experience during which one's mental space litteraly lights up. In contrast to such an "enlightenment", the experience of depression seems always associated with darkness. Many psychotherapists behave as if the link between *depression* and *darkness* is just a metaphor and most psychologist the author heard talking about it, also see the light in "en*light*-enment" as an analogy for blissfull states of mind. However, clinical practice hints at the existence of more literal forms of both darkness and light. From therapeutic work we know that clients with their eyes closed may remark during a success-full intervention "Hé did you put on the lights?" In pseudo religious, spiritist and shamanic therapies, like Spirit Releasement Therapy (Baldwin, 1995), "The Light" can play a central part in the healing process. This sppears as a bright glow at several meters distance.

After working with clients with mood disorders for several years the hypothesis arose that a sense of darkness seems to be a subjective epiphenomenon of depression. When asked for

it, clients could reliably point out where the dark areas in their mental space were located. In general these were found close to, or in the head and upper body, on all sides except the center of attention; thus not so much in front of the client's eyes. The locations of the areas of darkness raised the speculation that they are produced in the awareness field of the right hemisphere.

In the early therapeutic attenpts the clients were stimulated to move and dissolve the areas of darkness by direct suggestion. The first results led to the hypothesis that this type of darkness probably signals a process of repression; since most clients by whom the dark zones began to melt away, started to talk about significant life-issues that they could not handle and felt helpless about. It appeared that only the changing of the shape and density of such clouds had little sustainable value on its own. It was clearly what was hidden behind the darkness, the repressed issues that needed to be the real targets of therapy.

Why can this discovery of darkness in awarness space be important? That is because mood disorders, such as depression and bipolar disorder, are a leading cause of disability, with 32 percent of Americans suffering from these disorders within their lifetime. The suicide rate among people with depression is 30 times higher than the rate among the general population. But the seriousness of this suffering seems not to balance out with a treatment that just only explores and removes "clouds of darkness". And it is an open question if such a method fits to the severety of the symptoms. However, the results with a number of cases of moderately depressed clients are such that it is my obligation to describe this work in order to give darkness its rightfull place in mental space. But if a mental spatial approach to depression can be shown to be really effective, this would be very good news.

That is why as a start, Beenhakker (2016) conducted a pilot study with 5 participants with mild depressive symptoms (measured on two different scales and tested against a untreated control group with similar symptoms). The results were that 4 out of 5 participants improved considerably, and even improved some more in the 30 days after the treatment; against no significant changes in the controls. Now the society for mental space psychology (SOMSP) is looking for the sponsoring of an upscaled experiment.

An approach like this immediately confronts us with the larger context in which the treatment of depression is imbedded. Among psychiatrists, the discussion about depression centers round antidepressant drugs versus talking therapies. However, since drugs work quite reliable and easy and are promoted by the pharma-industry, most of the discussions (for instance in the online journal Psychiatric Times) are concentrated on how to know what dose or mixture will work for a particular type of symptoms. In general monoamine oxidase inhibitors, tricyclic antidepressants or selective serotonin reuptake inhibitors are the weapons of choice.

Due to the systematic over representation, in all journals, of evaluation studies that show positive therapy results, an unduly sunny vision of therapeutic effectiveness is created. This holds also for both psychotherapeutic and pharmaceutical treatments of depression. That is why Fournier, DeRubeis, Amsterdam, Shelton & Hollon, (2016) believe that the debate about what works best cannot yet be concluded. And Steven Hollon, a professor of psychology at Vanderbilt University comments:

> Both talk therapy and antidepressant drugs are efficacious. They're just not as efficacious as we think they are.

Thus we need to be just as careful with the evaluation of a spatial approach to clouds of darkness. An other central problem in the psychotherapeutic treatment of depression is the widespread belief that depression is mainly a neuro-physiological disorder that needs a biochemical solution, for which there also seems to be much support from experimental studies. Some of this evidence is ambiguous (Eveleigh, 2015). For instance, it was shown that the so-

called serotonin transporter gene plays a role in depression. When this gene was shorter than normal, this was associated with an increased risk for depression, but only *if the bearer experienced adverse childhood events* (Caspi, 2003). The gene was not causing depression on its own. Thus when the client had a traumatic childhood the shorter genes might express themselves in the form of depression. Benedetti (2014) also confirmed this with patients who were diagnosed with bipolar disorder. However, the problem with the latter group is that they respond only slightly to the anti-depressant drugs that were mentioned above, but they respond better to lithium. While researchers have found that other non-lithium based drugs may be effective at managing certain symptoms of bipolar disorder and depression, they are not very effective at preventing suicidal thoughts. Lithium, however, was found to be an effective anti-suicidal medication for patients with bipolar disorder or depression. Although the two disorders have different symptoms, the underlying depression connects them. The effects of lithium can be uplifting to the patient's mood but it may be damaging to the liver. Benedetti (2014) found that sleep deprivation and light therapy reduced the suicidality among bipolar depression patients; often rapidly. This is an important finding, since one third of bipolar patients in a depressive phase attempt suicide.

The severity and the long duration of depressive symptoms is another obstruction for psychotherapy: doctors, psychiatrists and clients alike often have a low expectation of the as weaker measures regarded "talking therapies".

All in all, this dominant medical psychiatric context makes a very brief therapy for depression something hard to sell: most people, even the author, cannot easy believe that it can work in only one single session. No therapist who proposes the possibility of a brief anti-depression psychotherapy is likely to be taken serious. However… it will be still a single session spatial psychotherapy approach targeting depression that we will look at in the next section. Then again, the severity of the cases on which this study is based may be of a moderate level – which however matches to the great majority of the depressed.

1.5.6 Repression, a Freudian fossil or real?

A great candidate to become a law of mental space psychology is that, when a mental object (image, feeling, memory, etc) is moved away from the center of attention (straight in front of the nose) it becomes less conscious (Walker, 2014). That means that people can move (MSI) hard-to-deal-with ideas to the side or even to locations behind them, and by doing so they will not be bothered by them as much. We already mentioned that this leads to forms of incomplete coping: since the client still cannot deal with the problem stimuli. Walker (2014) saw how traumatic images can have a "sensed connection" to the person's body that may keep the emotional intensity high, nomatter how far away and far to the side a problematic image is moved. The latter signals that, just only moving the image away is not a form of sufficient coping.

In addition people can stop thinking of something by training their selective attention to block the idea before it comes to awareness: that is what Freud called repression. But this may come at a price, as most clinical psychologists and psychiatrists know since the work of Pierre Janet (1889) at the end of the eighteenth century. In the long run such "repression" (Singer, 1990) may cause a great variety of symptoms of which many can be called "depression".

The type of depression that is targeted in clinical experiment 7 may be called, depressed episodes stemming from repressed frustration. The symptoms may however be present for many years. The person has no clear idea what is causing the feelings of sadness and the lacking

of energy. The bad mood is normally already present at the moment of waking up and it may go somewhat to the background when the person is occupied during the day.

In the case a depression stems from the client repressing an area of life they cannot cope with, there are some brief technical steps that have shown to be able to bring relief. The fact that procedure presented below is quick and easy is at the same time its greatest disadvantage. Since the amount of suffering, its duration in comparison to the easiness of the ritual that brings its resolution is way out of balance; this may keep clients from accepting this as a genuine treatment (Hollander, 1995).

Clinical experiment 7: Depression in Awareness Space

First phase

1) Ask the client to sense the feeling of sadness that typifies their depression.

2) When the client signals that the feeling of sadness is present, ask the following presupposing question: "Where in the space in and around you do you sense an area of darkness?"

3) Let the client point out the exact location of the dark area.

4) Next, suggest that the client imagines that the sun rises somewhere behind him or her, in such a way that it can shine on the dark area.

5) Suggest that the client moves the dark area in the direction of the center of attention: in front of their eyes.

6) Now give the client the time (10 minutes) and rest to do all of this and also to witness what happens. Let the client talk about it.

7) One can expect the dark area to slowly shrink or melt and become significantly lighter. This is a process that needs time.

8) Next; ask the client to find out what the issue is that was hidden behind the dark area: this is probably something they could not deal (cope) with and gave up trying. Give the client enough time to explore this.

Second phase.

The author and some of his colleagues have been very successful by continuing this process with the aid of a classical NLP-technique: The use of an inner model (Bandler & Grinder, 1979). The question to the client is, "Do you know somebody, or do you believe that someone can exists, who is able to deal with the issue that was hiding behind the dark area?" The indicated example of a real or fantasy person (the inner coping model) is used to find the appropriate response to the issue. If the imagined response of the model appears right, the client tests it first in a dissociated form and then steps into it. The client needs to be congruently sure about the appropriateness of the new behaviour and coping method. If not, the inner model approach can be repeated, or other such models can be used for the same purpose. After a sufficient form of coping is imagined, the client imagines his younger self before the problem issue came into

their life. The younger self is then educated to use the coping strategy that the coping model provided to the client. When the younger self seems to know how to handle the issue, the client imagines to step back into the younger self and do it all over, now aided with the right skills.

An extensive test of the ecology of this new behavior is required.

Caution:

It is not helpful just to do the first phase without helping the client to find the appropriate behavior, because then the client is only aware of his or her faillure to deal with some part of life (Krakauer, 2000).

Observations:

The relation between disturbed, broken, blocked, obstructed and dark, future personal time-lines and depression was mentioned by (James & Woodsmall, 1988; Walker, 2014). The logic of a person seeing no clear future when they feel depressed has proven to be a cornerstone in the NLP approach to depression, besides changes in inner speech, trauma-work and beliefs.

Bipolar symptoms appear to correlate with dissociative coping: the stepping out of oneself. At the onset of the problems the client could not continue to be the person they were and to solve that, left themselves (their self position, see the section on the self) to live on in another spot. Such splitting of the person makes it possible to alternate between the two forms of the self. In the social panorama model, this is seen in mental space as a bi-location of the self (feeling and image) (Derks, 2002).

Allthough we are here primarily looking for the role of *darkness in awareness space in general,* its application in the treatment of depression draws most attention. Within the admosphere of the author's private therapy practice the method was used with about a dozen of clients over the last years. And the pilot study by Beenhakker (2016) mentioned above added extra weight to that.

One would not expect that in the context of NLP-workshops there would be people who want to be a demonstration subject for working on their depression. But during the last 5 years the author found at least one in every workshop group. On one occasion the seminar was called: "Working with depression in mental space," there were about 24 participants of which 7 wanted to work on their depression within the group setting. One of them was willing to be a demonstration subject the others were treated in the above manner by teams of other participants. Recently in Japan, 16 out of 27 workshop participants wanted to have their depression treated. Critics may argue that workshop participants do not represent the population of depressed patients in psychiatry, and that is also not suggested here.

The participants in the above experiment could easily get into their "sadness" when asked to do so. And then from here on, finding the location of the dark zones proved pretty easy as well. Just by assuming in the question that such an area does exist ("Where in the space in and around you do you sense an area of darkness?"), brought it quickly to the surface. It seems also that these dark areas are very visable, since the participants could point out these locations with precise gestures.

The metaphor of a sun that shines on the dark zone, was only problematic if the client's body was in between the imaginary sun and the dark area: in which case their body blocked the imaginary sunrays from penetrating into the dark areas. In such cases the imaginary sun could be moved to a better position.

The combined suggestion of sunshine on the clouds of darkness and at the same time moving these clouds into the center of attention, helped to decrease the clouds in size and density. Finally they all shrunk and bleached considerable.

As soon as the participant reported a significant reduction in size and darkness (approximately 60% less than the original size and shade) this seemed good enough to start to explore the repressed issue.

During demonstrations of the above experiment, most participants preferred to leave the content of their issue unmentioned, just for the sake of privacy. In those demonstrations only the client knew what it was that they could not deal with. But some examples were very clear: as in the case of a lady who could not accept that she had an autistic daughter, or a man who could not give up his life's mission of starting some social movement, or a surgeon who had rather had been a football pro, or a person that as a child had tried in vain to safe the marriage of her parents. In the development of NLP, the use of a "social coping model," who must be a person who is an example for the client of an individual who can cope well with an issue like theirs, has shown to be one of the most powerful and reliable therapeutic techniques ever (Bandler & Grinder, 1979; Derks & Hollander, 1996). As soon as the participants in the above experiment found a real or virtual example that they believed could deal with a similar issue, it was only a matter of technical routines to make that also work for them.

Technically it appears most important to analyse exactly what the crucial ability is that the client failed to have. Then, when the age at which this ability failed is known, this skill, as acquired over the inner model, can be transferred to the younger self just before that age. Then the client can step into their younger self, sense the new skill, and grow up slowly in a way of *change personal history* (Bandler & Grinder, 1979).

Progress can be monitored just by reviewing the areas of darkness. The emotional expression of relief in the shape of, for instance, intense fits of laughter appeared to be the best sign of therapeutic success. It is only when the participant has concrete ideas about how to proceed with their life and also how to deal specifically with the issue they had given up on, that one can expect lasting results.

Conclusions:

For spatial cognition, and the research into spatial psychological phenomena, the discovery of dark areas can be a step forward. Beside out of pure scientific interest it is great to know that this discovery has a clinical implication: when darkness can be connected to depression. In the experiment above, the experience of darkness appears to coincide with the activity of repressing something. The latter process is believed to be innitiated by the prefrontal cortex, as for instance is supported by an experiment by Kikuchi and colleagues (2010). They write about that:

> Dissociative amnesia usually follows a stressful event and cannot be attributable to explicit brain damage. It is thought to reflect a reversible deficit in memory retrieval probably due to memory repression. However, the neural mechanisms underlying this condition are not clear. We used fMRI to investigate neural activity associated with memory retrieval in two patients with dissociative amnesia. For each patient, three categories of face photographs and three categories of people's names corresponding to the photographs were prepared: those of "recognizable" high school friends who were acquainted with and recognizable to the patients, those of "unrecognizable" colleagues who were actually acquainted with but unrecognizable to the patients due to their memory impairments, and "control" distracters who were unacquainted with the patients. During fMRI, the patients were visually presented with these stimuli and asked to indicate whether they

> were personally acquainted with them. In the comparison of the unrecognizable condition with the recognizable condition, we found increased activity in the pFC and decreased activity in the hippocampus in both patients. After treatment for retrograde amnesia, the altered pattern of brain activation disappeared in one patient whose retrograde memories were recovered, whereas it remained unchanged in the other patient whose retrograde memories were not recovered. Our findings provide direct evidence that memory repression in dissociative amnesia is associated with an altered pattern of neural activity, and they suggest the possibility that the pFC has an important role in inhibiting the activity of the hippocampus in memory repression. (p. 13)

Just as with the suggestions in the Wholeness Process, where the participant is intentionally trying to let some concept "dissolve", here it is the "moving and bleaching" of clouds of darkness that is suggested. The effective responses to these suggestions confront us with the human capacity to influence inhibitory (repressing) activity through suggestive communication. Hypnotherapists are often familiar with the bandwidth of what the brain can be made to do in this area. And the lifting of repression has been part of hypnotherapy for over a century (Janet, 1889). It seems to be just a matter of understanding the subjective processes first, to then come to effective suggestive interventions.

Spatial cognition (and MSP) helps to change our idea about spontaneous spatial linguistic expressions, like "I look forward to that". Now this sentence is believed to correlate with images in front of the person. Thus we now witness the "de-metaphorization" of spatial language. This is not a manner of speaking but the way in which people describe the relations in mental space. Also darkness and light seem to be more than metaphorical expressions. The experiment shows what happens when we start to take clouds of darkness literally.

The relocation of a concept in mental space (*re*MSI*)* has been introduced as a quick automatism, that can be done by the persons themselves, when they reconsider a belief or by external suggestions, for instance when a therapist says, "Put your mother further downwards and backwards." Recognizing the considerable role of mental spatial indexing in cognition provides us with insights in other areas of life than psychotherapy. Think of the science studying political indoctrination (Ötsch, 2000). History is riddled with examples of political leaders who by their communication relocated concepts in the mental spaces of their followers. When a tyrant cries out: "Our great nation goes above all others!" this forces the audience to create a big image, probably high up in their visual field. When such an image becomes large, bright and central in the mental space of huge crowds of people, it may become their collective priority number one. We may hypothesize that most political and also religious indoctrination aims at creating such priority-number-one imagery. History shows that when God and the Nation are combined in such images it may have disastrous consequences (Derks, 2006).

The work with darkness and light in mood disorders forms a link to religious/spiritual indoctrination patterns, since religious language tends not only to be full of superlative locations (all over, highest, heaven, everywhere, world) but also with darkness and light. In the therapeutic approach to depression the same thing is suggested as vicars or priests may express: "The all penetrating light of Jesus' love will concur over the darkness of our sins," or "Christmas is the celebration of how the light of the world, our savior, the son of God, came to rule over darkness." Thus, MSP can also be interesting for theology and the anthropology of religion.

1.5.7 Awareness space has specialized categories.

When we look at the subdivisions of awareness space in the following sections of this manuscript – we encounter chapters that deal with navigation, the construction of time, social life, the self and the interpretation of language – we may consider these as manifestations of the same kind of neural processes that operate diffusely and in parallel through one and the same brain. The difference between these modes of thinking is not shown by neurological characteristics but by the categorizations made by the researcher. It has already been mentioned that our capability to navigate in the real world must be the cognitive foundation for navigating the social world and the world of abstractions. How we conceive of time is probably not different neurologically than how we deal with the distance we have to travel to work everyday. And sensing the core of our self is probably processed by similar brain structures as our notion of being "at home".

1.6 Navigation and Orientation.

Spatial cognition (Tversky, 1991) is a rather young sprout of psychology that primarily studies how people find their way in the physical world. Most researchers agree that to be able to navigate, creatures create cognitive maps in which they use all kinds of orientation strategies (Tversky, 1991). The diversity in how people orient themselves makes it a fascinating area, where there is an overlap between how spatial cognition researchers look at this and NLP's modeling technology (Grinder & Delozier, 1987; Dilts et al., 1979). People make use of all their senses, all manners of landmarks, retrieve memories and build schematic reconstructions. They use multiple perspectives, various scales and also apply their inner speech to find their way around. They use their double screen mental navigational systems in the shape of both hemispheres in which they store a multitude of complementary mental maps. Most people have enough orientation skills to get wherever they want: neurological damage, however, reveals the vulnerability of this complex system (Hopkins & Cantalupo, 2010; van der Ham & van Stralen, 2015).

That spatial cognition, and all animals' navigation skills, builds on early body awareness is now generally accepted in the field of spatial cognition. However, that the same skills of spatial orientation can help a client in therapy to sort out his or her problems is not so widely recognized (Derks, 2014). This is because only a few researchers in this field are familiar with spatial psychotherapies. But the link becomes easy to grasp when one first sees how spatial orientation forms the basis of all cognitive skills. When we make the paradigmatic step to assume that everything in de mind is spatially organized, than psychological problems and their solutions cannot be an exception to that (Derks, Ötsch & Walker, 2014).

We already introduced the concept of mental spatial indexing (MSI): the placing of ideas and memories on locations in awareness space. The most basic reason why we need to index spatially is to enable us to distinguish between concepts. Concepts need to be spatially separated in awareness to represent different items. Seeing the process of mental spatial indexing at work in all areas of life creates an image of people moving around surrounded by a landscape of concepts. And in this section it is hypothesized that we use nearly identical orientation skills to find our way in this imagined world of concepts as we do for the finding of our way in the real world.

Perceived objects in the real world, such as landmarks, are the stimuli that trigger the stored mental files when we orient ourselves: "Hé that is the Golden Gate!" For our inner landscape of concepts, it works just like that: "Hé that is an example of honesty!" And in the stream of mental activity we encounter a mixture of sensory stimuli and inner stimuli that can both activate what is stored on locations in our mental space. Just like the Greek philosophers used the topography of a building or a familiar route as a mnemonic aid to keep track during a long monologue, all kinds of spatial symbols can help to give structure to ones thoughts (Tversky, 2002). These symbols can be of the type that are only kept in mind in de shape of imagery or can be given a more material form, like a drawing, a schema or pebbles on the floor.

During a psychotherapy session, a client will orient himself in mental space no matter whether the therapist is aware of that and supports it or not. But a therapist who is incognizant of mental space may miss out many opportunities to guide the therapeutic process.

Sandbox therapies, like "Sand tray therapy" (Magnuson & Sangganjanavanich, 2011) and "Sandplay" (Dale & Lyddon, 1998) are both clear examples of spatial structuring. The practitioners of these methods tend to collect a great selection of small dolls, toys, animal figures, tools and whatever may play a role, and offer these to the client for assembling a symbolic scene that represents their problem state.

Sand-box therapy

Next, the client, in dialogue with the therapist, starts to adjust these symbols spatially. The re-arrangement of the figures in the sand box is always part of that. Some say this is the preferred mode of therapy for pre-school children. Others argue that this is the preferred therapy mode for everyone, since it bypasses much of the left hemispheric "talking" mode, which tends to distract client and therapist alike from the fact that problems are primarily visuo-spatial cognitive constructions (in the right hemisphere).

A therapy example:

Therapist to the client: "Imagine that the solution to your problem is at that sheet of paper over there on the floor,"

Client: "Yes, I can see that…"

Therapist: "What emotional obstacles are blocking the way?"

End of the example.

In NLP one uses the term "spatial sorting" for giving a robust 2-D or 3-D structure to problem solving communication (therapy). In spatial sorting the concepts that are relevant for the client are mostly symbolized by sheets of paper that may have words on them and are arranged in spatial configurations on the floor. At the IEP-institute in the Netherlands all students learn to practice NLP with the aid of "The NLP Workroom" (Derks & Hollander, 1996). By working in this manner one makes use of the existing navigation and orientation skills of the client.


NLP work room

With the above example, the therapist does not have to explain much why and what he means with those papers on the floor, since every client already understands that there is some distance to go to the solution of their problem and that one may encounter hurdles along the way. The meaning is obvious from its analogy with the client's previous experience with moving over a pathway towards certain destinations in the real world.

Within NLP, Voice Dialog, Structural Constellation work and Clean Space, the natural ability of the client for self-orientation is applied to steer the therapeutic process. This significantly reduces the amount of communication that is required and helps both therapists and clients to know "where" they are in the therapeutic process. The possibility to distance oneself from spatial symbols, to step out of one's self, and to take other peoples positions and perspectives contributes for a large part to the raised levels of creativity in the client.

Clinical Experiment 8: Increase the level of spatial structure.

When you lead the participant through this experiment, you should not give any suggestion for a solution whatsoever, during the entire experiment.

1) Stage 1. Start a conversation with someone about his or her *desired outcome*. Also explore, the *present state* and the emotional *obstacles* that keep the person from achieving his/her *desired outcome*. Do this for 10 minutes. Notice that this conversation centers around 3 distinct themes: Desired Outcome, Present State and Emotional Obstacles.
2) Stage 2. Now, take three sheets of paper, write DO (Desired Outcome) on one and PS (Present State) and EO (Emotional Obstacles) on the other ones and put these on the table. Include these sheets of paper as symbols in the conversation by pointing to them at relevant moments. Continue for at least 10 more minutes.
3) Stage 3. Now, put the sheets of paper on the floor and have the person organize these papers spatially. Make the person step on one at the time according to what is spoken about. For instance, when there is spoken of the *Desired Outcome* (DO) this is the sheet to stand on. Do this again for 10 minutes.
4) Stage 4. Now, let the client speak about his/her issue from standing on one of the sheets of paper and address what is said to the relevant other sheet according to the content at the time. For instance, from the *desired outcome* the person may speak to the sheet that represents the *emotional obstacles*. Do this also for 10 minutes.
5) Stage 5. Now help the client to visualize him or herself as being exclusively the part that is the DO. Then step into this position by stepping on the sheet. Help the person to become emotionally connected to DO when standing on the sheet. Do the same with PS or the EO. Again for 10 minutes.

Observations:

Since the whole experiment consists of one session in which the procedure is changed 4 times, the therapeutic results of the 10 minutes runs cannot be compared as they build on each other. To compare the effect we should use these different stages with matched groups of participants in a pre-post design.

That we use only 3 symbols in the above experiment keeps the structure of the work relatively simple. However, since 1996, the author and his colleagues (at the NLP-practitioners training at the Institute for Eclectic Psychology, Nijmegen, Netherlands) use 10 such symbols in their training (Derks & Hollander, 1996). Within this set of 10, there are 3 that are identical in meaning to those in the above experiment. This 3 symbols experiment is unique for Mental Space Psychology workshops (Derks, Heemelaar & Koppelaar, 2015). From this specific 3 symbols format, we have only about 25 observations. However, from the use of the version with 10 symbols, which includes the same 3, we have 5000 or more observations, all acquired during 20 years of running a 21 days training program 4 times a year, during which trainees use it under the supervision of the trainers.

Apart from the above, we have also a large number of observations from training participants that use the structure of *Desired Outcome, Present State* and *Emotional Obstacles,* entirely without symbols, neither on the table nor on the floor. This was the regular way this was practiced before 1996 (and still is on many occasions). However, the fact that these people use no symbols in the shape of sheets of paper does not exclude the implicit symbolizing by the spontaneous mental spatial indexing of these concepts.

Having seen so many examples over so many years makes it easy to describe the differences between the condition of *no symbols* and that of spatially sorted symbols including the stepping on/in to them. Thus if we compare stage one (no symbols) with the stages 4 & 5 (spatially sorted symbols) it was observed that:

1) The stages 4 & 5 work at least 4 times faster and takes only a quarter of the verbal interaction.
2) In the stages 4 & 5 the participants are more physically active, more self-reliant and seem to be more oriented on the task.
3) In the stages 4 & 5 the coach has the tendency to position him/herself beside the participant while in format 1 they tend to face each other more.
4) In the stages 4 & 5 the participant seems more involved in re-experiencing material from memory and imagination and to be less occupied with what is going on in the here and now of the coaching situation.
5) Due to the reduced verbal interaction, the demands for explanations, the chances of unproductive discussions, time spent with philosophical contemplation and arguing is less in stages 4 & 5 than it is in stage 1.

For further research it is important to take notice of the fact that all the above variables can be quantified and used in a more controlled research design.

Conclusions:

By dividing the process into 3 categories of experience, desired outcome (DO), present state (PS) and emotional obstacles (EO), a strong comprehensive structure comes into being. When these three states are given a symbolic location in physical space by means of the sheets of paper, the navigational skills of the client are clearly activated, which leads to a better distinction between them. The participant can stay longer with the Desired Outcome before switching to, for instance, Emotional Obstacles.

Not only does this robust structure support the client, it is also helpful for the therapist to orient him or herself in the therapeutic process. By maintaining his or her posture oriented to the symbol, it remains clear what is being explored.

By putting the sheets on the floor it becomes possible to navigate through it as if it were a landscape with three different (ritual) sites. The participant can walk (even with small paces) from the one spot to the other and there is also the possibility to take more distance and enjoy an overview.

At the moment the participant takes place near or on top of the present state symbol, the landscape starts to include a pathway. This is the trajectory between how things are now and the desired situation. In between these two positions, the emotional obstacles may become positioned. However, this spatial configuration of symbols may elicit the idea that there is more to be taken into account, and thus there may be a tendency to add symbols to the system.

When the client visualizes himself as standing on the symbol-sheets, the spatial configuration turns into a social landscape. Now the previously abstract concepts (DO, PS and EO) become automatically personified: they become human-like objects, which can be spoken to. (That brings in similarities to "Structural Constellations", in which living people are used to symbolize any type of abstract concept.) By making it a social affair, one adds a huge problem solving potential to the therapeutic process. The social intelligence multiplies the "creative calculation power" that is available for therapy. This enlarged problem solving potential might explain why this has become such a popular form of "something completely different" in EU countries.

Clinical Experiment 9: The Clean Space Experiment

(Based on James Lawley and Penny Tompkins, 2003)

1. The client thinks about a theme that is worrying him or her until he gets stuck in negative feelings (problem state).
2. First Clean Space question: Where (with a gesture around the room) is a place that knows more about this theme?
3. The client will indicate a place in the room. The guide encourages the client to go to that place and to open himself up to whatever the place knows about the theme with the Second Clean Space question.
4. Second Clean Space question: What is it that this place knows about the theme?
5. The client thinks about the theme from that place until he gets stuck in negative feelings again. (the next problem state)
6. First Clean Space question: Where (with a gesture around the room) is a place that knows more about this theme?
7. The client indicates another place in the room. The guide encourages the client to go to that place and to open himself up to whatever the place knows about the theme with the Second Clean Space question.
8. Second Clean Space question: What is it that this place knows about the theme?
9. These steps are repeated until the client no longer gets stuck in negative feelings.
10. Then go back to the start position, check the difference in the problem state and only visually retrace all the steps that have been made.

Observations:

The above version of the "Clean Space Experiment" was applied at least 30 times in the author's private practice. It was redesigned after James Lawley and Penny Tompkins (2006), who modeled this method from David Grove (1998). Lawley and Tompkins have used their original version, hundreds of times since 2006. (see on YouTube: Mental Space Psychology.) It was also demonstrated by the author in seminars and practiced by seminar participants. Togheter this amounts to at least 120 cases.

In general it takes 4 to 7 different positions for a participant to solve an issue this way. The time that it takes will not often exceed 45 minutes and sometimes it takes just 15 minutes. One factor that may cause this speed is that the participant has no escape: the only option left is

to resolve the issue. And a second factor is that the therapist lacks all information about the content of the issue, something that prevents him or her from interrupting, with some well-meant but often useless advice. In other words, clean space leaves no room for inefficiency.

Since the procedure is repeated until the client signals that the issue is resolved, the success rate of this process is extremely high. Whether these successes last is unknown – but there is no reason to doubt it.

The biggest obstacle for the widespread use of clean space comes from disbelief, from the side of therapists and clients alike. The steps seem nonsensical and there are ample signals of emotional release or cognitive restructuring. It also seems all too easy… Since no other procedure, not even EMDR, leaves so little room to show one's therapeutic skills.

In training situations it appears staggeringly simple: some students revolt against that. It seems that if you have seen half of it, you can already practice it. However, observations show that it works best when the therapist understands how problem solving in psychotherapy on the basis of the client's own resources looks. Because then he or she can read the client's non-verbal signals and add refinement in the shape of timing, wording and intonation. Much quality comes also from the balance between leading and following the subject, but on the other hand, we have seen learner coaches have success with participants who were themselves able, if this was needed, to compensate for inappropriate guidance.

If skepticism does not interfere with this process, many people are stunned observing clean space in action.

Over the last 10 years, the clean space experiment has contributed a lot to the body of knowledge of mental space psychology. From the start the big question was: How is it possible that so little can do so much? Only by envisioning the crucial role of spatial cognition is it possible to formulate plausible explanations.

Conclusions:

Both, the previous and the last experiment give rise to the same question: Why can psychotherapy be effective, even if the therapist doesn't know anything about the content of the problem? This fact confronts us with another reality, which is that everything the therapist thinks about the content of the problem seems to have no real function in psychotherapy. To the contrary, what the therapist thinks about the issue may result in him or her expressing distracting, confusing and interrupting sentences that the clients in his or her role must respond to even when it is just distracting. The classical role of the "understanding and advising therapist" will loose the solid place it once had in professional mental health care when spatial technologies like clean space (just like EMDR) take over. The problem is that many professionals are highly identified with this role and see no alternatives for themselves. And also, most research in clinical psychology is based on the seemingly false assumption that therapy can only be done when one understands the problems, their causes and symtoms. Now it seems that the core of what one needs to know is just how people solve their own problems, nomatter what these problems are.

To understand the active components in clean space, one needs to be familiar with several more or less strange theories. For instance, the question "Where (with a gesture around the room) is a place that knows more about this theme?" – can be seen as a suggestion (command) to the client to mental-spatially index (MSI) a part of himself that is not yet included in the problem solving. Hypnotherapists with an Ericksonian background will recognize that this is all implied by this one question. It implies that there exists such a part. It also makes the assumption

that this part is located somewhere outside of the client and in addition stipulates, that this part *knows more*… in other words, contains resources.

One can also wonder: What social cognition is triggered when someone steps into "*a location that has knowledge"*? Since knowledge is generally attributed to people, this necessarily implies that a location that has knowledge is a kind of social being (a personification, in terms of the social panorama model).

Here we reach terrain that will be familiar to some anthropologists (Martians) who study therapeutic rituals, as all manner of helper spirits, supporting Gods or guardian angels are addressed as social (spiritual) entities with (more) knowledge than the client has.

If a shamanistic therapist had asked: "Where do you find a spirit that may help you with your issue (because it knows more than you)," he would have done a similar job. Whatever spirit appears in response to that question, will for certain appear on some location in mental space.

"A location that knows more", is not so different from the more neutral, "a part that knows more". The latter formulation could help to access a resource part in a NLP or Ericksonian hypnosis session. In clean space, the participant steps in to the location of that unnamed something that knows more. The question here is; is this not very similar to when a personality part that is localized outside of the client is transferring resources to another personality part of the client, as for instance the older self may transfer to the present self?

If a skeptic asks, "Can a therapist justify being paid for something as simple as clean space?" the answer must be a clear yes, since this procedure is very elegant method for achieving a whole list of therapeutic goals:

1) It provides a solid pattern interruption: a something completely different.
2) It aids dissociation from the problem state and association with something else, hopefully more resourceful states.
3) It uses spatial anchoring and spatial sorting.
4) It respects the model of the client to the fullest.
5) It assumes the client has the resources to solve the issue.
6) It is similar to parts work, with association and disassociation.
7) It makes use of implicit personification, by assuming that the location has knowledge, which is a human-like feature; thus it is a technical and religion free form of spirit healing.
8) Its iterative steps make use of the TOTE model.
9) It takes good observation skills and rapport skills to do it effectively.
10) It makes use of mental space in the purest way.

Thus as already stated, the answer is a full-hearted YES, since a lot of psychotherapy clients pay much more for much less.

1.7 Time/Space

Physicists seem to have concluded that time existed already forever before space and that it will continue to do so even after the universe is gone. However in the mental cosmos there exists only the experience of the present. For a brain it takes mental constructions in awareness space to simulate the physical reality of time.

Most philosophers who studied the perception of time realized quickly that it must be a product of space: and to be precise, a product of the movement in space in relation to points of reference (Kant, 1781). Only objects that change their position in space create the suggestion of the passing of time. These can be orbiting heavenly bodies, the movement of the hands of a clock, revolving sub-atomic particles or any other steady movement in the natural world.

Neuroscience cannot yet explain our conception of time, but some researchers have found several brain areas that cooperate when people are "timing" their behaviour (Matell & Meck, 2000). Although everything that happens in the nervous system takes time, we are speaking here of milliseconds. It is improbable that people compose the seconds, minutes, hours, days, and years out of such miniscule units. The duration of neural processes is also too variable to provide a neural clock with a steady pace. Eagleman et al. (2005) write:

> Intuition suggests that knowing when something will happen helps us to focus resources at that expected point in time to enhance our behavior. By now, many studies indicate that we can use temporal information flexibly and across multiple sensory modalities to orient attention selectively to specific intervals (Griffin et al., 2001; Lange et al., 2003; Correa et al., 2004). Positron emission tomography and fMRI studies have shown that control of temporal orienting in speeded-response tasks involves brain areas that participate in spatial orienting of attention as well as areas that participate in motor control (Coull and Nobre, 1998; Coull et al., 2000), including posterior parietal cortex, in which cellular correlates of temporal predictability have been identified (Janssen and Shadlen, 2005). Despite the sizeable overlap of brain areas participating in temporal and spatial orienting, the neural mechanisms involved in anticipating and modulating stimulus processing when each type of orienting occurs in isolation can differ substantially (Nobre, 2004). For example, event-related potential studies show that, in most visual attention tasks, temporal expectations alone do not modulate early perceptual analysis of target objects but instead optimize motor-related mechanisms (Miniussi et al., 1999; Griffin et al., 2002). However, when combined, temporal and spatial orienting interact synergistically to potentiate attentional mechanisms during early perceptual analysis (Doherty et al., 2005). (www.ncbi.nlm.nih.gov 6-6-2016)

The conclusion from the above can be, that visuo-spatial activity in combination with activities in the motor cortex produce the sense of time. The reader can test this by starting his or her own inner stopwatch: "Go! Wait, wait, wait, wait…" Musicians can tell us that to keep such timing going – like for the measure of the music – one must continue steady mental processes: like muscle tension cycles, rhythmic inner vocalizations and the duration of that must be represented as a stretch of time in space. Thus the timing of a behavior must result from a complex interaction between real and imagined movements.

Astro-physics confronts us with the limits of what human brains can simulate, especially when it comes to time and space. If we cannot comprehend a scientific statement on the basis of our embodied logic, it will stay beyond our scope. For instance, astrophysicists calculated that the super-massive black hole in the center of our milky way must be nearly the size of our solar system (with a diameter of about the orbit of Uranus: 6.25 light hours). The density of the matter

in a black hole can be such, that if all of the earth's substance were to be compressed to this density, our planet would be the size of a small orange. The black hole in the center of our galaxy is monstrous, but still so far away from earth (26.000 light years), that its existence could only be inferred from a cluster of big young stars that spin around it at incredibly high speed. Within a black hole time does not exist.

But even to conceive of everyday terrestrial time is not so easy. Children may wrestle with "after how many nights before my birthday?" until they get the spatial representation in sight: "Ah, four weeks, that is not so long, not so far…"

Anthropologists noticed that children become socialized in a certain tradition of handling time. The cultural differences in "time management" show how much of it must be a product of learning (Hall, 1990). That the Swiss are reputed to be on time is a product of their socialization and not of them being excellent watchmakers.

The individual differences in the handling of time surface in how a person meets deadlines, lives under pressure and keeps appointments.

Thus, besides having a biological, a circadian and an innate mental clock, people primarily learn to construct time in mental space. And it is clear that they use moving forwards through space as the foundation of this construction (James, 1890). It became the established view in cognitive linguistics, that people use physical movement through space as their conceptual metaphor for the passing of time (Lakoff & Johnson, 1999). Thus a baby that crawls from the cupboard to the piano is laying the cognitive foundation for his representation of time later in life. The embodied experience of walking through a corridor, crossing a garden and climbing a staircase may all help to create a model of time later on. Initially, the body may serve as the reference for the present: then the "now" equals where the body is located. And from this perspective, one would expect people to project the future in front of them, as the way to go, and the past behind, as the road traveled. The speed of the movement influences the scale and maybe, if the future appears to be hard, the traveling may go up hill.

By giving the important memories separate locations in mental space, the past becomes composed of unique moments that can be chronologically positioned in the right sequence. The linear representation of the past as a line in space, in which the recent past is close to the person and the things that happened long ago far away, helps a person to know when some past event happened. The WHEN is in fact a WHERE in the spatial construction of time (William James, 1890; Lakoff & Johnson, 1980, 1999).

In psychotherapy, time, and especially the past, plays a major role. The main reason is that psychological problems are learned at certain moments in the person's development. The moment WHEN a person has encoded the start of a problem in their past is crucial. The reason is that traumatic events are more easily treated when the moment of their origin is dealt with. Regression Therapy (Van der Hart, 1991), Reincarnation Therapy (Cladder, 1986) Anachron Therapy (Van Ginniken, 2010) and every approach that treats traumatic experiences needs to consider time in some way. Hypnotic imagination techniques are used by many schools of therapy to maneuver the client from the present to the past and further back. The NLP techniques Change Personal History (Bandler & Grinder, 1979) and Reimprinting (Dilts, 1990; Dilts, Smith & Hallbom, 1990) are prototypical for how to the use time in therapy.

Whyatt Woodsmall and Tad James (1988) published "Time Line Therapy". This approach deserves to be called "the prototype of spatial therapies" and it can be used for two distinct psychotherapeutic activities:

1) The application of a line-like image that represents a person's course of life. When represented on the floor, therapists will use sheets of paper that symbolize the moment of birth and the here and now. This way of working is called "The Line of Life" (but many call it incorrectly "time line"). A variety of therapeutic operations can be given shape on the basis of The Line of Life and its value in therapy cannot be overestimated. It delivers an extension of all variations of Change Personal History (Bandler & Grinder, 1979; Isert & Rentel, 2000) and provides them with a more robust spatial structure.

2) The other therapeutic activity in Time line Therapy consists of the analysis and adjustment of the spatial model of time that a person has constructed in the course of their life. This so-called "Personal Time Line" is seen as the primary factor dictating how a person deals with time. Any problem with motivation, planning, stress, with being in the present or not, and also forms of future or past depression, can be related to how a person has constructed time. For instance, one of the author's clients had *the past* in two different locations in his mental space. This implies in MSP that he experiences two distinct fragments of past. The one piece was straight behind him, and went from his birth to age eight; that was the moment he had been kidnapped by his father after his parents divorced. The past from age eight up to the present was located half way between 10 and 11 o'clock direction in his mental space – thus in front of him left of the center. After moving this part behind him, and bringing it into a chronological order, his concentration problem seemed to be resolved.

A standard experiment within training groups that the author has conducted is:

1) Find a traumatic memory that you have not yet effectively coped with.

2) Find a traumatic memory that you have fully coped with.

3) Where in mental space are these two events located?

Up to now 99% of the participants had the unresolved trauma somewhere in front of them and the resolved one at their backs.

Time Line Therapy can help to deal with issues from the past or fears for the future and also adjust someone's personal time line to better fit to his or her needs (Hall & Bodenhammer, 1999). Thus beside doing psychotherapy with concepts (traumas) that date from the past or that are projected into the future (fears) or the present (conflicts), the personal way in which a client has constructed time can also be the focus of this type of psychotherapy.

Chaotic representations of time, as a result of a traumatic past, seem to be a typical companion of a borderline diagnosis. Given that the normal structure of time in mental space is that everything that is further away in space represents something that is further away in time. What is often seen is that traumatic experiences may be kept much closer than they should be on the base of when in the person's life they have taken place. They may also be represented in corners of mental space that are not so much associated with the past, like up front.


Micheal Hall, 2016

How a person has constructed time decides over many behavioral traits. For instance, motivation varies with how a person envisions the future. Is the future seen as far away and vague? In that case we may expect this person to experience little or no impulses to invest, study, save, enterprise, close insurances, build a pension or buy stocks. The rewards of all these activities are not seen in a compelling manner. However, is the future close, straight in front and clear, this may motivate the person to do all the above. Thus the question a therapist works with is: Where in an individual's mental space, are the images of past or future events located. Since the whereabouts of these have a direct impact on the persons' personality.

Clinical Experiment 10: Modelling the Personal Time Line.

1) This experiment takes two people A and B.
2) A asks B to imagine three balloons of three different colors. In this imagination, B visualises the word PAST on balloon 1, PRESENT on balloon 2 and FUTURE on balloon 3.
3) A helps B to relax and ask his or her unconscious mind to let these balloons drift to the appropriate locations where the person holds the past, present and future in mental space.
4) A helps B to find the time-scale of the past and present, by asking for the locations of important life events: Birth, first day at school, first trip abroad, marriage, etc. Then A does the same for the future: next Christmas, next holiday, pension, etc.
5) A helps B to show with his hands where the present is located and how the present connects to the past and the future.
6) Now B goes through the same series of steps 2-5 with A.
7) When both personal timelines are explored, then start to compare them. What are the most striking differences?
8) Next, try out some differing features of the other person's time line. Change it just for a moment by direct suggestion, to explore the effect of the change.
9) Return both timelines in their original shapes.

Observations:

This experiment can be done in a group format. For this the group is split up in pairs. All couples, lead by a trainer, explore their personal time lines simultaneously. In this manner, the unique individual results can be shared among all group-members. This provides the participants with immediate information about the range of variations that occur. This group format results in great numbers of observations.

The author has demonstrated the exploration of the personal timeline for 30 years, and he also used it as therapeutic tool with at least 50 clients with planning or motivation issues. Within circles of NLP-trainers the personal timeline is often considered a nice little item. For those who explored it in depth, it is the key to the spatial nature of personality.

Woodsmall and James' (1988) book included a detailed set of the patterns they found in personal time-lines. Over the years most of these could be confirmed in clinical practice. For instance, people who have their body inside *the area of space that they sense as the present* have more "presence" than those to whom the here and now is at a distance: these seem distanced. Not only does this match our intuition and sense of logic; but up until the present date nobody has produced an explanation that fits better to experience, philosophy and the outcomes of psychological research (Hall & Bodenhammer, 1999).

The above experiment reveals a hidden reality: time is a personal construction that gives rise to differences in motivation, planning and stress. And this construction can be described in regular spatial characteristics as if it were something like a bridge or a building. This can be a surprise for people with a psychology background, who never learned to think on this level of concreteness. The personal time line is something most people have never heard of, but it often makes immediate sense to them. During the above experiment, the comparison of ones own time construct with that of ones partner may unveil the subjective background of certain personality traits.

Conclusions:

The Personal Timeline is the construction of time that a person lives in the middle of and generally sees as the only logical way to think of time. Adjustments to a person's construction of time can be imbedded in all kinds of therapeutic work. It has proven to be of diagnostic value in the treatment of post-traumatic stress, post psychotic residu disorders (Walker, 2010) and some forms of depression (Walker, 2006). In other cases it is motivation or prioritizing that are at the heart of a client's problems, which may be approached through the construction of time in mental space (Bodenhammer & Hall, 2000).

When one tries to change someone's personal time line, for whatever reason, this may be very simple. It is often sufficient that the therapist suggests re-locating some part to the client. The immediate non-verbal response of the client may form the proof that the change was made and was meaningful.

What we also can witness in other spatial therapies is that a change in location that seems completely obvious to the therapist and others, can be a whole new idea to the client. We must conclude that since most of spatial cognition takes place below the level of awareness (is unconscious), the client him of herself will not so easily think of the idea of moving something. Probably all spatial coping (putting at a distance, etc) is also an intuitive process that more or less happens to the client without him or her having a sense of choice or control.

The fact that, things as general and abstract as the past or the future can be dealt with in mental space as one cognitive unit, probably shows how all levels of abstraction are mental-spatially indexed. In brief one can conclude, (1) that everything that people use words for must constitute concepts. (2) All these linguistically represented concepts will have their own locations in mental space. However, (3) there must also exist a large category of unnamed, preverbal or trans-verbal concepts that are also located in mental space. (4) The latter category of nameless mental spatial objects must not be excluded from psychotherapy (Varga von Kibéd (2014), since they may be the underpinning of the person's model of reality.

Clinical experiment 11: The now, the past and the future in 3 contexts.

1) Pick three of your most relevant life contexts (like: work, family, sport).
2) Put a piece of paper on the floor for each context. Step on these papers one by one to connect yourself to a clear experience that stands out for each of these three particular contexts.
3) Step into one of these three contexts and explore with the help of your guide, where you sense the past, the present and the future, being in this context. For the sake of precise exploration, it can be helpful to refer to concrete experiences from the past and the future (Christmas last year, Christmas next year, etc.)
4) After the past, present and future (time lines) are explored for all three different contexts, take some time to compare the differences. What do the differences tell about how you function in these different contexts? And what do the similarities say about your personality?

Observations:

This experiment is an uncommon procedure. It was designed to explore in what measure personal time lines differ by context. The number of observations of the differences in personal timelines between the contexts is very limited. A good example can be found on (YouTube: Personality in Mental Space).

Conclusions:

The human mind seems to reduce its "workload" by defining contexts. It is efficient since when you are in the context *work* you do not need to be occupied with everything from the context *family* at the same time. This means that by excluding everything that seems irrelevant, it makes it easier to focus on something. In psychotherapy one often deals with issues that only exist within a limited context. And because of that, the client does not use his full (beyond contexts) potential to solve them. The solution often comes when the boundaries of the context are breached and fresh ideas can flow in: when the therapist presents the client with "something completely different" that helps to activate latent resources (see also part 3).

The degree of uniqueness of the personal timeline for a context of life, may give researchers an example of how the mind makes use of the already mentioned contextual reduction of its workload.

The work with the personal time line was developed in the late 80s and was the prototype for the Social Panorama that came several years later (Derks, 1996). The social panorama in its turn was the breeding ground for mental space psychology (Hall & Bodenhammer, 1999; Derks, Koppelaar & Heemelaar, 2013).

The spatial experience of *the self* is closely connected to the social panorama and the personal time line.

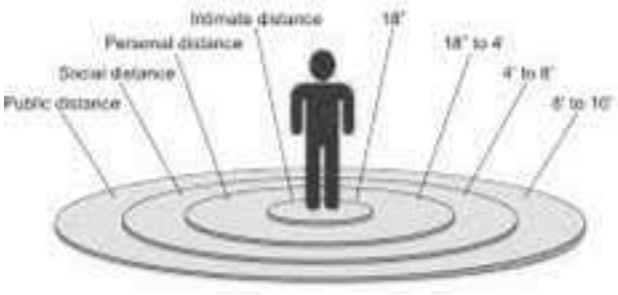
1.8 The Self-Space.

Because the awareness of "the self" – except during some altered states of consciousness – accompanies us wherever we go, even in our dreams, it constitutes a steady background to all we do (James, 1890; Gergen, 1998). This continuity leads to a high degree of habituated unconscious familiarity. In other words, we are always sensing ourselves but that is so normal that we only notice it when there is something wrong with it. Like for instance when a person "does not feel to be in his regular self" or "lost himself" or is "out of himself." The question here is, can we find a spatial structure in the experience of the self? And if so, does psychotherapy add insights to the field of spatial cognition?

At the start of the chapter about "Awareness Space" we already discussed the space around a person. This immediately surrounding space also relates to the sense of self.

The first to mention is Edward T. Hall, who in his "Proximenics" (1966), explored the micro territorial behavior of people: how people sit in busses or in a public library. What space do people tend to occupy? Other sociologists and social psychologists started to use a variety of expressions for the subjective borders between self and others. In this regards, the difference in the amount of distance kept during interaction between members of different cultures is still one of the most fascinating subjects. For instance, conversating (and standing) people in Finland step backwards at distances at which people in Brazil prefer to come three steps closer.

The variations found in what people consider appropiate closeness, resulted in scales of what interpersonal distance to keep to members of a particular culture (see the illustration below).



Personal space in the US

On the other hand there are studies into the neuralogical site of the self, with as a logical start: Is there a self-nucleus in the brain? The centrally located pituitary gland or the thalamus, or the dominating left frontal lobe or basic structures in the limbic system and brainstem, all appeared to be good candidates, most seemed related to the self, but as its neural center they were all fired. Since, the neural activity of the self appeared all over the place.

Butler, Eskes & Vandorpe (2004) looked at the reactions of neurons to invading impulses in the immediate space around the person: what area of space does a person regard as belonging to them selves and what neurons fire when this area is penetrated? The area within hands reach seemed to be more sensitive to such invasion than what is outside of that.

This and more behavioural research led to a twofold division of the self-space: peripersonal and extrapersonal. The peripersonal space is the area around the person within their hands reach. The extrapersonal space is defined as all that is experienced outside hands reach. It is often observed that individuals with certain cortical lesions may experience a smaller area of manual influence than they in reality are capable of reaching out to: a phenomenon called peripersonal neglect. The relationship between the experience of manual influence and neural struc-

tures was built on Milner's (1991) finding that the locations where objects in space are perceived are projected according to the perspective of the perceiver. Milner (1991) distinguished between the "where stream" (area) and the "what stream" –

the former being located dorsally (at the top of the brain) and the latter ventrally (at the bottom) of the brain. (Butler, Eskes & Vandorpe, 2004) found that peripersonal neglect was related to dorsal stream damage and its counterpart, extrapersonal neglect, was related to ventral stream cortical damage.

An integrated model for all elements of the self-construct and the self-experience is proposed by DeCicco and Stroink (2007), that is summarized by Jonathan Appel, Dohee Kim-Appel (2010) in: A Multipath Approach to Personality (MAP) and they propose that the self consists of the following levels of analysis: 1) the Neuropersonal; 2) the Intrapersonal; 3) the Interpersonal; 4) the Exopersonal; 5) the Ecopersonal; and 6) the Transpersonal. It is easy to see that the spatial location of any element in such a set of experiential categories can be explored with the question WHERE? For instance, WHERE is the transpersonal self located?

The answer from mentals space psychology to the question: *WHERE is the SELF located,* was mainly inspired by 20 years of therapeutic work on self-related issues with the help of the social panorama (Derks, 1998). This resulted in a number of very robust findings, presented below. However these discoveries led also to speculations about the neural background of these pattrens.

From working with the self in the social panorama comes what can be called "the standard spatial self construct that is found with people with enough self confidence in a given context". This model matches to the idea that most "rational" thinking is happening in the area around the head and in front of the person. The highest density of such rational concepts is probably represented straight in front; in what seems the core of the mentals space connected to the left hemisphere. From there an ever thinening cloud of rational concepts will extend forwards and sideways. A significant part of the self, probably the most conscious and rational part, will mainly operate in this central area of mental space – the self imagery.

It appears hard to give words to our deepest sense of 'self'. Who is the real you? And where is that located? In mental space psychology it is hypothesized that this lack of words comes from the deeper sense of self being located in the less talkative right hemisphere where the experience couvers what is sensed kinaesthetically with the little pronouns "I", "me" and "myself". Thus this right hemispheric location of the feeling of self, is probably why people tend to resort to vague metaphors when forced to tell someone who they *really* are. If we try to express this side of our selves, we must give words to a mixture of low intensity feelings, a life history of images that show who we our-selves and others do belief we are. This all together normally operates as habituated low intensity background cognition.

In contrast, as stated above, the extended content of the more rational self-refelctive aspect, the self-image is probably largely housed in left hemisphere. Thus when people start to talk about themselves, it will be largely based on what they see projected as self-imagery somewhere in their center of attention.

Thus in brief, self-images, the visualized schemes of roles, identities and social positions, most probable are located somewhere in front of the person in mentals space. The feelings connected to them, the feelings of self, are most often found in the body-space. The spatial relations among these bits of self-experience in all their variety, as discovered in space-oriented therapy are the subject matter of the remainder of this chapter.

From the self-space in the lab to clinical work

In spatial cognition research "the self" is often equated with the body (Maselli, 2015). The question of where a person experiences his or her self (body) proved harder than expected: Where is your *self*?

Derks (1997, 2002) found that the kinesthetic part of what people subjectively call their *self*, and at which they tend to point and gesture spontaneously, in general consists of an area the size of a tennis ball often located in the chest or the abdomen. The latter resembles more to the chi-point, as this is known in martial arts and oriental psychologies from Yoga to Zen. But this feeling seemed only to be one of the spatial components of the experience of the self.

William James (1890) in his exploration of subjectivity distinguished between the "I", the "me" and the "self". And the first therapist to start to look for the diversity in locations of these concepts was probably David Grove (Lawley & Tompkins, 2000) (see Andrew T. Austin in the documentary video "Mental Space Psychology", 2014 on the YouTube Chanel, MrMonte Cinto). David Grove asked his clients: "Where is I?" and "Where is me" and also, "Where is you?" – when the latter word was used as synonymous for *me*.

The Buddhist notion of "no self" refers to a subtle (meditative) experience in which the priority that is normally given to the self is reduced in favor of belonging to mankind and nature and the universe. In this state of "no self" the person focuses more on actual body sensations, on being in the present and forgets about the illusion of being a permanent being (autonomous entity) even after death (Jotika Hermsen, in the documentary: Een Wandeling in April, by Cinema Monte Cinto, 2016). The "no self" appears to resamble a shift in focus from the left hemispheric "I" to the right side of the self – anyway, this is a challenge for cognitive neuroscience to pinpoint (Fehmi & Robbins, 2008).

In a language oriented science like psychology, the self is also confused with ones inner voice. This voice is mostly sensed as located in de head and around the vocal chord and it may speak nearly continiuous to oneself, often in more voices than one. Brain damage in the left hemisphere may silence the inner voice, leaving the person with a lesser sense of self. However, such patients cannot express this so clearly. In some forms of meditation the person aims at silencing their inner speech, sometimes to connect to their "real self" in that manner.

As stated above, in western psychology and in spatial cognition research, the distinction between the self and the experience of the body is not always made. One's own body can be experienced around oneself, but a person can also be "out of their body". This may happen spontaneous during normal situations or during life threatening experiences like operations or accidents. However it can also be elicited in the laboratory (Marselli, 2015), for instance by creating a virtual space in which the video image of the participants is projected in front of them until they start to sense themselves out of their body.

For whatever reason a client comes to therapy, the self (mostly in the shape of too little self confidence) tends to be somehow part of their issue. The having of a problem that one cannot resolve by oneself may result in self-worth compromising shame (Andreas, 2001). However, the self can also be the central issue, as in anorexia, some types of depression or in socio-phobia. Beside that, there is a range of complaints where the self is explicitly mentioned, like for instance: "I lost myself in my relationship." Derks (2010) distinguishes the following self-related problems:

1. Lack of self-confidence, self-respect or self-worth in a given context.
2. The habitual assumption of inappropriate roles.

3. The regular assumption of conflicting roles.
4. Doubts about one's origin, culture or mission in life.
5. Problems with (confusion about) the identification with others: who is who?

The self in mental space

Whatever the self related complaints are, a therapist working on the basis of the Social Panorama model will start off exploring how the self of the client is situated in mental space, since this has a very high diagnostic value that immedeately links to what therapeutic steps to take. What makes this exploration rather technical is that clients normally have no clue about a spatial structure of their self. On the one hand this helps to do a good (surprising) "something completely different," but on the other hand there is no reason to expect the client to assist the therapist in the right direction. Confusion may take over when the therapist hesitates too much and the client loses his confidence.

In practice, this means that the therapist must be strongly convinced of what he or she wants the client to do, or else there may be a wave of uncertainty on both sides. The first step to success is a therapist that assumes that the self is made out of four essential components. These are:

1. The context: The experience of who we are varies with the contexts and the variety of roles and positions we have to take in society. When all goes well, we have already associated the right self experience to the appropriate context. Only in novel situations do we need to make up our mind about "who to be" (Gergen, 1998).

2. The kinesthetic-self: To take "the self" as "the body" has been a typical misconception in Western psychology. In oriental psychologies we find a clear notion about "the center of self" or "the feeling of self" or "the kinesthetic self" as being a small area of sensation, most often located somewhere in the upper body (Derks, 2002).

3. The self-connection: The connection between the kinesthetic part and the visual part of the self-experience seems crucial. It represents the activity of "being". Without a connection a person can still have a self-feeling or a self-image, but this does not create the sensation of actual being what is seen in the image. Without a connection, it may just remain a dissociated image of one-self.

4. The self-image: In ordinary everyday discourse, the expression "self-image" shows up frequently. However, many users, even professional ones, may not consider that it addresses a concrete mental picture. The reason is that self-images are highly habituated (and probably right hemispheric background knowledge) and stay below the threshold of awareness. (Derks, 2002).

The locations in mental space of the above components are searched for in the following manner and order.

Clinical experiment 12: Exploring the Self in 3-D

1. First determine the context in which you want to find the spatial structure of someone's self experience.
2. Ask the participant to mentally step into this context.
3. Get the participant to ask him/herself 'Who am I in this situation' (without him or her needing to give an answer).

4. Ask the participant: “where do you sense your feeling of self”. Then let the person indicate his feeling of self by pointing it out with his fingers. Accept every answer.
5. Let the participant concentrate for a moment on the feeling of self that he found. Then suggest a connecting line forwards in space that originates from the feeling of self. “Imagine some energy (connection) line running forwards out of your feeling of self. Look along this line.”
6. Get the participant to ask him/herself again, ‘Who am I in this context?’ (He or she doesn’t need to answer the question). Then ask the participant to point out, where he/she notices (senses, is aware of, sees) the idea (image) that is (provides, tells, shows) the answer. This probably will be a subconscious image that the person will none the less be certain enough about to continue.
7. Determine the distance, eye level and the direction of the gaze of this self-image.

Observations:

Over the last two decades this experiment was conducted in all Social Panorama workshops, of which there were at least 220. All participants in these workshops practised this procedure under supervision. Several hundred clients in the author’s psychotherapy practice also went through these steps. Thus the number of observations may easily exceed 2000.

The unconscious nature of the information sought for, requires a determined experimenter who is also in control of his or her non-verbal communication. Since the risk of suggesting the answers by unintentional gestures is lurking all along – by pointing at ones own body when asking for the feeling of self, or gesturing to the space in front when asking for the self-image. Thus, experimenters must use a neutral wording and restrain themselves from suggestive gestures. By taking that into account one can discover the spatial structure of the self in a reliable manner.

However uncertain the participant may appear at the start, as soon as this structure is clarified, it serves as an amazing diagnostic tool. This is because the way the feeling of self is connected to the self-image in combination with its size, orientation, distance and direction determines most of the experience of self-confidence.

Like everywhere in spatial psychotherapy, before certain representations are located, the clients were usually unaware of having them, let alone of their whereabouts. That is the main reason why they cannot change or move them on their own initiative. Thus much of the therapeutic power of this work appears to come from this aspect. For instance, most people seem never to consider moving their self-image to a closer location. However, when a therapist offers them the option, it can be an easy thing to do, with immediate positive consequences.

This experiment shows that the feeling of self represents where the person believes they exist in the universe. It seems to be one’s “position”. It is also clear that the place where it is located – in and around the body – varies between contexts. Next comes the observation that the site of the feeling of self indicates how the person occupies his place among the others in that context. Furthermore it is apparent that the feeling of self may alternate between a range of locations that seem typical for the individual: something that we can call the feeling of self-repertory, which will be the subject of the next experiment.

Conclusions:

A more or less speculative conclusion is that the coming into being of the feeling of self must go back to the first neural connections made in the womb. Here lays a great challenge for developmental psychology.

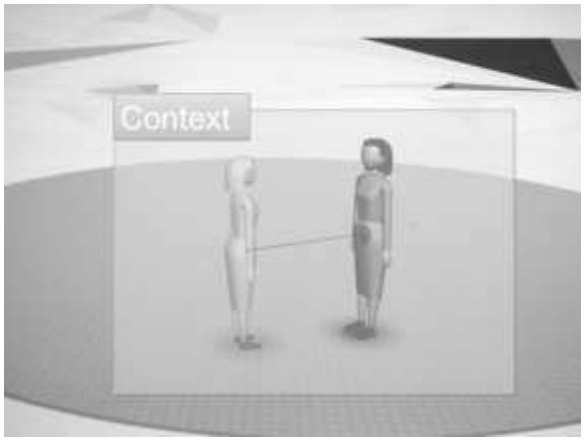
Logically speaking, knowledge about *who one is?* needs to be provided by some source of information. There is a host of reasons to believe that this source is a visual one that can be caught with the above procedure. But since it is part of the unconscious background cognition (probably maintained in the right hemisphere) no one can focus on exactly what this image looks like. But if we could, it would probably be a kind of caricature of ourselves. The self-image must be a visual construction that results from people trying to envision themselves in the way they see others. It answers their question: "Who am I among others? How do I compare to them? What is my status and rank among them?" Probably puberty is an important phase for creating or revising one's self-image. But conceiving and adjusting self-images will probably go on for a lifetime.

For the identification of anomalies a "prototypical standard self" that normally coincides with enough of a level of self-confidence became used. Whenever people complain about self-related issues, one expects deviations from this standard self-construct. We can describe this standard self-construct as:

1) The feeling of self is located in only one single spot that is somewhere within the upper body.

2) The self-image is connected to the feeling of self at a distance varying between one half and two meters.

3) The self-image is looking directly towards the person and is located straight in front of the person and has about the same size as the person.



A spatial self-construct that provides self-confidence.

The following Clinical experiment 13 is normally done with groups. The experimenter must first do the Clinical experiment 12 with the whole group, using the actual here and now situation as the context to start from. Only when all of the group members have found the self-construction for this context, does it make sense to proceed with the experiment below.

Clinical experiment 13: Variations in Self-Image positions

1) Ask the group members to move their self-image to 30 meters distance and make it about 30 centimeters high. Call this 'far away and small'.

2) Next ask the group members to move their self-image as close as 50 centimeters in front of them, then make it 10% larger than life-size and set it in bright sunlight. Call this 'close, big and light'.

3) Ask them to bring this close, big and light self-image right into their body – nose front. Call this 'turned into oneself'.

4) Ask them to send the self-image to a distance of 5 meters and make it 2 ½ times life-size. Call this 'the sovereign self' (see the image below).


A sovereign self image

5) Ask them to imagine five to seven friends to be their personal support group. And then to put these in their imagination behind them, and add to that the experience of these supporters touching them and also speaking to them in a very encouraging way. Call this 'with support'.

This experiment functions as a preparation for a more experiential exercise, called the "narrow alley". For this the group is split up in couples.

Clinical experiment 14: The Narrow Alley

1) Two participants stand opposite each other at a distance of 4 meters on either side of two chairs, between which there is a gap of 30 centimeters.

2) Now each of the participants chooses, without telling the other, one of their variations in self-image positions from the previous clinical experiment 13. Then they make it their actual self-image and let each other know when they are ready with a nod.

3) Without speaking, they walk towards each other and pass each other, through the gap between the chairs (Johnstone, 1990; Ötsch, 2002).

4) They do this three or four times with different self-images. Afterwards they discuss the experience.

Observations:

The first draft of this experiment was an exercise in the Social Panorama training of 1997. Four years later it was improved with the use of chairs, to create a more distinctive narrow alley. This idea came from Walter Ötsch who saw something similar in Johnstone's (1990) Impro-work. Since then it has been used an estimated two thousand times, by all trainers looking to clarify the effect of the size and location of the self-image on the encounter between people.

For a successful experiment, the participants need to first watch a brief and clear demonstration of the procedure. As soon as people try it out themselves, they tend to report that the abstractness of the concepts "feeling of self" and "self image" have changed into something concrete: unconscious background imagery that happens to be positioned at clear locations in mental space. For observers, it is easy to see that different sizes and locations of the self-images have a noticeable effect on the participant's expression of status, power and influence. One can see their "presence" shift in intensity when they decrease or increase the prominence of their self-images.

The participants tend to have a lot of fun trying this out. At the same time they will become convinced of the difference that the location of their self-image can make on their level of sensed social power. The exercise only takes about 10 minutes; which is also a disadvantage. Some participants take it too lightly and miss the deep implications of this experiment.

The most reported outcomes are:

1) When person A uses a more prominent (larger) self-image than person B, person A will pass between the seats first.

2) When person A uses an imaginary back-up but a similar size self-image as person B, person A will pass between the seats first.

3) When person A uses a turned into himself self-image, the passing ranking is unpredictable.

4) When person A uses a sovereign self-image, he will pass first when B uses a smaller variant. When both use a sovereign self-image there is a high chance of a dead-lock, a stallmate.

5) People using a sovereign self-image tend to be less aware of the other person.

Conclusions:

The notion that our self-concept also influences how we see others (Mead, 1934; Markus, Smith & Moreland, 1985) has been widely recognized among social psychologists. However, that the self-image must be regarded as a literal but largely unconscious image with spatial characteristics like size and distance is not yet reported in the literature known to the athor (Derks, 2006). The influence that this visual part of the self-concept has on how others are experienced comes from how it is seen relative to how the images of others or the real others are seen. For instance, when the self-image is small and the other is seen as bigger, the other is considered as more important than oneself. For psychotherapy, where most issues are about relationships, this is of high practical value (Derks, 2006).

The implications of this experiment concern everything that has to do with power differences and hierarchical patterns among humans. That is why this can be just as important for politicians, sales people, competitive sportspeople, the military and performing artists alike.

As soon as people become aware of the spatial characteristics of the self-image, they can take conscious control over it. This means that by the power of intention, they can move it closer, turn it or let it increase in seize. The most important outcome of this exercise manifests itself when the participants generalize it into the real world and for instance having done so never have to be submissive anymore to anybody.

For spatial social cognition, this experiment shows how some patterns of spatial representation follow more or less "natural" rules. The uniformity found in peoples self-concepts, forms a challenge for developmental psychology. How can one reconstruct how people create self-images with this many inter-individual similarities? But these common patterns seem an unavoidable conclusion from this experiment. In sum:

1) Since real people have a certain size, a self-image that represents oneself in a similar way to them, will in general have the same size as we see others.

2) To see oneself as the central person in the universe, one must create a self-image that is straight in front, close and large.

3) To be aware of oneself during a relationship with another individual, one needs an idea that enables oneself to estimate how one compares to this person on many social variables. For instance, age, attractiveness, strength, wealth, status, gender and so on.

4) The size of the self-image in comparison of the size of how we conceive others creates the balance of social power, status and authority.

   For the above points it seems hard to think of alternative ways to create a workable mental model that enables a person to do the same.

Improving the co-operation within oneself.

Many psychologists have divided personality into parts, like Freud's id, ego, super ego or Jung's anima, animus and shadow. But also more recently popular schools like Berne (1961) in Transactional Analysis or Assagioli (1965) in his Psychosysnthesis stipulated partitions of the mind. And "Martian anthropology" would certainly include all shamanistic traditions that ever existed as soul cutters, just as their modern versions like Spirit Releasement Therapy (Baldwin, 1995) in which wandering spirits that are hindering the client are brought to a location of rest. In all these models one distinguishes spatially distinct components of personality in order to create a new harmony between them.

These days there are many psychotherapists who treat the human psyche as a cluster of relatively independent units that can work in cooperation or can struggle with each other (Stone & Stone, 1993; Schwartz, 1995; Hilgard, 1977). Parts can cause problems if they are forgotten, repressed, expelled, rebelious, are infestations from an alien origin or can be stranded in early stages of development.

The work with personality parts as used in NLP was originally modeled from Virginia Satir (1977) and is generally regarded as an unbeatable tool for resolving dilemmas and inner

conflicts. The spatial arrangement and re-arrangement of the parts constitute a classical ingredient of this method. At the same time this work aligns with the concept of dissociation and repression (Singer, 1990) and also multiple personality disorders (van der Hart, 1991; van der Kolk, 2014). That is the reason why it has become a tool that experienced therapists use with severely traumatized clients (Zondag, 2010).


Rob Zondag

The solidness of the NLP parts model is supported by the independent development of similar technologies like Internal Family System Therapy (Schwarz, 1995; Early, 2012), and The Game of Gifts (Glaudemans, 2014), Spirit Releasement Therapy (Baldwin, 1995), which have also become reputed methods.

The following experiment is the most complex of all clinical experiments in this introduction. It gives substance to several hypotheses about the make up of the self (identity, personality).

The experiment presupposes:

1) That a person has varying selves (parts, roles, alters) that are classically conditioned to certain contexts. Thus, if the person enters context A, the appropriate feeling of self and self-image for context A will automatically come to the fore.

2) The technique is based on the presupposition that these selves are spatially separated. In the clinical experiment this is operationalized by laying sheets of paper on the floor, to signal the spatial location of a particular self-part. However, in the psychological reality these selves may surround the person more as a kind of 3-D swarm.

3) Not only are the selves swarming around the person, they also automatically reorganize themselves when another context is entered. Like how a team of soccer players circles around the player with the ball. This makes it possible to reorganize the whole configuration of all a participant's selves in one go within only one particular context: and it is assumed that when the participant enters another context the changes that were made will automatically be taken into account by this system.

4) The technique in the experiment below makes use of the locations of the kinesthetic parts of the selves, but also of the self-images that are connected to these kinesthetic centers. From the previous experiment it will be clear that the locations of the self-images in relation to the feeling of self are for a large part responsible for the power of a self. The power can thus be partly regulated by shifting the self-images.

5) The distance to a particular kinesthetic self and whether it is situated in the center of attention or to one side, dictates the accessibility thereof. By this spatial dimension one can regulate the priority that is given to a particular self: the closer and the more central, the more accessible.

6) Maybe the hardest hypothesis to believe is that as soon as changes are made in the spatial configuration of self-parts, these changes tend to persist automatically. The client does not have to do any rehearsal or additional activities. If the result of the procedure does not immediately hit resistance, the changes seem to be automatically implemented in the self-system. We already mentioned one reason why spatial psychotherapy may be so effective, and that is that the client has no conscious access to this information since it is running in the background in the right hemisphere. By making the client aware of it, he or she can take control where before there existed no such possibility.

Clinical experiment 15: Self-Design

The objective of this exercise is to adjust roles (personality parts, alters, egos) in such a way that the client is able to better reach his goals with regard to a significant change in career, marital status, financial situation, occupational choice etc.

What change do you want to make in your life?

1. Start with the current context (Who are you here and now?)
2. Get the person to stand on a piece of paper (present self-position) and associate in his current, actual, self.
3. Check the kinesthetic self, the self-image and the connection between the two.

The exploration of roles. (selfs, ego states, identities)

4. With the client on the current self-position, ask him 'Is this all you are? You are sometimes someone else, who else are you?'
5. The person names another identity, writes the name of the role on a piece of paper, puts it down wherever it feels right, and stands on it and associates in it.
6. Check the kinesthetic self, the self-image and the connection between the two in this position.

The further exploration of roles.

7. Search for other roles, starting each time from the current self-position. Have the client put down a piece of paper for each, and check the kinesthetic self, the self-image and the connection in each position.
8. Continue until the person is sure that all the important roles are on the floor.

Design.

9. Take the client to a position outside the area used for putting the selves – thus further than the papers on the floor. The latter is called the "Meta Position". From here the question is asked to the client: "What should be different to help you to achieve your significant change? Which parts should be more or less accessible or which self-image should be bigger, closer or more central?"
10. Now change the locations of the roles round the current self and vary the self-images until the ideal situation for the achievement of the client's desired change has been reached.
11. Check by going from the current self-position into the future.

    Look for objections and adjust the design accordingly.

Observations:

The author has used this procedure successfully with at least 15 clients in his practice, and 35 times as demonstrations in workshops, and in social panorama seminars more than a two hundred cases were done under the supervision of the author. For experimenters with enough experience with the previous clinical experiments, the method is not so complicated. They only need a single demonstration to be able to copy it.

The emotional reactions of de participants are not spectacular in any manner: but their self-reliance is. Often the experimenter only needs to start the process to enable the participants to complete it almost on their own. That makes it also an ideal approach for the participant to take home and there improve the work even more. As soon as the pieces of paper become meaningful to the participant, they seem to be driven by it in the right direction.


Self Design

Even though there is not so much a clear last step, the participants seem to know with enough certainty when they are done.

Another general observation is that resistance to change is easiest in areas where the client has conscious control. Therapy clients can very easily resist a therapist who makes interpretations and is psychologising: each sentence in language can be evaluated and then be disagreed with. Without the above spatial techniques the self-system is far beyond conscious control: the client has no way of intervening here without someone (therapist) providing him or her with the access to his spatial self-imagination.

Chances for success are best when the therapist includes all relevant selves of the client. Some parts may need a special treatment within the frame of self-design: for instance a part may require trauma treatment. When all parts are at peace with the end result, the prospect of a permanent result seems very good. If things are not yet fully in harmony, the client may be advised to spend some time at home to improve the result.

Conclusions:

If we take this experiment at face value, this means that the self is a complex spatial constellation of roles (parts). It is obvious that these roles are mental spatially indexed and can be moved around to change personality. Since the spatial structure of the self works unconsciously in the background, a person normally has no control over its structure. The above technique enables a person to get to grips with the spatial structure of the self.

Other scientific approaches than the above clinical experiments frequently touch on the spatial structure of the self. But it seems that the level of certainty that one needs to come to a more concrete hypothesis is often not reached. For instance the research of Maselli (2015) makes the distinction between the feeling of self and the self-image clear, but not on a level that shows how the self operates as a system of many of such units operating together to enable the person to be the appropriate person within a certain context. Maselli writes:

> Self-location refers to the experience of occupying a given position in the environment. Recent research has addressed self-location as one of the key components of self-consciousness, together with the experience of owning the physical body (ownership). An important tool for exploring these components and their multisensory basis is provided by body illusions. Although self-location and ownership are strictly linked to each other (through the body that collects/conveys information from the body and the environment to the brain), recent studies suggest that they may have different neural substrates. Furthermore, the way they reciprocally interact is still under debate. In particular, it is not clear to which extent, during full body illusions, changes in self-location entail changes in ownership.
>
> (ICSC Rome 2015, electronic proceedings, abstracts)

When one considers the full implications of the above experiment, it connects many bits and pieces that the psychology of personality has discovered. It also contradicts the idea that personality is not open for change. To take on this topic one must make a distinction between the areas that we consider to be the result of generalized spatial constructions and more physiological factors like the anatomy of the nervous system and hormonal differences.

1.9 Social Space

Humans are social creatures, so our lives are full of people. To successfully navigate among them we need a representation of humanity that tells who the others are and how we fit among them. We also need to recall the unique features of individuals in order to recognize them, and we need a way to represent our relationships. The question that is answered by the clinical experimentation with the Social Panorama model is: how do humans keep track of their interpersonal links?

Twenty years of clinical work has led to one single clear conclusion: We unconsciously represent our relationships in a three-dimensional mental map (Derks, 2005, 2014; Manea, 2016).

This cognitive map is based on our primary orientation skills – it is embodied, grounded or scaffolded on how we learned to move through physical space as a baby. And one may expect it to build on the limbic structures that are housing these basic spatial cognitive capabilities (Burgess, 2014; O'Keefe & Nadel, 1978). However we must also expect that a large part of the social-spatial software is spread over the right cortical hemisphere (Gazanniga, 2015/1970) where it operates as the social-relational databasis in the background of attention.

Besides the evidence stemming from clinical work, which is the type of data that is central here, it is important to know that recent fRMI experiments stongly support the spatial nature of social cognition (Tavaris et al., 2015). In these experiments the focus was on hippocampal activity during social interaction – because the hippocampus has been proven to be the most relaiable area of spatial orientation (O'Keefe and Nadel, 1978). Rita Tavares and her collegues write:

> To investigate how the brain tracks social relationships, we developed a "choose-your-own-adventure" game in which participants played the lead role and interacted with six characters during functional neuroimaging (fMRI). The participants made choices throughout the game that reflected their social view of the characters along the two main factors that influence relationships: power (being submissive or authoritative) and affiliation (sharing private information or physical touch) (Fiske, 2012; Harris and Fiske, 2007; Todorov et al., 2005, 2008; Wiggins, 1979; Wiggins et al., 1989). Unlike previous social fMRI tasks, this task was designed to mimic real-life social interactions as a dynamic, rather than static, process. The design thereby helped to identify the neural computations that track ongoing social relationships over time. During these social interactions, the hippocampus represented relationships with other people as their location in a two-dimensional space centered on the self and framed by power and affiliation. Hippocampal activity varied with social distance defined by a vector from the participant to a character in an abstract space. This metric quantified social relationships between the participant and each character during each social interaction as a function of power and affiliation, and corresponded well with the participant's subjective evaluations of the characters obtained after the social game. Moreover, the correlation between hippocampal activity and social locations was higher in participants who reported better social skills, as though "tracking" the outcome of social encounters with relatively high fidelity helps guide adaptive social behavior in real-world encounters. These findings suggest that the hippocampus constructs cognitive maps across domains that include, but are not limited to, two-dimensional Euclidean spaces (Tolman, 1948).

In their conclusion Tavaris et al. come with statements that sound very similar to the conclusions from the clinical work with the social panorama (Derks, 1996, 1998, 2005). Tavaris and her colleagues write:

> This outcome suggests that beyond metaphorical description, the concept of social "space" may reflect how the brain represents our position in the social world. Spatial descriptions of social location such as "she is above him," or "he is closer to me," might reveal a mechanism of social cognition that locates others in a two-dimensional space of power and affiliation. "Finding our place" in a given social environment may be the outcome of navigating through a geometric representation of social relationships.

The Tavaris et al. (2015) experiments thus fully support the spatial character of social maps, although Tavaris reduces social relations to the dimensions of status and affilition and also stresses 2-D maps instead of the 3-D constructs that are found with the social panorama. The social panorama shows that affiliation is created in the 2-D horizontal plane of proximity, where power/dominance/status/submission needs the 3rd dimension, verticality, to have its effect. Here we have a clear example where a transdiciplinary evaluation will be complementary (Gallese, 2015), since, logically speaking, it must be the same spatial social maps that are revealed by fMRI scans and that appear in working with the social panorama (and in any other type of spatial therapy that works with relationships).

So what are social maps made of?

The most fundamental assumption in the work with the social panorama is that on the one hand mental representations of people exist and on the other there are real flesh-and-blood people – with all their specific details, unique characteristics and variability. They exist as dynamic biological objects in the physical space around us and we need to compress their enormous complexity to make them fit our mental processing capacity by deleting, generalizing and distorting them (Bandler & Grinder, 1976). The amount of diversity and variation that people possess is beyond what we can store, and, more importantly, taking all of these details into account would disable us socially. In most interactions we need to know instantly where we stand – what our position and role must be – and what positions and roles we can expect that others will take. The fast access to the relational meaning is certainly the reason why people seem to reduce others to mental diagrams that are given a steady location in mental space (Derks, Ötsch & Walker, 2014).

Thus on the one hand there are real people and on the other hand there are mental representations of people. We must assume that every relevant person is primarily represented as a simplified image that is located in a direction, at a distance and with a certain size on a unique spot. Social generalizations, in the sense of groups of people are given shared locations that include all the members. Tacares et al. (2015) conclude that a relationship is a vector, which translates in the social panorama to people locating the representations of others in relation to themselves. The self constitutes a relatively (kinesthetic) fixed spot in the center of their social panoramas (see Self Space above).

What do the mental social images look like? In expressionism and cubism we see an indication of what sort of icons people may use to mental-spatially index (MSI) the others. The final result of all relevant others put on unique spots is a 3-D landscape full of representations of people – a social panorama.

The distinction between real flesh-and-blood people and their mental representation, called 'personifications', is thus essential for working with the social panorama model (Derks, 1996; 2005).

The clinical application of the *social panorama* is an extraordinary confrontation with a highly elusive, automatic, fast and unconscious thought process. And it shows how people can juggle with inter-personal relationships without any conscious awareness. This is why we need to speak of 'unconscious social cognition.' Thanks to this unconscious nature, people do not so often realize that they carry images of other people with them; images that they made up themselves and that they are constantly regrouping and changing. People only become aware of this when there appears to be a huge mismatch between their mental image and the real person it represents and of course after they are introduced to the *social panorama* model. Then relationships become regarded as the products of unconscious spatial representation. Once people are introduced to this concept, the social panorama seems natural to them since they have already been busy using it from their early childhood.

This model shows how we assign ourselves a place among others. A place that however often fails to provide us with the best chances in life; and may even severely limit us. Once we grasp this, we may come to a new area of choice. This insight will improve our social life, and it will also enable us to help others do the same.

Because almost all human problems have something to do with relationships (have social components), the social panorama model is almost universally applicable. And thanks to its systematic nature it can help clarify the most complicated relational issues. It is an instrument that can be used to work with relationships with loved ones, friends, colleagues, children, parents, strangers, groups, teams, the deceased, ghosts and gods. It is also applicable where self-worth and self-confidence are at stake and it is useful when the relationships between groups, tribes, peoples, political parties, departments and organizations are troubled.

The concept of mental space plays a central part in the social panorama model. Mental space here means that we project representations of other people around and in our bodies. Where we locate (MSI) them within our mental space determines the emotional quality and intensity of the relationship. The influence of those images may provide the experience of support, confrontation, power, helplessness, love, aversion, adoration, possession, togetherness, loneliness, closeness, intimacy, status, servility, dominance, antipathy, ambivalence and hate. All of these seem to arise from giving social images a particular distance, direction and size.

Clinical Experiment 16: Love for a Stranger.

1) Think of the person you love most. Start to feel the love for this person.
2) Point out with your right hand at the place where you sense the idea of this loved one.
3) Show the exact direction, distance, level of the eyes and the direction of the gaze.
4) Now enjoy this for a moment.
5) Next think of another person that you know, but who is a stranger to you.
6) Feel the feeling that comes up by thinking of this person. Then find the location of the image of this person in the same manner as you found the location of your loved one.

7) Now move the image of this stranger to the exact location of your loved one ensuring that the level of the eyes and the direction of the gaze are the same.
8) When you have felt what the effect of this move is, please bring everything back into its original shape.

Observations:

This experiment tends to cause strong emotional reactions that often show themselves quite clearly in immediate non-verbal behavior. When executed in a group, participants may protest against this procedure. It is only when the experimenter orders the participants to bring everything back into its original shape that the mood will improve. So this is not a clinical experiment that aims at healing an issue, but more a procedure that immediately demonstrates the impact of changes in the locations of significant others in mental space. However, it is the same type of relocating of social images that is at the heart of the therapeutic application of the social panorama (Derks & Hollander, 1996; Derks, 2005).

Most participants sense a strong resistance against moving a stranger onto the location of their loved one. Only occasionally will there be an individual who considers this an interesting idea, because they have chosen a pop idol or a movie star for example.

For most people the location of their loved one is uniquely close. And this closeness seems to amplify the emotions felt. A stranger on this spot disrupts the core of the person's social experience.

There is a handful of social panorama trainers for whom this experiment is their favorite tool to demonstrate the priority of location in human relationships. It is easy to convince the participants, after they have sensed such strong reactions, that location is a decisive factor. In the course of the 22 years that the social panorama model has existed under this name, this experiment has been applied hundreds of times. Other experiments with intimate relationships (Derks, Ötsch & Walker, 2014) (in part 4) follow along the same lines. For instance the so called "Partners and Ex-partners Experiment" that the author has conducted a 100 times or more with groups up to 180 participants.

Seen from the back**.** White is ex- partners/gray is partners, over 130 participants in Moscow 2016.

Another observation is that, even though people may not like it, they are compelled to create the changed imagery in response to the verbal instructions. In other words, the language drives the imagery, whether one likes it or not. The speed at which this happens is shown by the immediate non-verbal reactions while the instructions are still being given. This suggests that unconscious social imagery is directly affected by verbal instructions. Thus when someone states: "Father Christmas is a criminal!" the listener must make some image that represents the

meaning of this sentence. A big part of the meaning is a spatial construction, as we shall see in the next chapter on linguistic space. That is why gossip or political indoctrination that includes spatial language will have a direct effect on the social panorama of the listeners (Ötsch, 2000). When people do not agree with what they hear, they may need to readjust their images afterwards.

Conclusion:

When talking about intimate relations most people express themselves in spatial terms in which closeness and distance (and from that, temperature) are the most prevalent words (Tversky, 1993, 1999; Lakoff & Johnson, 1999).

This linguistic evidence has not yet brought a general acceptance in social science that the space is the crucial factor in social imagery (Lewis, Amini & Lannon, 2000). Most psychologists tend to see spatial relational expressions as metaphorical. However, the social panorama model started with the recognition that these words express space in a far more literal sense (Derks & Hollander, 1996).

However the important role of distance (closeness) in intimate relationships is implicitly recognized in social psychology, as witnessed by the use of the "Inclusion of Other in Self Scale" (IOS) from Aron, Aron & Smollan (1992) that was used in an experiment on trust in intimate relationships by Kim et al. (2015). This scale should measure the "felt closeness" to the partner as dependent variable after the experimental intervention. The IOS is a test that is made out of graphical representations of overlapping circles. The respondent chooses the circles that overlap in a way that best expresses the closeness felt to the partner. This measures the spatial distance between the partners in the same way as the social panorama model defines intimacy: the distance to the location of personification of the partner in mental space. The great flexibility in the mental scaling of spatial representations that most people seem to possess enables a great variety of measuring tools to show the same phenomenon. In psychotherapy of different forms, one can see how easily representations on paper (social panorama), with toy figures (sand box therapy) and with real people (constellation therapies) can all elicit the same social-emotional responses.

In 2010 the author explored the variations in the locations where people represent their partners in mental space. This lead to a teaching tool called "The Secrets of Love" which shows that the partner is most often the closest person in the social panorama. This obvious observation has far reaching implications for therapy with couples, since, quite often, it is others, like children, ex-partners or lovers coming in between the self and the partner who are challenging the relationship (Derks, 2005).

The most fundamental conclusion from the above experiment is that a social relationship is primarily encoded in mental space and in no other mental medium. As soon as this code is changed, as soon as a personification is shifted to another location, the relationship is experienced as different. This leads to the equation: Relation = Location. Which is the basis for all the work with the social panorama model. This hypothesis is tested in part 4 of this book.

Clinical Experiment 17: General Social Panorama

In this experiment a person's relationship with humanity as a whole is explored. Even though this relation is abstract and functions on an unconscious level, it can be revealed and adjusted by the spatial process below.

1. Ask the participant to think about all the people in the world (humanity at large), in a natural, normal way.
2. Then find out whether the participant has an associated or dissociated image of humanity. To establish this one asks: Do you experience humanity separate from yourself, or do you feel yourself to be included or surrounded by humanity?
3. If the participant has a dissociated (not self including) image then ask him or her, to change it into an associated one. This is done, by asking him or her to find himself or herself in his image of humanity and then to step into this self.
4. Then ask what the average distance to the mass of people is. And in what direction this mass is sensed? What is the area filled by humanity? Is this area located in front, around, at the side, behind or somewhere else?
5. Then let the participant explore the average level of the eyes of humanity in comparison to their own eyes. Does the participant need to look up, at equal level or downwards? And by how much?
6. After the participant has become aware of the spatial dimensions of their spatial model of humanity, this leaves them with two logical dimensions to explore a bit further. Thus this experiment can be extended by first increasing and then reducing the distance to mankind (5 steps further 3 steps closer). Also the general level of the eyes can be made higher or lower (20 centimeters up or down).

Observations:

The main observation is that the communication about a general and abstract idea, like mankind at large, seems to be easily understood when discussed as a spatial construct. And, as can be demonstrated in the last part, any suggestions to change the distance or height seem to be put into action immediately. When the instructor says: "increase the mean size of humanity by 20 centimeters", the participants immediately show the emotions this spatial change trigger in them. The fact that spatial suggestions lead to instantaneous responses supports the spatial basis of the concept at hand.

The paradigm in cognitive linguistics, to test for the embodied nature of concepts, also uses spatial instructions that either match or mismatch with the content of the ideas tested for. To be clearer: The word *high status* can be projected on top of the experimental computer screen or at its bottom. The reaction time of the participant shows how well this location matches to the mental spatial characteristics of the concept *high status* (Bergen, 2012). One would expect *high status* to be recognized faster when it is projected on top of the screen, since the unconscious imagery that is involved in thinking about *high status* matches to this location more than to the bottom of the screen.

The implications of clinical experiment 17 for psychotherapy, psychopathology and also for the whole field of (social) psychology are huge. Since the underlying hypothesis that abstractions like *humanity* are constructions in mental space implies automatically the way to change these general concepts. Such abstractions can be influenced through providing the *thinker of them* with direct spatial instructions that then can change their meaning (Bandler, 1987: Derks, 2002; 2005; Ötsch, 2000) and use techniques like the ones in part 2 for dealing with any resistance.

Another striking observation is the strong relation between on the one side how a person spatially envisions *humanity*, and on the other side what this tells us about their (social) personality. On the base of a limited set of clinical observations it was hypothesized that how clients represented *humanity* in mental space correlates with the kind of personality issues they suffered from (Walker, 2015). The author found a clear pattern in people with grandiosity and narcissistic tendencies. They tend to have huge self-representations and look down on all others in their minds. When paranoia is the issue, this may call for certain locations of all "dangerous" others: like in front, since these threatening others must be kept in sight. The mean distance to mankind may be much larger with (Asperger) autistic people and when sociopaths and psychopaths tell to regard all others as belonging to a different, lower species of being, this must also show in where they locate them.

Conclusions:

Beside the diagnostic application of the *general social panorama,* it can be also used to correct undesirable general social tendencies. For instance when a client complains about loneliness, than the therapist must help to reduce the general distance to others in mental space. This distance tends to create "coldness" and just by moving humanity closer this may turn on the social-emotional heating somewhat. When too much involvement (hyper-empathy) is the issue, the distance to the others may be increased. In the same way one can address a lack of importance (status, social power), or its opposite in megalomania or narcissism in the vertical dimension. It must be stated that, although these spatial changes form the backbone of the change-work, it often takes a lot of other interventions as well. For instance, deeply rooted beliefs may block a spatial shift of *humanity*, just as traumatic experiences can.

In step 7 of the above experiment we use direct suggestion to start a spatial change in the relationship with *humanity*. For instance: 'Move, everyone 20 centimeters upward. What difference does that make?' The participants may respond to this in telltale ways. For instance, there is a category of what we can call "motherly ladies" that really enjoy making humanity higher in relationship to their own level. This may explain the fact that to them all others are "like children" who need to be taken care of by them. When the others all rise 20 centimeters in eye level they all grow up and mommy can finally relax. In the same way there are men who carry a lot of responsibility – natural leaders some people would call them – and who also enjoy "elevating" humanity since in their perspective the others becomes more self-reliant and they themselves do not stand out so much anymore.

Thus a conclusion from this experiment can be that all people have some relationship with *humanity.* This is a general concept that can be analyzed as a spatial construction. The relative position of the self to all the others makes for decisive social personality traits (Watch on YouTube: Personality in Metal Space, by MrMonteCinto, 2015). Spatial psychotherapy offers a promising alternative for clients with issues in this area. Sociology and anthropology could use the same concept to understand for instance how radical religious groups position the members of their faith and the rest of mankind.

Some remarks on constellation work.

Among the spatial psychotherapies "Family Constellations" is the one that has flourished most in the last decades, especially in Europe and Latin America (Hellinger & Beaumont, 1998; Weber, 1994). Beside Hellinger's relatively dogmatic approach there are also "open" variants like the "Structural Constellations" by Varga von Kibéd and Sparrer (1998). In the opinion of the author all these methods have helped to pave the

way for the future of spatial psychotherapies. And it must be said that the enormous amount of constellation workshops that the world has seen over the last decades have accrued lots of validating evidence for mental space psychology. The research on the therapeutic effect of family constellations, although limited, indicates that it significantly improves relationships (Sethi, 2009). However, these methods also bring along some philosophical and practical constraints. Here we will discuss some critical points in relation to MSP.

Beside a broad spectrum of procedures, styles and rituals, it is obvious that the main characteristic of constellation work is the use of living people as representatives for 1) living others, 2) dead others, 3) groups, organizations and nations, 4) body parts and organs, 5) problems and illnesses, and 6) abstractions of any kind. The other thing that is always present is the spatial arrangement and rearrangement of these representatives.


A team constellation

What generally fascinates people most in constellation work are the verbal and non-verbal responses displayed by the representatives (Stam, 1998). Discussions about this work often focus on "the striking matches" between the emotions and insights expressed by the representatives and those whom they represent: "Yes, that sounded exactly like my dead uncle!" The surprise is biggest when the representatives reveal family secrets and taboos or concealed facts that could be only known to the person they represent. When the latter happens it gives rise to theories about the supernatural channels by which the representatives receive this information about persons they represent but who they never met. To some this proves that time and space do not exist and that everything in the universe is linked to everything else and that all matter is just information… etc.

Because of this "spiritual" quality, therapists and clients alike may entertain a religious kind of fascination for this work. Most research into constellation work was aimed at proving the legitimacy of what is brought up by the representatives (Höppner, 2001). It is clear that this method will lose credit if people have doubts about the reliability of the representatives as guidance, since this information is heavily relied on to give direction to the work. Therapists who see the representatives less as an oracle and more as sources of alternative perspectives and creative impulses are gaining ground (Sparrer & Varga von Kibéd (2000).

From the stance of MSP, constellation work is primarily a method in which a tangible spatial reconstruction of otherwise vague and complex issues provides both client and therapist with a rigorous structure. When there is a substantial fit between the constellations in mental space with those on the floor, a lot can be set in motion, as witnessed by intense emotions and

insights. Since many therapists believe that the strong emotions are a correlate of good therapy, a lot of them see constellation work as the Holy Grail.

Additionally, the behavior of representatives in constellations shows how the combination of identification and a trance state results in unexpected levels of creative acting. This brings forth the high levels of synergy in constellation workshops that may be one of the contributors to their effect. In other forms of healing practices one can see the same psychological forces at work when people identify in a trance with spirits, Gods or natural forces. To the "believer" these transformations of identity are real and are seen as proof for the existence of certain religious powers. In constellation work the responses of the representatives are beyond discussion: to question the validity of the utterances of the representatives is a taboo.

Beside all of that, constellation work seems to prove that people have "social panoramas" in their minds. And although they are not aware of these spatial social maps, their lives are largely governed by them. When these maps become visible during a constellation this tends to really surprise them, and this in relation to the synergetic influence of the representatives makes constellation work a very strong "something completely different."

On a higher level of abstraction, constellation work shows how people who are unaware, deny or overlook the spatial cognitive mechanisms involved, are not able to explain the therapeutic miracles in this spatial psychotherapy other than by semi-supernatural concepts like: the system, systemic processes, the knowing field, the field, morphogenetic fields, zero point field, akasha field, the soul, the system soul, spiritual links, spiritual energy. Others rely more on intricate metaphors, concepts from physics or cybernetics, disqualifying it as placebo effects, or just do away with it as another case of unscientific fraud.

Having summarized the above, we must acknowledge that constellation work is one of the most inspiring examples of spatial psychotherapy. Studying it has challenged MSP more then anything else. However most of the theories that constellation therapists use to explain their work had to be rejected.

In addition, constellation work supports the hypothesis that people function largely on the basis of unconscious right hemispheric spatial models of the (social) world.

1.10 Linguistic Space

Generations of psychologists (and philosophers) saw language as the foundation of reason, and reason as the basis of cognition (Droste, 1977). However, in mental space psychology, the government of *king-language* seems overthrown by the mighty *emperor 3-D*. But was space not already ruling way before language came on stage?

Spatial cognition steers spatial behavior. Humans, and all other moving creatures, possess such spatial behavior, and it also let them send and receive tell tale signals. Movement in space can communicate an endless variation of meanings. For instance, when my dog goes tail wagging to the door, this means to me: "Take me out please!" When I walk in the direction of the fridge it means to him: "A snack!".

When we assume that all mental activity is based on spatial organization, then one may wonder if this also applies to language. This section tries to answer this question with the help of linguistic sources and most of all clinical input.

Words, outside and within the context of psychotherapy, are 1-D series of sounds or symbols. They get their meaning from the 3-D experience they are associated to by means of classical conditioning. Thus theoretically, when people speak, they trans-code 3-D experience into 1-D sentences and when they listen, they do the opposite (Lakoff, 1987). However, it appears that the transformation of thought into language and back runs in close synchrony, extremely fast and largely outside of awareness. This makes it a challenge for science.

For instance, Sokolov (1960) measured during "thinking" that the vocal muscles were extra active, as if "thought" was composed of mute whispering. But his conclusion that, thinking equals inner speech had to be abandoned after Neisser (1976) and others emphasized the role of all modalities in language guided cognition. But Neisser also stated that the great amount of motor activity makes speech a kind of *vocalized gestures*. Tversky (2015) writes:

> Like diagrams and sketches, gestures serve the thought of self and alter the thought of others. When solving mental rotation problems, people often rotate their hands; rotating their hands in the correct direction helps mental rotation (e. g., Chu and Kita 2008; Wexler et al. 1998; Wohlschläger and Wohlschläger 1998). When people read descriptions of rich environments in preparation for a later memory test, many gesture, and when they do so, they perform better. Their gestures represent the environments, point-like gestures for places and line-like gestures for paths between places. Participants rarely look at their hands, and the looks are brief glances. Thus, the representations that support memory and inference appear to be spatial/motor, rather than visual. A comprehensive theory of how externalizing thought aids thought must take into account facilitation by spatial/motor representations as well as by spatial/ visual representations. (p. 112)

For most neuroscientists it has long been a tantalizing idea that all mental functions have their own fixed locations in the 3-D space of the brain. The initial victories of this paradigm were the discovery that language production (Broca, 1861) and language reception (Wernicke, 1874) both lived in the left hemisphere. Sentence production appeared to be most vulnerable for lesions in the left front side, whereas the understanding of language relies on an intact left middle part of the brain. Later it was discovered that these areas were not the unique "centers" of speech production and speech comprehension in all people, and that without the right side of the brain language becomes monotone and stripped of its emotional meaning. Iain McGilchrist (2009) presents a contemporary overview that harmonizes with what Spivey, Richardson and Zednik (2010) wrote about the neurological location of language:

> Rather than language being an independent specialized module, informationally encapsulated from the rest of perception and cognition (Fodor 1983), perhaps it is a process that emerges from the interaction of multiple neural systems cooperating in real time (e.g. Elman et al. 1996; Pulvermüller 2002). If these neural systems are interfacing with one another so smoothly, might they be using a common informational currency? One reasonably likely candidate might be topographic maps, given their prevalence throughout the brain. And if linguistic mental entities exist in some kind of two-dimensional arena of representation, it is natural to expect them (a) to *be located* in particular positions in that two-dimensional space, and also (b) to *subtend*, or 'take up', some portion of that two-dimensional space. (p. 25)

It is a complex citation, but one might simplify it for our purpose as: The 3-D simulation of reality may be a right hemispheric specialization, where the 1-D and 2-D structure of language fits best in the hemisphere that makes 1-D and 2-D maps, which is the left one.

While neuroscientists were figuring out the brain areas of language processing; cognitive linguists studied how language is used to express 3-D information (Bowerman & Choi, 2001, 2003). For instance, much of what was asserted in the previous section about social space is supported by ordinary relational expressions. For instance: "I look *up* to her", "We drifted *apart*" and "They are *backing* me up." These are spatial utterances that help to convey clear massages about the state of affairs in one's social life. Several researchers stressed how *spoken words* in combination with *gestures* may convey even more about the 3-D character of what is talked about (Lakoff, 1987; Tversky, 2010). There is also evidence suggesting that gestures alone can be just as meaningful as gestures in combination with words.

Signing (sign language) probably exists from the time *homo-erectus* had its paws free to gesture. Some call it the *universal language*, pointing at how deaf people from different continents can understand each other after a couple of days, only limited by their cultural barriers. *Natural sign language* contains many gestures that are just spatial simulations of what is communicated about (Sachs, 1988; Kendon, 1990; Keatz, 2015;). These signs are not so much *symbolic* but rather the re-enactment in non-verbal scenes and mimed representations of the topic at hand, all down-scaled to fit the little *theatre* in front of the torso and the face. Some believe that if no spoken languages existed on earth, *natural sign language* would still connect humanity as it did before the Babylonian confusion of tongues.

Jinto Ohki (2014, TEDx talk in Tokyo), suggested that it is not at all so simple, and that at least 126 different sign languages exist in the world that however can be translated into each other and into spoken languages over a social media platform called Slinto (www.Slinto.com). There are 3 different sign languages spoken in the USA. Most deaf Americans use *Pigeon Signed English* (a more natural form), another group uses *American Sign Language* (a more symbolic form) and there are people trained in *Signed Exact English* (a form in which letters are constructed with the fingers; this form parallels spoken English most).

Parents should start signing with their infants Lissa Zeviar (2013, TEDx Amsterdam) argues, because that will enable them to communicate from 6 months of age: since hands are easier to control than the vocal apparatus babies can sign before they can make words (Goldin-Meadow & Mylander, 1984).

Silence is another great plus of signing: different conversations can run simultaneously without speakers interfering with each other. And a signed conversation can proceed independent of the level of background noise. Sign language can be spoken over a distance (and Skype) as long as there is visual contact. That makes it also the best form of communication on a hunt. The linguists Wendy Sandler and Diane Lillo-Martin (2001) write the following:

> The sign languages under discussion are the languages used by communities of deaf people allover the world. They are natural languages, in the sense that they are not consciously invented by anyone, but rather develop spontaneously wherever deaf people have an opportunity to congregate and communicate regularly with each other. Sign languages are not derived from spoken languages; they have their own independent vocabularies and their own grammatical structures. Although there do exist contrived sign systems that are based on spoken languages (such as Signed English, Signed Hebrew, etc.), such systems are not natural languages, and they are not the object of interest here. Rather, linguists and cognitive psychologists are interested in the natural sign languages passed down without instruction from one deaf generation to the next, and used by deaf people in their own communities all over the world.
>
> Sign languages exhibit the full range of expression that spoken languages afford their users. Different styles are adopted for different social contexts; storytelling has been heightened to an art in some deaf communities; deaf poets create artistic poetry in signs, marshalling the formational elements of the languages to convey images, emotions, and ideas. Sign language can "do" everything that spoken language can.

For mental space psychology *natural sign language* is an area of interest since MSP assumes that the mind primarily simulates reality in a spatial manner (Cogen 1977). Thus signing may give a better insight in the 3-D structure of thought than spoken language does (Levison, 2003).

Brain scans show that sign language makes use of slightly different brain areas (Sandler & Lillo-Martin, 2001). The first hypothesis that comes up in relation to this, is that natural signing uses different areas of the motor cortex (the areas that steer the hands and not the speech organs) but because of its spatial character it will also create more activity in the right hemisphere where visuo-spatial cognition has its headquarters (Emmory, 2002).

For the exploration of the spatial structure of thought, it is not so much the signed concepts, but the grammar binding these concepts into meaningful expressions, that is of greatest interest (Sweetser, 1998). Some sign languages (Signed Exact English) follow the grammar of spoken language but others don't. Although the grammar of *natural sign language* (Pigeon Signed English) shows some analogy to the grammar of spoken languages, the spatial gestures seem to make typical connection-words (like, towards, before, in front, apart, on top and besides) superfluous. It is as if this part of grammar serves to convert 1-D rows of symbols into a 3-D meaning.

It was at the end of the 1990s that Gilles Fauconnier, an American linguist with a French background, became aware of how a spoken sentence created a series of faint fast-moving images somewhere in front of and around the person. Fauconnier (1997) published these observations under the name "mental spaces". From there onward and together with Mark Turner, he developed the influential "Theory of Conceptual Blending" (Fauconnier & Turner, 2002).

This theory can be explained with the help of a computer metaphor: words operate like mouse clicks that open and close imaginary frames in which the meaning of the sentence is presented to the listener in a visual, auditory and kinesthetic form. When for instance a person says: "The rat catches a cat", "rat" and "cat" are the mouse clicks that open frames in which images, sounds and associated feelings about these animals are represented in such a way that it reveals the meaning of the sentence. In this example however, the listener may also become aware that he initially brings these animals in the wrong spatial relationship: since although the sentence says that the rat is the one who does the catching, super-fast mechanisms may first create the wrong image on the basis of the expectation that normally it is the cats that catch the rats. By starting with the wrong image, and correcting it in the next fraction of a second, the listener may

become subliminally aware of the "mental spaces" involved. This can be just sufficient awareness to enable him or her to point out where in mental space the images appeared. In retrospect the person may know that somewhere – faint and brief – a *cat* and a *rat* were blended over the verb *catch* into the meaning of this sentence.

The *spatialization of form hypothesis* as put forwards by George Lakoff in 1987, brought the whole issue of grammar into a shape that fits to mental space psychology. Lakoff states that grammar (re-) creates the *spatial structure* among concepts. He saw grammar as that which links mental images into meaningful 3-D constellations. In the development of cognitive linguistics both contributions, Fauconniers' *mental spaces* and Lakoff's *spatiality of form,* point at a similar psycho-linguistic reality. In this view grammar acts like compression in video (a codec). The original conceptual data in the brain are in 3-D. Grammar helps to compress that into the 2-D of graphics or in the 1-D of language (Lakoff, 1987). The same grammar does the opposite in the listener. From the 1-D linguistic structure the listener recreates 3-D imagination with the help of grammar. Tversky & Kessel (2014) write:

> Gestures and arrangements of props, sketches, and diagrams are all forms of visual thought, of visual communication. They work, but they work differently from language, more directly than language. Compare a map to a verbal description of an environment. A map "maps." It takes objects and spatial relations in a real world and puts them on a virtual world, typically a page, preserving certain spatial (and sometimes visual) properties like distance, size, and direction. Typically maps omit certain information and exaggerate other information as well, depending on their intended use (e.g. Tversky, 2011). Language can represent an environment but it does not preserve spatial properties directly. Gestures can create maps that preserve spatial properties (e. g., Emmorey, Tversky, and Taylor, 2000). (p. 207)

A sentence like: "The duck eats a clam" receives meaning from the reader composing this scene in mental space. The grammar found in *natural sign language* can help to bring the images of *duck* and *clam* (created with the hand gestures) into their rightful spatial positions (Goldin-Meadow, 2003). The positioning of the concepts in sign language is more immediate, compulsory and analog, than how a spoken language achieves this end (Iverson & Goldin-Meadow, 1998). For instance, one can sign in one go how a smaller, lower rat jumps on top of a much bigger cat and bites it in its neck – a spatial scene that leaves no room for misunderstandings. But in the realm of spoken language the listener might just as well visualize the rat as being hunted by a kitten. The rat then un-intentionally uses the rattrap that was set for him by a human. In the rush to his burrow the rat runs safely around the trap. But the kitten accidently steps on the trap, which immediately snaps tight around its paw and cripples him: the rat catches a cat.

Space, language and psychotherapy

Psychotherapy without the use of language is difficult to imagine, however, when one regards the restructuring of the 3-D problem experience as its core element, as we have been suggesting in this document, psychotherapy with the use of only a few words becomes very probable. This view is supported by a pilot study by the linguists Tonti and Gelo (2016) in which they found that emotional change goes better when the client talks less. They summarise their work as:

> This study investigates the relationship between a client's rate of speech (ROS) and emotional-cognitive regulation during a psychotherapy session. The ROS was measured in words per second on the timed transcript of a single session of psychodynamic psychotherapy. Emotional-cognitive regulation was assessed using the therapeutic cycles model on emotional tone (ET), abstraction (AB), and their combination in emotion-abstraction patterns (EAPs). The results were mostly consistent with our hypotheses and showed that: i) the ROS negatively correlated with the

conjoined ET and AB; and ii) the ROS in the connecting EAP (high ET and high AB) was significantly lower than in other EAPs. The results support the hypothesis that a significant reduction in the client's ROS may be a reliable marker of in-session change processes. Clinical implications and future developments are discussed.

Language was the starting point in the development of Neuro-Linguistic Programming (Bandler & Grinder, 1976, 1979). By analyzing frequently used language patterns in the sessions of several reputed psychotherapists – like Fritz Perls, Virginia Satir and Milton Erickson – the so-called Meta Model was created, which consists of a list of question-formats. The diverse questions in the Meta Model are more reactions to the grammar in the client's utterances than to their conceptual content.

It was only after Bandler (1987) introduced "sub-modalities" that the question "where" became a regular appearance in NLP. This "where?" is frequently used to locate emotional feelings in the body or to find the places where voices speak from, but foremost to locate mental pictures. However, the positions of words can also be explored: "Where is *honesty*?" or "Where is *freedom*?" or "Where do you see *safety* in your mental space?" Then the client may gesture at the specific location where these words/meanings are sensed.

It is the great emotional impact of therapist initiated changes in the locations of all manner of mental content that helped lay the foundation for mental space psychology (Derks, 1997). Parallel to the clinical recognition of the power of space, there came supportive views from cognitive linguistics – as demonstrated by the citation below. Spivey, Richardson & Zednik (2012) wrote:

> …we argue that cognitive science has made as much progress as possible with theories of discrete amodal symbolic computation that too coarsely approximate the neural processes underlying cognition. We describe a collection of studies indicating that internal cognitive processes are often constructed in, and of, analog spatial formats of representation, not unlike the topographic maps that populate so much of mammalian cortex. Language comprehension, verbal recall, and visual imagery all appear to recruit particular spatial locations as markers for organizing, and even externalizing, perceptual simulations of objects and events. Moreover, not only do linguistic representations behave as if they are *located* in positions within a two-dimensional space, but they also appear to *subtend* regions of that space (e.g. perhaps elongated horizontally or vertically). This infusion of spatial formats of representation for linguistically delivered information is particularly prominent in the analyses of cognitive linguistics, where linguistic entities and structures are treated not as static logical symbols that are independent of perception and action but instead as spatially dynamical processes that are grounded in perception and action. Some of the predictions of this framework have recently been verified in norming studies and in experiments showing online effects of linguistic image schemas on visual perception and visual memory. In all, this collection of findings points to an unconventional view of language in which, far from being a specialized modular mental faculty performing computations on discrete logical symbols, linguistic ability is an emergent property that opportunistically draws from the existing topographic representational formats of perceptual and motor processes. (p. 16)

NLP's use of location in the late 80s was primarily supported by the linguistic insights of Lakoff and Johnson (1980), who showed in "Metaphors we live by" how the natural language is riddled with spatial expressions. But it took several years of NLP practice to finely recognize how some of the client's spatial expressions are signs of successful and unsuccessful coping styles (Walker, 2014). Expressions like "I need to give that a *place*," or "I need to take more *distance*," are prototypical for this point. Walker found that some clients use "distancing" so much, that they lose all connection to the world.

In psychiatry “the hearing of voices” is traditionally associated with psychotic symptoms. But today it has become a common insight among psychotherapists that “the hearing of voices” is not the exclusive property of the “mentally ill”, but that even a psychiatrist, while he is diagnosing a patient with schizophrenia, will probably hear his inner voice say: “Oh this patient hears voices, that must be schizophrenia…”

Finding the location from where a voice speaks has become common practice in NLP (Andreas, 2014). This work also showed that voices are in general located around the head and near the speech organs: chest, larynx, tongue and mouth. Moreover, voices that come from other locations, like from behind the body may be attributed to “others”. They may be attributed to secret CIA or Alien implants or spiritual entities. Therapeutic practice shows that, such “external voices” can be tamed by moving them to better (inner, frontal or distant) locations, and one can also make them use a pleasant tone, change their speed and make them use nicer words (Bandler, 1986; Andreas, 2014). Such changes are made on instigation of the therapist – since clients tend to assume that such voices are beyond their control.

Awareness of the location of inner voices is also found in Mindfulness (Hanh, 1975) a western version of Buddhist meditation practice that has become very popular over the past decades, and is currently recognized by medical psychiatry as a useful method for the treatment of a range of symptoms. Among the variety of meditation techniques in use, shifting from “an inner dialogue about past or future” (left hemispheric activity) to “a silent sensory awareness in the present” (a more right hemispheric activity) is the main “something completely different” in mindfulness-therapy. People who regularly use their inner voice to talk themselves into a fit of anxiety or even into a depression will profit from such a shift, especially when they learn how to reproduce that on their own (Lebois et al., 2015).

A clinical experiment that would have fitted very well in this section would be 1) the finding of a disturbing inner voice followed by localizing it in mental space. Then next 2) move it around until it loses its disturbing influence. This would be a paradigm similar to clinical experiment 5.

Way before the time mindfulness became popular, a related “something completely different” was common practice: hypnotherapy. When the client is in a relaxed hypnotic trance, his inner voice seems replaced by the voice of the therapist. The therapist helps create positive alternatives for the unproductive imagery that client would otherwise set in motion. Hypnotherapy is an art form in which the use of sophisticated language-patterns stands out: it is the art of verbal suggestion. That is why hypnotherapists are trained to be far more aware of how language triggers experience than other people (Erickson, 1967; Bandler & Grinder, 1976)).

The mental processes in a relaxed hypnotic trance appear to be slowed down and reduced, which intensifies the impact of the hypnotherapist’s words. Although the intensity and sensory quality of hypnotically induced imagery exceeds that in a regular state of consciousness, the person may not afterwards be capable of saying exactly what happened. Thus, the meaning of the hypnotherapist’s words may be intensified, but they cannot reflect much on what is going on inside nor can they report about that later. This inability seems mainly due to hypnotic amnesia. This memory loss has always been the central problem in clinical experiments with hypnotherapy.

To use hypnotic trance in psychological research – for which there could be many good reasons – the experimenter is limited to paradigms with a small bandwidth. For instance, the participants do not do well behind a computer screen or a paper questionnaire during trance. What works best is that the experimenter him- or herself asks the questions as part of the hypnotic process. Although this seems extremely unreliable in the eyes of lab-researchers, it has

provided the field of hypnosis with a very solid body of knowledge over the last century (Kroger, 2008; Spiegel & Spiegel, 1978; Hillgard, 1977). The consistence in the phenomena that came to the surface as a result of clinical experimentation with hypnosis, screams and yells to be integrated into the regular psychological curricula as they are used at universities around the world.

Clinical Experiment 18: Critical Hypnosis.

1) First the subject is brought into a deep hypnotic trance. Preferably use a fragmented induction for this purpose (Bandler & Grinder, 1982).
2) When the participant shows the signs of deep hypnosis, the following suggestion is given. "I will tell you about my holiday. Please pay attention to where the images show up in the space before you. When I ask you to do so, you point with your right hand at where an image appears to you.
3) Tell the participant a story that is rich in sensory qualities. Use 5 words that must induce clear images. (like: the tree, the table, the cook, the car…)
4) Ask the participant 5 times to point out the location of a used concept. (like: "Point with your right hand at where you notice the tree?")
5) Awake the participant to report on what they remember about their experience and if they still know where these concepts showed up in mental space.

Observations:

Since the above procedure has no other goal than to test the hypothesis that the concepts spoken about appear at locations in mental space, there are only a few opportunities to execute it. But the evidence we will look at comes from the clinical work in which the locations of critical concepts are part of the therapeutic procedure, as in the personal time line (James & Woodsmall, 1988) and the social panorama (Derks, 2006). In this work the procedure is no different from the one above.

From the point of view of the traditional hypnotherapy (Kroger, 1977), all spatial psychotherapies make use of hypnotic suggestions and trance states. This is necessary to make them work: to enable the clients to get access to the intuitive (right hemisphere background) knowledge that is worked upon. Thus an eye-catching observation is that there is a significant overlap between spatial psychotherapies in their use of suggestive language and altered states of consciousness. Some spatial psychotherapists are aware of the hypnotic character of their work, others, by a lack of training, never saw it in this light.

In the footsteps of this observation comes a related one. And that is that, for changing spatial representations during therapy, a client should reduce his or her inner speech and open up for the suggestions of the therapist. This is necessary to enable enough awareness of what happens in mental space. One can also observe that the necessary state of relaxation is easily induced by just posing questions about the locations of images, feelings or sounds. Thus, when the therapist orders the client to find the location of a certain concept in his mental space, this may be enough of a trance induction by itself. This is also called a *task induction*. Which means that the participant assumes the state of consciousness that matches the task given to him or her. Only once in a while does a spatial therapist need to do extra work to improve of the client's state of inward attention. Most psychotherapists with an NLP-like training do this automatically.

Another related observation is that when the client is able to point out the location of a concept in mental space this signals that a deep enough inward concentration has been achieved. Although the participants in this and related experiments may show some reluctance at first, after they have pointed out the first concept, the rest will be easy to them.

Pointing out the location of an image requires the participant to raise their arm and stretch it out. It can be observed that some participants are too relaxed to do this right away. The experimenter may need to repeat the instruction *to point out the location of the image* for these participants.

Conclusions:

In the terminology of the *feed forward theory of* consciousness (Derks & Goldblatt, 1985, see part 3), a word helps to partially activate the cell assembly that holds the meaning of that word, which is the same as Pawlov (1907) wrote: the word is a CS. But in the feedforward theory a word is seen as a sound pattern that belongs to the same neural network as its meaning. Only the sound pattern needs to be heard, and it will help the cell assembly to become activated in its entirety.

Mental spatial indexing (MSI), the association of a concept with a certain location in mental space, has great similarities to the use of words. The location in mental space to which a concept is associated, functions in exactly the same way as a word, as a CS. Looking (staring) at the location (for instance when someone is pointing at it) helps to partially activate the cell assembly that holds the meaning. Thus this very theoretical view can be stated in terms of classical conditioning; then a word is a classical conditioned stimulus that triggers the meaning. The mental-spatially indexed location can do the same. On this level of abstraction, one can say that words are the auditory equivalents of visuo-spatial gestures at particular locations. The connection between language and natural sign language, as was made at the start of this section, becomes even more pressing in this light.

Connecting *mental space psychology* with the concepts of *the feed forwards theory of consciousness* delivers the type of psychology that the author is striving for. That is a psychology in which neurological and subjective phenomena can be understood within the same theoretical framework. The relation between *mental spatial indexing* and *the naming of things* builds also a bridge to linguistics. For a practical field as neuro-linguistic programming this might deliver the conceptual backbone.

A lack of practical familiarity with hypnotic states and verbal suggestion is a hindrance to the exploration of the spatial nature of experience. There must be tons of data/facts available outside of psychology-labs, waiting to be put to use. Pierre Janet, William James, Sigmund Freud and for instance Ernest Hilgard were all great contributors to psychology who shared their extensive interest in hypnosis. It seems to be just some cultural fences, which were raised on the side of science that constitute the barriers.

If all experimental psychologists were to be familiar with hypnotic phenomena, they would also be able to recognize where these phenomena naturally appear within their familiar paradigms in the lab. It can be very useful to be aware of how questions that are presented over headphones or on a computer screen may work as hypnotic induction in some individuals and not in others, which may influence their responses a lot. In other words, the significance of the experimental results can depend on the state of consciousness that the experimenter induces, even without intending to do so. Hypnotherapeutic practice shows how a different tone of voice or a lower tempo of speech used by the experimenter may be a decisive factor in what may appear as “just” sleepiness and boredom. Among many researchers it was Dietrich Lehmann (1990) who emphasized how much influence the state of consciousness of participants have on their responses.

Experimental set-ups beyond the level of rational reflection, in the area of unconscious spatial background cognition, demand well prepared participants.

1.11 Spatial metaphors

Metaphor is a cognitive phenomenon, in which the meaning of one domain is represented in another domain. Metaphors may stay contained within an individual's private thought processes, but they are also frequently verbalized with a variety of communicative goals (Lakoff & Johnson, 1980; Derks & Hollander, 1996). For instance, a person is talking about *plants* (= domain of vegetation) but wants to explain a point to his colleague about the *development of people* (domain of education): "Plants need dirty water to grow well," is what this person says, but this is meant as an equivalent of: "People will develop themselves best when stimulated with enough challenging and chaotic tasks". In metaphorical communication one finds a large number of spatial expressions – that is the reason for this chapter on *spatial metaphors*.

Spatial metaphors use the domain of 3-D concepts to represent things that in themselves do not need to have a 3-D nature. For instance, one may call a book "traveling new pathways" or "digging into deeper layers"; but real books cannot travel or dig. A bundle of paper on its own, travels nowhere and cannot shovel its way into the "depths". Of course, caves can be deep just as lakes, crevasses or hidden treasure. But most people still understand what it means when a book *travels untrodden tracks* or *digs deep*, and most may not even notice the spatial metaphor used.

Mental Space Psychology builds on the view that *the model of the world* that people create in the imaginary sphere around them is their primary simulation of reality (Derks, Ötsch & Walker, 2014). In other words, the mind cannot reach a more similar (better, more accurate, verisimilar or more fundamental) representation of the world, than it does in its seen, heard, smelled, tasted and felt 3-D map of its 3-D environment (Spivey, Richardson and Zednik, 2010; Tverky, 1999). In NLP the concept of "The Model of the World" is used according to Alfred Korszybski (1934), without any reference to its 3-dimensional shape. Mental space psychology however, claims that this model is primarily 3-D (Manea, 2016). And it seems probable that the mind creates this complex spatial model for the main part within its right hemisphere. There it functions in the background as a kind of silent, more general, more holistic library of knowledge about the universe (McGilchrist, 2009).

All kinds of lingual (left hemispherical) derivates, abstractions, generalizations and transformations can be superimposed on this optimised 3-D background reproduction of physical reality. Among these are bold generalizations in image, symbol and word that radically simplify the real world experience. These schemes, caricatures and formulations however have the power to overrule the faint and vague but often more realistic layers of 3-D representations – this may make the left hemisphere the dominant hemisphere. These concepts may owe their dominating impact to their simplicity and a superior signal to noise ratio: they stand out with clarity and high contrast against the more nebulous background of other but more accurate types of knowledge. It is probably due to the difference in neural conduction between the hemispheres that the left frontal and left temporal regions of the cortex can dominate the rest with their more 1-D linguistic, mathematic and 2-D- schematic focused knowledge (McGilchrist, 2009; Derks & Goldblatt, 1985).

When we assume space to be the central organizing principle in cognition, it can be expected that when people try to express intricate thought, they may also do this in the form of spatial metaphors – especially when they cannot express themselves in a literal sense because of the complexity of the subject matter. We need to consider that such reduced 3-D metaphors may also consist of left-brain translations to make the 3-D right-brain intricacy more tangeble.

Spatial metaphors can help create a strong simplified superimposed layer of imagery that overrules more complex mental representation: like *left versus right* in politcs or *top to bottom* or *central versus local* in organizations. Or take "a higher level of conciousness," or "a deeper

kind of psychotherapy" for example – there is nothing *high* in consciousness and nothing *deep* in psychotherapy. However, spatial metaphors may also find a place amongst other 3-D concepts that are functioning more in the background, like how the image of a globe compares to the complexer concept of earth itselve.

The above implies for cognitive linguists (Lakoff & Johnsen, 1999; Bergen, 2012) and for social scientists that follow the ideas of Alfred Korzybski (1933) like Bandler & Grinder (1976), that, on top of the 3-D embodied simulation of the world, more indirectly acquired cognitive maps with a lesser resemblance to the real world may exist. These concepts can range from 1-D linguistic formulations and 2-D schemas to virtual 3-D worlds of delusional imagery with multisensory qualities that fail to match to any one fact in the universe. In many of the world's religions such fantastic constructions – like spiritual pantheons, multi layered heavens – are transferred by culture at a young age and may even rule people's lives (Derks, 2006; Ötsch, 2000). Some spatial metaphors structure societies in a very powerful way: for instance in *top* and *bottom* or *upper, middle* and *lower* class and may offer hierarchical (caste) schemas of society. Also the division between groups, and the belonging to (in-) groups or the being of an outsider, falls in this category of spatial metaphors.

Scientists may use spatial metaphors for *science* and *no science,* as in *within and outside of science*. Their own specific field of research will be represented centrally in their schemas with the "pseudo science" of the competition somewhere (if at all) beyond the margins. And one can argue that science itself is the activity of reducing intuitive 3-D knowledge about the cosmos into 2-D or 1-D metaphors and formulas. This process of (dimension) reduction is driven by the desire for the action-power that 1-D and 2-D knowledge can provide. Symbolic simplification enables reasoning, logic and calculus and may immediately show a person what to do, what to believe and who to follow. The transformation of the more complex and faint 3-D imagery into simpler and clearer 2-D formulations helps to create technology and an organized society, but often this goes at the cost of the connection to the more realistic 3-D knowledge (McGilchrist, 2009).

Language has received tremendous interest from philosophers, linguists and psychologists, largely because modern man has regarded his possession of language as one of the unique features of being human. Reading and writing are highly regarded skills that can make or break a persons career in society. Language has shown to be a tool to create, conceive, generalize, structure, communicate, manipulate, control, lie and deceive. But at the same time language constitutes something that can also estrange humans from the sensory facts as they present themselves in the actual here and now. Before the spatial psychotherapies arrived on the scene, language was seen as the primary instrument in psychotherapy.

The Meta Model (Bandler & Grinder, 1976) is a therapeutic tool that was largely based on the above philosophy (Korzybski, 1933). The Meta Model can be used in psychotherapy to broach too over generalized, distorted and impoverished mental constructs and force the client to face more realistic (3-D) representations of what really goes on in life.

When we assume that language develops on top of embodied (sensory) knowledge, this does not mean that this is a one-way street. Language can also help create new, never felt, never heard of, never seen experiences. People can also use language to describe (and create) new spatial metaphorical ideas for complex issues (Narayanan, 1997).

One who looks and listens to natural conversations, finds that these are riddled with spatial expressions that are not meant to be taken as literal (Lakoff & Johnson, 1980), and these types of spatial expressions occur just as often in psychotherapy. "Our competitors are blocking our access to the market," can fit in a business meeting. "My fears stand in the way of intimacy," can be heard in a therapist's office. "Accepted paradigms obstruct new insights," can be heard in

science. Such expressions share the same spatial metaphor: of a hurdle on the way to a desired goal (the market, intimacy, new insights). From the previous section, on linguistic space, follows that a person that hears "…standing in the way…" must nessasary create a spatial piece of imagination to grasp its meaning.

Metaphors from the therapist

David Gordon (1984) looked for linguistic patterns in successful (healing) metaphors in psychotherapy. He was inspired by the dazzling examples provided by Milton Erickson (Haley, 1976; Bandler & Grinder, 1975; Lankton & Lankton, 1983). Erickson told a host of stories and case examples to his clients and students (Rosen, 1982). These anecdotes stood central in his teachings and therapeutic interventions, and he could present a compendium of follow up on cases that proved that his metaphors were a major impulse to the cure.

From the Martian Anthropologist's perspective, the metaphors told by a therapist are just another kind of "something completely different". And indeed some metaphor-telling-therapists argue that the exact content and structure of the stories told by a therapist at the time his client is connected to his problem state, is far less critical than one would expect. Some claim that everything goes as long as it carries the client away from his habitual problem behavior. The reported surprisingly strong therapeutic effect of therapeutic metaphors might just as well come from a radical shift in attention, away from the domains in which the client was searching in vain for a solution. By imposing a metaphor on the problem state, such a move will redirect the client's search in an inescapable way. There also seems to exist a "story listening state of mind" in most people, which some hypnotherapists connect to bedtime stories in early childhood. A metaphor may take the client from his habitual dead-end mind track and stimulate alternative forms of coping (Austin, 2013).

In a more technical formulation: The metaphors added to the problem-state enlarge the search range by adding a greater variety of possible analog connections (Derks & Hollander, 1996: Lawley & Tompkins, 2000). The greater variety in sensory qualities (sub-modalities) that become part of the searching process may hold the key to the finding of a broader set of solutions (in the shape of new neural connections coming into being – see part 3). One may say that the story, when listened to in the context of the problem state, enhances the chance of a lucky shot in the client's latent capabilities (resources). That does not necessarily imply that some metaphors stemming from the therapist will not do a better job than others. Thus it is not just a matter of telling nonsensical stories in the light of the client's misery. However, in the middle of an intense search for a solution, a client may be very open to any type of information; and may show great flexibility and creativity to make use of whatever is on offer.

Metaphors from the client

Beside the therapist being the one who is telling therapeutic metaphors, we frequently encounter the opposite: The client expresses him or herself in metaphors when explaining his issue. Several therapists reported good results when they responded in a (matching) metaphoric way but also in a literal way to these stories: as if the metaphor itself was the real problem. These successes resulted in the development of methods to facilitate clients to create a metaphor for their issue, when they failed to use spontaneous ones.

A great leap was made when the work of David Grove (1998, 1989) was studied by James Lawley (see photo below with Grove in the corner) and Penny Tompkins (2000). This project led to a method called "Clean Language", which had a substantial impact on the field of psychotherapy in the United Kingdom and its former colonies.


James Lawley and David Grove

When the client is connected to the problem state, the therapist using *clean language* will ask: "And your problem is like what?" and by that, help the client to create an analogy-metaphor for his problem. Next the therapist will help the client to elaborate on and extend this metaphor as much as possible. It appears that the more the metaphor is unfolded, the better the chances are that the client will find creative connections that help to solve the issue (Lawley & Tompkins, 2000). One of the main questions that are used in Clean Language is: "And whereabouts is (the metaphoric element named by the client)". The latter helps the metaphoric representations to be located in mental space and by that imply also spatial forms of coping. Clean Language developed into a method that is called Clean Space, and that was introduced in the section on awareness space (Lawley & Tompkins, 2003).


Andrew T. Austin

Inspired by Lawley, Tompkins and Grove, Andrew Austin (2010) recognized the typical fruitless coping styles of his clients in their spontaneous problem state metaphors. The same was true for the metaphors that he stimulated them to compose about their issues.

Austin formulated a series of general spatial patterns that tend to appear in his client's metaphors that showed how they were trying to move unsuccessfully towards a solution. This led him to focus more on what he called "metaphors of movement". He developed a method to visualize these ineffective travels. And he found that changing these "metaphors of movement" offered a point of leverage that could radically change his client's unsuccesfull ways.

The inappropriate coping style is easily recognized in a metaphor that shows *from where* and *in what manner* the client tries to move towards *a desired state*. Austin proposes that the movement in space in the client's metaphors is a set up for a rigorous therapeutic effect. For instance, the client may describe his situation as carrying a heavy burden with huge effort.

"To where are you carrying it?" Austin may ask.

"To my grave," answers the client.

"Drop it!" is Austins response.

Or a client describes to "swim towards an island that moves further away the harder he swims." Austin (2013) writes:

> The Metaphors of Movement work aims, to explore an entirely different area than that of human misery - it aims to strategically transform the fundamental coping behaviours inherent in the client's behavioural system. The work does this by:
>
> 1) Connecting the client to behaviours that commonly occur outside of their conscious awareness.
> 2) Exploring the mental landscape ("the map").
> 3) Examining the coping behaviours employed within this mental map.
> 4) Testing the effectiveness of these behaviours in the real world ("the territory").
> 5) Designing and teaching more suitable behaviours to be applied in the client's map and territory.

The richness of Austin's work leads us to the next clinical experiment. In which, the activity of bringing the client to draw or help them make a drawing is already a very strong "something completely different". But it also enables a client to express something of his or her 3-D experience in a richer form than language enables them to do. The drawing lacks the ambiguity of grammar and probably also stimulates right hemispheric creativity.

Clinical experiment 19: The Problem State Metaphor Drawing.

1) The participant thinks of a problem that is vague, unclear and thus hard to express in words.
2) Now talk about this anyway, for about one minute without solving it.
3) Now the experimenter asks: "And all of that is like what?" (Or another question that brings an analogy for the problem to mind).
4) It is crucial for the experimenter to accept everything that comes up as an answer.
5) Whatever the analogy for the problem state is, the experimenter helps to focus on the spatial aspects: "whereabouts are/is the described metaphorical element(s) in mental space?" Next, these responses are specified by asking: "Where are you in this story?" "Where do you come from?" "How do you transport yourself?" and "Where are you going to? (The desired state)."
6) The experimenter accepts all answers and next helps the participant to create a drawing that includes all metaphorical elements (but no literal aspects of the problem).
7) While making the drawing the focus is on exploring what is blocking the movement towards the desired state.
8) Finally the experimenter asks the participant to change the image in such a way that the desired state (the goal) can be reached. This may be the most prolonged part of the procedure.

Observations:

The observations referred to here, of problem solving with the help of metaphors, fall in two categories: one group of about an estimated 350 cases that were done without the use of drawings, and about 30 cases in which drawings were used. The latter are evaluated agains the background the author has as art therapist in psychiatry (from 1974 to 1976).

A broad observation that may be shared by all therapists who make use of metaphors is that this process triggers an immediate improvement in the emotional state of the client. It works as a powerful pattern interruption. When it is the therapist who tells the story, the client's mood shifts in the direction of curiosity. When it is the client who conceives and tells the metaphors, the client's emotional state moves from passive to active and from powerless towards more control. These observations match those of "Narrative Therapy" (Freedman & Combs, 1996).

A similar shift in mood appears when the drawing phase is started. On can characterize this as a transition from tenseness, verbal complaining and analyzing towards relaxation, silence, distancing and creating. Also one may notice a rapid rise in involvement and commitment of the client in the therapeutic process. In art therapy this phenomenon is seen as the heart of its effectiveness (Hogan & Coulter, 2014). The mood may also improve by the enjoyment of creative activity. Relativistic humor may come from both sides of the therapeutic alliance.

It is noticeable that during the drawing phase, the ratio between the number of words and the number of gestures will change in favor of the latter. Gestures precede and accompany the drawing activity (Tversky, 2015). After the drawing is fully in the hands of the participants, and they are creating the image of how to pursue their goals, a sense of control enters the conversation. Hand movements that show mental spatial indexing and re-indexing indicate the translation from the 2-D drawing into a 3-D constellation of concepts.

The role of the experimenter may change from a helper into an examiner or a provoker. Critical questions will stimulate the participant to rethink the weaker elements in the drawing. This applies especially to those parts that symbolize the lack of capabilities or the avoidance of difficulties.

In general, a therapeutic process that follows the structure of the above experiment will end when the client has reached what we can call "an atmosphere of resolution". This may be not a concrete solution, and it may still be confined to the domain of the metaphor, without a translation into the real world. This means that the client may not have a concrete answer to the question "what to do next?" in the context of the issue. But none-the-less the state of mind of the client can approach that of someone who does know the answers. Some therapists who work with metaphors actively prevent the client from translating the metaphoric solution into a real world solution. Others use this as their final step before bringing the session to its end.

Conclusions:

A psychological problem comes when the mind gets stuck. That means that it cannot create follow up associations (Derks & Goldblatt, 1985, see part 3). Such a state of affairs must be static in nature and thus lacks the experience of movement. This means that when we ask a client *where he or she is*, this will probably not relate to the movement towards a desired situation in the future. The answer we get will probably be a description of the actual sensed stuck-ness. We must assume that typical NLP-questions that imply the movement from the *present state* in the direction of a *desired state* must in themselves change the client's perspective from *stuck* to *moving forwards*. These questions will oblige the client to create an image of a pathway on which

he or she moves towards a solution. This was also the pathway that was used in clinical experiment 8.

Generations of NLP-ers and Outcome Focused Brief Therapists (DeShazer, 1982) have used future oriented questioning to bring the client from a stuck state into motion. They help the client to the awareness of being in a location of a blockade and then to become aware of moving away from the problem and towards to its solution. In such an image the hindrances on the road reduce the speed of traveling.

A metaphor can be described as a communication in another domain of meaning than that to which the subject matter at hand belongs. Metaphors break the boundaries of relevance and form a creative bridge between the rational (left hemispheric mode of thinking) and the intuitive (right hemispheric mode of thinking). To help to conceptualize a metaphor in 3-D, as with a sculpture instead of a drawing, may guarantee the involvement of visuo-spatial cognition. Although a drawing is a 2-D object, it might still represent something that is 3-D in the awareness of the participant.

Austin (2015) calls his contribution to psychotherapy Metaphors of Movement, since he focusses on how the client is un-successfully trying to move towards the solution to his issues. In general, psychotherapy clients only visit a therapist after a prolonged period of trying to resolve their issues in vain without assistance. The more incompetent the client may come to see him or herself in the course of that, the less they may probably expect from the therapy. It is here where a drawn image of the general pattern of un-successful coping becomes a valuable perspective.

For the future quantitative exploration of spatial metaphors, this experiment gives some guidelines:

1) Take into consideration that most knowledge is based on 3-D configurations of the concepts involved.
2) Regard any expression in language as a 2-D or 1-D derivate of the 3-D underlying originals.
3) The grammar of language and that of graphical illustrations help to translate 3-D into 2 or 1 dimensional representations. And the listener, observer or reader uses similar grammar to reestablish a 3-D configuration of the concepts to create their meaning (Lakoff, 1987).
4) The use of language shows the speed and flexibility of the process by which 3-D is reduced to 2 or 1-D and the speed of the reestablishment of the third dimension.
5) When people start to use metaphors, they shift from the relevant domain to the irrelevant domain and this functions as an idirect manner to reduce and re-establish experiential dimensions.
6) The 2-D metaphors, as used in the drawing in the experiment, probably thank part of their therapeutic power to their similarity to the original configuration of 3-D concepts in the issue. Since it cannot be the metaphor itself that solves the issue but the new creative links that are made by the client with the aid of the metaphor, the variables that govern the latter are the most relevant to measure.
7) Most social scientists prefer 1-D research data that can be translated to 2-D graphs and histograms. The above experiment shows how difficult it is to translate the 3-D psychological reality in the 2-D or 1-D of science in a way that makes sense.

1.12 General conclusions about CE in mental space.

Immanuel Kant (1781), in his *Kritik der Reinen Vernünft*, made it clear that perception needs space. Everything that is thought of, is thought of somewhere, added Julian Jaynes (1976) to that. Mental space psychology builds on these historic insights with the idea that space is the primary organizing factor in the mind and that all experience is composed of pieces of awareness being activated and deactivated at specific sites in mental space.

If all experience is primarily spatial, this must necessarily include all problem states. Although a client can describe his problem state in words, this is seen as a symbolic and simplified representation of the original spatial mental imagination involved. In other words, the problem experience itself is a spatial mental construction of feelings, sounds and images and the words are only superimposed on that. However, words can change minds. The linguistic interaction with the therapist can have influence on the spatial construction that makes up the problem. And this influence can help to set off changes that remove difficulties. Non-spatial psychotherapy, in which spatial imagery plays no explicit role, can still change the problem state of the client. Logically speaking, we must put all types of psychotherapy that do not directly work with spatial imagery into this category. The exchange of words between the client and the therapist can help, without either of them being aware of the spatial nature of cognition and it may include strong forms of "something completely different" too.

For instance, before discussing anything, a *provocative therapist* looks at the client for some minutes with a compassionate expression on his face and then states in a firm tone of voice: "The time has come to find the person who likes to fuck with you." This will probably be a pattern interruption on more levels at once. But it may work out spatially too. The client may see the image of someone he fancies and draws this much closer to him in mental space. When that happens, the answer of the client may be: "Yes, that is exactly what it is about."

In the last two clinical experiments (18 and 19), we worked with language and with spatial metaphors. The awareness of how his or her words can affect the spatial experience (of the problem state) of the client will be enormously helpful for a therapist. And here it must be noted that all experiments were presented in the form of written language. In other words, a spatial psychotherapist usually needs language to set spatial change in motion: "Move that image up". But as Tversky (2002) demonstrated all means of nonverbal gesturing, nodding and pointing can communicate spatial ideas. Examples of spatial interventions that were communicated by gestures only or by handing over a drawing to the client are rare, but do exist. In sandbox therapy, we may encounter therapists who only communicate over the touching, the pointing at and the moving of the figures in the sand. From constellation work come therapists that use Playmobil figures or other material objects to symbolize spatial configurations (of people). Constellation therapy is also a great example where language is largely banned (the representatives are sometimes not allowed to speak) and where spatial changes are set in motion without words. Zen Buddhists use a form of group meditation in which a series of heavy stones or wooden blocks are moved around within a rectangular area. Every participant in this meditation is allowed when it is his or her turn, to make one move at a time. Speaking is not allowed. The sensation of stones becoming emotionally meaningful when they are placed in a dynamic configuration shows the universal role of space. This is, in a way, a completely empty procedure. This Zen-group meditation may be used by each one of the individual participants for the personal projections of spatial associations with their own life's issues.

The problem state, as a spatial construction, can thus be impacted by therapeutic actions in many different ways. It must be clear by now, that therapeutic methods can differ in how effective they are in analyzing what it is in the spatial structure of the client's issue, that makes it a

problem. And if a method is effective in analyzing the spatial cause, then it may be in a good position to bring about spatial changes too. For instance, the personal time line model, is good for analyzing what the spatial problem with the perception of time can be, and provides tools to improve the weak spots. The same holds for the social panorama; it clarifies which personifications on what positions in the client's social model of the world are causing the difficulties, and it gives an immediate direction for creating a solution.

All "clinical experiments" in the above text are compacted versions of the spatial side of psychotherapeutic intervention from various schools of therapy. Many of them start with having the client re-access an unpleasant memory and do some spatial work on that. Among these experiments are others that help explore aspects of the mental representation of time, the self or social relationships.

The primary reason to offer this list of experiments was to provide the reader with a possibility to test the methods for themselves. Beside the verification in one's own experience, the same type of experiments can be redesigned for qualitative and quantitative testing.

The Clinical experiment 4, about the location of an emotionally neutral item, makes a good candidate for all sorts of experimentation. It will be easy to do a pretest on what can be a standard neutral item to use with a population of participants. Let's suppose that out of this a kitchen sponge is chosen. Then a population of psychology students can be asked to describe the location where they notice such an item in their mental space. To pin-point that location, they can use scales for distance, direction and elevation. A 3-D animation program may make it look more up to date. In the experimental intervention, a suggestion may be made to change these variables one by one, until the kitchen sponge is visualized close and high, up front. Most researchers will know methods of measuring the difference between the before and after state of affairs. The *nil* hypothesis could be that the suggested relocation of the kitchen sponge makes no difference in the emotional attitude of the participants. However, experience with Clinical experiment 4 shows that most people become far more fascinated by the item. It may become desirable, awful or beautiful to them.

An example of a similar experimental design is presented by Derks, Ötsch & Walker (2014). The objective was to test the central hypothesis of the Social Panorama Theory. This idea forms the core of all therapeutic work done under the name Social Panorama. It says: *Relation equals location*, which means that the social emotional meaning of a social relationship is largely encoded in the location where the image of the person with whom the person has this relationship, is projected in mental space.

Implicitly, the quantitative research program for MSP would be to test the "clinical experiments" in this chapter in similar ways. That means that in many cases the intensity of the problem state needs to be measured on a subjective scale. Then the experimental subjects are guided through the spatial procedure. After that the effect is measured with the same subjective scale for problem intensity. Also, and very important, the descriptions of the participants of their experience in their own words needs to be analyzed. The latter helps to validate if the measured change indeed can be accounted for by the spatial intervention.

Part 2

Why are people often so conservative and do they hold on to beliefs that even physically harm them and block their free development?

This part focuses on what there is to be learned from how therapists change their clients mind in the direction of believing more favorable ideas. The theory that stands out in this chapter is called the Time-Code of Mind Theory (TCMT). This concept answers the question why certain weird looking therapeutic strategies help to overcome the limiting effect of beliefs that date from early childhood. It appears that, one of the factors that make beliefs resistant against change is how early in life the person has *time coded* the moment of the acquisition of that belief. It seems that, the earlier this *time coding*, the further away in mental space its origin is located and the harder the belief will be given up for something new.

Originally, the TCMT was spun out of evaluating the technique called *re-imprinting*. With this technique the therapist helps the client to change limiting beliefs that date from traumatic events. For this, the scenarios of the traumas are rewritten in a more favourable way. From doing so the client will draw more empowering conclusions from the original events.

After applying this technique hundreds of times, it became clear that the younger self often refused to accept the new view and held on to the old belief. In this situation the resolution for this obstacle was always found in going back further in mental space/time. Thus when the new view was refused at a certain age, it was readily accepted when the younger self was made several years younger. Thus a new belief that could not be accepted at age four could easily be believed at the age of two. This phenomenon is so robust, that in 25 years of clinical work no exceptions to that could be reported.

Clinical findings like the above shed light on how the mind stabalizes its knowledge and protects itself from believing nonsense.

Clinical Experiments with Convictions.

A mind in turmoil desires nothing more then to become a mind at rest. That is where beliefs come from. (Charles S. Peirce: 1884-1886)

2.0 Belief-change technology

Sales people, priests, politicians, teachers, scientists, deprogrammers, brainwashers and psychotherapists, all encounter a similar problem: not everyone immediately believes what they say. The reason? People have already made up their minds about many things in life – they can hold on to convictions that contradict what one wants them to believe. The examples are so abundant that there is no need to come up with an extra one.

Part of the effectiveness of the fore-mentioned professionals depends on how well they can shift people's beliefs. To do so, they must use some kind of *belief-changing-technology*. If you ever bought a product that you were convinced that you did not need, then you may be sure a belief changing sales-person made you give in (Cialdini, 1984).

Traditional psychotherapists used the term "resistance" for when their patients did not easily change their mind in a more "healthy" direction. And these psychotherapists believed that to overcome this resistance was the core of their work. This started with breaking the client's defences – but these therapists found out that it could be hard labour. One of the mechanisms making it difficult is called "reactance". This is a natural response to persuasion; where the person tries to maintain his freedom of thought by opposing the influence (Eagly & Chaiken, 1995). Thus, clients may stick to the opposite opinion to their persuading therapist, then dig themselves in, and then contradict, set aside, undermine and ridicule the therapist's statements (Miller, 2000). Most people have had similar experiences in their lives: the more you argue against someone else's opinion, the more creative energy they may put into the defence.

Thus, the harder the therapist tries to counter the client's foolish resistance, the stronger it may get, ending in a fruitless struggle, stretched out over many sessions. In such a treatment the therapist may use his authority and become an angry father or a tyrannical teacher, which may make the client feel small, unworthy and dumb, since in a way the therapist is saying: "What you believe is stupid."

Such a loss of self-confidence is generally counter-productive in psychotherapy. And the client may try to balance the relationship by stating: "But what you believe is not smart either."

But even when the client fully complies and changes his mind in favour of the opinions of the therapist, this may well go at the cost of the client's self-esteem and self-efficacy. A therapist on his part, may feel fine about convincing his client of his *wisdom*, however, this can still do more harm than good to the therapy since the client becomes dependant of the therapist's advice. What traditional psychotherapists failed to have enough of, was, effective belief-change-technologies without the above negative side effects.

In this study we will regard the clinical work with beliefs as if it were experiments. However, we will not select the best belief-change technique, neither the most effective one, but we will use them to gain insight in several psychological mechanisms that play hard to get in the lab.

2.1 A very brief history of belief-change in psychotherapy

Freud recognized that beliefs could prevent patients from having happy lives. He may have found this insight supported by the work of William James, who himself probably came to that idea from Charles Sanders Peirce who may have read about this in "Discourses" by the Greek philosopher Epictetus.

Buddhist teachers have suggested that the human condition is as difficult as it is, because people try to fixate the state of affairs in the universe by believing they know how things are. However, the universe changes all the time and outdates all beliefs that one keeps stable. Thus believing that you know something for certain is the potential beginning of misery.

Then in the 1930s Alfred Korzybski created the philosophical foundation for clinical belief-change, in his *general semantics* (Korzybski, 2010). The first therapy on the market was Albert Ellis' *Rational Emotive Therapy* (RET). This method classifies beliefs in two types: rational and irrational. RET aims at giving up one's irrational beliefs. This brought psychotherapy its first effective tools for working with these cognitions.

Present day *Cognitive Behaviour Therapy*, *Schema Therapy* and *Acceptance and Commitment Therapy* are founded on this early approach. Thanks to the current academic acceptance of cognitive therapies, the clinical work with beliefs is gaining in importance.

2.1.1 Cognitive therapies work on beliefs

What all therapists working with belief-change-technologies share, is that they consider *cognition* to rule over emotion and behaviour. That is the only position in which these cognitive methods make sense (Beck, 1975). The idea that beliefs are at the root of human functioning, suggests that changing them is tackling the essence of people's issues. One problematic belief can cause many disturbing emotions and compromising behaviours; changing it for the better may have a widespread positive effect on a person. Thus, therapists working with beliefs think that they change people on a more fundamental level than other modes of psychotherapy do. And they probably have a good point.

Another similarity is that all therapists working with conviction start their interventions with bringing the problematic beliefs to the surface. For this purpose they may use different questioning methods, but in the end the therapist identifies, with the help of the client, the beliefs that need to be changed in order to reach the therapeutic outcomes.

From having identified the problematic beliefs onwards, quite different procedures can be followed.

2.1.2 Rational Emotive Therapy: RET

In the RET approach, clients are confronted with therapists who identify some of their beliefs as being *irrational*. In the form of a dialogue the therapist demonstrates how these beliefs stand in the way of the client's development. It is made clear that the client needs to stop believing these concepts and must look out for better ideas. A variety of therapeutic tools can be used: *cognitive restructuring* is the term used for these instruments in RET.

According to Ellis (1961; 1994) it is not our problems that make our lives difficult, but how we look at our problems. In the RET theory one uses the letters ABC as abbreviations for: *Activating event*, *Belief* and *Consequence*. The core of RET is that the *Activating events* are not the cause of the *Consequence*; it is the *Beliefs* that one uses to interpret and evaluate the *Activating*

events that make life hard. It is the use of the *Beliefs* that cause the negative emotions and inappropriate behaviours.

RET assumes that beliefs can be changed by exercising better ones. This means that the client is guided to repeat more rational belief-formulations in relation to the same Activating events. Rational beliefs can be recognized because they fit logically to these Activating events, and can be said to be empirically sound and match to what a human being is made of.

Therefore in Ellis' (2001) work, finding the irrational beliefs is the starting point and students spend time learning how to identify these. Normally such beliefs are captured in the shape of a brief sentence, like: *Therapists make people crazy!* Or: *I cannot do anything good!* Or: *I must be perfect!*

Several years before his death in 2006 Ellis changed the name RET into REBT. The B stands for behaviour. This was to accommodate the critics who thought that the outcome of therapy should be visible in a behavioural change, thus not only in a shift in internal thought, attitudes or expressed opinions. Thereafter Ellis' work gained more influence in mainstream Cognitive Behaviour Therapy.

The techniques used by REBT-therapists to help their clients change their irrational beliefs is our central interest here. Daniel David (2003) writes:

> REBT uses a large variety of cognitive restructuring techniques: (1) logical, (2) empirical; (3) pragmatic; (4) emotive/metaphorical (e.g., metaphors, stories, poems, humor, songs, meditation/mindfulness-based REBT etc.); (5) spiritual; (6) behavioral (fundamental to change not only conscious beliefs, but also implicit processes/unconscious information processing). Moreover, beyond these core REBT cognitive restructuring techniques, REBT agrees with the use of any safe technique borrowed from other psychotherapy schools. These techniques, however, are separated from their original theories, being used in a new "cognitive framework". REBT thus proves eclectic at the practical level (not at the theory level), a real platform for possible psychotherapy integration.

After presenting some some examples, David (2003) comes to another point of interest for our current study:

> Typically, the REBT intervention is focused on the "present problems", conceptualized by the ABC model. However, if necessary in the therapeutic process, REBT can engage a "historical understanding" of the present problems (e.g., how irrational beliefs were developed in the client's life history) and/or even a "here and now" approach (e.g., how irrational beliefs are expressed during the therapy process, in relation to the therapist). This is similar, as a technique, to the "dynamic" of dynamic therapies.

The eclectic choice of techniques and its popularity among psychologists helped REBT to integrate in mainstream psychotherapy. Ellis and his followers were open to criticism and feedback, which contributed to the general acceptance of cognitive psychotherapy. For instance, some critics found the distinction *rational/irrational* inadequate, saying that irrational beliefs do not exist, since beliefs always serve the individual in the best (rational) way possible. *Mindfulness Based Cognitive Therapy* and also *Dialectical Behaviour Therapy* are alternatives to REBT that do take the latter into account.

2.1.3 Beliefs in NLP

Most brands of psychotherapy begin with one genius-founder who after some decades becomes the leader of a school of loyal followers. In this uncertain field of work, such schools tend to develop some "cultish" and even "fundamentalist" trends. This means that the followers

spend their energy on proving the founder/leader right. They tend to claim that their therapy method is superior to other schools and develop mistrust to science and blame the academic world for not confirming the unique status of their therapy.

NLP has some of that but differs strongly in the sense that there were 3 founders (Bandler, Grinder & Pucelik from 1972-1979) who developed their method together with about 20 (3 generations) students at the University of California, Santa Cruz. In the begining NLP was not considered to be more than the (academic) study of the work of several excellent therapists (Perls, Satir and Erickson), with the aim to make their skills more available for a broader audience of therapists.

However, in the 1980s when the money came in, several NLP founders/leaders tried to acquire a unique guru status, but until present, no one has been successful in becoming the one central leader. Currently many thousands of accomplished NLP trainers operate globally and have brought NLP into all corners of society.

The fore mentioned three reputed examplar psychotherapists (Verginia Satir, Fritz Perls and Milton Erickson) were placed central during the entire development of NLP. That is why the founders had only the staus of intermediates between their students and these 3 great examples. The creators of NLP call themselves modellers (Bandler & Grinder, 1975a, 1975b, 1979).

Beside NLP being a collective effort, one wasn't sure whether this succesful enterprise should be called *psychotherapy,* which made it hard for outsiders to find out what kind of activity NLP was (Grimley, 2015). Because of the intense cooperation between the developers (in the first 5 years) no one knew exactly who contributed what, while at the same time new methods were introduced from everywhere (Grinder, Pucelik & Bostic-St.Clair, 2012). Later conflicts helped to further diffuse the authorship of the NLP-tools, although the basis was clearly laid by Richard Bandler and John Grinder. This "anarchistic" 1970s-hippy-approach, turned out to become the strength and the weakness of NLP. The initial unbridled creativity made NLP probably one of the richest sources for human development. But the unconventional behaviour of NLP-ers made it a misfit in academia and regulated psychotherapy. However, only few people worried about that, because NLP became a great success even without academic appreciation (Grimley, 2015).

In the 1970s and 80s, the mismatching opinions between NLP and established psychotherapeutic traditions forced the developers to focus on the role of convictions within psychotherapeutic sub-cultures. The question was: What *beliefs* keep professionals from being effective with the NLP-tools in their work? It became appearent that NLP-methods were most successfully applied when the practitioner worked on the basis of the right set of assumptions – which were sometimes the opposite of what traditional therapist adhered to. This resulted in the formulation of the so-called *NLP-presuppositions*: a list of 8 or 9 beliefs that one needs to assume for NLP to work best. For instance, the therapist must believe that the client already possesses all the skills that he needs to reach his goals (or to resolve his issue). And also, that every behaviour, however weird or destructive, aims at reaching something that the client strongly values, a *positive intention* (Derks & Hollander, 1996).

To actively choose beliefs because they help you to be effective, was a fresh perspective in the world of psychotherapy. NLP-trainers sometimes present the *NLP-presuppositions* in a provocative manner: The *NLP-presuppositions* are a set of lies that work better than other sets of lies. The ruling pragmatic meta-philosophy about beliefs in NLP became: A conviction is regarded as a choice – not something you just "have" or don't "have" – and certainly not something to think of as if it were an eternal truth. And this applied pragmatism coincides with the sense that beliefs can be a source of fortune and misery.

Meaning Reframing in NLP

In the beginning of the 1980s the NLP-developers had many projects going on. One of these got the name *Reframing,* and dealt with belief-change technology. The NLP-workgroup focussed on how beliefs could be changed in discussions, training situations and in psychotherapy. For the latter the search was on for techniques by which a therapist could shift the client's perspective on his issue in one well-aimed statement within a dialogue. By studying examples from many sources, Bandler, Grinder and Dilts produced a linguistic analysis of how this could be achieved.

In the early 90s, some NLP critics started to criticize this *reframing* work saying: *It is just giving a positive turn to every problem of the client*. And they used examples to ridicule *reframing* like the following:

Client (sobbing): "My husband died last night."

Therapist (smiling): "You should look at how much happiness you shared!"

Such an example was used to show that giving everything a *positive turn* might work as insensitive and rude. In NLP, however, the therapeutic relationship has always had the highest priority (rapport), and from that it followed logically that a belief-changing technology must be based on keeping a fruitful relationship with the client. Thus, belief-changing methods should not be presented in a confrontational, but in a supportive manner.

Ever since, NLP-trainers have to deal with the fact that teaching the linguistic analysis needed to come up with an effective *reframe* is not so easy. And on top of making the right linguistic analysis, it also demands a great deal of creativity to then compose a suitable *reframe*. Somewhere around 1980 the new tool entitled *meaning reframing* was brought to the audience. The same technique is also called *content reframing* or *verbal reframing,* and it is in the curricula of all serious NLP-courses. In parallel, the developers distinguished *context reframing*: a technically simpler approach, in which the therapist mentions an alternative context in which the point that the client presents as problematic is an advantage. For instance: Client: "I have a phobia for microbes." Therapist: "Find a job at a Center for Disease Control and Prevention (CDC) or in biotechnology." This way of creating new perspectives was later influenced by the work of the founder of provocative therapy Frank Farally (Farally & Brandsma, 1989). At the end of the 1980s Robert Dilts developed a more refined version, that he called *Slight of Mouth*, which became part of the curriculum of all NLP-master trainings (Hollander, Derks & Meijer, 1990).

Meaning Reframing asks for a counterintuitive way of listening and responding to the client. What a therapist would naturally do when he notices that his client utters some crazy belief is to contradict it. For example: The client says: "Everything I say is stupid!" Then the therapist may impulsively contradict this by saying: "But you just gave a very good explination why you have so many problems in your life. That was not stupid at all!" Then the client may win the point by saying: "But my problems are stupid, thus what I said was stupid." Therapist contradicts: "That was a very smart way to still be right!" Client: "The greatest stupidity is when one abuses ones intelligence against ones own interest, and that is what I do."

To do a *meaning reframing* the therapist needs to deconstruct the client's utterances in three components: "facts", "conclusions" and "values". But it is only seldom the case that a client says something in which the facts, conclusions and values are all clearly presented. Often only fragments are expressed. When the client comes just with a *conclusion* one needs to ask for the *facts* on which the *conclusion* is based. When the client comes with the *facts*, one asks what *conclusion* he or she draws from these. And for the therapist to be able to do a really effective *meaning reframe*, he or she also needs to know the *values* that are involved in the belief. The latter

goes by asking: Why is this important to you? Since the fulfilment of these *values* is what a person drives to believe a conviction. When in a reframing intervention these are replaced by other, strange *values*, the whole thing does not make sense to the client: "No, no, that is not what it is all about for me!"

Then secondly, armed with *facts*, *conclusions* and *values*, the therapist can start to creatively compose a new interpretation of the subject matter of the client's issue that offers an alternative perspective. Then the hope is that this alternative perspective can be accepted by the client and will increase the chance of solving his or her issue.

An advanced example:

The client says: I never do what I need to do!

Now the therapist takes this sentence as a *conclusion (=limiting belief)*.

Thus he asks for the *facts*: What happened that makes you think that way?

The client then explores his memory and comes with the following story: "Even in playschool the teacher complained that I never did what she told me to do. Then at primary school it was even worse. As a student I always read other books than I should. In my job I never do what others think is appropriate. I have come to hate that habit in myself!"

The therapist asks for the *values* underlying the issue: So what is important for you in doing what you need to do?

The client takes some time and says: To be accepted.

Now the therapist has all the information needed to compose a *meaning reframe* and comes up with: "Yes, slaves and soldiers are better accepted when they follow orders… The fact that you always followed your own interest more than what you were ordered to do can also mean that you will not accept yourself as a slave or so? Maybe not?" Then also, "are there also people in the world who accept somebody like you who has a mind of his own?"

The above is not a standard *meaning reframe*, but it shows how a therapist can use the information and his fantasy to present the client with other perspectives without being too confrontational or giving him too much of a chance to argue. The above example starts with a tautology (slaves and soldiers). Then follows the meaning reframe: *not doing what is ordered* means *following ones own interests*. The example also contains something that Dilts called "apply to self": from looking at how *others accept you,* it moves to *how you accept yourself*. Then the "Maybe not," and the question at the end, create an opening for other opinions, to maintain the rapport with the client. All in all, this leaves the client with enough to reconsider.

The detailed analysis of the possibilities to juggle around with the three elements mentioned above resulted in Dilts' *Slight of Mouth* (Hollander, Derks & Meijer, 1990). *Sleight of Mouth* can be called an advanced tool for *rhetoric* and is a beautiful example of the high level that NLP reached in the 1980s.

Meaning reframing and *Slight of Mouth* share with *RET* and *The Work (see below)* that they are versions of what one could call *Socratian dialogue*. The therapist helps the client to question his/her beliefs. This will create a level of uncertainty in the client that may give rise to the reviewing of the conviction.

2.1.4 Byron Katie

Some similarities with *RET* and *meaning reframing* can be found in a later development by Byron Katie (2002) called *The Work*. In this now popular approach, beliefs are scrutinized on whether they are *true* or not. This in some way parallels Ellis' criteria of *irrationality*. *The Work* spreads the awareness of the influence of beliefs on people's lives. This is seen as a very useful gift from Byron Katie to mankind.

A person taking part in *The Work* will first identify a belief that is connected to a major issue. Katie has created "worksheets" to facilitate the discovery of such beliefs. When a belief is formulated, the change work starts. Here follows some excerpts of Katie's homepage (www.the-work.com) by way of illustration. Katie writes (5-9-2015):

> The Work is meditation. It's about opening your heart, not about trying to change your thoughts. Ask the questions, then go inside and wait for the deeper answers to surface.

The core of Byron Katie's *The Work* is formed by four questions. These can either be posed by a therapist, or by the participant in a monologue:

> Is it true?
> Can you absolutely know that it's true?
> How do you react, what happens, when you believe that thought?
> Who would you be without the thought?

One of the ways in which a false, unsuited belief is set aside, is by diffusing it with the help of "turnarounds". To find effective turnarounds the client and the therapist can use some standard guidelines but must also make use of their creativity. Katie's example:

> The original statement, *Paul doesn't listen to me*, when turned around, becomes "I don't listen to myself." Is that turnaround as true or truer? Now identify examples of how you don't listen to yourself in that very same situation with Paul. Find at least three specific, genuine examples of how this turnaround is true. For me, one example is that in that situation I was out of control emotionally, and my heart was pumping.
>
> Another turnaround is "I don't listen to Paul." Find at least three examples of how you were not listening to Paul, from *his* perspective, in that situation. Are you listening to Paul when you're thinking about him not listening to you?
>
> A third turnaround is "Paul does listen to me." For example, he puts out the cigarette he was smoking. He might light another one in five minutes, but in that situation, even as he was telling me that he didn't care about his health, he was apparently listening to me. For this and for each turnaround you discover, always find at least three specific, genuine examples of how the turnaround is true for you in this situation.

The turnarounds and the (three) concrete examples of when these turnarounds were true by themselves, can take the absolute certainty out of a belief. Quite often the client will spontaneously recognize true aspects in the turnarounds that are incompatible with the original problematic belief being the sole truth. Some people mention that Katie's approach has similarities to Buddhist logic and can also be combined with Mindfulness. Byron Katie writes:

> Uncomfortable feelings are clear reminders that we've attached to something that may not be true for us. They are gifts that let us know it's time to identify the stressful thoughts and do The Work.
>
> Until you can see the enemy as a friend, your Work is not done. This doesn't mean that you have to invite your enemy to dinner. Friendship is an internal experience. You may never see

the person again, you may even divorce him or her, but as you think about the person, are you feeling stress or peace?

In my experience, it takes only one person to have a successful relationship, and that's me. I like to say that I have the perfect marriage, and I can never know what kind of marriage my husband has.

2.2 Observations on RET, reframing and The Work

When a *regular client* – one *not* trained in RET, NLP or The Work – goes to a therapist he or she will not expect to be treated for problematic beliefs; they do not suffer from beliefs. Clients suffer from the recurring awareness that something in their life is wrong: fears, frustrations, conflict, compulsions and the like. In therapy they can talk about these and when asked to do so they may automatically enter their problem state.

When the therapist asks, "What beliefs contribute to your issue?" this will already be "something completely different" for most *regular clients*.

When the above types of belief-change techniques are used in psychotherapy the results can be expected to be positive. This is supported by a few effect studies for REBT and by plenty studies for CBT. Cognitive Behavior Therapy shows enough similarity and overlap with the above methods to justify the expectation of a comparable effect. Meta analysis of CBT research shows a wide range of symptoms can be successfully treated **(**Hofmann, Asnaani, Vonk, Sawyer & Fang, 2012). The strong focus on beliefs, in the above 3 methods, may probably result in a little more effect (David, Szentagotai, Kallay & Macavei, 2005).

However, as is noted in the beginning of this book, the therapeutic effect is not our focus here. One can rightfully state that an outcome these 3 methods will certainly reach is the raising of the client's awareness of the difference between what he or she believes and what can be called reality. In a way, this is also what all education in philosophy aims at. Thus the client at least becomes a better philosopher when treated with RET, meaning reframing or The Work.

The next observation is that these three methods are primarily used in a *Socratian dialogue* format. The beliefs of the client are under scrutiny, but the roles are set in such a way that the client will not challenge the therapist's beliefs in return. This places the therapist in a position of higher status than the client. To most people this is logical and even desirable. However, when one believes that the creativity in combination with the self-efficacy of the client is central in psychotherapeutic change, such a hierarchical relationship may not be optimal. Since submissivness tends to reduce creativity.

Then again, these three belief-change-technologies try to change the beliefs in the present. Which means that the moment in the client's past of the origin of the belief is largely left out. Only occasionally is the formation of the problem belief discussed. This specific "here and now" preference, seems to stem from the need to distinguish the cognitive methods from psychoanalysis. Something that is also clear in the philosophy and work of DeShazer (1982).

The point of confusion is that psychoanalysis also constitutes a very cognitive approach, but here the role of the past is put central. A major difference between the three methods and psychoanalysis is that the latter method does not have a clear technology to crunch problem-beliefs, apart from making them conscious to the client. Of course, when a belief is in awareness, the client has a better chance to reconsider it and stop believing it. But without the guidance towards an alternative idea, this is not so easy and may take many sessions.

Although the above technologies are capable of changing beliefs, they may be laborious, confusing and complicated. The conceptual structure on which the methods are founded is relatively solid. The pragmatism of Peirce (1982) combined with Korsybski's (1933/2010) structure plus some elements of Buddhist logic are hard to beat. However it is often difficult to translate these frameworks into concrete client-therapist communication. This makes it a serious task for students to master them on the level required for therapeutic practice.

It was frequently observed how these methods, in the hands of well-willing but not expert therapists may lead to counter productive sessions. This is because, as written at the beginning of this article, when a therapist coerces a client, this may raise resistance (reactance). That may cause the client to mobilize his creativity for the defence of his problem beliefs against the well-intentioned assaults by the therapist.

In the previously mentioned provocative therapy (Farally & Brandsma, 1989) the therapist is aiming to awake this type of defensive creativity in the client. But here the therapist makes sure that he challenges the client with "nonsensical opinions" (Bandler, 1999; Hollander, 2012). The client is triggered to revolt against the stupidity of therapist, to force the client to come to more "rational" conclusions by himself.

In other styles of work it may simply irritate the therapist when the client opposes his wisdom. This may drive the therapist to try to overrule the client's points of view by authority. When driven into submission this will reduce the creative potential of the client (Amabile, 1978). If the client does not defend himself, as clients do in provocative therapy, he may just become a docile follower. Some inexperienced therapists may not notice this, or when they do, may even like it – they may enjoy the influence they have over their client. But in general this reduces the chance that the client will take anything home from the therapy. Since clients appear to implement their own creative findings most, it follows that a solution should always come from the side of the client, or the client should at least believe that it is a product of his own creativity.

As already stated above, finding the exact limiting, irrational or untrue belief can be confusing at times. The implicit assumption that only *one* limiting (untrue or irrational) belief must exist that prevents the client from achieving his goal may in fact cause a lot of trouble. The reason is that some beliefs were never formulated in language. They are primarily represented in images, feelings or non-linguistic sounds. To communicate about it in words, according to George Lakoff (1989; 1987), a 3-dimensional sensory representation must be trans-coded by means of grammar into a 1-dimensional sentence. Then the therapist, the listener, must trans-code this 1-dimensionl sentences back into 3-dimensional sensory experience (Derks, 2016; Fauconnier & Turner, 2002).

While trying to formulate the limiting belief in one single sentence, some therapists cannot decide on the one right formulation. Other therapists cannot create a clear image from the client's words and keep on questioning the client. In other cases the client reformulates his beliefs over and over. Such clients try to be helpful, but find an irritated therapist beside them, who needs to correct his notes with every new "final" formulation.

Cognitive therapies that make clients refect on their beliefs are not suited to everyone. For some this is too much of an intellectual challenge. Others are too deeply involved in their emotions to distance themselves from their beliefs. David, Szentagotai, Kallay & Macavei (2005) write:

> This is particularly important since cognitive-behavioral psychotherapies seem to be somewhat stuck, as although effective, the efficacy and effectiveness of these therapies has not yet reached "the desired standard," as about 30–40% of people are still non-responsive to these

interventions. Thus, REBT could be a platform of reinvigorating empirical studies on the efficacy/effectiveness and theory of cognitive-behavioral models of psychopathology and human functioning.

David (2010) also writes:

> Thus, up to this moment, REBT has not clarified the mechanisms involved in various mental disorders. Future research is needed here. Even when the mechanisms are known, REBT does not have the techniques to changes these mechanisms in all patients.

2.3 Exploring the origins of beliefs in *re-imprinting*

From 1985 onwards the NLP developer Robert Dilts focussed on belief change. He came up with a mixture of the well-known NLP-techniques *Change Personal History* and *Six Step Reframing* (Bandler & Grinder, 1979). Five years later he had a load of clinical experience and published "Changing Belief Systems with NLP" (Dilts, 1990) and "Beliefs: Pathways to Health & Well-Being" (1990). The latter coauthored by Suzy Smith and Tim Halbom. This work helped NLP to become one of the most complete forms of psychotherapy at that time.

Criticism on NLP from the academic world – critisim targeted at other things than the belief-change-work – prevented this development from reaching the audience that could use it best, clinical psychologists. That left most academic psychotherapists incognizant.

From 1990 onwards people in NLP-trainings learned to use Dilts' new line of belief-change-techniques. Especially the procedure called *re-imprinting* is seen by most NLP-ers as the best tool for changing deep-rooted limiting beliefs in one single session.

Instead of categorizing beliefs as *rational* or *irrational* ones, as in RET, or as true or untrue as in The Work, the NLP-methods aim at changing *limiting beliefs* into *empowering beliefs*. In the NLP frame, all human knowledge is in fact a belief (Peirce, 1982). In a world in which everything is variable and mixed up and inter-connected, a human being must draw conclusions and make up his mind, to come to "know" how things are. Beliefs are our way to consolidate and generalize knowledge. Beliefs provide the person with a kind of "certainty" about something. All beliefs a person develops in the course of his lifetime serve a purpose, are *empowering* him to deal with the various things that life throws at him or her.

However, beliefs are only empowering to the point where they begin to hinder the person to take the next steps in his or her development. Then they are called *limiting beliefs*. But they are only limiting the person to some extent and may still empower them in other areas of life. When one wants to help a person to change limiting belief, resistance comes when the empowering value becomes at risk; then the person fears losing something valuable.

In the *re-imprinting* technique, it is assumed that *limiting beliefs* stem from the *conclusions* that the client has drawn from *traumatic events*. Quite often this assumption proves extremely useful and it matches with psychoanalysis in the sense that traumas can cause psychological issues. As soon as a traumatic origin is identified the procedure fits like a glove. However, there are also beliefs that have no clear traumatic origin that can still limit a person. For such limiting beliefs the *re-imprinting* method is unsuited.

On the next pages we present the *re-imprinting* procedure as this is found on the NLPU website (6-9-2015) – that is web-mastered by Robert Dilts. We will regard this format as a key clinical experiment on convictions.

Clinical Experiment 20: *Re-imprinting*

By Robert Dilts.

An *imprint* is a significant experience or period of life from the past in which a person formed a belief or cluster of beliefs, often in relationship to one's identity. An imprint experience also often involves the *unconscious role modeling* of significant others. The purpose of re-imprinting is to find the resources necessary to change the beliefs and update the role models that were formed (not simply to resolve the emotional issues associated with a particular event, as in the NLP technique of *change personal history*).

1. Identify the specific physical manifestation of the symptoms to be addressed.
Stand in the physical location on your time-line representing the present and face the future direction. Focus your attention on the physical expression of your symptoms, and any beliefs associated with them, and walk slowly backwards pausing at any location that seems to be relevant to the symptom or the accompanying beliefs. Keep moving back in time until you reach the earliest experience associated with the symptoms and/or the beliefs.

a) Keeping in the associated or "regressed" state, verbalize the cluster of generalizations or beliefs that were formed from the experience(s). Make sure you speak in first person, present tense; i.e., "*I am feeling...*"

b) Take a step backwards to a time before initial imprint experience. When you do so you should feel differently - as if the imprint had not yet affected you either mentally or physically.

2. Step off of the time-line and return to the present and look back at the imprint experience from 'meta-position'.

a) Notice the effect that earlier experience has had on your life. Verbalize any other generalizations or beliefs that were formed as a result of the imprint experience. (Beliefs are often formed "after the fact.") This time, speak about the events you experienced in third person, past tense; i.e., "He/She (or 'The younger me') thought that..."

b) Find the positive purpose or secondary gain of the symptoms or responses formed at the imprint experience. What positive function did the symptoms serve in relation to those past events?

3. Identify any significant others involved in the imprint. [Some symptoms may actually come from the role modeling of a significant other]. The significant others do not necessarily need to have been physically present during the event or period. Sometimes an imprint occurs because the significant other was somewhere else at the time of the imprinting situation (and thus became 'internalized'.

a) Associate into each of the significant others (2nd position) and experience the imprint situation from their perceptual position. Describe their experiences using first person language.

b) Step out of their perceptual position to a point off the time-line (3rd position) and find the positive intention of their actions and responses.

4. **For *each* of the people involved in the imprint experience:**

a) Identify the *resources* or choices that the person needed back then and did not have but that *you do have available now*. Remember that you need not limit yourself to the capabilities that you or the significant others had at that time. So long as you (not the significant others) have those resources available now you may use them to help change that experience. [Make sure the resource is at the appropriate logical level to address the needs of the person - i.e., belief, identity, spiritual]. Sometimes a single resource is needed for the whole system.

b) Step onto your time-line at the location where you most strongly experienced having that resource and relive as fully as possible what it feels sounds and looks like. "Anchor" this experience by symbolically representing the resource as a kind of energy, light or sound.

c) Still standing in the resource location, "transmit" the resource back through time to each

person in the system that needed it. This may be done metaphorically through energy, light or sound.

d) When you sense that the "associative connection" has been made through the "anchor," step off of the time-line, walk back to the imprint experience, step into the position of the person who needed the resource and relive the imprint experience from that person's point of view incorporating the needed resource. You may continue to use your symbolic "anchor" to bring the resource into that perspective.

e) Associate once again into your own perceptual position within the imprint experience, and update or modify the beliefs and generalizations you would now choose to make from the experience. Verbalize them from first person, present tense.

Repeat this procedure for each of the significant people involved in the imprint experience.

5. Identify the most important resource or belief that you would have needed as your younger self. "Anchor" that resource and take it back to the location on the time-line before the imprint occurred. Take the resource into your younger self and walk all the way up your time-line to the present, experiencing the changes made by the re-imprinting.

[*End of citation*.]

2.4 Observations from *re-imprinting.*

Re-imprinting in the above version is carried out by all master practitioners in NLP, whose numbers globally must be written with 6 digits in 2016.

The author has practised this method since 1987 with at least three hundred and fifty clients and witnessed at least 550 trainees apply it during their first encounter with this method and on other occasions. However, there is no quantitative/empirical evaluation study on the effectiveness of *re-imprinting*. The same holds for the simpler older brother of this approach, *change personal history* (Wake, Gray & Bourke, 2013). With regards to *re-imprinting* as a belief-change technique, most NLP-users are convinced of its effect on the basis of their own experience as subjects and on the immediate responses of clients. There seems also to be no doubt expressed anywhere outside of the NLP-community, as far as the author is aware – but possible this is because potential critics are not familiar with *re-imprinting* and that criticism of NLP is usually of a very general character (Grimley, 2015).

No effect studies

Motivation among academics and NLP-ers to initiate an effect study into *re-imprinting* seems minimal. This appears largely so because by the lack of a driving organization, such research depends on private funding (Derks & Hollander, 1996). The so-called research and recognition project (R&R) is one of the very few active initiatives to evaluate NLP's efficacy. One of the first studies done by R&R (Gray & Bourke, 2015), evaluates a procedure with similarities to *re-imprinting*, but this does not aim at belief change but at post-traumatic stress disorders.

Recently the technique called *the generator of new behaviour* was evaluated, and found to significantly improve the emotional state of the participants (Konkel, 2013). A study done by Ojanen et al. (2004) and also one by Reiner et al. (2010) evaluates the general effectiveness of mixed NLP-techniques and did not isolate belief change as a dependent variable. Until such a study is done, judgements about the effect of *re-imprinting* are no more than clinical impressions. On the basis of what we have witnessed so far, these impressions are quite positive.

A process in personal space/time

Therapists of a psychoanalytical upbringing will understand the *re-imprinting* procedure, and will probably like its beginning most and after that they probably will begin to doubt whether the changes that appear to be made after "only" 2 hours of therapy, will have any chance of lasting.

In the above description of *re-imprinting*, the term "*time-line,"* refers to a method in which the client visualizes her or his entire life between two sheets of paper that are put on the floor. Here we will call it *paper time-line* to distinguish it from what is called the *personal time-line* or *subjective time-line* (Part 1, Derks, 2016; James & Woodsmall, 1988).

For a person with *no* prior knowledge of NLP, the *paper time-line* will stand out as the most interesting part of *re-imprinting*. This tool gives this method a very solid structure: now it is clear (for the therapeutic alliance) where in the past the experience of the client is taking place (just as in the present or future). At the same time it provides the therapist with control over *association* and *dissociation*: which means fully re-experiencing something or looking at a traumatic event from a couple of meters distance to be able to reflect on it.

An NLP-myth says that the *paper time-line* was introduced somewhere after 1983 as a teaching tool, but that it amplified the therapeutic process so remarkably well, that thereafter techniques were redesigned on the basis of it. Richard Bandler, Robert Dilts, Whyatt Woodsmall, Steve Andreas and Connirae Andreas, are mentioned as its developers and authors.

At the start of the *re-imprinting* procedure the *paper time-line* is used for what hypnotherapists call a *bridge* technique (Watkins, 1947). In NLP this procedure is called *trans-derivational search* (TDS) with the help of an (auditory or kinesthetic) *anchor* in NLP jargon (Bandler & Grinder, 1979). TDS helps the client to find the belief-forming event without the need for any verbal suggestion about its content.

TDS is one of the clearest examples of what in the article in part 3 will be described as *feed forward searching on the basis of analogy*. This type of searching is portrayed in that chapter as the regular way brains process information and as the immediate consequence of how neurological tissue is hard-wired to function. In *re-imprinting* most clients are guided by the therapist to focus on the limiting belief and to find analogue memories, while they are walking back in time on the *paper time line*. To facilitate that they may mentally rehearse the sentence that expresses this limiting belief; other clients focus on the feelings connected to the problem state and search for analog feelings in their memory.

A return to the trauma

Thus, in the first steps of *re-imprinting*, a client walks backwards in time, over the *paper time-line* until he *senses* that he hits the memory of the moment of origin of the belief. Instead of interviewing the client about: Where do you think this belief stems from? – the origin is found by just walking backwards without the therapist even knowing or understanding the limiting belief. This part of the technique reduces the chance that the therapist discusses the belief or its starting point, which in itself solves many of the rapport-problems that the Socration dialogue forms bring with them, for example, the disqualification of the client's beliefs as limiting, untrue or irrational.

Especially when led by less experienced therapists, in step 2a of Dilts' format, un-necessary explanations and emotions can interrupt the sequence of steps. It may be the curiosity of the therapist that interferes, when they are eager to hear what exactly took place. But there is no

technical reason why the therapist should know all the details of the traumatic situations that led to the limiting belief. Unfortunately many therapists can't stop asking about the events. The other side is that clients often like to express their victimhood and expect that unveiling their past is a necessary part of therapy.

In step 2b of Dilts' approach the "*positive purpose or secondary gain of the symptoms or responses formed at the imprint experience"* are explored. Thus, the therapist needs to have the skills to guide the client to these values without discussing them. In the hands of a less elegant practitioner this may lead to confronting the client with the view, that there *must* be some gain in having these symptoms. It is quite logical that Socratian style discussions may slip in, since stating that the problem has an advantage comes close to *meaning reframing*. Most clients only see their symptoms as a nuisance. Here a therapist with lesser rapport skills runs the risk that the client loses involvement, because the therapist takes a too strong a lead.

In step 3b a remarkable shift in perspective can be made when the client views those involved in the traumatic event and "*finds the positive intention of their actions and responses*". The changed limiting belief in *re-imprinting* arises from new perspectives on what took place and how others were involved. Most victims of traumas never consider the perpetrators to have a sensible goal with their deeds. This step may require tenacity from the side of the therapist. The subtlety by which this subject is brought to the fore can make or break the *re-imprinting* process. After identifying the positive intentions of all involved, a massive shift in perception can be expected. This will come with strong changes in emotional state and non-verbal behavior. But it might also be clear from what the client says: "I never looked at it that way…"

The next steps – focussing in step 3 on the capacities that all those involved in the belief-forming trauma were failing to use at that time, and then in step 4 guiding clients to fill in these omissions in their imagination, appears to add strongly to the belief-changing effect. One can compare this with the *turnarounds* in *The Work*, but here it is often more convincing. By doing this, the client creates so many different, new, fresh and more positive perspectives on the traumatic event, that the old generalization cannot be sustained any longer. In the NLP theory, one can say that the belief-changing influence comes from the resources that the client introduces in the traumatic situation, by giving the images (personifications) of the people involved the skills they lacked at the time of the trauma. In that way a totally different scenario will be written. And while the client reconsolidates a new memory around a more competent social environment, the alternative conclusions tend to pop up by themselves. But the therapist may stimulate that too: "What new conclusion do you draw from looking at it *now*?"

With the new conclusions in mind

In the *re-imprinting* method, one can observe how the improvement of "historic" memories facilitates the creation of new empowering beliefs about these events. To achieve that the therapist takes the client back in time to make him/her relive an improved (idealized) version of what happened. This "as if" fantasy will becomes the new cognitive basis on which what happened there after is evaluated. In other words, by acting *as if* the past was much better, it becomes easy for the client to adjust everything he knows to fit to this fantasy. Or one can also say: the original experience from the past is updated in the here and now, but this is done in a framework of *as if* it was happening in the past. As soon as the improved experience is created, it may be observed how easily this "new resource memory" can be integrated in memory as the client imagines growing up anew on the basis of that. When the client grows up anew from early childhood onwards with the new belief in mind, a remarkable non-verbal pattern of sighing and nodding seems to show how the new associative links are formed.

Something that can make *re-imprinting* difficult, is, when a client disqualifies the new views by saying that these mismatch historic reality. Such clients often think they are "fooling themselves" by fantasizing an idealized past. With their objections they touch at the core of the difference between what we can call, "moralistic" psychodynamic therapy and "pragmatic" imagination therapy.

Although he also expressed the opposite view, for many years Freud (1920) held the position that the confrontation with the historic truth (facts) was helping the client to heal from symptoms that Freud by then saw as being caused by childish (sexual abuse) fantasies. This is a polar opposite point of view from *re-imprinting,* in which the traumas are seen as historic facts but the healing is believed to come from an adult fantasy.

People seem to love to discover hidden truths and forgotten facts. That psychotherapy serves the purpose of bringing historic realities to light is easily "sold" to the public as something that *must* be useful and morally right (Hellinger and Beaumont, 1998). Many people also love something that "oracles", "unearths" or "channels" the truth of what "really" happened in the past. A therapy that is presented as doing that – as *family constellation therapy* (Hellinger, 1996) is often presented – is as appealing as the work of Sherlock Holmes, Erich Von Däniken or a trance medium who communicates with the spirits of the dead (Derks & Hollander, 1996b).

In *re-imprinting,* following the pragmatic Jannet-Erickson tradition, positive fantasies are regarded as the healing force. It is the positive imagination that helps the client to deal in his/her later life with the too harsh reality from his/her childhood (van der Kolk, 2014).

When the above "fooling myself" disqualification by the client occurs, it is up to the therapist to save the improved scenario from the client's loyalty to the historical truth. This is a crucial skill that is not always part of the therapist's *re-imprinting* training. Some therapists solve this type of disqualification, by first confirming to the client that this indeed is not the historic truth, but that the new scenario will help the client to live a life that is just as good as that of people who had more luck in their upbringing: who had parents that had these capacities. "Do you want to be limited by history for the rest of your life or would you rather be supported by a fantasy that gives you the same chances as more lucky others have?" Or they come with examples like: "Some people live as if the second world war is not yet over, because the stay loyal to the victims that way. Often they lead difficult lives. But they often believe they do a moral service (sacrifice) to those who died. Others believe that world war two was fought, won and ended to create new happiness on earth. They see enjoying this happiness as their moral duty to those who gave their lives."

Thus therapists using *re-imprinting-like-approaches* must maintain a pragmatic position, in the sense that there exists no historic reality in the mind but only a model of the world that is composed of imagery. And during a *re-imprinting* the client is replacing imagery that makes him unhappy with imagery that does the opposite. When therapists cannot successfully work with NLP-like techniques, it is often because they are blocking themselves with mismatching philosophies.

Since, at the start of the *re-imprinting* procedure, the therapist has checked out what the client's limiting beliefs were and what he felt as his problem state, the effect is immediately testable at the end of the work. This can be done in a virtual way, by just presenting the problem triggering stimuli to the client in his imagination. A good method is to confront the client with the original limiting belief as if the therapist is convinced of its truth: "But you know… A person must be perfect at all times!" And then wait for a protest from the side of the client as a proof of change. In an estimated 90% of the observed cases such a test shows a significant shift in attitude.

2.5 Conclusions from *re-imprinting*

From the above observations can be concluded that an algorithmic (step by step) procedure, like *re-imprinting*, reduces the chance of undesired argumentation and reactance, when compared with more heuristic (improvised) Socratian dialogue forms of belief-change. However, *re-imprinting* leaves the therapist less room for creative expression. The same fixed step-by-step structure also improves the reliability of *re-imprinting* as a clinical experiment, since this sets a lot of therapist variation aside.

As a clinical experiment, *re-imprinting* is a rich source of psychological insight. It demonstrates many core functions like, time/space perception, temporal distance, episodic simulation, autobiographic memory and learning, social imagery, belief, reason, emotional distance and the power of conviction driven behaviour.

2.5.1 The representation of time and space

The application of the *paper time-line* is always a part of *re-imprinting*. This tool provides a direct demonstration of how the mind uses space to create the chronological order in memory (James & Woodsmall, 1989; Derks, 1998, 2015). This is primarily proven during *re-imprinting* by the ridiculous ease by which all clients can visualize a line that represents their life (Gentner, 2001). This universal fit suggests that *time* is already represented linearly by almost all people (see also part 1).

In the field of spatial cognition (Lakoff, 1987; Tversky, 2006; Groh, 2014), researchers came to the conclusion that for two concepts to be regarded as distinct, they need to be represented in different locations in mental space; if they are located on the same spot, they are treated as one and the same concept. And when two ideas are put in one position this results in confusion and/or generalization. This phenomenon is best known from the work with the *social panorama* (Derks, 2000, 2002, 2005), where the term *shared location* is used for two social images represented on the same spot in mental space. Two or more (real) people who are represented (mental-spatially indexed) on one single location are confused with one another or are regarded as identical, which may make it difficult for the person who does so to approach them as unique individuals.

By giving the important memories of life's events separate locations in mental space, the past becomes composed of distinguishable moments that can be chronologically positioned in the appropriate sequence. Life's memories become like a movie, which is edited in such a way that only the scenes that are crucial for the storyline are shown and everything else in between is left out. The linear representation of the past, as a line in space, in which the recent past is close to the person and the things that happened long ago far away, helps a person to know when some event did happen. The WHEN is in fact a WHERE in the spatial time-code of the mind (William James, 1890; Cogen, 1977; Lakoff & Johnson, 1980, 1999). The importance of knowing WHEN something took place is crucial for psychotherapeutic belief change – since the mind seems to hold on to older beliefs more than to newer ones (Derks, 1998).

As already stated, most experienced NLP-therapists share the impression that *re-imprinting* out-performs the Socratian dialogue methods in belief-changing power. A remarkable difference between *re-imprinting* and these dialogue forms is that the latter methods generally aim at keeping clients in the present (Ellis, 1962; De Shazer, 1989). The supposedly strong results of *re-imprinting* may be largely due to it focusing on the past. If this is the crucial difference, one may conclude that rewritten scenarios and plots can indeed causes positive changes in emotions, beliefs and behaviour (Janet, 1889; van der Hart, 1991; van der Kolk, 2014).

Ethical concerns

Although *re-imprinting* seems effective, it also triggers some philosophical-ethical discussions. In the first place, it demonstrates that the mind relies on its subjective re-construction of history more than on what it knows to be historical facts (Burgess & Shallice, 1996). Also in courtrooms, families and politics it has been shown over and again, that people tend to believe what fits best to their personal interests and worry less about facts (Schacter, Norman & Koutstaal, 1998). 40 years of research in social psychology on "attitudes" and "beliefs" form a solid body of proof for this (Cialdini, 1984; Eagly & Chaiken, 1995). One could say that *re-imprinting* stimulates the client to revise their beliefs to fit their needs.

2.5.2 The origin of a spatial past

In William James' exploration of time, he was fascinated by the duration of the present. He tried to measure and estimate the subjective "now" that he then called the *specious present* (James, 1890). He wrote:

> 'We are constantly aware of a certain duration—the specious present—varying from a few seconds to probably not more than a minute, and this duration (with its content perceived as having one part earlier and another part later) is the original intuition of time.' (p. 237)

James suggested that the *spacious present* (the now) had a mean duration of about six seconds. But when we work with the *subjective time-line* another idea about the passing of time comes to the fore than just an internal clock that counts off bits of time as a stationary process. It is also clear that the past personal time-line must be made of outdated pieces of present, but how this comes into being is an unanswered question.

Hypothesis about how the subjective past comes into being

In the logic of mental space psychology, all pieces of experience that are positioned in the past once were located in the present. Thus a fascinating question is; how could something that was on the location of the present move towards the past? Or in another formulation: What is the embodied present and how can this transform into the embodied past?

We must assume that a newborn mainly senses the flow of the coming and going of emotions and bodily sensations (Johnson, 1987). These sensations are accompanied by the coming and going of sound, smell, taste and visual perception. When we try to reconstruct human development on the basis of embodiment, this means that the stream of sensory experience must transform (over time) from the present into the subjective past (Pöppel, 1978; Lakoff & Johnson, 1999; Evans, 2003).

Hypothesis 1: The linear representation of the passing of time must be a product of the necessity to differentiate between what is happening in the *present-here-and-now* and what has happened *a-moment-ago* (Evans, 2003).

A person will be involved in the feelings of the present and needs to distinguish these from the kinaesthetic after-image of what has happened the previous moment. Without this distinction a person would live in one continuous kinaesthetic experience of "present" with nothing before or after that. It can be expected that some brain damaged patients and maybe embryos experience something like that.

Hypothesis 2: It is emotional changes that define "moments".

For instance, when you enjoy a walk in the forest, this emotional state may last for say 20

minutes in a row. Then a dog attacks you, which leads to an unpleasant argument with the owner. As a result you shift your emotional state, causing the previous feelings to disappear (Le Poidevin, 2015). In practical work with NLP, it became apparent that people can only really experience *one* feeling (emotional state) at a time. Thus when the feeling of the present is ready and something else needs to be felt, the previous feeling needs to go away.

But *to where* do these feelings disappear?

Exploration of the personal (subjective) *time-line* (part 1) leads to the clear observation that the memories of what just happened before the here and now, are moved out of the person's body space. In other words, the body (centre) is normally involved in the feelings of the *actual here and now* (Johnson, 1987). And since the body cannot hold multiple emotions at the same time very well, anything that happened before must be moved out, to create room for the next *actual here and now* feelings. The direction in which the previous *present* experience is moved away seems to come from a mixture of natural, sensory, logical and cultural influences. Most people in the world push the recent past out of their backs. But examples from cultures (Andean tribes) where the past is represented at the front, suggest cultural influences play a part (Núñeza & Sweetser, 2006).

Does it work for you to stop, step back and return into the feeling that you had before the dog and his owner appeared?

A conclusion from *re-imprinting* that is drawn in this section is that the spatial time-coding comes from a kind of conveyer belt principle, where an experience is moved further away to make place for what comes after that. In the long run, only those memories that receive their own unique spot in mental space will be remembered as single events. All that is clustered in a diffuse area in the past will be remembered as generalized periods or episodes.

Walker (2008) explored the usefulness of working with such *generalized episodes* with psychotherapy clients with a disrupted past in their personal *time line*. This work resulted in a tool he called *time structures*.

2.5.3 Searching for bad memories

As has already been mentioned, the *paper time-line* method is used easily with all people, and this leads to the conclusion that the spatial/linear structure of time is pretty universal (Hermholz, 1867; Clark, 1973; Pöppel, 1978; James & Woodsmall, 1989; Evans, 2003; Derks, 1998, 2015). But the *re-imprinting* experiment tells several other stories too.

How memories are pinpointed in *re-imprinting* can be seen as a telling experiment with episodic/autobiographical memory. For answering, for instance, a question like: "When did you hear a Beatle's song for the first time?" a person must start a search that is guided by "Beatle analogue elements" such as images, feelings, sounds, names or titles. The time span of this search may include a person's entire life, but will be more efficient when the essential episode (the sixties) is selected first. Eye movements and gestures in the direction of the area where the sixties are located in mental space may accompany the selection of this episode (Emmorey, 2001). On the basis of experience it is estimated that a large part of the population will have the sixties located at their back, at more distance from the body than the seventies or eighties (Sweetser, 1998; Núñez & Sweetser, 2006).

As already mentioned above, in *re-imprinting* the same associative process based on analogy (TDS) is used to locate the belief-forming traumatic event. Instead of Beatle analogue elements, it is a recent instance of the problem feeling (by way of an *affect bridge*) or by reciting the limiting belief (with a *postulate bridge*) that is used as the search-lead to get to the location

of WHEN it happened for the first time in the client's life.

The conclusion that follows from this part of *re-imprinting* is that the mind searches and finds memories on the basis of analogy. Something that was already clear to David Hume (1711-1776) and William James (1842-1910).

However, to understand autobiographical memory as a spatial structure in which events have locations that determine WHEN they are encoded to have taken place in life's history, opens up useful new ways of looking at memorization in general. This is the core of what we call the timecode of mind theory.

2.5.4 Temporal distance and emotional distance

When people say, "It takes time to get over it," while pointing at a traumatic experience, they express how the event becomes located father away in mental space because of it becoming encoded further back in the past, and that this will have an emotion reducing effect.

The events that are represented on the *paper time-line* do have *temporal distance* (Bashir, Wilson, Lockwood, Chasteen & Alisat, 2014). *Temporal distance* seems to encode how long ago an event took place. Beside this *temporal distance, emotional distance* also exists (Bar-Anan, Liberman, & Trope, 2006; Walker, 2014) which influences the intensity of the emotions about the event.

It is a fascinating conclusion from *re-imprinting* that the *temporal distance* and *emotional distance* must correlate. This means that when events are encoded longer ago, the distance to them on the *subjective time-line* increases, which then reduces, by the necessarily spatial distance required, their *emotional impact*. That is one reason why over time traumatic emotions tend to wane and go to the background of experience.

2.5.5 Intentional emotional distance

In part 1 (*Clinical Experiments in Mental Space*) the author explains how "taking distance" is one of the major coping strategies for most people (Walker, 2014; Derks, 2015; Van der Kolk, 2014). In other words, people may move images that elicit unbearable emotions further away in their mental space to reduce the emotional intensity. Thus, this type of *emotional distancing* has no relation to the passing of time. We can call this *intentional emotional distancing*, in which a person shifts an image away on purpose, probably in another direction than where the past would be located; to the left side for instance. Doing this may prevent confusion about *when* the event took place, but still reduce the dysphoric feelings. Logically-mathematically speaking, such an image is shifted in another dimension than that of time.

From this observations we can conclude that there must be two forces that make memories move away from the self position in the centre of mental space: *temporal distancing* and *intentional distancing*, and both types of distancing reduce the emotional impact of the images involved.

"Dear" memories may be kept at a closer distance than what they would logically deserve from how long ago they took place; but this does not only happen with pleasant memories. Walker (2014) observed that some traumatized clients intentionally keep the images of traumatic experiences close, to prevent them from drifting out of sight with the passing of time. We could call this *intentional emotional nearness*. By doing so they increase the emotional potential of the memory and create a discontinuity in their subjective time-line.

One can also derive from the above, that a tendency to keep traumatic memories close, in

fact aims (unconsciously) at re-evaluating them: to still learn how to deal with them – or in other words, the closeness keeps them high on the list of things a person needs to cope with. But often these clients say they keep these traumatic memories close to stay vigilant enough to prevent the repetition of such events (think of domestic violence). Or they explain that they do it to stay loyal to themselves as a victim or to other victims: "One may never forget…" or "I will never forget you."

Because of such *intentional nearness* the natural reduction of the emotional impact of the memory that would take place from the passing of time is interrupted. This shows when a therapist tries to start *re-imprinting*, since then the client may show intense emotions in the first step of the format. It is helpful when the therapist recognizes that the client keeps his trauma intentionally close, and then adjusts the method.

At this point the experiment with *re-imprinting* touches on *dissociative phenomena*: in clinical psychology these are generally defined as a splitting of or the repression of a part of the personality (Singer, 1990). Translated into mental space psychology, the same phenomena show themselves as incoherent areas of mental-time/space (van der Hart 1991; Walker, 2008).

For example: The author had a young client who complained about difficulties with concentration in school. His father had abducted him at the age of eight, and he happened to have encoded this event separately from the rest of his past in his mental space. His *personal past time-line* ran behind his back, the abduction however, was represented in front of him on the left. In this way he had constructed an interrupted representation of time. By moving the traumatic event to its proper, logical location in the past (behind his back), he could sense tranquility. His problems with concentration appeared to stem from his broken up awareness-space, in which a piece of the past was located in the wrong place. Walker (2008) encountered several of such broken up *subjective time-lines* in traumatized clients as a result of the *intentional nearness* of traumatic events.

In re-imprinting, *intentional emotional distancing* is applied on purpose by having the client step to the side of the *paper time-line*, and then look at the traumatic event from more (meters) physical distance. For this, the client first steps out of the event, then looks at it at an angle of about 90 degrees to the *paper time-line.* Several metres of distance can make a lot of difference for the emotional impact of the traumatic event. This type of emotion-reduction is a prominent tool in NLP, where it goes under the names *meta-position* and *visual-kinaesthetic (V-K) dissociation* (Bandler & Grinder, 1979). *Meta-position* and *V-K dissociation* has proven to be of great value in modern psychotherapy especially in the treatment of PTSD (Wake, Gray &, Bourke, 2013; van der Kolk, 2014).

2.5.6 Distance and creativity

The above suggests that another theoretical conclusion from the *re-imprinting* experiment can be drawn, based on the observation of the ease by which most people can shift from *reliving* a traumatic event to *observing* the same event from a distance. This shows a fundamental feature of the mind. Not only does this function stand out in NLP-techniques, but it can be seen in RET, Buddhist forms of meditation and mindfulness-based psychotherapy. And besides that there is a lot of support from linguistics and social cognition for this process (Bar-Anan, Liberman, & Trope, 2006; Barcalu, 2012; Walker, 2014).

This leads to the next conclusion, which is that the mind creates distance from the self to memories but the self can also get back into them. For getting back into and reliving a memory,

the *temporal distance* to the events from the past needs to be overcome, and for this all therapists use suggestions like: "Go back in time and get into the situation…" This is enough for most people to "associate back" in something from the past. It can be observed that the further away in mental space a memory is located, the more effort it takes to follow such a suggestions. The *paper time-line* as a tool, with pieces of paper on the floor, helps the client to move through subjective time/space in a controlled way (Derks, 1998). And it makes it possible to *re-associate* with past events in a functional manner.

Beyond the "belief forming event-horizon."

As already mentioned above, the highest density of awareness in mental space seems to exists in an area that extends from within the front of the body to several meters forwards and an few metres to the sides. It has the shape of a horizondal waterdrop that comes from center front to include into the body.

One of the most striking conclusions from *re-imprinting* is that, because of the passing of time, the memories of belief forming moments move further away from the person and by that become hard to retrieve, because they shift far beyond the area of dense awarenss. The analogy with black holes in astronomy led to the idea that traumatic events may move over the, so to speak, "belief forming event horizon", making them very hard to recall because of their great distance to area of high awarenss in fornt of the self in the center of mental space.

Apart from *temporal distancing, intentional distancing* also make the memories involved harder to retrieve and thus also harder to reconsider.

Which implies that many (early) belief-forming moments must be so far away from the person in mental space, that they are beyond the scope of spontaneous retrieval and thus are out of reach for reconsideration. These belief-forming moments are in a way "fixated" or "conserved" by *temporal and intentional distance.* We can regard all forms of psychotherapy that work with regression, as *re-imprinting* is, as ways to enable the person to reconsider beliefs that would be out of reach without such (mental space/time) intervention.

Within the area of highest awareness the person is surrounded by his/her recent, close memories that are ready to be re-evaluated and also surrounded by "dear" memories that are kept intentionally close to make them easy to stay in touch with. Also, traumatic memories that are not so dear but are kept close for other reasons (loyalty to other victims) may be located near to the body in mental space. Thus, belief-forming events that are kept "artificially" close can be easily retrieved and the beliefs concluded from them can be easily reconsidered however what is beyond the horizon of intense awareness is not.

It must be stated here that, despite the central role of emotional distance in people's experience that comes to the fore in clinical work, this has been little studied in cognitive psychology (Bar-Anan, Liberman, & Trope, 2006; Derks, Ötsch & Walker, 2016).

One reason why psychotherapy researchers do not focus enough on emotional distance may be that some established schools of therapy like CBT and REBT and also psychoanalysis, are less aware of emotional distancing. In sharp contrast, NLP and oriental schools of meditation have distancing as a major instrument.

However, many therapist themselves tend to work in a distanced state as a standard. In that way they keep the images, which the clients help them to create by telling them about their traumas, at bay in their own minds. In that way the therapists stay out of their client's pain. On the other hand, during such therapy the client will automatically empathize with the observer-

position that the therapist uses. This leads to "talking about the issues therapy". Then a useful therapeutic effect of distancing comes from the therapist being a role model for the client for how to look at his childhood traumas from an adult, distanced perspective.

But *re-imprinting* shows that mastering the cognitive mechanism involved in distancing (V-K association and V-K dissociation) might be even more effective. Thus from observing *re-imprinting*, one may conclude that the distancing is highly structured in Dilts' (NLP) approach.

When fully connected to the perspective and the emotions of a trauma, a client in general finds little room for creative reflection. The habit of some traditional therapists of keeping their clients connected with their problem state for most of the duration of the session makes therapy extra and unnecessarily painful and slow. In a way these therapists stay with their clients in the first phase of psychotherapy and do only a tiny bit of "something completely different". It was Milton H. Erickson who prioritized the awakening of the client's creative resources. This creativity is what helps to find alternative mind-tracks: *resources and changed beliefs* (part 3).

However, therapists who believe that it is the expression of intense emotions that makes therapy work, will keep their clients away from *emotional distancing.* And such therapists may do the opposite: reduce the intentional and temporal distance and actualize the trauma in the client to make him or her relive it in the therapeutic situation (Derks & Goldblatt, 1985; Hollander, Derks & Meijer, 1990; Wake, Gray & Bourke, 2013; Van der Kolk, 2014).

Repeated observations suggest that *re-imprinting* helps clients to deal with the blocking conclusions stemming form traumatic experiences. The same observations support the view that the expression of emotions is no more than an irregular side effect of *re-imprinting* that does not directly contribute to the therapeutic result. During *re-imprinting* one can see the client slip into a traumatic moment, but when the procedure is lead properly this is only brief and serves to identify the traumatic event. When it is found, the client wil be led to take a distance, to enable him or her to make the creation of significant alterations from the *sideline*. The latter changes are seen by Dilts (1990) as what stimulates the client to draw more favorable conclusions from these events (and change internalized role models).

As already mentioned, by the natural time-governed process of putting a traumatic event further away in the past, the distance between the person and the event increases in mental space. But this distance also makes the memory harder to retrieve. In a healthy situation, in which there is no pathological residu from a "difficult event", a person uses the opportunity to re-evaluate this "difficult situation" before it is to far away that this becomes too hard. That would be the core of the definitive coping with terrible situations before they become pathological traumas. In such regular "learning how to deal with certain difficulties" the initial conclusions may then be reconsidered and more useful beliefs can be formed. But very often, life leaves no opportunity to re-digest traumatic memories while they are still within reach and this causes the limiting beliefs that may be treated with *re-inprinting*.

2.6 Reconsidering beliefs

In the course of their lives people must update the beliefs that don't fit to changed circumstances – this is how they regularly develop themselves. Without reviewing their opinions, adults would still live according to their childhood beliefs. This logical conclusion is supported by some observations from *re-imprinting*. Before looking at these we investigate step 1 in Dilts format (above):

> Stand in the physical location on your time-line representing the present and face the future direction. Focus your attention on the physical expression of your symptoms, and any beliefs

associated with them, and walk slowly backwards pausing at any location that seems to be relevant to the symptom or the accompanying beliefs. Keep moving back in time until you reach the earliest experience associated with the symptoms and/or the beliefs.

One of the things the use of the *paper time line* in *re-imprinting* clearly shows is that many limiting beliefs are formed at specific moments. When asked for it, most clients can straight away pin point the origin of a limiting conviction. However, in the re-imprinting technique the client is asked to find the origin by walking back in time with the limitations in mind. From observing how clients walk back in time it appears that they spontaneously signal these moments in which the belief was very relevant to them. They tend to stop at the locations of these events. *"Here I was at university and my paper was not accepted…"* Two feet further back: *"This was primary school and I had to…"* Again several steps further back: *"At kindergarten…"*

Thus it appears from these pauses, that at these moments in history the limiting belief was repeatedly applied, strengthened, modified and maybe reconsidered. And without any activity from the therapist the same moments will also stand out when the client walks back to the present with the new beliefs in mind. As is described in step 5 of Dilts' format:

5. Identify the most important resource or belief that you would have needed as your younger self.

"Anchor" that resource and take it back to the location on the time-line before the imprint occurred. Take the resource into your younger self and walk all the way up your time-line to the present, experiencing the changes made by the re-imprinting.

Dilts only briefly mentions these intermediate moments. And as already stated, when the client walks forwards in time, growing up anew in their imagination, with the new belief within themselves, they pass the same moments they encountered on the way to the belief forming moment (in step 1).

The non-verbal behavior at these intermissions shows a clear pattern: The clients first tend to frown and then stop walking, then they nod several times, then they smile somewhat and finally sigh. This sequence of behavior is quite remarkable and appears to indicate the actual moments of change – the literal switching to another opinion and emotional state. Here clients unintentionally give away how they overcome the previous difficulties in their imagination, when implementing the alternative beliefs in their life history. The frowning probably signals the reconnection with the historic difficulties and that brings them to a halt; the nodding seems to coincide with distancing themselves from the old belief, and then reevaluating the difficulty with the help of the new belief; the smiling shows the effect this would have had on them and the sighing signals the positive emotional shift resulting from stepping into the improved situation.

The hypothesis is that in the original real historic trajectory of growing up, a person may encounter a series of difficulties that are analogue to the belief forming moment – for example similar conflicts. The already formed limiting belief will be found easily on the basis of the analogy: "How did I deal with this before? Oh yes…" Analogy to the original belief-forming situation will lead to similar conclusions as the original traumatic situation did. A series of such analogue events may force a person to re-strengthen and re-formulate their limiting belief. In some cases these beliefs will be re-established as even more forceful, more generalized and often more radical. The conclusion is that beliefs are not only formed at specific moments, but from their origin

onwards they are connected to a series of memories in which the belief was used and re-established. This image of beliefs as pathways from the past to the present brings us to our next theoretical step.

2.7 Conclusions on Re-imprinting and the Wholeness Process

It probably will surprise the authors of Re-imprinting (Dilts, 1990) and the Wholeness Process (Andreas, 2014), to see their creations in one paragraph. During the teaching of either of these models such a link might confuse the students. But to combine them in one clinical experiment may carry unexpected fruits.

Why do people omit to update some beliefs, but sometimes bolster them in a way that hampers their development even more?

For many clinicians the answer to this will be that such limiting beliefs once helped the client to escape from severe difficulties. In the emotional upheaval around belief-forming events, ideas were accepted or concluded that instantly turned the confusion into the certainty required to safe survival. In other words: in the past, when things were messy a newly formed belief provided immediate guidelines for how to act. However, this certainty came at the cost of limitations in later life (Dilts, 1990: Dilts, Smith & Halbom, 1990).

This explanation about survival in chaos makes a lot of sense but misses the spatial dimension. In this section we will add to the above, that the location where the belief forming moment became indexed in mental space (MSI) helps to conserve them against all odds. Thus, as already mentioned in the previous paragraph, the person cannot update an old belief because he or she cannot reach out far enough with his attention in mental space to review it.

Re-inprinting shows that when a client needs a therapeutic belief change, the belief forming moment tends to be located in the distant past: many metres away over the *paper timeline*. By the passage of time (30 years for instance) the moment of formation has drifted so far away in mental space that it is out of reach/sight for re-consideration without therapeutic guidence. For this we playfully use an analogy from astronomy by saying that most limiting beliefs treated with *re-imprinting,* were preserved by their too distant points of acquisition – at locations hidden behind the *belief-forming-event-horizon.*

The (astronomy inspired) metaphor of the *belief-forming-event-horizon* comes with the fantastic image of humans held steady by chains of beliefs coming from all sides, linked to invisible anchoring-points in the far past. As if the person is fixed in position by sort of fishing lines that have their other ends at belief forming moments (the side of the fisherman and their fishing rods) far away in mental space. And in this image a client with a limiting belief becomes like a fish that wrestles with the fishing hook and the near-by line but stays unaware of the rod and the fisherman on the far bank of the river.

In the following we will include observations from the application of the *Wholeness Process* (Andreas, 2014). The latter is a recent tool that builds on the foundations of NLP and spiritual traditions. This subject matter has already been already explored in part 1. Here we will look at what the *Wholeness Process* might reveal about belief change.

One reason to look at the *Wholeness Process* again is that it shows similarities to the belief change work with *re-imprinting*. But not only that, there is also analogy to another method developed by Connirae Andreas, called *Core Transformations* (Andreas & Andreas, 1994), and there are similarities with Clean Space (Lawly & Tompkins, 2003) and The Work with Helpers (Walker, 2014). Before we go into details, we will formulate the main similarities:

1) In *re-imprinting*, the *Wholeness Process, Clean Space* and *Core Transformations,* the work focuses on a series of interconnected concepts. These concepts form chains that have the problem concept at one end (located within the self of the client).
2) By using special questions the client is guided along the chain of concepts, in a direction away from the problem concept, which finally takes the client to the outer, far end of the chain.
3) At this outer end of the chain there is a heightened potential for change, which is used to resolve the problem. After resolving the issue the client is led back in the direction of the problem location in the body again, to test the changes.
4) Before therapy, the client had the issue, the problem concept/state, but the concept at the far end of the chain was beyond the client's awareness (mental spatial reach).
5) In all the above mentioned 4 approaches, it is assumed that the mental object at the far end of the chain, that forms the heart of the change, already existed in the client's mind before the start of the therapy.

In *re-imprinting* the *belief forming moment* is what is found at the natural far end of the chain. In Core Transformations it is the *core state* (Andreas & Andreas, 1994). In Clean Space (Lawley & Tompkins, 2003) it the last found location that "has more knowledge about the issue". In the Wholeness Process it is the *"I" position* that is found last (see part 1) (Andreas, 2014). In the work of Walker with "helper spirits", personified social entities are used to take the client to the place where the changes need to be made, and they also help to make the changes happen at that location (Walker, private communication).

When we oversee the similarities in these different and independently developed therapeutic approaches, it is logical to assume that there might be one universal psychological principle binding them. But can that be identified on the basis of clinical observations?

Most basic, from the view of the Martian antroplogist (see part 1), these methods are "something completely different" ways to lead the clients out and away from their problem state by following a sucession of related experiences. But there might be much more at work.

By introducing the Wholeness Process into the theory of belief change technology, the 1-D linear image that is implicitly suggested by the *paper time line* changes into a wild 3-D image. It is a kind of 3-D web, since the work with the Wholeness Process reveals spatial chains of beliefs coming from all directions that may zigzag in any direction. This web of belief-lines surrounds the person in mental space and freezes their more centrally located actual model of reality.

This provides us with the metaphorical picture of a person dangling under his parachute after landing in a tree. The bundle of strings keep him locked in a steady position in mid-air, but where the lines connect at the parachute, is out of reach, which prevents him from freeing himself (no - he has no knife). Or in a literal sense, all a person's beliefs are attached to belief forming moments that can be too far out of mental spatial reach in the past, too far beyond the belief forming event horizon to be reconsidered. These keep the person from having a more free and flexible model of the world. To choose more adaptive convictions is beyond their control.

Thus the 3-D landscape of the social panorama might have a twin sister in the 3-D chains of beliefs. In the future, new research could unveil the spatial patterns in this "wholeness landscape" (3-D web, parachute). For example, it would be fully logical if the chains of *"I"positions* spread primarily to the back and the sides of a person's mental space, at the same time leaving the center of attention open. One could explore how the scale of the space filled with *"I" positions* matches to traits like flexibility or conservatism.

Now we are ready for our next theoretical discussion.

In the Wholeness Process the therapist helps the client to find *"I" positions*. The first to be found is the location in mental space from where there is awareness of the client's problem. This location is found by asking: "From where are you aware of this issue?" When the client has pointed out this location, the next *"I" position* is found by asking: "Where is the "I" that is aware of this awareness of the issue?" Then the "I" position after that is sought for in a similar way, and so on until no new *"I" positions* can be found.

Imagine that the first such location pops up beside the head of the client and then the next one at two meters distance at the left-hand side of her body and following that two more appear even further away. The fact that the Wholeness Process reliably helps clients to find such chains of interconnected locations makes one wonder about their origin and nature.

The reason to look at this phenomenon in this section again is that, these *"I" positions* appear to be the locations in mental space that mark similar phenomena as those that were found as the intermediate stops during *re-imprinting* on the *paper time-line*. The *"I" positions* might indicate the moments in the past that a belief was strengthened or reconsidered.

The series of belief-relevant moments that we encounter on the *paper time line* when we do *re-imprinting*, may just result from situations in which the limiting belief played a major role because of what happened at that time could be resolved with the help of this belief.

The above reasoning suggests that beliefs do not only leave spatial traces at their moment of formation, but also at their moments of reconsideration and strengthening.

Only when we regard *"I" positions* and *beliefs* as related phenomena, does the next question makes sense: How can a belief that is actively reconsidered become a location in mental space? Or in other terms, how can the moment of reconsideration become indexed on a fixed location in mental space?

This can be understood when we assume that for the reconsideration of a belief, the imagery that forms the evidence for that belief needs to be put at some distance. Thus, in NLP-jargon, to enable the re-evaluation of a belief it needs to be dissociated first. The mental distance makes it possible to critically oversee the belief.

In other words, when a person in normal life reconsiders a belief, he creates *intentional distance* to that belief. For that he will step out of it, to then look at it and make up his mind about it. He wonders: "Is this idea really true?" Our hypothesis is that this moment of reconsideration leaves a trace in mental space: in the shape of what Andreas (2014) calls an *"I" position*.

It is assumed here that after a belief is reconsidered, a new formulation and/or 3-D simulation will become accepted as the new truth. To make this possible, the old version of the belief has to be intentionally distanced to a place further away, probably somewhere outside of the body. The new *reconsidered conclusion* however, will be kept in or close to the body – since the kinesthetic part of believing something demands that it is located in the body-space.

"I" positions, also in the view of Andreas (2014), may result from the intentional distance taken in the moments of coping with life's difficulties. The chain of *"I" positions* in mental space may hold a historical record of the coping history in relation to a certain issue.

A theoretical obstacle here is the supposed direction from where is looked by whom at what. In the *Wholeness Process* the therapist asks for locations that are looking "towards" the client – looking from possitions out in mental space in the direction of the client, whereas in the idea above, the reconsidering requires looking at the belief from the self to outwards in mental

space. So it is the difference between: Wholeness: "Where is the "I" from where there is awareness of your problem?" versus "Where do you see that belief/problem in mental space?" This suggests a 180° opposite direction of awareness.

More experiments are needed before we can decide if the *"I" positions* are indeed locations of belief reconsideration, and also whether this apparent contradiction in "looking direction" is fundamental or that it just arises from the linguistic grammar used. If the latter is the case, it might be enough to talk about "conceptual connections" that have no real direction of awareness. The comparison to how locations are found in other technologies, like in Clean Space and re-imprinting, gives away something about the degrees of freedom that may exist to guide the client from the one concept to the next in the chain. Maybe the connection is created instantly due to the implicit suggestions in the questioning, or maybe the exact questioning is immaterial and many more variations of questions will unearth the same concepts because they are already linked in some unspecified (neurological) way. So this must be explored further.

Consider an example. A man expresses, "Christmas is an awkward commercial piece of mass delusion". Now he may believe (feel) this in the center of his body, which makes him express it with strong convincing gestures. On asking that man: "Did you always believe that?" a spectacular phenomenon is witnessed: the man starts to trace back several *reconsiderations* of his current point of view. The therapist asks: "Where is that first point of reconsideration located in your mental space?" He points out an "*I"position* that is connected to his former belief, being: "Christmas forces one into rigid social behaviors like the giving of presents." This belief was formed, he explains, after living several years on the basis of the conviction: "I cannot find the right presents for my family and friends." The latter is connected to an *"I" position* at 3 meters distance and is time-coded as being 25 years old. Then by further exploration, it is found that this belief was the reconsideration of: "Finding the right present is a signal of love." And before that, at 20 meters distance, time-coded in his early childhood he finds: "Santa loves me since he gave me my favorite model-truck."

Zigzagging time lines

When we place *re-imprinting* beside the *Wholeness Process* and regard them as two independent clinical experiments, this gives way to some extra insights in the structure of mental space/time.

First, what is represented as a *time-line* with sheets of paper on the floor, may be a one-dimensional translation of something that constitutes a three dimensional structure. Thus the person is located in the middle of his mental space surrounded by series of beliefs and their successive reconsiderations that stretch out zigzagging in all directions into space. The distances increase with going back in time. Only in a certain segment of space, reserved for the projection of the future, does distance really coincide with further away in time.

Secondly, all concepts, including traumatic memories and *"I" positions,* seem to obey general spatial-emotional principles, which are:

1) The further away a concept is represented, the less emotional impact it has on the person (emotional distance). The further away a belief is located the less "deeply convinced" the person will be; illustrated by, "Deep inside I feel that this is true" versus: "When I look at it now it is hard to believe that I was once so convinced."

2) The more out of the center of attention a concept is represented, the less emotional impact it has on the person and visa versa (distance from the focus of attention); illustrated by,

"This is the central truth for me."

3) And the smaller/lower a concept is represented the less emotional impact it has on the person (size). "This stands as a rock in front of me".

The hypothesis is that, *the level of believing that something is true* and the *level of emotional impact* may be quite related in how this operates in mental space. Thus reducing the emotional impact by moving the concept farther off may also change the sense of *truth* (certainty, convinced-ness) of a belief.

For the development of belief-change techniques this would imply a very brief procedure:

1) Find the limiting belief and feel, hear and see how it is true to you.

2) Step out of the limiting belief and place it 10 meters away behind your shoulder and lower it to the floor.

Bandler (1985) developed a procedure that has fundamental similarities with the above two steps. This technique is called the *sub-modality belief-change*. This procedure changes the sensory qualities (sub-modalities) of the imagery that belongs to a limiting belief to match such qualities in something that is doubted. It is a method to make certainty appear as doubt. For instance, the reference image of the limiting belief is perceived as near, central and big. The reference image of a belief that is doubted is seen at a distance, at the side and small. By maneuvering the limiting belief in the same qualities as the doubted belief, the limiting belief should lose its power of being regarded as true.

Bandler did not specify *space* to be the critical quality (sub-modality) in this work but he did mention it as very powerful (Bandler, 1985). For doing the *sub-modality belief change* with a client the therapist first must search for the critical sensory qualities. And such qualities of imagery must be explored twice, since the therapist must also pin down the sensory qualities of the *doubted belief*. This is only doable for trained practitioners. Then, even when it is done correctly, clients often resist such a change, since it does not take care of the positive intentions that believing the limiting belief has for them. Maybe for this reason, this method is not as popular as *re-imprinting*. The submodality belief change operates on the representations of beliefs in the here and now, and does not necessarily incorporate the belief forming moments.

Bandler's (1985) *sub-modality method* however, showed the way to techniques that do have more attention for the positive values behind beliefs. But whenever there are no strong benefits from holding limiting beliefs, the *sub-modality belief change* technique seems to work well. In cases when it doesn't, it may lead to coercive communication from the side of the (irritated) therapist that can harm the therapeutic relation.

2.7.1 Before the first time: how conservatism is overcome

Dilts (1990) and Andreas & Andreas (1989) work were the major influences on the author for improving the belief change techniques. The author aimed at a belief change technique without the need to focus on trauma, without much creative imput from the side of the therapists and that includes the earliest belief forming moments.

The first result of this project was called *Convincing Your Younger Self* (Derks, 1998). The major steps in this procedure harmonize most with Dilts' step 5 in *re-imprinting*. In this step one

transfers the resources the client missed during the traumatic event to a moment *before* the trauma happened. Dilts writes:

> **5. Identify the most important resource or belief that you would have needed as your younger self.**
>
> "Anchor" that resource and take it back to the location on the time-line before the imprint occurred. Take the resource into your younger self and walk all the way up your time-line to the present, experiencing the changes made by the re-imprinting.

Convincing Your Younger Self circumvents the exploration of traumatic events by focussing formost on an early enough transfer of the failing resources/beliefs. Some may argue that the exploration of the trauma cannot be left out – for whatever reasons they may come up with. For the moment, this discussion will be avoided. Since the application of this reviewed form of *re-imprinting* delivers a fascinating piece of experimental evidence for the hypothesis that:

Beliefs that are older, overrule newer ones.

At the start of this *convincing-your-younger-self*-approach, the episode *before* the acquisition of the limiting belief has to be identified, just as in *re-imprinting*. This may be simply done by asking the client: When in your life, at what age, didn't you have this idea/conclusion/conviction/belief yet? As soon as a reasonable approximation of this age is given, the client is stimulated to create an alternative belief: A belief with all the advantages and without the constraining implications of the limiting belief (see the format below). After this alternative belief is formulated, the client is asked to act *as if* he was teaching this belief to his younger self, *before* the time/age he had acquired the limiting belief. For instance, if the client had learned *I am not good enough,* at age 5, the client acts *as if* his younger self gets this most important replacement-lesson at age 4, 3, 2 or even at or before conception. The latter lesson is given to the youger self, by his current self in the role of the teacher. This lesson thus contains a newly composed alternative belief that resolves all current issues, like maybe: "You are good the way you are."

Now comes the crucial observation: When therapy clients imagine they learn an alternative belief at an earlier age than their limiting belief was formed, the alternative is readily accepted by their younger self. The alternative belief can then be used as their new conviction and they can grow up with it very easily in their minds – ready and done. However, it can also happen that the younger-self of the client appears to protest against the newly offered alternative belief. As witnessed by clients saying: "No, my younger self does not believe this! He shakes his head!" The question is, what is happening in such a case? Does that really mean that the alternative belief is offered at a too late moment in life? Did the younger self of the client in fact already possess another, contradicting idea at this age?

These "protesting younger selves" show up very often. And it is also fascinating how the clients become aware of these protests. Some see a clear image of a child revolting against the new lesson.

Even more fascinating is that the therapist can *always* help to overcome this hurdle by moving the client back in time some more, and then have him teach the alternative belief/lesson to an even younger, younger-self. It seems that when the age is young enough, the alternative idea is always accepted. After having seen this very pattern 300 times or so, the scientist practitioner, author, knew he had hit something that needed further investigation.

What can be witnessed in the *convincing-your-younger-self*-approach, in the step after the transfer of the alternative belief, is how the client imagines growing up anew, with the freshly acquired believe associated in his body and mind. From observing clients in this step on the *paper time line* it appears that the freshly learned belief smoothly overwrites the original limiting belief through all relevant memories from the past to the present, in one go. This happens even when the client is fully aware of the fact that he just *role-played as if* he learned this alternative belief in his early childhood. The fact that the new belief is *only* offered *as if* it was acquired in early childhood seems a sufficient condition to solidly change one's mind. During the *convincing-your-younger-self* procedure it appears that the younger-self only protests when it already has a different opinion at the age chosen for the *as if teaching*. However when the younger self is still blank, it will readily accept the newly offered belief.

The necessary conclusion from the above is that such "conservatism" in a younger self must result from a general tendency of beliefs to be consolidated from the past towards the present on the basis of their date of acquisition. We will formulate this as: When beliefs are *mental time-coded* as older they have a higher level of "convincingness" and they overrule later *time-coded* beliefs. Or put in another way: Beliefs with recent *time-codes* are less convincing than beliefs with older *time-codes.*

Mental time coding

What are these *mental time-codes* about? *Time-coding* here means that it appears that knowledge about the moment of acquisition of a belief is stored together with the content of the belief. For instance: "Santa is a hoax!" is time-coded, December 25th, 1963. Making this moment a reference point in time that helps decide about the convincing value of this idea.

What is the implication of the concept of a *time-code* in the mind? It implies, belief-change can be brought about quick and easy by making use of this *mental time-coding principle*. In *convincing your younger self,* the new belief is presented *as if* it was learned before the acquisition of the limiting belief, which in fact means that the therapist helps to fool the client's mind by *time-coding* the alternative belief as older than the limiting belief. The mind seems to accept such fake "*as if*" *time codes* without much criticism and starts to apply the new belief as its new truth, if it had originated from before the limiting one.

The concept *time-code* stems from video-editing and computer science. There a time-code is a piece of additional information that is connected to a file, giving the historic date, hour and second of when the file was first saved.

Some time coding logic: When we remember events from the past, we do so in the present. A memory from the past is always experienced within the time frame of the here and now. "Pastness" is thus a matter of the special coding of experience. How long ago in the past an event took place is something people can reconstruct on the basis of secondary information. Some mothers *time-code* the past on the basis of pregnancies and children: "Yes then little Sammy had the measles so that must be before Debby broke her leg in 1993." Some men measure the past on the basis of love affairs and cars: "I drove with Angela in my Morris Minor Convertible TDI, thus then… 1961." Others orient themselves with holidays, domiciles, terrorist attacks, jobs or presidents – all secondary information that enables the person to derive approximate time frames.

The larger part of the *mental time-codes* therapists use comes from distance in mental space as this shows itself on the *paper-time line*. The universal ease by which all people seem to comprehend the relation between distance and time suggests a pre-existing cognitive construct: The personal time-line (see part 1). This semi-linear mental structure helps to differentiate the

past from the future and the present (Walker, 2008; Bandler, 1983).

This leads to the view that whilst the images belonging to memories can be represented anywhere in mental space, to know their place in history they must be related to a cognitive structure that represents time as a sequence of events in space, a time line: an inner calendar of the past.

However, the order in memory cannot only be the product of images being stored on a location on the person's time line. Memories must receive part of their temporal organization as a result of being linked to each other in a particular sequential order. Because, logically speaking, memories are stored in the order of their natural succession, in their order of acquisition, of what happened after what. They must more resemble railroad cars, connected in an order that is not so easy to break apart.

What we find in *re-imprinting*, when the client moves back and forth over the *paper time-line*, is the behavioral evidence of different associative links between the memories.

2.7.2 Prograde and retrograde links between memories

People probably go to the past and back many times a day (James, 1890). But nowhere this is done so clearly as when a client is led over the *paper time-line* (Derks, 1998).

From observing clients on the *paper time line* it becomes apparent that the process used for moving forwards in time is different from that of moving backwards. Going backwards, as this is done in the beginning of *re-imprinting* (step1), in search for the belief forming moment, clients can easily loose track. They may stop, become emotionally involved in their memories and thus may need some assistence from the therapist (with a TDS search anchor) to keep them going in the right direction.

On the other hand, when clients walk from the past to the future, they tend to stay on track very easily and need little or no help. These behavioral differences suggest that two different types of memory retrieval are at work. When the client goes backwards (retrograde) the links appear less stable than those used in going forwards (prograde) in time. The hypothesis is that the backwards links (retrograde) are largely based on analogy. In part 3 we will look at analogy from a neurological perspective. For the moment it is enough to say that analogy connects the memories from the present backwards to the past on the basis of shared features (similarities in sub-modalities). From the past to the present however, another type of link holds memories in line. The prograde links probably run over the neural connections that were created during the learning history from conception onwards, of the one event after the other – in the order of a person's development.

When the client is growing up anew with an alternative belief in his body and mind, this updated version of the belief seems to hich-hike over the pre-existing highway of prograde neural connections. This makes for a very fast and smooth ride from the past to the present in which the new belief seems to be integrated in the body of memories of the client.

Thus the difference between the retrograde links and the prograde links seems the difference between associations over analogy versus association in the order of development. This is a distinction that stands out in *re-imprinting* related belief change methods.

Retrograde links run against the flow of time, and for them to reach their target the mind must jump and slide to connect everything over the similarities found among memories. But the prograde links run with the stream of time. Down-stream is easy and fast and this type of associ-

ation contributes strongly to mental coherence, and as we will see later, must be tightly connected to the *time-code of distance*. The prograde type of conceptual bonding solidifies the model of the world. From the past in the direction of the present beliefs appear to hook in to each other like railroad cars. Such beliefs form "hardened" chains from past to present. And what needs to be concluded is that the older beliefs keep later ones from being changed (from derailement).

The mechanism by which older beliefs overrule, resist, dominate, contradict and appear to be more convincing than newer beliefs, helps people to avoid nonsense ideas. And as such this process protects their lifetime investement in building a sensible model of the world; but with the same principle people can also hold on to early acquired nonsense.

This very psychological principle causes people to maintain totally irrational beliefs that stem from their childhood. The best examples are religious indoctrinations that initially help children to cope with death and loss: like *life after death, ever present deities* or *heaven and hell*. Such ideas cannot be defended in a rational manner, but even though they are not logical and hard to imagine in the universe that science shows us on TV, they are maintained anyway into adulthood, since they help to cope with one's own and other's final destinies. The examples of this are abundant: ranging from people holding on to political, philosophical and cultural beliefs that have been proven to be false or malicious. However, a large proportion of the believers of such things respond with inertia to all arguments that are contradicting their convictions: "I just feel it is right that way!"

People who work with, for instance radicalized youths, should be aware of the mechanics of conversion (belief change) as presented here.

Although arguing does not help to change childhood beliefs, the same arguing helps to reveal the *chain* of related beliefs that the person keeps. Since in heated debates, when people dig in and hold on to their positions, they may go back in time and begin to express the earlier positions that support their current point of view. "Yes but… at kindergarten all children did better than me." Or: "Yes but… my grandma said that undergoing the operation makes a girl a better woman."

Thus a hypothesis from *re-imprinting* is: Beliefs are conserved in chains that run from the past to the present. This is how our mind creates a solid structure in its model of the world that is not so liable to change.

2.7.3 Prograde connections between *"I" positions*.

In a universe where everything is impermanent, the creatures on earth are equipped with central nervous systems that are built for the creation of permanent models of the world around them. This causes continuous friction between what they believe to be true and the state of affairs in reality. When all cognition is 3-D and beliefs are all we know, then all beliefs are primarily 3-D experiences that may sometimes be put into words. A typical limiting belief sentence like: "I am not good enough," verbalizes a 3-D spatial experience. For instance: a negative self-image seen at 3 meters away straight in front but looking to the floor (see part 1).

Seeing that beliefs protect each other over prograde connections, one can wonder, when observing the Wholeness Process in action, whether the *"I" positions* are doing the same thing. In the Wholeness Process it is also a clear phenomenon that only the last found *"I" position* can easily be dissolved (changed) by suggestion and this very last found *"I" position* appears also to be the oldest one of the chain.

In other words: Does it make sense to regard a chain of *"I" positions*, as a 3-D staircase of beliefs that conserve each other from the past into the present? If this hypothesis is correct, than

the *Wholeness Process* experiment shows how beliefs are stacked on top of each other in a 3-D spatial way, where the earlier formed concepts consolidate and hold the later formed ones over spatially extended links. Links that can be several meters long and may go in every direction in mental space.

In the Wholeness process the therapist helps the client to identify the last found *"I" position* – which is most often also furthest away from the self. As stated before, Connirae Andreas discovered that this last found *"I" position* permitted change without much resistance. Andreas suggests that the client let the last found *"I" position* "relax and dissolve in the larger field of awareness". After the last found *"I" position* is dissolved due to this suggestion, this softens the connection to the next *"I" position* in line. When suggestion is given for the next one to dissolve in its turn, then the following one seems to become open for such a change and so on. The final therapeutic effect comes when the experience of the problem state, (as the first found *"I" position*) also dissolves. With dissolving of the problem state related concepts the Wholeness Process is done.

The mechanism that comes to the surface here is that only the last found *"I" position* can be dissolved right away. And it seems that a previous *"I" position* in a chain holds the key to the *un*-dissolvability of the next one.

As already stated in part 1, the structure of interconnected *"I" positions* show how a series of re-specified beliefs form a pathway in awareness space, since this is what the *Wholeness Process* shows time and again. Participants tend to find 4 or 5 interconnected "I" locations in mental space. Connirae Andreas (2014) considers the zigzagging pathways between the *I-positions* to be a result of how the subject has created several new perspectives on the same issue during his lifetime. Every time a new *"I" position* came into being the ideas that made it up were reconsidered. She proposes that it is the person's spatial coping (putting it at a distance, distancing oneself or dissociating) that results in the *re-mental spatial indexing* (re-MSI) of the concepts.

The link between the 3-D *Wholeness Process* and the 1-D belief-change with *re-imprinting* showed itself only during clinical experiments. And the neuro-scientific implications this must have are thrilling. In part 3 we will look at the latter in more detail.

Inhibitory links in mental space.

Here we continue with the notion that the way the word "inhibition" was used in psychology has caused confusion. Since it is used on the one hand for repressed behavior or thought processes but on the other hand for the microscopic activity of special classes of inhibitory neurons and their inhibitory neurotransmitters. It was Russian followers of Pavlow (1920) who discovered the various roles that microscopic inhibition plays in the brain (Mangan, 1972). One of the things that microscopic inhibition does is to help keep up the integrity and boundaries of neural networks (cell assemblies). Without the microscopic inhibition doing this, concepts loose their shape and may mingle and blurr with each other as in dreams. But as Sinclair (1982) came to understand, inhibitory neurons and neurotransmitters are also a major factor in the consolidation of the strength of synaptic links within and between the neurons that belong to a neural network (cell assembly, concept). This makes inhibition crucial for memory storage and learning in general.

The *feed forward theory of consciousness* (see part 3) describes the type of inhibition that the neurons of a cell assembly A apply on cell assembly B and vise versa. This backwards and forwards inhibition solidifies the synaptic links between the units of a cell assembly (Derks &

Goldblatt, 1985). All in all, this means that the links between concepts are initially brought about by excitatory activity and that the consolidation of the links is taken care of by inhibitory activity. This consolidation goes forwards and backwards in a chain of concepts: which means that when one concept is followed by another, the link is consolidated by inhibition from the already active concept to the one to be activated. Or simply said: first A starts up B with excitation. Then A also sends inhibition to B. In the next phase, when B is fully activated, it gives inhibition to A in return.

That is why one can speak of forward inhibition (from A to B) and feed back inhibition (from B back to A).

When we think of a chain of concepts (like beliefs or *"I" positions*) then the clinical experiments showed that the oldest, last found, belief or *"I"position* has a special property: it can be changed easily in comparison to other concepts in the chain. Thus logically speaking, this concept at the end of the chain must have other characteristics. This might be that it is not consolidated by feed forward inhibition as much as the other concepts in the chain. The feed forward inhibition could be the consolidating element in prograde association that helps protect the next concept in a chain – feed forward inhibition must thus also be the operator in conservatism. Thus again, in the chain,

A>**B**>**C**>**D**>**E** etc,

it is A, that symbolizes the oldest concept, that has no > in front of it. When > symbolizes feed forwards inhibition, that is what logically must make the difference.

In other words, the reason why the last found *"I" position* is easy to dissolve and later ones are not, implies that there must be one property that only holds for the first concept in the chain. Feed back inhibition can be excluded, since this also must have been applied to the first *"I" position* in a series.

Thus when we stay with the limited options in this theoretical exploration, the right candidate must be feed forward inhibition. This idea may give direction to research by way of a concrete hypothesis.

When one applies this idea to the *Wholeness Process*, the therapists suggestion to "relax and dissolve" the last found *"I" position*, may be seen as an instruction to unconscious mechanisms to let go the inhibition that is consolidating this concept. Such a possibility of the intentional letting go of inhibitory activity is beyond what most psychologist consider possible in the mind. But when we take the widely reported experience of the participants in the *Wholeness Process* seriously, then the suggestion to "relax and dissolve" seems to have such an effect. This could mean that the feed forward inhibition, and maybe also the inhibition that maintains the integrity of a cell assembly can be intentionally switched off.

When we take the *Wholeness Process* at face value, this implies that the inhibition that consolidates a last found *"I" position* can be intentionally reduced or stopped. At that moment this concept loses its inhibitory scaffolding and begins to fall apart. From that moment on it will also stop consolidating the next cell assembly in line, which now is hanging in the air. This one now will be open to dissolving.

Clearing the mind from hampering concepts has always been the holy grail of psychotherapy. Electro-convusive therapy does it, just like psychedelic drugs do but in a far too general

way. Extinction by emotional outbursts or the withdrawal of reinforcement also works sometimes. But the Woleness Process opens a new page.

The idea of an embodied cognitive developement, suggests that there is in a way no beginning to any learning in an organism other than the first neurons that change the strength of their synaptic links. With our current insights we expect that to happen somewhere in the intestines in the very young embryo. This vision implies that everything we learn rests on previous learning so that there cannot be such a thing as the first time something was believed, because this belief is always grounded on pre-existing cognitive elements. This challenges what has been written above, which suggests that at the far end of a chain of beliefs or "I" positions, there exists a unique concept that was the first of its kind.

2.7.4 Concluding remarks about *re-imprinting*

The accumulated observations of *re-imprinting* show without any doubt that a therapeutic belief-change can be brought about in one session. Many people may have had an instant belief change happening in their normal lives: when for instance their parents told them that Santa was a hoax. Or when they suddenly saw that their favourite politician got involved in a scandal. But it might also be that someone lost his faith in a partner, God or the nation. In other words, there is nothing exceptional about people changing their mind about something in one go. The problem is, that many therapists themselves adhere to beliefs that say that real change goes slowly. Probably this belief helps them to cope with the fact that they fail to have an effective belief-change technology.

Bandler and Grinder (1979) recognized that what therapist believed about learning, unlearning, reverse learning and relearning could make or break their work. NLP is done on the basis of the assumption that, given the right conditions people may make great shifts in attitude, belief, emotion and behaviour in one session. And NLP's techniques are designed to achieve that – which does not mean that they always deliver such a quick success.

The belief changing effect of *re-imprinting* can be tested. Normally, the verbal expression of a changed opinion is easiest: "How do think about it now?" Changes in non-verbal reactions can also be used as evidence. But most therapists prefer long term behavioral changes above what the client gives away immediately after the intervention. The primary test is, does the client believe that they can achieve the goal that was blocked by the limiting belief?

The author has never seen longitudinal follow up studies on the effect of *re-imprinting*. But one can expect that the duration of the effects of a belief change with *re-imprinting* match that of Schema Therapy or REBT. On the other hand the author saw many individual cases that support the positive effect of *re-imprinting*. Until someone collects the financial means and makes the effort to do a solid study, it will be inconclusive whether *re-imprinting* can really change limiting beliefs in a one or two hour session in a lasting manner. But the fact that this technique has been used for this purpose for almost 30 years gives a hint.

2.8 Is changing memories good or false? A moral question.

Traumatized people tend to rewind the mental film of what happened to them over and again without making any changes to it. The impulse to do so can be seen as the mind's natural way of driving the person to still cope with the traumatic issue. But what is "coping with" if you

only remind yourself of *the historical facts*? There is evidence that such repetitions may even worsen the complaints. If that is true, this underlines the idea in cognitive psychotherapy that the reliving of a traumatic experience without the cognitive restructuring thereof has little therapeutic value (Derks, 1988; Ellis, 2001; van der Kolk, 2014).

A method like "debriefing" should be looked at with some sepsis because of the above (Van Emmerik, Kamphuls, Hulsbosch & Emmelkamp, 2002; Lewis, 2003). This latter method presupposes that reliving the traumatic event and expressing the emotions while talking to some listening ear, by itself helps to heal it. Common sense supports that with statements like: "Sharing it, is half the cure."

Common sense is not always right on the matter of psychological issues. For instance, when someone calls a type of therapy "manipulative," a first common sense reflex may be: Oh that is bad! Or when they call it "dangerous" then it is probably: Stay away! But another less commen sense response to *manipulative* can be that it is skillful and when it is *dangerous* is must have a strong impact (Hollander, 2014).

All forms of imagination therapy (Singer & Pope, 1978) stimulate the client to add to or change their present problem related images. In *re-imprinting*, the therapist stimulates the client to replace the original traumatic images by much better ones. Some critics put a "common sense" negative frame around that by calling these improved images "false memories". After experimenting with implanting nonfactual childhood memories in participants, Elizabeth Loftus (1997) writes the following:

> False memories are constructed by combining actual memories with the content of suggestions received from others. During the process, individuals may forget the source of the information. This is a classic example of source confusion, in which the content and the source become dissociated.
>
> Of course, because we can implant false childhood memories in some individuals in no way implies that all memories that arise after suggestion are necessarily false. Put another way, although experimental work on the creation of false memories may raise doubt about the validity of long-buried memories, such as repeated trauma, it in no way disproves them. Without corroboration, there is little that can be done to help even the most experienced evaluator to differentiate true memories from ones that were suggestively planted.
>
> The precise mechanisms by which such false memories are constructed await further research. We still have much to learn about the degree of confidence and the characteristics of false memories created in these ways, and we need to discover what types of individuals are particularly susceptible to these forms of suggestion and who is resistant.
>
> As we continue this work, it is important to heed the cautionary tale in the data we have already obtained: mental health professionals and others must be aware of how greatly they can influence the recollection of events and of the urgent need for maintaining restraint in situations in which imagination is used as an aid in recovering presumably lost memories. (p. 70-75)

The type of caution that Loftus advises aims at therapists that "help" unaware clients to discover supposedly traumatic childhood events. But that is not included in the practice of *re-imprinting*. One can say that what a therapist helps the client to create in *re-imprinting* are "false memories" in the sense that they are not historical. As stated, common sense logic implies that "false memories" must be a bad thing (Loftus & Ketcham, 1994). When the *re-imprinting* procedure is led well the client creates new interpretations of historic events. These are not suggested by the therapist but made up by the client under the structuring guiding of the therapist. One can call these memories false but they function as a form of "healing by imagination".

The technique used in *re-imprinting,* to integrate the "false memories" is prograde association (from the past to the present). The latter is similar to what Loftus & Ketcham (1994) used as *suggestion* in their experiments, which led to subjects who could not distinguish between facts or fiction anymore.

When a client is unaware of having had a traumatic childhood, some therapists choose to confront them, on the basis of whatever observations, with a probable victimhood in sexual abuse, alien abduction or infestation with evil spirits. Such confrontation can have a strong nocebo effect. Such possibly "false traumas" are a problematic artifact of psychotherapy. Therapists who do that often believe that knowing the truth is something that heals on its own behalf. It is clear that most therapists who treat clients for alien abduction, past life traumas or satanic possession, themselves tend to believe in the reality of such events.

Re-imprinting shows the opposite at work: the client imagines a probable history in which a very difficult situation is turned into a valuable leaning opportunity. *Re-imprinting* helps the client to create a fantasy about how a traumatic situation could have been much better if certain resources had been present.

Therapists who regard helping clients to create better (non factual) reconstructions of traumatic events as unethical cannot congruently perform *re-imprinting*. Since the transmission of the failing resources to all involved in the traumatic experience, must be the crux of bringing about the belief-changing-effect in *re-imprinting,* all involved know that this is an example of *wishful thinking*. The latter expression disqualifies the work in a similar way as *false memories*. However when the therapist leaves the wishful thinking out, the client is left with procedures that resemble psychodynamic therapies in which becoming aware of what really happened is seen as the point of leverage.

2.8.1 Improved social imagery

There is another very important aspect to experimenting with *re-imprinting*, and that is how the images of others change (improve) after they are given the capabilities they missed in the traumatic situation. The fact that these capabilities are given in the imagination, as if it were possible, makes this a fascinating point, since, as soon as clients have transferred these capabilities to some other in their mind, they express a shift in attitude to that person. In extreme cases, a formerly hated perpetrator can become regarded as a person who is, for instance, pitied. The clinical work with *re-imprinting* was of great help in conceiving some tools in the *social panorama model* (Derks, 1997, 2002, 2006). Dilts also mentions how destructive role examples (violent fathers) may turn into better ones: this heals the internalized purpetrator in the client. The following of such bad examples is often part of the clients problems (see Dilts, NLPU website 6-9-2015, in his introduction to the re-imprinting format).

2.9 Redesigning Re-imprinting

Compared to more traditional forms of psychotherapy, two hours for freeing a client from a limiting belief is brief. But for specialists in single session treatments, the main disadvantage of *re-imprinting* is that it may take these two full hours. One reason for this length is that *re-imprinting* makes the client explore traumas, which consumes time, because both the mind of the client as well as the mind of the therapist have the tendency (just like all minds) to stay focussed on what went wrong. Thus without a strong guidance in another direction, clients and therapists tend to plough slowly through the misery.

Beside that, it is often difficult to identify the positive intentions of perpetrators in abuse, violence and criminal acts and yet this is part of *re-imprinting.* Achieving this demands extra competencies on the side of the therapist. Therapists who intervene with judgments and evaluations of what happened to the client also extend the procedure.

All in all, although *re-imprinting* can work miracles, since 1989 the author started to look for short cuts and improvements.

One of the first steps to come to an upgrade of *re-imprinting* was a clear distinction between *trauma-treatment* and *belief-change*. By taking these two apart, the way opened to look for a method aimed only at belief change. As already stated, *re-imprinting* seems to acquire much of its power from taking the belief-forming moment into account. This in contrast to REBT, The Work and Bandler's sub-modality-belief-change. That leaves us with the question whether the traumatic moment should be explored at all to get this power?

And then there is also a category of limiting beliefs that were merely a result of prolonged exposure to certain circumstances rather than a particular traumatic experience. How could these limiting beliefs also be addressed?

2.9.1 The Prologue

The word *prologue* means the "time before": thus in this work this is used for the period of time before a belief was formed. As has already been extensively discussed above, beliefs seem easier to change if one chooses a moment before their first occurrence on the time-line. Thus a new technique-design should transfer an alternative empowering belief as *if this* takes place in the life of the client before the belief forming moment.

And as described above, it was observed that when an alternative belief was presented to the imaginary younger self, *as if* that happened in a moment before the limiting belief was formed, this alternative belief was easily absorbed. In contrast, empowering alternative beliefs that were presented during the belief-forming situation, during the trauma (as in the earlier forms of *re-imprinting*) or after that, or in the here and now, tend to trigger higher obstacles of disbelief.

The same phenomenon was observed in *change personal history* when resources were presented *as if* it was done before the first occurrence of the issue (Andreas & Andreas, 1989). These resources were more easily integrated over prograde association, compared to resources transferred during the reliving of the moment of incompetence. When indeed the resources were received before the onset of the problem, the clients were just only sighing, nodding and smiling when they took the resource over the *paper time-line* through their life to the present (Derks & Hollander, 1996).

2.9.2 The quality of the alternative belief

It was clear that not any alternative belief would be effective. In *change personal history* the resources should exactly match the missing capabilities at the time of the onset of the issue to be effective, not just any type of "self confidence". In a redesigned *re-imprinting* the new belief had to fit exactly to the needs of the client or else it would not work. The belief had also to make "all the sense in the world" to the client.

By experimenting, it appeared that such an alternative belief had to help realize the same

positive intention as the limiting belief helped to fulfil. Thus when the limiting belief gave the client "protection" the new belief must provide that in the same amount and quality.

The crucial questions to the client became: "When did you not yet believe this (limiting belief)?" and when this had been answered the next question was: "What was the positive intention of believing this (limiting belief)?"

With the help of these two questions every exploration of the traumatic event and the people involved could be skipped. This resulted in the already mentioned technique, called: *Convincing your younger self*. Below follows the authors' original training handout from 1997:

Clinical Experiment 21: *Convincing your younger self*

The indication is a limiting BELIEF (=`ZZ´) that prevents the reaching of a GOAL (=`XX´).

The BELIEF `ZZ´ is: I believe that…

The GOAL `XX´ is: I want…

1) What has been the advantage of believing in BELIEF `ZZ´? What did that bring you, or what did it protect you from?

The ADVANTAGE called `YY´ is: It enabled me to…

2) Find out at what age you certainly did not yet believe in BELIEF `ZZ´.

Encounter yourself at that age and, in your imagination, make good contact.

3) Teach your younger self a lesson, that will enable him or her to have later in life BOTH the ADVANTAGE `YY´ as well as the GOAL `XX´. First, find out what this lesson should be. Next, in your imagination, talk as long as necessary to convince your younger self.

(If your younger self has objections, go back to an even earlier age.)

4) As soon as your younger self is fully convinced, step into his or her shoes. Become your younger self and listen to the lesson again as it is provided by your grown-up self.

5) Grow up in your imagination with the altered belief in mind. On the way, change any experience that would have been different as a result of having this new belief. You have finished when you reach the present.

6) As an NLP-er you can use the following test, "Why can't you reach GOAL `XX' ?" If the process has been successful the client will no longer be able to give any reason.

Or a more provocative test: "Look! You will never be able to reach GOAL `XX', because of… (and here you present the original limiting BELIEF `ZZ')!"

If the process has been successful the client will make objections.

Still not satisfied? Return to your younger self and teach him or her some more lessons.

2.10 Observations concerning Convincing Your Younger Self

This procedure was the author's preferred belief-change technique between 1996 and 2010. Since the entire work with traumas was now skipped, the process gained speed in comparison to *re-imprinting*. But as soon as the client reported struggling with horrific memories,

flash backs or trauma-related depressions, the elements of *re-imprinting* that dealt with trauma still could be applied on their own.

It appears that the crux in *convincing your younger self* is to guide and inspire the client to create a sufficiently strong alternative belief that can overrule the limiting belief when it is taught to the younger self in step 3. Technically speaking this is a matter of repeating the questions to the client in a precise manner, being very clear and also of giving some examples to help set off the client's creative processes in the right direction. When a client hesitates about what to tell to the younger self, the favourite guiding examples are: "You are good the way you are!" and "Follow your own intuition!" These helped many clients to understand what was demanded of them and then next enabled them to invent their own empowering lessons.

However, it was observed that "You are good the way you are" is probably also the most often composed alternative belief told to the younger selves in this line of work. This observation also offered a glimpse in what kind of empowering beliefs children in general may need in life.

A frequently observed difficulty in *convincing your younger self* was the same as it was in *re-imprinting:* the search for the limiting belief, its exact formulation and its moment of formation. In some cases a client could tell right away what he or she believed that stood in the way of their goal and also when they had come to believe that. In other cases however, it was very hard to agree with the client about the right formulation. The latter could have different reasons, like for instance the urge in some clients to do it perfectly. This made them reformulate the same idea over and over again. "I must make no mistakes… no, no, what I believe is in fact that… I have only one chance to do things right… no, no… I must be perfect to be loved… etc." In other instances the impression was that the limiting belief was vague, only kinaesthetic or just hard to catch in words.

The most remarkable observation in this study, already discussed in previous sections, is what happened when clients tried to convince their younger self at a too late moment in life (on the *time line*). Take the example of a client who said he did not yet believe the limiting belief at age eight. When trying to convince his younger self of the alternative at age eight, to his great surprise this lesson was not accepted: "He protests!"

In the remainder of this section we will get back to some things that were already explored before – we hope the reader understands that this serves to support the line of reasoning. Thus as already stated, whenever something like the above resistance occurred, going back in time *always* solved this problem. Which means in practice that in the above example, the same empowering alternative belief could be presented some years earlier, at age 6 to be accepted there. In some instances even two years earlier hit on resistance: "He is still protesting!" But however frantic the younger self protested, by moving further back in time there *always* appeared to be an earlier age at which the alternative belief could be accepted without resistance. Although on many occasions, one may have to go back as far as in the womb or before conception or even in previous generations of ancesters (like Neanderthals).

The reliability of this phenomenon made it appear like a law of nature. The logical conclusion was, that when the younger self protested, it must already have had the limiting belief at that age. Thus, although the client had thought the belief was formed after eight years of age, he had overseen that the belief was already present at that age and even two years earlier. And theoretically this justified the conclusion that even when the client as a child of eight did not *really* have this belief historically at eight years of age, in his mind it was currently *encoded* (*time coded*) as already existing at this age. This brought about a working rule:

Beliefs are harder to change when they are subjectively *time-coded* as dating earlier.

As already stated, the above was the core of the *time-code of mind theory* (Derks, 2010). This theory was based on the assumption that for the mind to organize its beliefs in a hierarchy of age it must be capable of knowing when a certain belief was formed. Therefore it was presupposed that the mind used a *time-code* to accomplish this, since for the mind to know whether there is already a belief about something at a certain age, this belief must be *time-coded* in a way analogue to how computers add date and time stamps to their files or videos in the camera.

The question then became: How does the mind encode time? The first place to look for an answer to this was the *personal time line*. It seemed logical that this linear structure of events that went from the body/present of the client backwards in time/space, could be used to know the moment of the formation of a belief.

As already mentioned, the current theoretical position is a combination of factors:

1) *Time coding* is done by putting the memories of unique moments and generalized episodes on specific locations in mental space that rank them according to their moment of memorization: by their distance from the body. The personal (past) time line comes from moving experience out of the here and now close or in the body, to make place for new ones. Nicknamed, the conveyer belt of the past.

2) Time coding can also be done by contemplating what happened relative to what, like: which child was born before which grandparent died or holiday or car or lover, etc.

3) The other factor that can be responsible for the above phemomena of resistence against newer ideas, stems from the way concepts appear to be neurologically linked in the order in which they were conceived. Here we are talking about the *feed forwards inhibition* that stabilizes the connection between a sequence of cell assemblies (see part 3).

Whatever the correct explanation is for the very consistent phenomenon of conservatism found in regards to the "*as if*" timing of the transfer of alternative beliefs, the facts do not go away.

2.11 Conclusions concerning convincing your younger self

The first conclusion from *convincing your younger self* involves its therapeutic application. The method leaves little room for arguments between the therapist and the client. Primarily since the client becomes his own teacher (his own Socrates), and can think of what to teach himself, while the therapist stays out of the debate. The process can be done successfully without the therapist even knowing what the beliefs are.

Although *convincing your younger self* is one of the techniques most used by therapists who are familiar with it, it still can be improved. One of the open wishes after doing it for over 10 years was that it would be great if the difficult search and formulation of the limiting belief could be left out. And also if the queste for the right age of the younger self to present the alternative to it could be solved in another way, since it was frustrating to have to send the client back to even younger younger selves because the alternative was rejected. And it would work faster if the whole *paper time-line* could be left out as this interrupted the workflow in some situations. Then, in a considerable number of cases the younger self reacted as if the limiting belief stemmed from one of its parents, making convincing the younger self thus useless.

The above led to re-designing the method to meet the above criteria. The core operator would still be an alternative empowering belief, which helps to fulfil all the needs of the client at

once: the therapeutic goal and the positive intention behind believing the limiting belief. This belief must be presented so early that one does not need to worry about time code related objections. And a new design should also elegantly deal with trans-generational influences.

The result was the technique called *pre-conception,* that is used as a standard procedure for belief change in all social panorama trainings since 2010. The following is the author's social panorama course training handout from 2009:

Clinical experiment 22: Pre-conception

1. Determine **Goal X**, which is what the client wants to do but cannot achieve.

2. Ask the client to assume that **Goal X** is being blocked by **Decision B**, which he made sometime in the past. It is not necessary to know what this decision is. It is enough to only assume that a decision is the root cause of the blockade. (Decision B is an unknown limiting belief)

3. Have the client ask his unconscious mind for the **Positive Intention Y** behind **Decision B**.

4. Make sure that both **Goal X** and **Positive Intention Y** are named in short, clear key words.

5. Ask the client to visualize the sperm cell and the egg cell that he once was. (It doesn't matter whether or not this is biologically correct.)

6. Help the client to consider the following question:

7. What **lesson** must the sperm and the egg learn, before conception, to make it possible for you to achieve both **Goal X** and **Positive Intention Y** in your life?

8. If necessary, you can suggest a couple of examples, such as 'You're OK as you are', 'Trust your instinct', 'Be yourself', etc.

9. Repeat the question in step 7 several times until the client has **the answer**. (The therapist does not need to know the answer.)

10. Ask the client to teach the **lesson** to the sperm and the egg in such a way that it becomes more important than anything else.

11. Check whether both the sperm and the egg can accept and believe this lesson.

12. If not, go back and do the same procedure with either the sperm or/and egg that became his father and/or mother (whichever one cell did not believe or accept the lesson).

13. Only continue when both cells accept and believe the lesson. If necessary, go back to grandparents, great-grandparents or even further.
    Once this has been successful, go back to the visualization of the sperm and the egg before the client's conception.

14. Help the client to visualize his own conception and to visualize the very first cell. Ask him to associate in this first cell and listen to his adult self, repeating the **lesson** again.

15. Once the client, in his first cell, fully believes the truth of the lesson, then he can grow up into the here and now.

16. Test the effect by asking the client "What is stopping you achieving **goal X**?"

2.12 Observations from Preconception.

When people are not informed about the psychological principles that lay at its roots, this process may appear weird. And concerns whether clients will go along with it can be heard regularly in training situations. But just as in the teaching context, with therapy clients it is a matter of framing the steps of the procedure right. Often it is enough if the therapist says: "Now we will do something crazy." Since this will disarm most sceptics to a workable level.

A disadvantage of the method is that it leaves little room for improvisation. The steps must be taken according the format or else it will result in confusion. But because of the fact that the steps are identical with all clients, learning the right steps by heart is a good investment.

Step 2 shows a level of communication with the unconscious that is uncommon in NLP and even more rare outside of it. In this step the client is asked if he or she *can assume* that there was some decision in the past that is currently blocking the client from reaching the goal. (The answer needs to be "Yes, I can assume that.") When the client does assume this to be the case, the limiting belief and the belief forming moment are identified at an unconsciously level and they do not need to be brought to awareness:

> Step 2: Ask the client to assume that **Goal X** is being blocked by **Decision B**, which he made sometime in the past. It is not necessary to know what this decision is. It is enough to simply assume that a decision is the root cause of the blockade.

So the client's answer must be a YES! (Yes I can assume this.) And since this type of question is uncommon, it needs often to be clarified that just a YES is good enough.

From the point of view of mental space psychology, this question must lead to the unconscious identification of the location in mental space where the belief forming moment is indexed (placed in history, time coded). An alternative question like: "Ask your unconscious mind (or a helper spirit) to find the place (location) where changes need to be made," can do the same with a more general meaning. Such a procedure that, builds on a lot of trust in the client's unconscious capabilities at the side of therapist, speeds up the therapeutic work in an amazing way.

The question for the positive intention is another example of communication with the unconscious mind:

> Step 3: Have the client ask his unconscious mind for the **Positive Intention Y** behind **Decision B**.

Observing how easy it is for most clients to come up with the positive intention behind the believing of the limiting belief may lead to amazement too. However, they often just need the right state of mind in which case this step is combined with one simple suggestion: "to relax some more… and wait for what comes up." The "miracle" is that at least 90% of the clients are

fully able to identify the positive intention of the thus unknown decision on the basis of only the implicit suggestion in the question that something like that must exist.

When conducted step 2 and 3 skilfully, this takes out the whole work on 1) identifying the limiting belief, 2) identifying the age of the belief forming moment and 3) exploring the probable traumatic content of the belief-forming event.

The sperm cell and egg cell metaphor guarantees that the client shifts to a *time coding* that lays way before everything that was ever learned in life. Beside that, it is a hard metaphor to argue about, since all people were once two such cells. Of course, the speaking to, teaching to and watching the responses of these cells is extraordinary and must often be framed as a "helpful way of thinking". Clients who have difficulty with the spermatozoa-and-egg-format probably will still accept the work with a younger self. From the work with personifications in the social panorama model it is known how easy it is for humans to express themselves towards some object (real or fantasy) as if it were another human being; so talking to genetic cells appears no big deal for most people.

Just like in *convincing your younger self*, finding the right formulation for the alternative belief is the most crucial step. Here the therapist needs to make sure that the client understands precisely what is asked of him or her. That is why step 9 says:

> Repeat the question in step 7 several times until the client has **the answer**.

The second part of step 9 can be skipped, when the therapist is sure enough about the creative work and intelligence of the client. But as a way of checking this parts says:

> Ask the client to express the **lesson** briefly and clearly.

When the expression of the lesson that is given to the cells is skipped, this means that the therapist has no idea what the alternative empowering belief is. Because of just assuming that there is a limiting belief, without talking about what it is, the limiting belief is also not known to the therapist. The great advantage of not knowing these two formulations is that this makes it impossible for the therapist to interfere. Beside that, it will bolster the client's self-worth, since it is clear that they solve their issue by their own powers.

By not using the *paper time line* in this method, some of the diagnostic potential of this spatial tool is lost. For instance, there is no place to show other moments of reconsideration of the limiting belief or of the occurrence of similar traumas or where other resources are lacking. Most clients make the radical jump in time, directly to the moment before conception, without hesitation. They seem to know where to go without the *paper time line* as their guiding line. It must be in a way the farthest point in an outwards direction on their personal time line. Observing people do that shows something that can be translated in a laboratory setting, with the aim to just study how people navigate mental space/time.

2.13 Final conclusions from all belief-change technologies

After *reimprinting* and *convincing your younger self*, the author has used *pre-conception* for eight years. It has been demonstrated in hundreds of teaching sessions and, depending on the number of generations of ancestors one has to take care of, the result can be ready to be tested after between 10 and 40 minutes. When the client is able to invent the alternative belief

without hesitation, it may even be faster. But most decisive for the speed is the number of objections the client hits on and how elegant the therapist can make the process move forward (see: on YouTube: “Personality in Mental Space, by Lucas Derks”)

The first conclusion from working with belief change techniques is that they show us very fundamental properties of the mind and mental space. And by trying to change concrete thought patterns, the experimenter unearths phenomena that remain unseen in other forms of research.

The changing of beliefs confronts us with 3 themes: 1) the way in which people hold on to their beliefs, 2) the communication that helps people to update limiting beliefs and 3) the role of mental space and neurology in how the mind creates the phenomenon of conservatism.

Then suddenly there it was: the image of the person surrounded by chains of beliefs that went in all directions into mental space to end at their starting point somewhere far beyond the reach of regular daily awareness. And by experimenting with psychotherapy we had to come to the conclusion that the minds of our clients, with all their beliefs, are consolidated from the outside of mental space inwards. In other words, a person is kept put in the center of a web of cords of related cognitions (beliefs). The area in which a person can control and change his ideas is much smaller than this web. And it is at the far fringes of the web that most cognitive plasticity is found. That is what the psychotherapeutic belief change techniques all show us.

Thus the area of mental space in which most effective psychotherapeutic belief change is done is far in the background of immediate awareness: but is this the area controlled by the right hemisphere? Although this is in the hypothesized awarness field of the right side, it may be not. It could be, that this situation arises from these ideas being pushed out of the center of awareness by the left hemispehere, when the beliefs were reconsidered. Futher exploration is required.

Limiting beliefs are not only liguistic objects, in the form sentences spoken with the inner voice. But this linguistic shape is what is best manageble by cognitive science (read, speak, write down, fill out, computer test) – it is like searching under the lantarn because there one could see ones keys bets if they indeed were lost there… The hindrances in the spoken form can be expected to formost operate in the left side of the brain. It would be missing the point if we overlook the non-verbal side of beliefs. For a large part blocking schemas must have their effect from the right hemisphere.

Why are people conservative?

Thus again: Why is changing someone’s mind so hard? It is because of all the above. Problematic thought patterns are consolidated in the same way as useful lines of thought. Both are sustained from the outside of mental space inwards in the direction of the present and this is happening largely in the unconscious mode over prograde associative links. This helps to make a persons map of the world something robust and stable. On the box of the mind it says: “No consumer repairs”. By being primarly stiff minded we protect ourselves against taking in nonsense. But by the same principle we also conserve nonsense. This helps to stabilize people and make them predictable, but it also makes it difficult for them to correct inappropriate patterns in cognition, emotion and behaviour. And when something is really wrong with a person, it is the same stabilizing mechanism that hampers change.

It is not the whole story of the mind. But it is what the clinical experiments with convictions in this study provide us with as the most striking insights.

To change beliefs we need to travel with the client to the outskirts of his/her mental space. There we can reach the beginnings of the chains of concepts that hinder the client in the present. For this the client needs to be so quiet that also the intuitive knowledge of the right hemisphere becomes accessible in a reliable way. To travel back in time in mental space we must get many meters away from the present in the centre. By such time travel we can reach the far away endings of the thought-lines that are in fact their beginning. And we discovered that just before these endings are the places at which changes may be made.

Part 3

This chapter is devoted to the Feed Forward Theory of Consciousness (FFTC). This is an ambitious reconstruction of how the brain must function to account for how psychological problems are solved with the help of so-called 'resources' in psychotherapy. During the 1980s, numerous trials with the NLP-technique *Collapsing Anchors* resulted in the reformulation of the most basic phenomena in psychology. In order to create a coherent model of these phenomena we had to draw from many sources; most of them stem from cognitive psychology and neuroscience. The dynamic nature of these processes asks for a multilevel and multi perspective description. But the core of the FFTC-model is quite simple: When in the stream of thought there is an interruption, this is experienced as a problem. Only when the interruption is bridged in some way, does the experience of having found a resolution arrive.

The feed forward theory of consciousness is derived from many hundreds of observations. Every time a 'resource-memory' was applied in the tested technique this solved a part of or the entire emotional issue the client had. The simplest NLP-technique for making that happen is called *Collapsing Anchors* (Bandler and Grinder, 1979). This latter method is still taught in most introductory NLP courses, and it results in remarkably similar outcomes. The fact that a resource-memory is capable of instantly solving an emotional issue, contradicts traditional views on how psychotherapy worked. The feed forward theory emerged from rethinking psychological theories, like the so-called "Hebbian Rule" and the dynamic behavior of "Cell Assemblies" and also classical conditioning and operant conditioning. Although most of this work was started in the 1980s, we here present a 2016 up-date.

This article is written in remembrance of John David Sinclair, who was a source of inspiration and collegial friendship for the author, from 1983 until his death in 2015. The *Rest Principle Theory* made many things fall into place. David's understanding of the psyche was greater than his ambition, which made him the nice person he was, fitting better in the Finnish society than in the US from whence he came.

(The article below has only the most crucial references for the sake of readability)

Clinical Experiments in Problem Solving.

Lucas A. C. Derks

Published in *Acuity* spring 2016, original title:

The Feed Forward Theory of Consciousness Revisited

3. 0 Man… these ideas are… far out!

The 1980s saw the birth of a single theory that explained consciousness, unconsciousness, problem solving, learning, dreaming and emotions. This so called '*feed forward conception of consciousness*' by Derks and Goldblatt approached the mind as an integrated reality simulator. Such a mind must be capable of capturing, generalizing and mimicking the stream of events in space and time that surrounds it, to enable the organism to adequately deal with all of that. Like most psychologists, Derks and Goldblatt believed that the brain uses neural networks (engrams or cell assemblies) for that purpose (Hebb, 1949; Derks & Goldblatt, 1985). These must consist of large groups of nerve cells that become activated and deactivated in parallel streams. In their *feed forward theory*, inspired by William James' 1890 use of the *stream of consciousness*, all major psychological phenomena are linked to the onward moving flow of these networks. Most theorists looked at how such a stream starts with the perception of a stimulus or how it ends in behavior. Derks and Goldblatt however, focused on interruptions in the succession among these flowing networks. Their central vision was that when a sequence of associations comes to a halt, this causes an acute impasse for a brain that by its nature can only move forwards from the one idea (cell assembly) to the next. They envisioned that whenever one of the brain's parallel streams is hampered, new learning is compulsory: fresh pathways must be created to enable an onward flow again. In their philosophy, this so called *feed-forward learn force* – which is wired-into the brains of all creatures – obliges all organisms to represent their environment in order to survive within it.

Goldblatt & Derks, at the WTC, NY, 1986.

In Derks and Goldblatts theory, interruptions in the mind's cognitive flow cause flashes of conscious awareness when it takes longer than a third of a second before a new forward link can be established. In such cases the *search activity – the search for potential forward links* – spreads, and intensifies over the entire brain to allow a far reaching and controlled choice for a successor network.

But in their theory they also state that these same interruptions produce negative emotions. That happens when bridging a missing link takes longer than a second. In this case the

spreading and intensifying search activity peaks until it must drop because it 'runs out of gas' in the shape of neurotransmitter substances. During such peaking, a storm of excitation inundates the sensory-motor cortex, with uncontrolled emotional behavior (panicking, crying, tensing) as its consequence. When the intensity of such an eruption finally diminishes, the emotions extinguish and the person calms down.

Critical in this particular theoretical view is that consciousness is seen as a correlate of the amount and intensity of mental activity. In other words, the more neurons become involved in such a search process and the higher the intensity of this involvement is, the more aware the subject will be.

It was also hypothesized, that after such an interruption in the stream of associations is solved, by making a new link, positive emotions, ranging from satisfaction to euphoria, set in, depending on the intensity of the search that preceded it. Thus in Derks and Goldblatt's view, the searching for and the finding of connections between networks is the driving force behind all learning and development and a moment of consciousness is in fact an intermediate step in the creation of adequate survival software.

3.1 Resources, solved and unsolved problems

Progress often comes after taking one step back. After practicing NLP for several years Derks and Goldblatt concluded that it confronted them with three fully overlooked questions:

1) What is a *mental problem*?

2) What is a *solved mental problem?*

3) How can a mental problem be solved with the help of a *resource*?

The readers' own intuitive answers to the first two questions are probably good enough for the moment. But what is a resource? A *resource*, in the 1980s NLP, was seen as some piece of information that was laid down in the client's central nervous system and with the help of which his problem was solved. It was also seen as unused, latent coping potential. In NLP therapy, and directly adopted from the famous hypnotherapist Milton H. Ericson, *resources* are considered the most crucial ingredients in psychological change. Let us present an example.

Suppose the client's problem centers around jealousy in intimate relations, a *resource* here might be some piece of knowledge that contributes to the resolution, that however, had previously no associative links to this issue. When the client was thinking of his problem, he never considered, or got access to this resource domain. Its content may not even have anything to do with relationships or the comparison between what one self and what others possess (=jealousy). But we speak of *a resource*, when the client makes an associative link (leap) between the problem domain and this piece of previously unrelated information that then in this instance, causes the jealousy to go and stay away.

In the NLP of the '80s this *resource related problem solving* was the cornerstone of therapeutic work, just as it is today (Derks & Hollander, 1996; Hollander & Derks, 1990). The definition of a *resource* has changed somewhat over the last decades, into a competence that the client possesses outside of the problem-context but that he fails to have available in the problem-domain.

The above three questions were pretty alien to psychology in the 1980s, for the simple reason that only few scientists were familiar enough with how people solve psychological problems. But for NLP-ers, who were doing regular hands-on clinical work with actual clients, their problems and their resources, these questions were quite logical. One must realize that practicing NLP-ers frequently witness how something that seems unsolvable at first, changes into a fruitful learning in front of their own eyes within an hour or so, with the aid of a seemingly unrelated piece of cognition that was passively existing in the client's memory: *a resource*. But beyond that, in the pragmatic NLP, no psychological theory about this type of change existed – in contrast to other schools of therapy where the scholars tend to be drilled with the founder's ideologies (Bandler, 1985). In NLP trainings, "What is the theory behind this?" was a recurring question.

Today in 2016, the only accepted concept that explains the same phenomena, especially when they are related to solving traumatic issues, is the reconsolidation theory (Alberini, 2007; Besnard, Caboche, & Laroche, 2012).

3.2 Clinical experimentation

At the start of their cooperation, the technique *collapsing anchors* (Bandler and Grinder, 1978) served as their primary experimental paradigm. They made this choice because this technique has six clear steps and is easily learned and can be applied to a wide range of issues, and also because *collapsing anchors* is prototypical for NLP and can be demonstrated with all committed subjects with a problem. The procedure takes about 20 minutes and is immediately testable on the basis of the non-verbal signs of stress and relaxation, and also on the basis of the verbal feedback from the clients. Derks and Goldblatt's subjects often described their experience in enough detail to provide deeper insight in the workings of this approach.

Clinical Experiment 23: Collapsing Anchors

In *collapsing anchors* a recent example of a recurring problematical experience (*stuck state)* is briefly relived by the client, to enable it to be *anchored* (=connected by classical conditioning, (Pavlov, 1927)) to a specific touch on the skin. This is done, until an independent presentation of the touch-*anchor* on its own, can help to re-evoke the *stuck state* in the client. Next, the client is asked to name what to him or her is *the opposite emotion* of this *stuck state*. This emotional polarity is normally alien to the problem context. After naming the opposite emotion, the client is asked and guided to relive a clear example thereof, and this experience is also anchored with a touch on another spot on the skin. Now a *stuck state anchor* and a *resource anchor* have been created. The critical part consists of the simultaneous stimulation of the *stuck state anchor* and the *resource anchor*. By this the two previously unrelated experiences are called into mind together. By touching the two different spots on the skin, the *stuck state* and the *resource* automatically start to work their way towards a new single stable experience. The subject does not need to put any extra effort in this "enforced creative process" (Bandler and Grinder, 1979). Over the past decades collapsing anchors lost some ground to more precise techniques and to new varieties of the same principle that some trainers have developed.

3.3 Examples

Let us look at a more detailed example. Suppose the client calls his problematic stuck state *fear*. He then will be asked to briefly relive a recent case of this fear, while the experience is anchored at the same time to a touch, for instance on the skin of a knuckle of the hand. Then he must name the opposite emotion of this fear; suppose he calls that *trust*. The latter word is the name of the potential resource. Next the client is asked to explore his biographical/episodic memory, with the aim of finding a concrete example of this type of *trust,* preferably from outside the problem context. After such an historic example of *trust* is relived and also anchored on the skin, the crucial moment has come, in which both touch anchors are activated at the same moment. By simultaneously touching the two different places on the skin, the two opposites become activated in parallel.

This may at first lead to confusion and then to a kind of mixture, during which the client may go through phases of uncertainty, until usually a new stable experience comes into being that lacks the negative emotional quality of the original stuck state.

This procedure reliably reduces the intensity of the stuck state (the *fear* in this instance). The therapeutic effect can be immediately tested, by activating the *stuck state anchor* (the touch connected to the problem). The test is positive when a better feeling than the stuck state comes up. After that, the new feelings can be connected to an imagined future situation that otherwise would have caused the original *stuck state*. When things work out, this future fantasy also comes with a better feeling. This technique was evaluated for *dental treatment anxiety* at the University of Groningen the Netherlands in 1991 (Derks and Hollander, 1996). Most skeptics cannot believe that the positive effects hold very long. The existing impression is that, when the immediate test is positive the prognosis for a lasting change is also good, but this still needs futher evaluation.

The above *collapsing anchors* problem-solving paradigm with the aid of *resources*, gave rise to the central hypothesis of the *feed-forward theory*, stating that the connection of the *resource* to the *stuck state* exemplifies the regular way in which emotional issues are solved. The famous creativity explorer Arthur Koestler in his 'The Act of Creation' from 1964 already connected this process to all creative problemsolving and called it 'bi-sociation'.

3.4 Conclusions from clinical work

In psychotherapy many things are taken for granted, because in the end it is enough if the client feels better and pays the bill. But nothing is obvious when one sees clinical work as psychological experimentation. After conducting a large number of NLP's resource techniques the following conclusions were drawn:

1) What is a me*ntal problem*? A psychological problem consists of recurring undesired *conscious awareness*. Most often this awareness is filled with insights in what it is that is wrong and this is normally accompanied by negative emotions (like fear, anxiety, panic, stress, jealousy, rage, nervousness, anger, etc.). By defining problems as *undesired conscious experiences,* the most basic part of the theory was laid out.

This formulation however confused people who were raised with the psychoanalytical view that the resolution of a problem necessarily always comes through it becoming a conscious experience (Miller, 1941; Baars, 1988). They are confused because to them "consciousness" is set equal to the solution of a problem and not to be a core characteristic of what constitutes a problem.

This stemmed from the Freudian thesis that healing takes insight in unconscious conflicts – and was based on examples with repressed traumatic experiences in which this appeared correct. However, the client's complaints must logically speaking always consist of undesired moments of consciousness. When the client is not consciously aware of any type of dyscomfort, we better consider him as having no problems – but he may still be a nuisance…

Milton Erickson suggested that consciousness is the main feature of a problem and that without the finding of adequate resources, problems do not go away however conscious the insights in them are. Consciousness just points to where in the mentals software resources should be applied. In that view, consciousness and negative emotions are no more than indicators that an unconnected piece of cognition, a loose end, has become activated in some way. Thus whenever a client senses complaints or starts to cry this means: failing resources!

2) What is a *solved mental problem?* The solution to a psychological problem has arrived, when a previously recurring *undesired conscious awareness* and the connected insights and above all the negative emotions, do not recur anymore under identical or similar stimulus conditions. The lack of awareness of any discrepancy between what is, and what is desired, necessarily implies that the stimuli that previously were triggering the stuck state (consciousness, insight and emotion), can now become processed in an unconscious way. One can say that they are now *habituated*.

The reason for going into psychotherapy is that frequently recurring problems clog the conscious learning capacity of the mind and block further development. Conclusion: The habituation of disturbing conscious content and emotionality is what therapy is all about. When a solution to an issue arrives the client will become consciously aware of that too, because moments after a solution pops up, pleasant emotions follow; but this joyful awareness fades rapidly to leave space for other things to pay attention to. In therapy we see clients cry of joy and relief, smile, nod and sigh when relaxation sets in, but then they may, after some brief moments of happiness, become aware of their next issue or stuck state. Some clients, after suffering from a problem for years, may totally forget about their issue altogether after a totally successful therapy session. Such amnesia keeps them from providing spontaneous follow-up feedback to the helper.

Out of these very basic conclusions, the central question of Derks and Goldblatt's research project returned to front stage:

How can a recurring piece of unpleasant consciousness be turned into an automatic unconscious process with the aid of an unrelated chunk of information from memory?

3.5 Theoretical obstacles

Thus, how can resources achieve their habituating effects? Derks and Goldblatt found that a longstanding research tradition, called *The Habituation of the Orientation Response*, appeared to be a relevant start. The strength of this theory came from its foundation on an experimental paradigm called *evoked potentials*. This predecessor of our present neuroimaging (PET, fMRI) consists of filtering out statistical data from EEG graphs after presenting the subject repeatedly with the same not yet habituated (scary, strange, novel) stimulus. This technology delivered irresistible curves that showed a gradual reduction in amplitude after every stimulus presentation. It was Sokolov (1975) who first used this technology to monitor habituation and Näätanen (1975, 1980) who found that high amplitudes coincided with consciousness and Öhman (1979) who made the connection with learning. It was a scientific breakthrough that came to a standstill because these researchers were all captivated by the view that the orientation response came from a *mismatch* between the *external state of affairs* (the stimuli) and the *internal*

model in the mind of the subject. That means in brief: whenever a stimulus *mismatches* a mental model, this results in a moment of consciousness that was visible in their graphs as a peak that came 300 milliseconds after the presentation of the stimulus. The discussions focused for instance on what happens with *novel stimuli*, since the subject could not have made a mental model of them yet, but it was clear that new items could also cause strong orientation reactions.

Derks and Goldblatt worked their way through this subtle subject matter, and started to play with some irrefutable examples. For instance: When one sees a cat with three legs, one may go: "Hey what is wrong with that cat!" (a startle =orientation response, consciousness, emotion). The Sokolov paradigm stated that this startle is caused by the discrepancy between the external stimulus (cat with 3 legs) and one's mental model in which cats all have four legs. It is this mismatch, according to Sokolov and his colleagues, that causes an orientation response.

Derks and Goldblatt proposed that this theory could not be right, since the number of potential mismatching stimuli in the world exceeds the number of orientation reactions in normal humans. When you walk around in a totally foreign environment your mind should explode with orientation responses but it doesn't: most of us like holiday trips to foreign countries, science fiction movies, horror movies etc. And we can also observe that some people do not notice a three-pawed cat even after looking at it carefully: they in fact see four feet where there are in reality three. They seem to take their mental model for real.

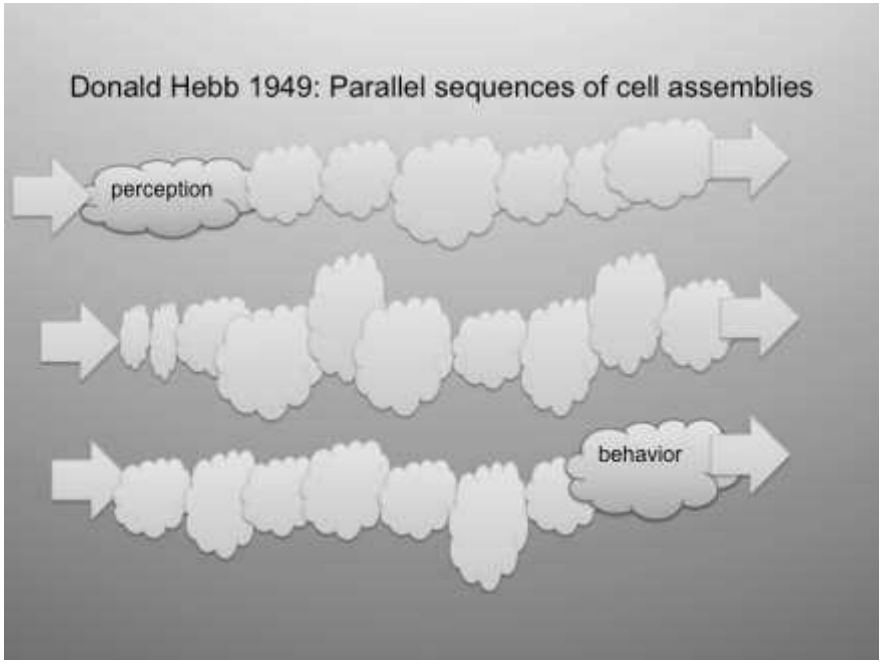
Thus even when a stimulus mismatches the mental model, it is not decisive for causing a startle response. Persons may also become startled because they may have the impression of seeing three legs, when in reality the cat they observe has four.

It is logical that the stimulus activates the first mental model, but what happens thereafter depends on the next mental models. Conclusion: Sokolov's theory had the charm of simplicity and was a good beginning but not the answer to how a resource can help to habituate a recurring undesired conscious process.

Since in Sokolov's work, 'mental model' was a very global concept this lead to a tautology. It appeared to be correct, since anything apart from the stimulus was the mental model in his theory. A more specific idea of what mental models are made of was needed (Bruin, Kenemans, Verbaten, & Van der Heijden, 2000).

Donald Hebb had postulated in 1949 that thought processes were composed of *cell assemblies*, which themselves were spatial and temporal patterns of neurons. *Mental models* should be deconstructed into cell assemblies. The question became: Is the speed of ativation and deactivation of cell assemblies related to the research data that was used to explore habituation?

In the '80s, researchers had made measurments demonstrating that habituated stimuli might already be recognized 8 milliseconds after stimulus presentation. A cell assembly might thus take between less than 8 milliseconds for unconscious and more than 300-500 milliseconds for conscious processing. When we see the fastest humans in action (e.g www.wimp.com/fastestgunman), it is clear how fast their trained nerves can react.



One of the biggest differences between human brains and computers is that even the fastest computer runs a task the first time just as fast (or even faster) than after 1000 times; but the brain has a way to increase its processing speed in an unbelievable manner. Thus before a 'mismatching mental model' is activated, there can already have been a whole series of mental models (networks, cell assemblies) gone past in the unconscious mode of processing.

3.6 "My dear… I though I was going crazy!"

Now suppose you fly for your job to the other side of the globe. You kissed your spouse farewell at the airport. Now in your leisure time at your destination, you walk along a beach. How many cell assemblies do you need to process first, before you recognize that your own spouse approaches you over the same beach?

In other words, how well a person is habituated to a stimulus is not decisive for the effect it will have. For instance, take a weapons dealer who is very habituated to guns. He may still panic when he is looking into a gun barrel. That is because many more cell assemblies run past before he spots the danger. From this logic came the view that the orientation reaction is not the product of a *mismatch* between the external stimulus and the first activated cell assembly, but from the cell assemblies that are succeeding the first one. On the basis of such examples Derks and Goldblatt concluded that Sokolov's theory was not detailed enough.

3.7 Awakening from theoretical daydreams

This conclusion led them to look at what could happen after the stimulus had activated the first cell assembly. And they hypothesized that somewhere further along the stream an activated cell assembly comes to a standstill because of the three legged cat now suddenly having four, cannot be associated to a next concept. It triggers: "Who the hell has put a fourth leg on my cat!"

No answer.

Schneider and Shiffrin's 1977 research had shown that fast flowing automatic thoughts run at high speed without any awareness. That speed must be at the core of what establishes unconscious thinking. Thus when we see a stimulus it can cause a fast succession of unconscious associations until it gets stuck and breaks into consciousness.

The consciousness and emotions that result from an orientation response were now regarded as the consequence of hitting loose ends in one's mental software. As soon as those loose ends became connected to *a resource* they were not loose anymore and would become smooth processes therafter and eventually become habituated and function unconsciously.

The experiments with collapsing anchors showed that a searching brain is not always so critical about what to use as a resource; it has a great capacity to transform and adapt the resources found into something that fits in.

3.8 Fruits

In the 30 years that followed the feed forward theory, all therapists who intentionally or unintentionally apply resources in their work, may have wondered: Why is this effective? And many found their own favorite explanations: some technical, others neurological and again others spiritual or metaphorical like the many 'new-age field and energy-models'. It was clear that the accepted psychodynamic, behavioristic and cognitive theories did not provide the answers (Prochaska, 1984).

Today, in 2015, this question gained even more priority, as therapists now have a multitude of methods for the treatment of traumas and fears at their disposal, which have all proven to work to some extent. Some approaches are just collapsing anchors in disguise: they help the client to access specific resources. Many others however, enable the client to find resources in a more indirect manner: they reduce the client's critical controle mechanisms with entrancing procedures of any type – or do this by their irrational frames and methophors. At times the latter can be really weird! The exotic procedures and irrational theories kept most "serious" scientists at bay. However when one looks at it from enough distance, it becomes clear that all these methods have in common that:

The therapist starts to help the client recall the negative emotions that are directly related to the issue and then have the client do ***something completely different!***

Doing something completely different to being stuck, can consist of thinking of the best moment in one's life or praying to a deity or searching for any other type of spiritual assistence. But just as succesful can be thinking about how it will be when the problem is solved sometime in the future or even better, tomorrow morning after a miracle has happened during the night. Ways to distance and detach oneself in one's imagination from the problem also seem very powerful. Such distancing methods are related to the Buddhist practice of visualizing onself in one's misery.

Other indirect methods to help to get access to resources may range from the client doing relaxation exercises, listening to alternating left-right clicks, drumming, doing prescribed finger tapping on head and body, moving the eyes fast left and right for a while, being given drugs like beta-blockers, taking on complex yoga postures, being massaged, being touched on sensitive places, taking a run, looking at the traumatic images with attention from one's other hemisphere, trance dancing, making unusual movements, reciting letters and numbers, walking to other locations to look at the issue from an other perspective, throwing and catching balls with the therapist, having the problem made ridiculous and funny by the therapist, singing songs or

pretending to have a fit of laughter. Most therapists believe their special approach is superior to all others and they can provide one with arguments why that must be the case.

It is probably very wise to assume that all these irrational looking approaches help (frequently), but the question of course is *why?* Many therapists have offered explanations that are not so far off from the feed-forward theory. They give suggestions about how doing *something completely different* can work like the resource in collapsing anchors (like the opposite emotion does). Or they see the *doing something completely different* as a way to improve the state of consciousness – lower the level of arousal – to create better conditions in the search for a resource.

In the urge to explain psychic healing, metaphors about *energy that is stuck* and is made *to flow again* thanks to the intervention are very popular. Or other explanations refer to movement as does one by Caesar Milan, the star in the popular animal show, *The Dog Whisperer.* He once said: "When the dog moves forward, his *mind moves forward*, and all his fears are gone." In this sentence, he showed his comprehension of what causes fear: a stuck mental process.

3.9 Three modes of habituation

In 1988 Derks argued that the *feed-forward project* had in fact delivered an improved theory of habituation. At least, when we define habituation as the processes by which conscious processes turn into unconscious and automatic fast running trains of thought. This contrasted with many authors who believed that a problem needed to become conscious to be solved. But the discussion was also difficult because in the '90s there were still many psychologists who remained to be convinced that unconsciousness even exists. Earlier in that century, many had embraced the idea of unconsciousness being scientifically incorrect, as a result of statements by Carl Popper: When the client denies something the therapist believes to be applicable to the client (You hate your father!), the therapist can always claim he is still right since it functions unconsciously in the client (You hate your father unconsciously!).

In the search for a solid structure to fit the new theory of habituation, three modes of habituation were postulated (Derks, 1988). The idea is that when a person suffers from a recurring undesired conscious process, this can go away as a result of:

Habituation 1: The unconscious processing comes into being after *a new link* to a follow-up concept (resource cell assembly) is made. The now continuously flowing chain of thought will finally exit at the motor cortex. There it may give rise to behaviour or inner- or external speech.

Habituation 2: The unconscious processing comes from the *extinction* of the searching concept.

On extinction: During a prolonged search, accompanied by emotional behaviour (crying, fear, screaming and motor abreactions) the synaptic connections that are holding the concept together rapidly weaken. This may go on to the point where the original stimulus cannot trigger consciousness or emotions any more.

In contemporary neuro-psychophysiology there is a consensus, based on microscopic evidence, that the process of the strengthening of synapstic links equals learning. However, the less researched opposite process, the weakening of synapses must exemplify de-learning, unlearning, amnesia or reverse learning.

According to Sinclair's *rest principle* (Sinclair, 1982), all synapses with rates of firing that lie above their steady-state rate will have their links weakened. And all *conscious thinking about something* implies such firing above the steady-state rate. This weakening of synaptic links must

be caused by the gradual depletion of the neurotransmitters that are involved in the synaptic firing; they burn up their fuel. At a steady state rate of firing the synapses replenish their neurotransmitters at the same tempo as they burn them. Intense conscious and emotional processes take firing rates far above the steady state, causing the synaptic links to weaken fast.

However synapses do to not stay weakened forever. Driven by their neurological wiring they will compensate for the weakening effect, by firing for some time thereafter below their steady state rate. In that way they can stockpile new fuel. It must be local inhibitory neurons that help them to reduce their firing rate after an intense burst of activity, and during this lower than average effort the synapses can restore their neurotransmitters (and receptors) to above their original levels, and thus become stronger than before. According to Sinclairs' *rest principle* all learning goes like this. Thus, synapses are actively used and thus will weaken at first, but immediately thereafter they are *rested* and can restore their strength to above their previous levels.

Extinction is just a very long continuation of active use that will be compensated for by an extra deep rest thereafter. Endorphins and other neural modulators are the agents that help to provide this deep rest and thus to conserve the over-used links. In this way, links will restore their strength up to higher levels than before the extinction. Thus in the end, an extinction process can result in stronger synaptic links. A cognitive process which at first seemed to be exhausted by "over-thinking" it, may become even more solid. This is an explanation for how, among other things, compulsive thoughts, addiction and phobias may come into being.

The parallel with marathon running fits here: after running a marathon an athlete is often not capable of running one more additional step, even though he just has done a great amount of training, one could say. This training however was over the top. Not only because his muscles are now exhausted, but also because the synapses involved in the running are fatigued. Marathon runners may explain that this in fact already happens after 30 kilometres. But they can still continue because endorphins are creating the "runner's high". These self-generated opiates help to conserve the synapses that otherwise would leave the runner disabled. Running a marathon extinguishes one's capacity to run. But not for ever…

In the '70s this re-strengthening of links after the extinction of a traumatic memory had been some therapists' enemy number one (look at Janov's, 1970 *primal therapy*). Since after therapeutic extinction (flooding, exposure) this same process caused the rebound and reocurrence of the symptoms. But at the same time this gave these therapists a more or less steady job…

Psychotherapy that aims at the extinction of emotions, like implosive desensitization, flooding and exposure, may become frustrating for clients and therapists alike, because an initially reduced sensitivity for the problem stimuli may turn into a increased sensitivity in a couple of days.

The biggest difficulty in this debate is that according to the professional convictions of many therapists, any focus on emotions and even better any expression of emotions will bring the solution of the client's problems closer. These therapists sometimes believe that the core of psychotherapy is making the client feel as many emotions as possible. So the extinction of emotions may be the logical consequence of doing that.

However, the current view among modern cognitive therapists is that extinction-therapy only works when it enables the client to start a fresh search and find new resources: cognitive restructuring (in REBT and CBT). In brief this can be formulated as: a client that has panic attacks when he is alone is not healing by doing that. A client that has the same panic under the supervision of a therapist is not healing either. The therapist can motivate the client after panicking to make a search for new perspectives, giving resources an extra impulse. And most effective

are therapeutic strategies that stimulate the client to connect well-chosen cognitive elements (resources) to the problem experience.

Habituation 3: Unconscious processing comes from *repressing* a concept. Repression is seen as the application of a mental function that stems from the timing and preparing of motor action (see Jerome L. Singer, 1990). It is the ability to withhold an action until the right moment has arrived – like ambushing hunters must do. It is waiting. Humans can also use this faculty – that is housed in the prefrontal cortex - for stopping their undesired conscious processes (Hopf, Boehler, Schoenfeld, Mangon, & Heinze, 2011). With the help of this mechanism one can put too difficult, too confusing, too hard to handle concepts on hold, sometimes for decades. The latter can consist of the infamous repressed traumas. In some instances the repression of issues may have disabling consequences because it blocks part of the brain's free flow (that may show up as dark areas in mental space, see part 1).

3.10 Conclusion

Derks entitled his 1988 Dutch book: Psychotherapy is a matter of habituation (Psychotherapie een Kwestie van Wennen). In this book he wrote that the job of a therapist is to help clients to habituate the undesired conscious processes that they themselves were not yet capable of bringing into unconsciousness. Only habituation 1, guiding the client towards fitting resources is realy solid for this purpose. Habituation 3, repression, is what Sigmund Freud and all proponents of the theory that neurosis is caused by repressed traumas are talking about. Extinction or habituation 2 was mistakenly seen by many therapists as the mode to use.

Deeper in the Feed-forward Theory of Consciousness

The farreaching consquences of Collapsing Anchors

3. 11 Simultaneous & sequential: contiguity & contingency.

Our brains only serve us well when they can simulate the order in the universe or, regarded in a smaller perspective, copy the structure of reality in such a manner that we can predict what will happen to us next, and also that we can find the locations of what we need. To make that work, our minds model the events in the space around us in their sequence of occurrence. Neural tissue seems miraculously predestined to do that. Without any help, our central nervous system controls our body, captures the dimensions of space, represents our immediate environment including the social world and constructs a spatial metaphor of time.

The Feed forward Conception of Consciousness (Derks&Goldblatt, 1986; Derks & Sinclair, 1997) explains the mind's innate drive to create a model of the world from a fundamental property of all neural tissue, i.e. that every living neuron always sends impulses to several other such cells. No one can deny that the intelligent simulation of reality must emerge from this apparently random phenomenon. But how can this seemingly spontaneous firing lead to a useful representation of reality?

The initial answers to this question are found in the *association theories,* as formulated by David Hume (1711-1776):

> There is a connection between different thoughts or ideas of the mind and their appearance in memory or imagination. Even in fleeting thoughts and loose conversation their connections can be observed. This is the case whatever language is used: different ideas are connected. There are three principles of connection among ideas: **Resemblance, Contiguity** (relationship in time or place) and **Cause** and **effect**. These can be illustrated by a picture leading our thoughts to the original (Resemblance), by one room in a building leading us to a discourse concerning the others (Contiguity), and by the looking at a wound leading our thoughts to the pain which followed it (Cause and Effect). On examination, we may become assured that these three form the complete list of connections.

Hume's scholars believed that raw sensory perception is shaped into knowledge through the principles of *contiguity* (the representation of simultaneously occurring events) and *contingency* (the representation of sequential events, what Hume called *cause and effect*). Resemblance (called *analogy* in this article) was seen as emerging from the other two.

Thus, perception on its own was seen as a sufficient condition to bring forth concepts. These concepts then become automatically associated in the order in which they were perceived. And in this view, things that appear together are represented that way and things that follow each other in time are remembered in their succession. Thus a creature only needs to perceive the world to learn about it.

Evolution theory suggests that the phylogenesis and the ontogenesis of the brain follow the same path. In the beginning of the life of an embryo, the ancient structures with their fixed functions in the body and at the basis and centre of the brain will be mostly involved in learning. But learning in an embryo will basically follow the same principles as in an adult: synapses need to be strengthened to form sequentially grouped patterns of concepts. In that way Donald Hebb (1949) translated the association theory into neural processes. He called the concepts that undeniable behave in a sequential order, *cell assemblies*.

3.11.1 How do cell assemblies come into being?

Logically speaking, *contiguity* produces the neural networks (cell assemblies) introduced in *part one*. Hebb wrote that the unity in such networks must stem from the simultaneous activity in its member cells. The process by which a network can be recalled in memory must obey the principle that *when a part of the network becomes activated, this part immediately starts to arouse the rest of the network.* And this very principle is seen in action in the NLP-technique *collapsing anchors*. When the anchor is activated it pulls the entire connected experience (cell assemblies) into mind. But it is also the same thing called classical conditioning, where a part of a network (CS) triggers the whole network (UCS) into action.

How can simultaneously firing nerve cells unite into a cell-assemby?

For that to happen, the neurons must make use of their dendritic connections. These consist of billions of tiny wires that run from everywhere to everywhere in the brain. Their abundance makes it probable that two cells have multiple mutual back and forth connections. An activated group of cells will continue to reciprocally stimulate each other over their dendritic connections until the entire network is activated. The water in the bathtub is put in motion in a corner, but a second later the whole bath is full of waves. This is also comparable to a few dogs that can initiate an all-over-town barking concert.

In the feed-forward theory, just as in Hebb's view, repeated simultaneous activity (contiguity) is seen as the principle behind the formation of networks (concepts/percepts). It is believed that the strengthened inter-cell connectedness of the member cells leads to its preservation in memory. The repeated simultaneous activity in a group of neurons thus enables easier activation of the same configuration of cells at a later moment in time (remembering).

The application of an "anchor", as used in *collapsing anchors* must function on the basis of the above. The kinesthethic touch-anchor becomes a part of the cell-assembly (problem or resource) that it is anchored to, by being stimulated together for some time.

3.11.2 How to find a single frame in the mental movie

The central operation in the technique *collapsing anchors* is to unite two pieces of previously unrelated experience. This holds as well for the anchors that become connected to the experiences (problem and resource) as for how the problem and resource experiences become merged later on. This fusing of different sensations immediately raises the question: what is one single piece of experience, one single cell assembly like? It is a question that has occupied psychologists for ages. Some have formulated it as "what are the atoms of thought?" What is the smallest unit of awareness in the mind?

A critical point here is that with the currently (2016) available research tools it is very difficult to single out concrete *cell assemblies*. But still, to isolate one single frame in a mental film is high on many researchers wish list. The reason why this is difficult is obvious: Chains of thought are very different from cinematic movies. In a film, one finds clear sequences of frames with identical size and duration (a 24^{th} of a second and 35mm). But the frames of a mental movie are of variable duration and size. From less than 8 milliseconds up to several seconds and from several hundred cells locally, up to many millions all over the central nervous system. Beside that, they also appear to be seamlessly connected and they cannot be pinpointed since they always come and go in parallel streams. That is why brains don't rattle like movie projectors and that is what makes single networks so hard to distinguish with our present devices (Gerstein and Kirkland, 2001).

The feed forward theory accounts for this obstacle, with the idea that cell assemblies not only strengthen their synapses and speed up their processing rate through repetition, but at the same time shrink the number of their included member cells. Thus the same network increases its speed and reduces its size after every use. This makes the trained brain run highly efficiently.

Thus when a therapist has connected two cell assemblies with *collapsing anchors* in the client's mind, it is understandable why the connection becomes automatic and fast after only a few repetitions. At first the client may notice how the one concept follows the other, but after a couple of repetitions the whole experience becomes an unconscious affair.

Hebb postulated that the repetition of the same mental processes strengthens the synaptic links involved. This of course is congruent with how most people learn foreign languages or a poem, by sheer repetition. Also, in such learning, everything will become automatic and unconscious after some rehearsal.

3.12 Unlearning

However, David Sinclair (1982) showed how Hebb's learning model fails to have 'negative feedback': in Hebb's formulation there is no place for *unlearning*. According to the so called Hebbian rule, neural connections can only become stronger after every rehearsal and the related thought patterns become ever deeper engrained. That would imply that thoughts that are frequently repeated must develop a very strong inner coherence and their links to other networks must become extremely solid. The cell assemblies included in such thoughts will become bound by synaptic links of maximum strength. That would lead in the end to a situation in which a person can only think about one thing: the strongest concept in mind. Sinclair argued that even heavy addicts have some variation in their minds. But also on other grounds he stated that Hebb's model fails a very important component: *negative feedback*. And Sinclair jokingly states that atomic bombs work with such ever-increasing feed forward chain reactions, but the brain cannot work that way, since it does not explode. And Sinclair demonstrated that in the mathematical modelling of artificial intelligence and neural networks without the option of the weakening of neural connections, the simulated brains all get stuck.

In the therapeutic use of *collapsing anchors* however, it is not a matter of unlearning, but everything centers on the creation of new connections.

3.13 Conditioning

When psychologists watch *collapsing anchors* in action, most of them recognize that what is called anchoring is the same process as classical conditioning (Pavlov, 1907). In the past, several researchers pointed out that contiguity and contingency also underlie the established distinction between classical conditioning (=several parallel elements of experience become imbedded in a single network) and operant conditioning (=elements of experience, networks, that succeed each other in time become connected in that sequence).

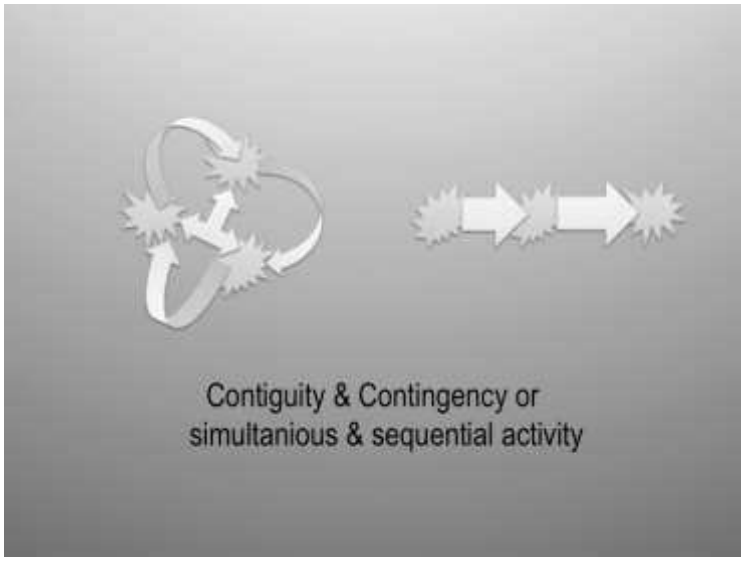
Pavlov and Skinner demonstrated that all these connections are strengthened or weakened on the basis of punishment and reinforcement. But what happens when something is reinforced on a neural level? How can punishment weaken synaptic links? Some observers suggested that the touch-anchor might be a kind of reinforcement, but most NLP-experts see collapsing anchors as a technique in which rewarding or aversive conditioning plays no real role.

3.14 Contiguity and contingency: two sides of one coin

Although neuroscience adheres to several dichotomies – like the central and peripheral nervous system, the sympathetic- and the parasympathetic nervous system, inhibition and excitation – the question is open as to whether contiguity and contingency really constitute a pair of opposites.

Our mind seems to tolerate even the most ridiculous theories about itself, but does another two-category model bring us closer to a description of the psycho-neural reality of the experiments with *collapsing anchors*? Derks and Goldblatt disliked the idea of a bimodal brain, mainly because most mental functions show great overlap and everything appears to be connected to everything. Thus in their quest for unity and fluidity, Derks and Goldblatt tried to move around the dual contiguity/contingency modes of functioning. They looked for *one* basic mechanism that, on its own, would result in these two different modes – analogue to physicists looking for the basic force in the universe. Derks & Goldblatt came up with the following:

1) All neurons send impulses to some others all the time. There are sending cells that transmit impulses over their axons and dendrites to receiving cells. The difference between *contiguity* and *contingency* depends on to which cell an axon or dendrite is connected. When the excitation loops back from the sending cell over a receiving cell that in its turn sends it back to the original sending cell again, this is *contiguity.* Then these cells send looping excitatory pulses to each other. By doing so, the dendrites involved in this reciprocal activation, help the formation of a network or help an already existing cell assembly to which they belong, to wake up again and lead to the recall thereof.



2) If however, a sending cell activates a receiving cell that does not loop back to the original sending cell, this implies *contingency*. The dendrites and axons making up such a connection help to awaken receiving cells that belong to other networks. These dendrites help to move the chain of thought forward. In other words, when there is no reciprocal looping involved, it must be *contingency*.

This idea accounts for the consolidation of networks (contiguity) and the association from the one network to the next (contingency) and allows both processes to seamlessly overlap in time. Thus before a cell assembly becomes active in its entirety, it can already start the search for a successor.

Metaphorically speaking, we can compare this view on contiguity and contingency to a religious congregation (=cell assembly). Suppose that all the members (cells) thereof are continuously preaching their ideology (sending action potentials) to everyone that listens. At times some will preach to people who already belong to the same church and by that deepen these people's conviction and make them preach back in return (=contiguity), which helps to strengthen the entire church. But sometimes they preach to people who are not yet members of the congregation. These then may become believers in a related church (=contingency).

3.15 The speed of association

When a therapist touches the kinaesthetic anchor on the skin of the client, this can instantly activate the entire resource experience. Thus when a part of a cell assembly is activated, the rest of it may come along. The time it takes a sub-group of member cells to complete their entire cell assembly, might largely depend on the remaining number of passive units that make up the assembly. The the start-up duration might depend on the ratio between the number of cells that were activated by the first impulse and the number of cells that make up the rest of entire network.

When the resource is activated, this can result in a new mental connection that helps to solve the issue. However, the amount of time it takes to search and find a suiting successor or series of successors appears to be quite variable. When the therapist continues to stimulate both kinesthetic anchors, this forces the client to go on trying to connect the problem state and the resources state. Observing such connections coming into being was a large part of what Derks & Goldblatt did in their clinical experiments.

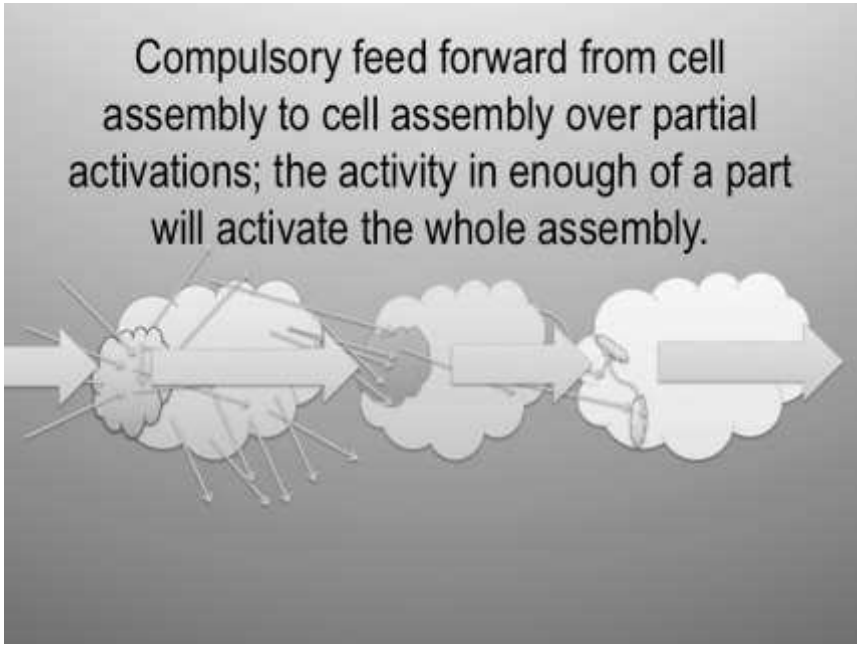
Further in this article, we shall mention that a large proportion of shared cells (analogy) between the two assemblies that are to be connected will help to create a new link quickly. The feed forward theory predicts on the basis of Evoked Potential experiments, that when the latter time exceeds 300ms, this leads to consciousness and longer than a second to negative emotions.

Generalized to making any type of creative link (bi-sociation: Koestler, 1967) one can state that a hard search over a large range of alternative possibilities, as in a difficult scientific exploration, may take months or even years. But routine problems are solved in a split second. This is something that fits to most people's experience.

3.16 Partial activation

Every theory has its limits. Although one can rightfully call the anchors used in collapsing anchors classically conditioned stimuli, this accurate description from behaviorism is still limiting us in the understanding of the processes involved. Derks & Goldblatt started to rename the neural representation of the Conditioned Stimulus into *partial activation*. The anchors in *collapsing anchors* are created with the purpose of making them function as *partial activations* of a problem state or the resource state. In the feed forward theory, a *partial activation* is defined as the number of member-cells of a cell assembly that need to be initially activated to force the remainder of the network into action. One can call this the critical mass of activity that needs to be present to start off a percept/concept that can then lead to a neural chain reaction. Within the whole tradition of the modelling of mental functioning (AI, neural networks) the concept *partial activation* has the power to solve most difficulties. In fact one cannot simulate running chains of associations without such a principle of *connection*. Together with Sinclair's rest principle this

brings the model of the mind closer to the brains that we own ourselves, encounter in psychotherapy and also those seen in neuro-imaging.



The idea of *partial activation* also parallels some classical experiments by Weber and Wundt in the 1860s that looked at how much of a stimulus must be perceived before a subject is able to recognize it. Weber and Wundt found that a person only needs to see an ear of a swine or one corner of a chariot, to recognize the whole animal or vehicle. (Or, if we only read a few *ltr*, we can already recognize the word, or *evn rd t whl sntce*.) To set off recognition, only a fragment of the stimulus is necessary: this must translate into the *partial activation* of the cell assembly that represents the stimulus concept (the percept).

Thus the key to any link between the network X and the network Y is a *partial activation* of network Y coming from the searching activity stemming from network X.

In other words, a potential successor network needs to be inundated with a sufficient level of excitation to make it the next point in the chain. As already stated, the back and forth running dendrites are doing this work. In fact, these dendrites make up the 'net' in the network.

3.17 States of consciousness

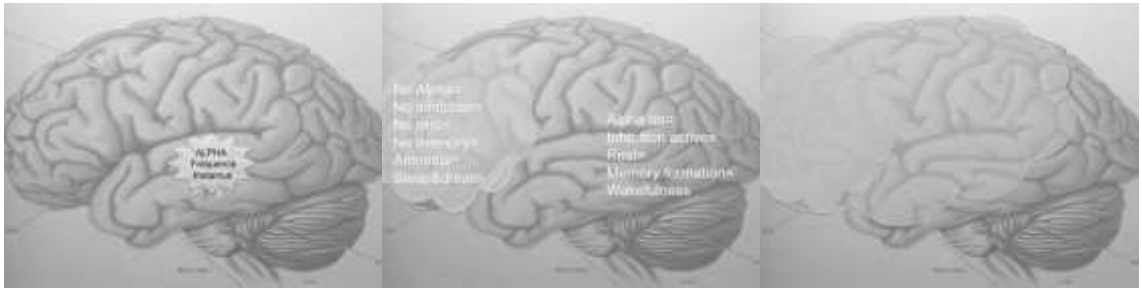
Although the theory suggests that a *partial activation* equals a certain number of active cells, Derks and Goldblatt came to the conclusion that a *partial activation* cannot be a fixed value or steady proportion of activated cells in a network. In working with clients they were confronted with a huge variation in sensitivity for the anchors. Fluctuations happened often during the same session. It all matched with observations from hypnotherapy. When relaxed the range of new associations a client can make is much larger than in a more vigilant or agitated state of mind. Thus, Derks and Goldblatt concluded, the number of active cells and the intensity of their activity must be more to *partially activate* a cell assembly when the client is more aroused and less when in a state of relaxation.

Deep relaxation comes with high levels of alpha waves in the cortical EEG. Sleep coincides with a reduction in the alpha frequency. When a person is aroused and mentally active higher frequencies start to dominate the EEG.

One of the main variables determining the state of consciousness of a person seems the region of the neo-cortex where pulses in the alpha frequency – that radiate out of the thalamus in the center of the brain – keep the inhibitory cortical neurons going. These alpha waves appear to drive the inhibitory neurons to stay "switched on". Only the alpha-driven brain areas where these inhibitory neurons are turned *on* are awake.

Thus for the experience of wakefulness large areas of the cortex need to have stationary running inhibitory neurons. This inhibition helps to maintain the boundaries of activated concepts. The same inhibition takes also care of the orderly progress in sequences of cell assemblies: it creates the rails on which the mental trains roll forwards. But inhibition is also a key factor in memory storage. Thus without the involvement of the inhibitory neurons, undefined concepts connect in a disorderly fashion to others and all of that is forgotten about: dreaming!

All individuals appear to have their own patterns of thalamic alpha and will thus switch *on* the inhibition in certain cortical areas in their own characteristic ways. This leads to typical personal patterns in states of consciousness. This comes to the fore in hypnotherapeutic trances, where the therapist can observe individuals responding differently to relaxation suggestions. In general one can see that hypnotic trances start with the subjects beginning to have a sleeping prefrontal cortex (Mandler, 1979), which coincides with a loss of muscle control, difficulty with articulated speech and reduced selective attention.



A related factor that influences the state of consciousness is the level of inhibitory neurotransmitters. These levels drop during prolongued mental effort, concentration and selective attention. These inhibitory neurotransmitters are the batteries of the mind, and they recharge our mental resources during sleep. Thus mental fitness depends largely on how much one's inhibitory neurotransmitters are recharged after waking up.

However the state of consciousness is also a product of the general level of arousal in the nervous system. This level can be seen as the background noise in a functioning brain. It goes up when there is much search activity, when there are many flashes of awareness, unanswered questions and emotions (Mandler, 1984). Beyond a certain level of arousal/noise in one's mind, clear thinking becomes hard. That is why panicking passengers may forget to release their safety belt during a crash.

Since all neurons steadily generate action potentials at a base-line rate, the concept of *activity* is a relative one. When we speak about active cells, this means cells with a *heightened* activity in relation to cells in the background doing their steady firing (like car engines that run stationary when waiting for a traffic light, then green… whamm!). A *partial activation* must be

seen as a *heightened* level of activity in a number of cells. These cells together form the triggering *signal* for waking up the whole cell assembly. One can also say that these more highly activated cells need to achieve a certain *signal to noise ratio* to set off a network. In a relaxed trance this signal can be of low amplitude and of short duration. In a hectic brain the signal needs to be strong. That is why the searching for resources works best in a state of trance.

When a network is activated, it will immediately start searching for its successor. This will go on, until the chain ends in some sort of motor activity or in another related brain exit like external or internal speech.

The role of attention is to amplify the awareness and control over the searching for new connections. Attentions is automatically called in when it is hard to find a link. Under the influence of attention a fruitless search can result in the faster extinction of the searching concepts. As can be concluded from experiments with unilateral attention, from Vecera & Rizzo (2003).

3.18 Feedback inhibition and extinction

If the brain were to be just a simple organ, science would not need complicated theories like the feed forward model to describe its workings. Although neuroimaging can show us where in the brain a process takes place, it cannot help us to understand what these processes exactly are made of. That is why we need to create cohesive theoretical reconstructions like the one described here.

The *feed forward theory* postulates a probable way in which an activated cell assembly can bring the next one in line into action. A searching neural network only needs to activate a key amount of some other network to get this other one going. That is the basis of the feed forward movement. However, there is also a backward connection involved. The forward link is mainly *excitatory* in nature but the backward link is largely *inhibitory*: called *feedback inhibition*.

The so-called *state of having found* starts as soon as the next network is activated: because then it will automatically initiate an inhibitory effect on its predecessor. It says as it were 'Thanks for finding me'. By inhibiting the predecessor it helps the predecessor to stop its search. Without this feedback inhibition the predecessor would continue its search. This would imply that it stays active and its synaptic connections will go on losing strength. Thus extinction can be said to result from postponed or failed feedback inhibition.

This *feedback inhibition* will not only stop the predecessor in its search but it also helps to reinforce and strengthen the connection between the two cell assemblies involved. This is because the *feedback inhibition* provides rest for the synapses just used between the two networks (Sinclair, 1982; Derks 1986). So the synaptic connections will be strengthened after every successful use: and in this manner pathways will be laid down solidly in memory.

The inhibition of just used synapses and the effect of feedback inhibition combined must be what solidifies learning. Beside feedback inhibition, there must also exist feed forward inhibition. This type of inhibition coincides with the excitatory searching activity. This inhibitory force keeps the chains of thought on the right track; it provides the rails over which the mental train rolls onwards. We may expect that the entire brain (especially the cortex) is built around small circuits of interacting excitatory and inhibitory neurons, as Sir John Eccles (1980) already suggested, that automatically cause both ways of inhibition to take place.

However, the same neurological micro-switch systems will leave the synapses weakened when the search leads to *no* succession. Subjectively and on a larger scale, this invokes states of dissatisfaction, which when not halted, spill over into an emotional crisis, which at the

same time coincides with the further extinction of the synaptic links of the loose ends in mind. Crying, besides all the social functions it fulfils – like acquiring attention, raising compassion and losing accountability – signals the weakening of synapses. The full extinction of a network or a series of networks may take a considerable emotional outburst: as sometimes used with traumatic memories in exposure-, flooding-, implosion therapies.

Allthough these extinction therapies are generally considered an acceptable form of treatment, they earn that to the fact that there exist a lot research literature about these methods, bud not so much for their record of therapeutic effect. Most research shows that after an initial reduction of the (trauma/ fear/ compulsion) symptoms, these tend to recover to a higher level of intensity. Gray & Liotta (2012) sum up several other theories that explain the recovery of traumatic memories after exctinction therapy. They write:

> *Spontaneous recovery* refers to the reoccurrence of the extinguished or unreinforced fear response after the passage of time. It was first observed by Pavlov and is one of the first evidences that extinction does not remove the memory. As noted, extinction involves the creation of a new contextual association to the effect that, in this context, the CS does not predict the feared stimulus (the UCS) and, therefore, the fearful response is irrelevant. That new memory of the new contingencies, if unreinforced, is subject to a time-based decay. It is forgotten over time and the fear reemerges (Bouton, 2004; Bouton & Moody, 2004; Dillon & Pizzagalli, 2007; Massad & Hulsey, 2006; Rescorla, 1988; Vervliet, 2008).
>
> *Contextual renewal* refers to the reemergence of the conditioned response in a new circumstance where the extinction memory was not created. If the client is subjected to unreinforced (extinction) trials in one context, so that the CS fails to evoke the feared response in that context, a subsequent test of that same CS in another context may show little or no reduction in expression. Even though the original fear response may generalize to multiple contexts, extinction phenomena are much more context dependent. Contextual renewal is contextually bound; the response is only renewed in the contexts where the UCS has again appeared (Bouton, 2004; Bouton & Moody, 2004; Dillon & Pizzagalli, 2007; Massad & Hulsey, 2006; Rescorla, 1988; Vervliet, 2008).
>
> *Reinstatement* occurs when the fearful stimulus, the UCS, is presented without the CS. In that context where the original UCS is presented, despite the fact that the fearful response had been fully extinguished, the CS will be restored. It will not, however, reappear in other contexts where the UCS has not been presented (Bouton, 2004; Bouton & Moody, 2004; Dillon & Pizzagalli, 2007; Massad & Hulsey, 2006; Rescorla, 1988; Vervliet, 2008).
>
> *Rapid reacquisition*, as the name suggests, describes the reacquisition of the fear memory after it has been successfully extinguished. In this case, there is a net savings in the number of trials needed to reacquire the memory. If, for example, the original fear association took 10 trials to install, during postextinction training it may take only 3 trials (Bouton, 2004; Bouton & Moody, 2004; Dillon & Pizzagalli, 2007; Massad & Hulsey, 2006; Rescorla, 1988; Vervliet, 2008).

And Gray and Liotta continiu with the comment:

> Extinction has traditionally been held to be the tool of choice for the treatment of PTSD. Foa and her colleagues have indicated that extinction, in its various forms—from desensitization through imaginal and in vivo exposure—inter alia, is the most well-researched and most highly regarded of treatments and, in combination with cognitive behavioral interventions or supplements, represents the scientific treatment of choice (Foa et al., 2000; Foa & Meadows, 1997; Rothbaum et al., 2003; Wessa & Flor, 2007). Extinction-based exposure treatment is the most common

form of intervention, and one of the only treatments supported and funded by the federal government. Nevertheless, one would expect that relapse data from extinction-based studies will provide the following predictable kinds of relapse behavior.

Because PTSD and trauma-related memories are resistant to extinction, it is to be expected that extinction effects would be variable at best. Because the extinction memory is subject to decay over time, extinction-based treatments may be expected to be characterized by a certain level of temporal instability. In light of the crucial role played by the VMPFC in the inhibition of amygdalar function in extinction training, the decreased function of those circuits under conditions of extreme stress mitigates the efficacy of exposure models. For these reasons, without further treatment, extinction measures alone may be only partially effective (Diamond et al., 2007; Gharakhani et al., 2006; Liberzon et al., 2007; Wessa & Flor, 2007). (Gray & Liotta, 2012, p. 7)

But extinction may sometimes also have a lasting effect. That is when the inhibitory system is not able to take care of the recovery, like when inhibitory neurotransmitters and modulators (endorphines) are depleted or under developed. Drugs that reduce the level of inhibition may help to wipe out concepts by means of extinction.

Most adults can reduce or block emotional outbreaks by mental effort, but when they just let themselves go they may extinguish series of cell assemblies. When healthy grown-ups extinguish cell assemblies that they cannot otherwise cope with, this will lead to a state of emotional relief. However, the positive effect may be short lived, because it will be countered by the already mentioned tendency of the brain to restore the lost strength of the synapses involved in intensive use and extinction. The endorphin system will jump into action and also other means of providing inhibitory rest to the overused synaptic links will take care of this restoration. Derks (1988) connected this to the crying of babies and the emotions that coincide with acute psychosis. Both types of emotionality result from the inability to control or suppress the extinction. Babies have not yet developed this (frontal) cortical faculty and in psychosis it is exhausted or otherwise impaired. Thus, babies and mentally exhausted individuals (burn-out, intoxicated, psychotic) may not be capable of such repairs. In those cases extinction can help to clear the mind from 'indigestible' stuff.

As already is mentioned above, Sinclair (1982, 2014) argued that if the brain could only strengthen its links, in the end everything would become clogged together in one big thought. And thus, for a well functioning brain a negative feedback system is a necessity.


David Sinclair, 2013.

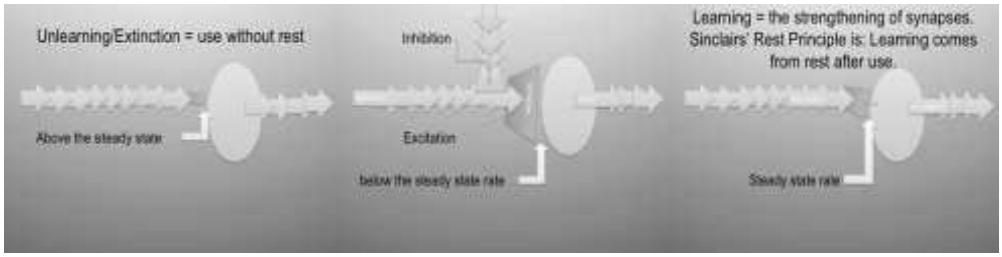
The weakening of synapses is the eraser function of the mind. Unlearning is just as important as learning to create a useful model of the world. Some scientists have recognized this too, and the theme 'reverse learning' can be found in the recent neuro-psychological literature with parallels to the above.

Apart from synapses getting stronger or weaker, the greatest miracle is when they *don't change*. When the things we learned in childhood are still available after 70 years. That must be caused by the synaptic connections staying the same for ages. How is it possible that these minute organs could keep their equilibrium for so long within such a dynamic environment?

3.19 An excursion around extinction

Extinction as neuro-psychological phenomenon is best known from experiments by Ivan Pavlov and Burrhus Skinner, in which behaviour was no longer rewarded and was found then to gradually stop. This brought forth useful applications in behavioral therapy. David Sinclair developed what he called the pharmaceutical extinction of alcoholism (Eskapa, 2012).

The explanation for how that works goes as follows: Alcoholism is a learned behavior. During excessive drinking, the synapses involved in the digesting of the alcohol – a hard painful task – will weaken. However, the brain has an in-built mechanism to prevent such synapses from weakening, by releasing endorphins in the affected brain regions. Endorphins are the brain's own opiates and help to conserve over used synaptic links that otherwise would be thinned away. The euphoria that comes with drunkenness coincides with the endorphins doing their repairs. Synapses that are saved in that way tend to be strenghend above their previous levels; and thus help the person gradually to become a better drinker… an alcoholic.



Sinclair applied drugs like *naltrexone* to block the uptake of these endorphins. The liquor tastes as fine as ever but the euphoria is less. This blocking reduces the restoration of the strength of the over used synapses. By blocking the uptake of endorphins these synapses gradually lose their strength.

This treatment enables the un-learning of the drinking habit (Eskapa, 2012). In this way heavy alcohol consumption may diminish in about five months to normal social levels. This so-called "Sinclair Method" is now registered in many countries as an approved treatment and has a close to 79% success rate (e.g. http://youtu.be/OC8CKDXrFYc, http://youtu.be/SnrQUU_7EHk, http://youtu.be/sqwgTixmPUU) (Watch also the documentary entited: *One Little Pill,* by Claudia Christian, 2014).

Let us now look at another side of extinction. The metaphors most therapists use for how change comes about are often in sharp contrast to the neural mechanisms that the feed forward theory describes (Brewin, Gregory, Lipton, & Burgess, 2010).

Firstly, there are therapists that believe that emotions are stored somewhere in the mind or in the body and these are piling up at these sites and must be released. That is why these therapists aim at emotional expression with their clients and believe that therapy works best when the client cries or screams.

The feed forward theory sees such emotional outbreaks as signs of the extinction of some stuck concepts in the mind: at the site where resources are needed. At first sight, therapy by emotional extinction appears 'powerful' and 'deep' because of the intense 'cathartic' emotionality that comes with it. Clients may also believe that emotions are necessary for change. And in the realm of repressed traumatic experiences in particular, emotional extinction appears most spectacular: it may give rise to sudden bursts of emotionality when the stuck networks are reactivated and start to search in vain for successors (Hollander, Derks & Meijer, 1990; Gray & Liotta, 2012). This then will be followed by dramatic stories of abuse, torture and humiliation – that clients often want to ventilate and many therapists (people) like to listen to.

In fear reduction, trauma and the treatment of compulsion, extinction has been shown to work, but as already stated, it has its drawbacks: the effect may not last very long because of natural restoration. Several emotional release sessions seem required if the client did not also find the fitting cognitive-emotional *resources* in such 'ordeal therapy' (Edelstien, 1981). Most experienced NLP-therapists believe that when (any type of) therapy needs to be repeated with the same issue it failed to help the first time, then it failed because it did not help the client find appropriate resources.

But some times emotional extinction works. The feed forward theory explains that in cases in which emotional extinction is effective, this results from the extinction hightening the chance that clients find resources on their own in the time immediately after the extinction. Following the extinction there is a sense of relief and less sensitivity to the problem stimuli. This will help the client to relax somewhat; and the lessened level of arousal will improve the signal to noise ratio in the 'calmer' mind. The latter will raise the chances that the client will find useful resources without therapeutic support (Hollander, Derks, and Tanebaum, 1996). Thus in the time window of open-mindedness a creative sulution can be realized.

We must assume that in many forms of psychotherapy, the "something completely different" enables the client to find resources on their own initiative that otherwise would stay out of reach. Collapsing anchors shows that a client in the right state of mind (creative) can accept a wide range of resources; such a client is not so picky, critical or rational. Milton H. Erickson (1967) said that the entire hypnotic procedure and state enables a client to give up their frame of reference to make room to use a wider spectrum of creative resources. When the therapy is crazy enough, the client may make connections they never would when thinking about their issues in their usual way. *Provocative therapy* is a great example; the therapist reacts to the client's complaints by making only nonsensical comments.

Many therapists prefer to use the concept of "energy" and the "release of energy" above the understanding of the neurological mechanics of the brain. And although one can argue that the whole universe is made of energy and the brain is a kind of battery that uses and produces electricity, the 'energy metaphor' provides a too superficial level of comprehension to understand a therapist's job.

3.20 Sleeping and dreaming

In general, the extinction of neural connections comes with the 'unlearning' (forgetting, retrograde amnesia) of concepts and behaviors. A fascinating side step is that the weakening of synaptic links must also happen during sleeping and dreaming. If it is true that during sleep inhibition is switched off, and the latter function is nessasary for memorization, this makes sleeping and dreaming a process of forgetting. This may at first seem paradoxical, since the only dreaming that people know about are dreams they have remembered! Some questions that will be answered here are:

1) What do we dream about?

2) What dreams are remembered?

3) And what dreams are forgotten?

4) Are dreams unconscious or conscious?

According to the English dream-researcher Joe Griffin, who tested his hypothesis for years, we dream most about what occupied us during the day before (Griffin, 2014). This means according the feed forward theory, that recently strengthened neural links are topped off to a lower level of synaptic strength during dreaming. This fits with experience, since such a process must make the concepts and thought patterns involved less prominent in mind the next morning. When we have slept over something it appears less dramatic. Reverse learning helps to clear our mind for fresh ideas.

In this view the synapses that have reached *maximum strength* are the first ones to be trimmed down during dreaming – these synapses are binding the concepts that stood out most at the end of a working day. Which cell assemblies become activated during dreaming must also have some degree of randomness to it. The things that have occupied us most will have the strongest synaptic connections and will be the easiest to become reactivated. So it is probably not the content of the thoughts that determines what will be dreamt about, but just how lightly the synapses of the cell assemblies involved are triggered to form enough of a partial activation to initiate a dream. In that way we must assume that extra strong cell assemblies might be lightly triggered into nocturnal action. During dreaming, lines of thought are not kept well on track, because the switched off (feed forward) inhibition cannot take care of that function anymore. That makes dreams wild. The advantage of this is that chains of activated cell assemblies in a dream will not get stuck so easily because the track is less rigid. But when it does happen we may wake up out of a nightmare that we then also will remember, because remembering works retrograde from the moment of awakening. Thus metaphorically, during dreaming the mental wind (excitation) blows from all directions and takes hold of those concepts (synaptic links, cell assemblies) that stick out above ground level.

The mind would not function well if everything that has ever occupied us would stand out at full power all of the time – as a newspaper with only screaming headlines does not work. Thus the blackboard of the mind must be cleaned somewhat to make room for new lessons the next day.

This dream theory is fully logical from Sinclairs' *rest principle,* which states that during sleeping the inhibition must rest. Inhibitory neurons cannot rest during wakefulness because their activity is required for staying awake, learning, selective attention and reasoning. Thus having excitation and inhibition *both* active is what wakefulness is about. However, inhibitory synapses use up their neurotransmitters during a day of mental effort and finally run out of steam, which causes mental fatigue. To let them rest and restore stocks the mind switches the

inhibitory neurons largely off. The 4 stages of sleep probably correspond with different populations of inhibitory neurons being rested (Sinclair, 1983).

Thus, the restoration of the levels of inhibitory neurotransmitters might be the main neurological function of sleep. A burning question which was already answered in the 70s but which answer still has been missed by many current neuroscientists is: how does the switching of inhibitory (inter-) neurons work? The answer was found in the 70s with a series of experiments on dogs. It says that inhibitory neurons depend on *alpha driving* from the *thalamus* for being switched on (Lopes da Silva, 1977; Lopez Da Silva, Vos, Mooibroek, & Van Rotterdam, 1980). The complex biochemical machinery that regulates sleep is probably the finger that pushes the thalamus' switches. Some hormones that accompany mental fatigue must be responsible for that. The thalamus sits in the centre of the brain and can generate alpha in all directions but does this segmentally: it is not an all or nothing system, but drives inhibitory cell populations in certain cortical regions. The stronger the apha signal the more awake a cortical area must be. However, on the EEG the alpha pulses may be diffused when the person is also actively thinking something in the cortical area registered. Thus a clear and strong alpha in the EEG points at an idling but wakeful cortex: aware but empty minded as in Zen meditation.

Thus when the thalamic alpha waves that drive the inhibitory activity are switched off, a highly conscious, intense and unbridled mode of mental activity sets in: *dreaming*. The missing inhibition not only causes amnesia, but the inhibition cannot help with defining the limits of networks anymore. Then there will be no inhibition to prevent concepts from merging, fusing and getting mixed up. And by the lack of *feed forward inhibition* one cannot keep the trains of thought on a straight track. That makes dreams such a fantastic mess! If we were to remember them as completely as our wake state mentation, this would cause instant craziness.

Used, and thus weakened, excitatory synaptic links, cannot be restored unless they can be pulled below their steady state level of firing by means of inhibition within an estimated time frame of several minutes. These excitatory neurons cannot be switched off in a similar way to the inhibitory ones; they have no such switch system; they stay on constantly. But they fluctuate in their firing rate. As already explained several times, excitatory neurons need to be inhibited for the restoration of their strength. An actively functioning inhibition is a necessary requirement for the strengthening of excitatory synaptic links – for memorization. When inhibition rests during sleep, the excitatory synapses have no way to restore themselves and can thus only become weaker. The amplitude of excitatory activity during dreaming may exceed the amplitude during wakefulness by six times (Evarts, 1967). Thus, an active inhibition reduces the intensity (amplitude) of what is visible of mental activity in the EEG. But during sleep, this extra high amplitude also indicates the trimming down of synapses during dreaming.

Whilst consciousness is seen here (in the feed forward theory) as a phenomenon of intensity, dreams themselves must belong to the conscious domain of experience since the intensity of neural firing, as witnessed by the amplitude of sleep EEG, (that shows bursts of excitation without inhibition) may reach several times the intensity of that during the waking state (Evarts, 1967). Dreaming coincides with a very high level of awareness (Windt, Nielsen & Thompson, 2016). However, even the most intense dreams are immediately forgotten if one does not wake up right after having dreamt them. This amnesia caused the logical mistake of calling dreams unconscious; but according to the feed forward theory they become only "unconscious" after they are forgotton.

After awakening, the synapses used last will be consolidated by the just switched on inhibition. Thus the last dream just before waking up is more likely to be remembered (Derks & Sinclair, 1997). The record button of the brain works a couple of seconds or minutes back in time.

Electro-convulsive shocks or a blow on the head can also prevent just-activated neurons from getting their needed rest: causing similar amnesia. For the consolidation of a thought the synaptic connections involved must be inhibited for some time immediately after the moment of thinking.

3.21 Reconsolidation theory and feed forwards theory

The re-consolidation theory of memory storage (Nader, 2000; Gray & Liotta, 2012) is being accepted in neuroscience and can be understood from the principles of the feed forward theory. For the field of psychotherapy the re-consolidation theory is most relevant for the treatment of traumatic memories. It was found that when a therapist helps a client to retrieve a traumatic memory, the re-storage thereof could be prevented by a chemical interruption. This then causes the intensity and quality of the memory to cease. Carlos J. Rodriguez-Ortiz and Federico Bermúdez-Rattoni (2007) write about this:

> Reconsolidation proposes that after a memory trace is activated by means of retrieval, it is susceptible to disruption by the same treatments that disrupt memory during consolidation. In 1992, Bucherelli and Tassoni reported that inactivation of the parabrachial nuclei by infusions of tetrodotoxin disrupted previously consolidated memories when reactivated. Similarly, Susan Sara's group reported that infusions of either NMDA or β-adrenergic antagonists (which disrupted LTM when applied after training) disrupted a clearly established memory trace upon retrieval. Since then, memory reconsolidation has actively been studied.
>
> The most acknowledged study is the one carried out by Nader and coworkers in 2000. This work brought general attention to the reconsolidation phenomenon because of the clean data reported and because of the use of a translational inhibitor that interfered with protein synthesis, considered to be the main cellular substrate for memory consolidation. The experiments were performed in the widely studied fear conditioning task and showed that the same treatment applied under circumstances that disrupt consolidation also impairs memory after retrieval. Similar to the report by Misanin and coworkers, Nader et al. conditioned rats in a tone-foot-shock association but memory was assessed by the percentage of the time that rats were immobile (except for movements required for breathing) to the total time the tone was presented (freezing). The day after conditioning, the protein synthesis inhibitor anisomycin was injected in the amygdala after the tone presentation.

This experiment left the rats less afraid of the tone. Clinical trials with humans have shown similar results. From the perspective of the feed forward theory the interpretation is that retrieving a traumatic memory will automatically start to weaken the synaptic links used. Thinking is *use* and without *rest* reduces the strenth of the synapses. The intensity with which traumatic memories are normally brought into awareness will help to speed up the natural thinning of the synaptic links. Normally, without interference, these synapses would be restored to above their original levels of strength by inhibition and even by endorphins during the immediately succeeding rest phase. However, the protein synthesis inhibitor anisomycin interupts this process, leaving the just used synapses in their weakened condition.

The reconsolidation theory matches the observation made in the beginning of this article (and in part 1) about how psychotherapy proceeds. This was described as existing of two phases: 1) reconnecting the client with the problem state (here to retrieve a traumatic memory) and then 2) to make the client do "something completely different" from what he or she otherwise would have done after being connected with the problem state.

One can expect that the therapies that have been shown to be effective in the treatment

of traumas (like EMDR) the "something completely different" (making eye movements) is which interferes with reconsolidation. This has been translated by researchers into the extra taxing of the working memory during the time the traumatic memory is vividly recalled (Hout & Engelhard, 2012).

When reasoned from the feed forward model, the effect is caused by the combination of the extinction without restoration of synaptic connections, plus a heightened chance for the client to find useful resources during and after the therapy. The latter can be guided by the therapist or just left to the client, which of course will have consequences for the control over the therapeutic effect.

3.22 Depression and the feed forward theory

When depressed clients complain about feeling tired after waking up in the morning and also report that their worries did not go to the background during sleep, this may indicate that the synapses in their worry-cell assemblies were not topped off during their dreams. Some of these clients use the analogy that, their "black dog" is already awake before they themselves wake up.

For the feed forward theory this theme is a fascinating challenge. A deeper insight in this topic may have direct implications for the treatment of depression.

In part 1 of this book on *experiments in mental space*, a spatial approach to depression is described. The symptoms of exhaustion, areas of darkness and the feeling of sadness were connected to the client repressing some issue that had proven to be too hard to tackle. Mostly the client had given up trying to solve a problem or to achieve something important and felt helpless about that failure. In the technique that was presented in part 1, such an issue was defined as "something that the client could not handle and has given up trying." This led to zones of darkness in the client's mental space. These dark areas were explained as a side effect of repression. Now, since this model developed from clinical work, and was supported by its application, it can be regarded as a serious lead into understanding something about the mechanism behind a certain type of depression.

From the above comes the idea that the issue is repressed by inhibitory neurons on a steady basis, thus also during sleep which must make it it resistant to being dreamt about. The ongoing repression by inhibition however, implies that the person cannot be fully sleeping, since some inhibitory neurons are still working the night shift. Theoretically such inhibitory neurons must get fatigued without rest, and may cause the experience of exhaustion on waking up.

It is too early to elaborate on the details. This asks for a very precise model about the neural mechanisms behind repression. It is a model that the author would love to have, but even without that, this idea provides some perspectives.

When inhibitory neurons are actively involved in the repression of the too hard to handle issue, this may have a paradoxical effect, since for the client who has given up solving it, the repression serves of course the purpose of avoiding thinking about the issue. But the suppressing inhibition may at the same time contribute to the consolidation of the issue. If it is true that the inhibitory neurons that do the repression also can give rest to synaptic links, they could just as well consolidate the cell assemblies involved in the issue. This could clarify why such a depression tends to trouble people for so long.

This hypothesis states, that in some cases of depression sleeping and dreaming about the

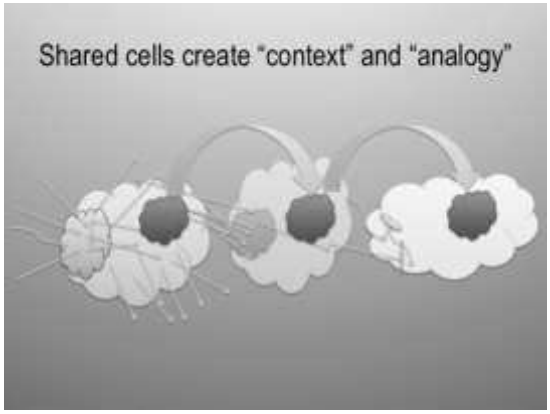
issue is not working as a means to get it to the background. But since it is repressed, it has no access to consciousness, which keeps the client *in the dark* about the cause of the depression.

Every time psychoanalytical notions turn up in modern theories (like repression here) we are confronted with prejudice against (pro or con) them. In an insecure field like psychotherapy prejudice has often guided us to find the courage to try to do a better job. But reservation about behavioral therapy may just as well be based on prejudice. One treatment for depression used by behavioral therapists is sleep deprivation. 40-60 % of the clients improve after one night of total sleep deprivation (Giedke & Schwärzler, 2002). The above may give useful hints about where to look when we want to understand why sleep deprivation is effective with a significant number of clients.

3.23 Final conclusions from the use of resources in C.A.

The process of creating new associations through analogy is studied in several scientific disciplines like philosophy, creativity studies, linguistics, psychology, advertising and poetics. In psychology it is often treated as too obvious to give much attention; however it appears that analogy is what for large part characterizes the operation of the mind (it is Hume's *resemblance*). Subjects in the *collapsing anchors* experiments frequently reported that *the problematic stuck state* found *the resources* through some 'similarities' between them. This could be any kind of resemblance, like colour, smell, shape, name or sound that *the problem* and *the resource* had in common. (In NLP jargon it says that representations find each other on the basis of matching sub-modalities=sensory qualities.)

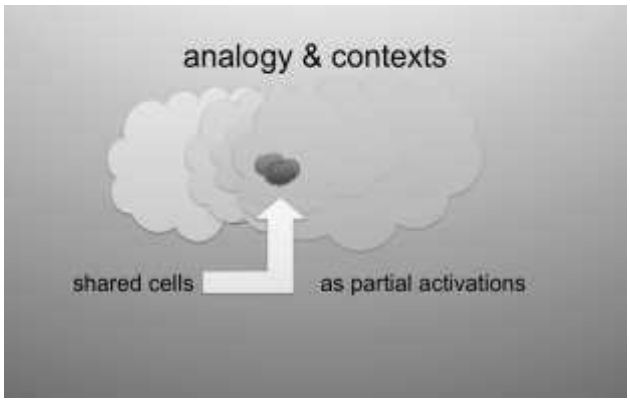
Analogy can be defined as identical features amongst different concepts. In the brain this must work out in the shape of shared cells among different cell assemblies. Recent fMRI research suggests that the 'green' in 'vegetables' and in 'trees' makes use of the same population of 'green-brain areas'.



From the point of view of the feed forward theory, these shared cells are crucial in creating new association between cell assemblies. When the searching cell assembly shares a large amount of cells with the potential successor, this can be enough for a *partial activation*. Such a wide bridge of analogy will help the one cell assembly to be followed fast and seamlessly by the next.

This theoretical idea comes close to every day experience where we jump quite often from the one idea to the other over some resemblance. During the move from the one assembly

to the next these shared cells can stay active all along. Like some pixels on a TV screen can stay unchanged in two or more successive frames. (*Video compression* is the best metaphor here, although too few readers might be familiar with that.) Thus one reason why a searching network cannot find a successor might be the lack of enough analogy (similarity) between the searching and searched for network. Like when we search an item on Google and get no results.



What Google does on the basis of the similarity in sequences of letters and numbers, the brain does by using any type of similarity, in any sensory quality including words, rhyme, symbols, letters and numbers. To the brain the meaning of the similarity is not important, because it works with populations of shared neurons. The concept of analogy, when this is translated into shared neurons between cell assemblies, bridges the gap between experience and neural functioning. It can be a contribution to *neuro-logic*: the understanding of logic on the basis of brain processes.

Metaphorically: The last concept at the end of a stuck chain of association fishes in the files in the mind with its sensory qualities as bait. These sensory qualities are groups of cells that are shared with other cell assemblies. Thus what the searching network catches depends on the amount of analogy between the searching and the to be caught concept. If the amount of analogy in sensory qualities is enough to form a *partial activation,* this will function as the start-up key for the concept that is found.

3.24 "Context" in the feed forward theory

From the above considerations of the feed forward theory it did not take much to conclude that in the mind, the chances for a cell assembly to share some cells with other cell assemblies must be substantial. It seems logical that an overlap of cell populations will enable a mind to flow without interruptions.

Linguists concluded that people give meaning to what they experience, on the basis of *the context*. The latter is knowledge that functions unconsciously in the background, probably mostly located in the right hemisphere, that supports the understanding of what is going on in the foreground (left hemispheric awareness). Such c*ontexts* seem a fundamental efficiency principle of the human mind. To subdivide knowledge *contextually* reduces the amount of data that we need to deal with in a specific situation. It is like when we open a certain computer program, this excludes nearly all other irrelevant files and plug-ins. Contexting is an efficient way to bring the number of possible considerations down. An important question is: How can we keep different contexts apart? What distinguishes the one domain of meaning from the other?

In line with how the feed forward theory handles most aspects of the mind, as processes following from the most basic properties of neural tissue, contexts must stem from the prolonged perception of what is going on in a certain domain of reality: contiguity.

Regarded in this way, it seems logical that context-domains are bound together by (perceived) similarities that all concepts that belong to it share. Take for instance 'holiday'. Ideas about 'holiday' must share some basic qualities to be part of that category. It may even be a collection of such elements that form the connecting pins of a context-domain like "holiday". In "holiday", traveling, beaches, mountains, sight-seeing, ice-creams etc. can function as the common binders. These shared qualities smoothen the association within that context. As soon as people start to talk/think about *holiday*, they may continue to associate from the one to the other holiday example. Then the contextual structure of *holiday* makes it easy to *mind-surf* from the one to the next memory thereof.

Within the feed forward theory such a 'context' can be understood as stemming from groups of shared cells within a larger range of cell assemblies. These shared cells must thus result primarily from contiguity during perception. That is why we may expect them to represent *analogy* in sensory qualities. The process of generalization may diffuse the specific sensory character of the original perceptions that helped to create these groups of linking pin cells.

It seems a characteristic of the human mind that people can 'enter' a certain 'context' and then struggle to think of concepts outside of this 'context', while it remains easy to stay within this 'context'.

In other words: When grandfather starts talking about 1960s jazz, he can go on with that forever. But it is very hard to make him switch to shopping, football, house keeping or grandmother. Also researchers like myself are not likely to leave the comfort of their subject of study and accepted paradigms.

Thus, analogy among the networks in a certain context facilitates the association within a domain. At the same time the contexts with less shared cells will be harder to access. Which brings us back to our original topic, *collapsing anchors* and the activation of *resources*.

In NLP, most resources used stem from outside the problem context. Out of the box, so to speak. Without some extra push from the side of the therapist, a client probably cannot get easy access to these. The required impulse can be a question like the one in *collapsing anchors*: What is the opposite emotion to the one that dominates your problem state? Such an intervention helps the client to search outside of the problem context where he had been trying in vain to find a resource. Several NLP techniques have such questions that lead 'out of the box' as their centerpiece.

The collapsing anchors experiments might falsely suggest that the activation of *any* content or *arbitrary resource* is sufficient to resolve *any* impasse. For instance, when the client suffers from an undersired emotion he calls "irritation", the therapist may ask: "What rhymes with irritation?"

We may consider any link on the basis of rhyme arbitrary and thus not very likely to be relevant for the client's issue. When the client answers: "radiation", this may sound quiet nonsensical in the context of the problem. Still the therapist can proceed with: "Okay, find yourself the strongest experience of *radiation* you can remember now". From the basic observations of how psychotherapy goes, "radiation" may still provide the client with enough of a "something completely different" to solve part of his issue, in which case the rhyme brought the client away from the problem context and towards a useful resource.

The same may hold for an association that is raised by some story, like in a song, a movie or in advertisement. Thus on the surface it seems to be true that when during an intensified search an unrelated piece of memory is activated, this will be automatically docked to the stuck point in the client's mental software to help continue the interrupted train of thought.

The question is, does it really work that simply?

The appearance of simplicity comes from overlooking the signs of fast unconscious creative processes influencing the selection of the resource. In fact, if it worked so mechanically, every nonsensical resource would be accepted as good enough to solve any problem. However, this is not supported by clinical evidence, even though a therapist who observes a client during collapsing anchors can be surprised how easily some resources are accepted. But at other times clients are quite picky about the resources and detailed observations show that although collapsing anchors may often work in one go, during the process of creating the connection all kinds of considerations may play along. And also during other "simple" approaches like EMDR, EFT, figure of eight and IMR for instance, lots of fast unconscious cognition can be triggered. In EMDR it is not so much the moving of the eyes that is crucial, but it might be all considerations that influence the search during the occurring trance state.

When we consider the failure to make use of a resource in *collapsing anchors*, we need to assume that the interference from other networks can play a major role. Fast unconscious processes may block a connection. In the 1980s Robert Dilts used the word *interference* to describe what stops a person from finding/choosing a resource in his/her own spontaneous problem solving.

It seems logical that the mind protects itself against the creation of malicious, costly, harmful, nonsensical and irrelevant associations. The way to do that is by preventing potential links that contradict existing beliefs. Only in a brain where fast processes can intervene in the slow processes of making new connections is such censorship possible. Clinical work suggests that our brains work that way. (In the NLP work with limiting beliefs (part 3) this is in the centre of the action.)

3.25 Levels of abstraction

Thus apart from some hiccups once in a while, everything in the mind flows seamlessly from the one idea into the next, and such processes may run in parallel, slow and fast and in great numbers. And on top of that, some of the processed concepts are quite specific and others highly abstract.

The level of abstraction plays an important role in logic, linguistics and in the NLP of the '70s under the name of *chunking up* and *chunking down* and in the '90s in Robert Dilts' *logical levels* (Dilts and DeLozier, 2000, Dilts, 1990). It is also relevant in current cognitive psychology with the *level of construal theory* (Bar-Anan, Liberman, & Trope, 2006).

How can the feed forward theory account for the difference in specific and general concepts in the mind?

Generalization can be defined as a wide range of stimuli that give rise to an identical response. Or in other terms: generalization is when many different inputs activate the same output. Or also: generalization is a shared property among a large number of concepts.

For this to be possible, streams of thought must be able to mingle and unite. But although the mental rivers may merge and meander in all directions, Derks and Goldblatt started with the observation that however flexible they are, they also can get stuck.

The initial hypothesis about why mental streams get stuck was that this happens when they lack the access to a next point in the chain. However, from clinical work came strong evidence that networks can also block each other. From observations and self-reports it seems that two streams sometimes bump onto each other, causing both to 'freeze'. This is best known from paradoxes, double-binds and inner conflicts.

The above translates in conflicting cell assemblies mutually inhibiting and blocking each other's way to further connections, as if they step on the other one's brakes. In such an instance, the brain cannot solve the conflict between two parallel streams. Selective attention can be used to force a way out, by the extra, directed inhibition of one of the concepts. Then the other gets a chance to move on. If that works, the more important concept, the one higher in the hierarchy of values, prevails. But in many instances such a choice cannot be made and both streams stay on halt.

In clinical NLP work it has been shown that a conflict between two streams of thought (two conflicting parts) can be resolved with the help of resources with a higher level of abstraction. In the contribution to NLP by Hall (2000), Andreas and Andreas (1989), Connirae and Tamara Andreas (1994) and Dilts (1990), this is the main operator. But then the question rises: How can a very general concept help to resolve a particular impasse? For this, we must imagine how two conflicting cell assemblies mutually inhibit each other.

Such a conflict can only exist between two cell assemblies which have something in common. For instance they both deal with a person's future career. (Shall I start out for myself or stay with my job?) These clusters of cell assemblies will thus have their differences and their similarities. (I want to be able to sustain my family in both instances.) These similarities must then consist of shared cells among the cell assemblies involved that are kept in the background of awarenss. But such a shared aspect can be activated and brought to the foreground. "What value do both parts share that is more important?" This group of shared cells then finds a way to new connections.

If we can ever prove that a more abstract (general) concept is composed of fewer cells than a more concrete one, this would take psychology several steps forward.

When we consider that analogy means that different networks share the same cells (like the green cells in vegetables and trees or the distance cells in social- and spatial distances) this implies that *a cell assembly* is not only seamlessly connected to other such assemblies over contingency, but its member cells can belong to more assemblies at the same time over contiguity.

3.26 The Feed Forward Theory and Mental Space

Walker, Ötsch and Derks (2014), the members of the international laboratory for mental space research (ILMSR), spent the last ten years studying clients in psychotherapy, linguistic literature and psychological research papers for more detailed information about the structure of spatial cognition. Valuable clinical evidence came from *the personal time line* (the spatial structure that represents time) and the *social panorama* (the unconscious landscape of relevant people) – these two NLP related therapeutic instruments date from the '80s and '90s, and have proven effective on the personality level.

Walker, Ötsch and Derks concluded that much of human cognition is structured on top of an unconscious frame of spatial knowledge (probably largely in the right hemisphere, see Part 1, for a more detailed description). This spatial foundation goes as deep as the universal concepts, *here versus there, up versus down, front versus back* and *sideways versus centre*: it consists of the most obvious background knowledge that exists (Tversky, 1991, 2010, 2015; Barsalu, 2010). In brief this means that each individual creates a spatial map of the universe with itself in the center.

It is assumed that the embryo already develops such spatial intuitions and uses these as the foundation for all its later knowledge (Barcalu, 2014). These spatial concepts primarily serve the actual orientation and navigation. Later, more sophisticated levels of cognition all build on the hippocampal structures that help all reptiles and mammals to find their way (Burgess, 2014; O'Keefe & Nadel, 1978; Moser & Moser, 2005).

Spatial orientation is necessary for many psychological functions; among them the retrieval of memories from one's personal history, the orientation in time, social relationships and self-awareness. The acclaimed explorer of unconscious processes John Bargh, called spatial orientation *the scaffolding of cognition*.

How people find their way around is a frequently overlooked area of psychology and was pioneered by Barbara Tversky in the 1990s. The current conclusion from the above is that all knowledge depends on spatial schemata and projections: all is based on *spatial cognition*.

Spatial relations are also very commonly used as metaphors in higher levels of cognition. George Lakoff and Mark Johnson (1999) proposed that all of philosophy is implicitly built on bodily experience of which space is the core. Take for instance the expression: "In high science". We tend to have an immediate understanding of the meaning of these words. However, science in reality, is not something with elevation (high?) neither can something really be inside of it. In their work they make a case for how the bodily experience in space is the basis from where people simulate reality and interpret a little sentence like that. Nowadays this area of cognitive linguistics is called *embodied simulation* (Bergen, 2012).

From the perspective of the feed forward theory, the spatial foundations of cognition must result from shared cells in great numbers of cell assemblies. The continuous perception of spatial relations will cause these shared cells to be present by contiguity in all related concepts. The cell assemblies with strong basic spatial components like those stemming from the specialized spatial centers in the hippocampus (place cells and grid cells), will just run their connections from these nuclei into the cortex and back.

3.27 Social psychology in mental space

From the clinical work with the *social panorama* as well as from *embodied simulation studies* comes the view that knowing a person means among other things, that we project an unconscious generalized image of that person on a location somewhere in our mental space. Walker, Ötsch and Derks (2014) found that the positions on which these images are stabilized, govern the emotional quality of the relationship with a certain person (Parkinson & Wheatley, 2013). In common language this is evidenced by expressions like: *"A person is distant or central in one's life."* Or: "*A person is backing you up*" Or: "*A person stands at your side…etc*" (Battino, 2006).

As written above, the extrapolations from *mental space psychology* to the *feed forward theory* imply that such a generalized unconscious person-image must consist of a core (or maybe several cores) of shared cells; these cells then, are shared by the specific cell assemblies that together represent this person. Thus these shared cells cluster or bundle all information about that specific individual (Derks, 1997, 2005).

As already discussed, shared cells form a bridge from the one cell assembly to the next. The partial activation of a followup assembly is easy by way of the cells they share. This implies that such shared cells make staying within the context/domain that is about this person more likely. One may circle around for some time in the knowledge about him or her, as when you talk about a friend for a while and then ever more memories and anecdotes pop up.

In *mental space psychology* (part 1) it was shown that the relocation of generalized unconscious objects in mental space coincides with shifts in the meaning of these objects. Thus, suppose you think of a general idea, for instance our previous example *holiday*, this might be located, say, high on the right hand side of your visual field. Now when you move *holiday* downwards and to the left, you will experience a shift in emotional meaning. Now *holiday* might be less attractive, for instance.

From all the clinical experience with the *social panorama*, the hypothesis comes to the fore, that when the client moves a person's image to another position, he or she must be influencing the group of shared cells that denotes this *location*; because how else can one move an image to another position in mental space?

The movement of mental objects in mental space can be done intentionally. It is an act of will, for which one uses selective attention. But is that all there is about the neurological reality of such a change in location?

This volitional relocation of a mental object's position is very probably executed with the aid of the frontal cortical control mechanisms. It is likely that such a controlled shift of location first considers becoming aware of the image and then the fixation on the image. In computer terms this would be "select image". This can be done by the temporary inhibition of the shared cells that link the concept. Such temporary inhibition will be directed from the frontal cortex, and it would be a very interesting challenge for neuroimaging to see whether this is in the right frontal lobe when we are dealing with such spatial (social) cognition.

Such targeted temporary inhibition (selective attention) lets cell assemblies wait before they continue their search for successors. When it is about moving an image in mental space, then the selected and held (like clicked on with the mouse) concept needs to be brought into motion. This just means that the person decides to move this image from the one place to the other in mental space and makes it happen at the same time. Again, this comes close to when one clicks on some icon on one's computers desktop-screen (fixation) to then draw it to another place on that dekstop. The subject may literally see the idea of the object/person slide to its new

position. Such intentional shifts in location with social images are the cornerstone of the therapeutic interventions in the *social panorama.*

To be clear about this, in the social domain, the location of a person-image in mental space *means* the emotional quality of the relationship (relation = location). The place where the image is projected determines whether this is love or for instance just friendship. From having witnessed thousands of such shifts in location of person-images, and how these reliably change the relationships involved, the challenge has become to connect such a phenomenon to the *feed forward theory.*

The first thing that comes up, is that the population of shared cells that denote the location, meaning where the image is sensed, must also carry part of this relational meaning. Thus when the shared cells create the experience of a high location these same cells create the high-status-meaning in the relationship.

Thus logically, when whatever change in location of a generalized mental image is made, 'something' must change with the shared cells that are at the root of the generalization. And when it is about a shift in the location of a person's image, the shared cells that create the generalized unconscious person-image on a particular location must be the ones to change. As stated before, it must be the shared cells that denote the location in mental space that must change most dramatically.

3.28 Location in the brain

In the first place, we must assume that the neurons themselves cannot move around in the brain. Which opens the question: what neurological mechanism can give the subjective impression of a shift in location of a person-image? Cinematography and experiments with the perception of movement at the end of the 19th century have shown what we all know: Brains have excellent capacities for perceiving and representing motion but they cannot do it by moving their cells around. Thus when the image is seen in another place, it must mean that other neurons take the role of the ones that took care of the sensation of the image being on its previous location.

Before we can answer this question we must look at something more fundamental. Most basic here is how the idea of *the location* of a mental object comes into being. How do we know that something is located somewhere?

David Milner proposed a "two streams hypothesis" of the visual cortex (Goodale & Milner, 1992). He postulated a *where stream* and a *what stream*. The *where stream* flows over a large region of the visual cortex, at the back of the brain and just above the neck. Milner called this *where stream also the dorsal stream* because of its place at the lower back part of the brain. Milner found that in these large cortical areas the objects are represented from the point of view of the subject. Thus according to this, the representations of generalized objects in mental space must logically be found in this part of the brain too. When we look for neuro-psychophysiological correlates for the shifts in location of mental objects, Milner's idea can be an initial lead to follow. It implies that the mind has a way to simulate the point of view of the subject and also that the subject can look around in this 3-D representation of space. Recent eye-tracking experiments with spatial imagery have proven that people represent objects on the location in mental space that matches where they have seen them in reality. So we may expect the sensation of the location of an object to match a particular area in the visual cortex.

It would be a great step for social psychology and physiological psychology alike to see whether a shifted image of a person coincides with cells becoming active in another cortical region. The technical question is: *is this within the range of our present (7 Tesla MRI) instruments?*

3.29 Brain flip

Mental space psychology focuses on the spatial characteristics of subjective experience. Looking from that perspective at the brain's anatomy makes little sense, until one makes "the-brain-flip". Yes, this is high mental gymnastics! In fact one must imagine the brain upside down and then front to back. Why?

Most people in the field of neuroscience are familiar with brain images that show how the brain is placed in the skull. Evolution was very consequent in how brains are placed in skulls, so there must be very good reasons from the point of view of survival to do it like that. However, for neuro-psychology this was a disaster.

To place the brain in a skull in the way we see it in neuro-images asks for all kinds of criss-cross wiring. Take for example the centre of visual attention; this is the subjective direction towards which we look with our minds eye: this is normally experienced straight in front of us. But strangely, the centre of the visual cortex is in the back of our skull. It is 180 degrees from where one would expect it from experience. Beside that we may realize ourselves that our bodily sensations are below – especially in humans; the body is straight underneath the brain. But surprisingly, the sensory motor cortex is on top of the brain. Then we may notice that the subjective position from where we control our thinking, our point of view, from where we use selective attention, is from the back. This is more like how a captain from the bridge of a large ship overlooks everything in front of him: from up at the rear we steer our mind. But the frontal cortex, the part that without doubt is the brain structure from where this control takes place, is behind our forehead. On our mental ship the bridge is at the front and the windows point backwards. These are things that neuroscientists of course knew all along in the same way that the left side of our experience is represented at the right and visa versa.

So what does this mean? It means that if we look at images of the brain that match its anatomical orientation within the skull, this does not fit with experience at all. In a way we are looking at a 180 degrees inaccurate compass that is also held upside down.

So the thing to do, for matching the anatomical brain to our spatial experience, is to put it upside down and turn the front to the back. Then we immediately see something that makes sense. Everything in the cortex falls in place. Now your visual cortex is in front and the *where stream* is on top. Now it is easy to imagine where things are represented in the visual cortex. And an object that is spotted somewhere in reality, can be directly represented in the same direction it was perceieved.

Evolution has fooled us unintentionally by wiring the whole machinery as an inverted mirror image of our spatial experience. Evolution did not consider scientists wanting to understand this aparatus. Of course, most scientists prefer to have the comfort of the familiar images as used by Broca and Wernicke. On the other hand, experiments with prisms have shown that an inverted prism image of the world will habituate faster than expected – in humans, but at least in frogs.

We need to mention here that without the painstaking work of many generations of brain explorers, a radical change in perspective like the above would have been impossible.

3.30 Concluding remarks and postscripts

The *feed forward theory* regards emotions as the driving force for learning about the world. Survival probably works best if emotions force a person to deal with an actual difficulty and at the same time force him or her to create a better model of the world to be prepared for the next encounter with a similar situation. For most colleagues in the 1980s, the feed forward theory sounded too good to be true – a fine excuse to show no interest. This model also brought conscious and unconscious in one spectrum; in a way that was in accordance with the ideas of William James and Fredrick Meyers at the and of the 19th century, that were confirmed by Schneider and Shiffrin's experiments in the 1970s. At the same time the feed forward theory, with the help of Sinclair's rest principle, explained why we must sleep and why we forget most of our dreams, except the last one before waking up. Such a link to *states of consciousness* made the theory a *'too far out hippy thing'* for psychologists who already found the clinical connection suspect.

Derks and Goldblatt could empathize very well with colleagues who rejected 'freaky fantasies'. But that did not help much. However well they understood this criticism, they had, nonethe-less, composed a theory that fitted most clinical and experimental facts. So, what did they do? They did not have the scientific status to surpass their sceptical colleagues and thus could not reach a receptive audience. That is why their theory landed in the fridge. After 30 years, however they found it again, as fresh as ever.

Complex theories like the present one, ask for multi-dimensional visualizations. It only makes sense to readers able to create a 3-D mental animation of *searching and finding* and of *neural networks*. Against the background of such a mental movie the conclusions below will fall in place.

3.30.1 Consciousness, emotions and brain centres

In the feed forward theory, consciousness and emotion result from the search for new connections. When such connections are hard to find *consciousness* helps focus on the impasse. When, after a moment of controlled search, still nothing is found, negative emotions set in.

Today many psychologists believe that the limbic system is the centre for memory and emotion, because its nuclei light up in brain scans when emotions or memory storage are involved. Lesions in the hippocampus correlate with impaired memory function (anterograde amnesia). This made many consider the hippocampus as a memory centre.

From the perspective of medical science, it is totally logical to believe that a clearly distinguishable neurological 'organ' – as the limbic nuclei are – must have a clear function, like the heart or the liver does. However, without a general image of how the whole brain works, the real function of its anatomical structures cannot be clarified. A liver on its own does not tell us much about its function either.

For instance, neuro-anatomical research shows that the amygdala plays a role in emotional information. Today the link between a compromised amygdala and the occurrence of autism has gained supporters. They think this is logical because autistic people often display uncontrolled rage… Others came to believe that the amygdala is the emotional control centre or even that emotions are stored there. But what does this unifying model of the brain tell us?

According to the feed forward theory, emotions are stored nowhere, not in the brain and not in the body. Emotions result from searching and finding, and emotional information, apart from memories of emotional moments, is not deposited at all. What is the evidence for that?

That emotions are just an epi-phenomenon of searching, follows from the clinical fact that a fully *cognitive resource* can resolve a frequently recurring negative emotion in one blow without even leaving a trace of emotionality. Imagine a highly emotional traumatized person who during therapy discovers one piece of unrelated information (a resource) and after that all signs of emotions are gone. Is that possible? 'But where then is the emotion gone?' some will ask. It is gone nowhere, because the emotion was never located anywhere. The same clinical work shows that as long as there are no resources found, the same type of stimulus will trigger the same emotion again every time.

NLP pioneered cognitive trauma therapy. There exists a bulk of clinical evidence that it works that way: it is however not easily harvested in the shape of high status publications (Wake and Bourke, 2013; Gray and Bourke, 2015).

In contrast to what many therapists believed in the '70s and '80s, the problematic recurring emotions and also the original traumatic emotions, do not need to be expressed or relived during a therapeutic treatment to make them go away forever.

A negative emotion acts more like an unspecific storm of excitation that blows through the central nervous system during a difficult search. It is a chain reaction of searching excitation. The main area where the searching cell assemblies are located in the brain determines from where the wind blows; and this gives a certain character to the emotion, be it fear, sadness, rage, frustration… This storm also hammers on the sensory-motor areas of the cortex. This creates miserable feelings and muscle tension. Having once lived through such a storm may cause stimulus avoidance thereafter. But the storm itself also causes background noise: high arousal that reduces the signal to noise ratio and decreases the chances of finding a fitting resource. Phobias can stem from one such failure. To break the pattern a therapist needs to influence the signal to noise ratio with the aid of relaxation and hypnosis and facilitate a new search trial.

The feed-forward view explains negative emotions in the above manner, however, positive emotions follow the finding of resources. And the more profound the *state of searching* was, the more intense the positive emotion will be. From a profound *state of searching* one can enter an intense *state of having found*. The strong reinforcement due to feedback inhibition towards the formerly searching networks causes pleasure and relaxation. The endorphins that can already have been released before the moment of *finding* help to consolidate the new connection faster and give a feeling of satisfaction at the same time. Eureka!

Part 4
An Experiment with Love.

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Relationships are Constructed from Generalized Unconscious Social Images Kept in Steady Locations in Mental Space

Abstract

The *social panorama* approach is a psychotherapeutic method based on the view that generalized unconscious spatial imagery forms the cognitive foundation of social life. It appears to be an efficient therapeutic tool for solving a wide range of relational issues and may inspire research on space in social cognition. The leading principle of the social panorama model is "relation equals location", which means that people keep the generalized images of relevant others in steady locations in the mental space around them. The exact location of such an image governs the emotional quality of the relationship. We tested the prediction that moving a social image will change the emotional meaning of the relationship involved (i.e., relation equals location). To this end, we measured how increasing the distance to the image of a beloved alters the emotional experience. Our results show that when asked to triple the distance to the image of a loved one, the participants exhibited a significant decrease in the intensity and dramatic shifts in the quality of their emotions.

4.1 Relationships as spatial constructs

Regarding relationships as spatial constructs may be rooted in primordial shamanic traditions. In social psychology, this concept started with Jacob Levy Moreno's *sociograms*. Moreno's (1951) sociograms are depictions of how social parameters, such as interpersonal attraction and eye contact, link the members of a group. Social psychologists have used sociograms to analyse communication networks, power structures and group dynamic phases. In doing so, they discovered that most humans have an intuitive understanding of these pictures. Most relevant to our current study are the sociograms in which individuals are allowed to sketch their relationships just by following their impulses. For this purpose, a person normally draws himself or herself in the center with the images of significant others around him or her, often as seen from above. Status, personal distance, the direction of attention and the strength of the connection are often clearly expressed in these visualizations.

Aside from enabling scientists to perform technical analyses, sociograms tend to elicit emotions: They may be challenging for those represented. More realistic 3-D representations created with the aid of toy figures, computer animations (figure 1) or role-playing stand-ins can even elicit social emotions of dramatic proportions (Schlötter, 2005; Weber, 1993).

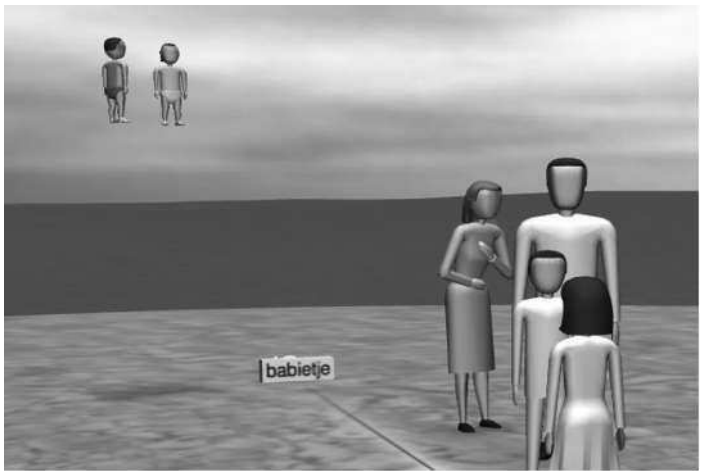

Figure 1: An image created with the online coaching app at www.coachingspaces.com.

However, these 3-D reconstructions of families or teams do not only serve diagnostic purposes. Psychotherapists noticed that by shifting the locations of these symbols, clients may adapt their attitudes to the represented others in real life. A number of these therapists came to the conclusion that spatial changes in these symbolic configurations are automatically translated into the social cognition the subject uses for actual interaction. Psychotherapy with the aid of the social panorama method is also based on this assumption (Battino, 2006). Moving social symbols is also the central form of intervention in other therapeutic traditions such as Psychodrama (Gessmann, 2013.), Family Sculptures and Family Reconstruction (Haley & Hoffman, 1967), Family Constellation Therapy (Weber, 1993; Hellinger, 1996; Schlötter, 2005) and Structural Constellations (Varga von Kibéd & Sparrer, 2000; Weber, Schmidt & Simon, 2005; Hoppner, 2001).

4.2 Social Panorama Theory

How can people change their social attitudes by shifting the locations of social symbols, for instance, pieces of paper or Playmobil figures? Social panorama theory explains this by a strong match between these spatial symbolic representations and the way in which the mind tends to encode social relations (Derks & Hollander, 1996; Derks, 2000, 2005). In other words, due to their analogy, the spatial shifts among these symbols have a direct associative impact on the social cognitive processes that guide social behavior.

How, then, do people simulate social reality? According to this model, they use an unconscious landscape filled with the generalized images of all people who are relevant to them. The permanent character of a *relationship* arises from giving such an image a relatively stable position in this panorama, which means that an individual with whom one has a relationship is located stably at a particular place in mental space. External spatial symbolic manipulations will thus be trans-coded automatically into a person's map of social reality. These phenomena are held to take place largely outside of awareness.

Behavioral indicators. There are some indicators that support this view. For instance, during conversations about others, speakers may spontaneously point, gesture and gaze at the places where these others seem to be located in their mental landscapes. Another indicator is *spatial language*. Attentive listeners can hear how people frequently use spatial expressions when they speak about relationships: "He stands by me." "We drifted apart." In order to consider these as supporting the claims of social panorama theory, they must be regarded as literal – and not metaphorical – descriptions of spatial social imagery. Even more convincing is what happens when we ask people to point out the locations of their social images because when they have spotted one (which can be difficult at first, since these may be below the threshold of awareness), they are often surprisingly decisive about the exact location of such an image. Further, when we try to pinpoint the correct place of such an image in physical space together with them, they may say, "No! No! Mom's image is almost five centimeters more to the left!" Such precision supports the notion that the person already has a steady localized image in mind before being asked to search for one. Above all, in psychotherapy, people tend to experience strong emotional reactions after visual or verbal instructions that these images be moved closer or further away, turned, or made taller or smaller. Walker (2014) and Derks (2002, 2005) discussed how these emotional responses might be indirect proof for the existence of the unconscious stimuli that are causing them. In psychotherapy, this type of evidence is generally regarded as valid. Strong social emotions, such as fear, jealousy and hate, experienced in the absence of stimuli from real flesh-and-blood individuals (where no real *villains, bitches* or *assholes* are to be seen) have always been a common appearance in therapy and are generally seen as proof of a client's imagination (Singer, 1974).

4.3 Generalized Social Images

After having met someone for the first time, one may hold a concrete memory of how this person behaved and looked. In this study, we use the term *generalized social images* for images that combine the great variety of looks, behaviors, attributes, traits and ways of expression, etc. of a human being into one single concept also called *personification* in the social panorama (Derks, 2002, 2005; Battino, 2006). Such a

generalized image can be located anywhere in mental space and still be recognized as the representation of this particular individual.

The shape of such an image often seems comparable to a caricature or cubist portrait, as was reported by people after painstaking introspection. Such an abstraction may result from the merging and stacking of the memories of repeated interpersonal encounters (real and imaginary) that distills the essence of the person into one concept.

4.4 The Relational Meaning of Location

Mental Space. The concept of *mental space* in cognitive psychology was pioneered by Barbara Tversky, who explored in detail how people create spatial representations of their bodies and the space around them and how they mentally map the larger areas they navigate (Tversky, 1991, 1993, 1997). She also investigated how spatial perspectives may change when listening to stories, how gestures can express the spatial dimensions of mental images, and also how to apply all these findings in diagramming, architecture, design and graphic applications (Tversky, 1999). In linguistics it was Gilles Fauconnier (1997) who started to use the expression *mental spaces* in relation to making meaning out of language (Fauconnier & Turner, 2002). George Lakoff and Mark Johnson (1999) explored the role of space in logic, metaphors and in social experience. This work gave rise to the *embodied simulation theory of meaning* (Bergen, 2012), in which the *where-question* plays a crucial role. In cognitive psychology, Williams, Huang & Bargh (2009) postulated that physical experience is the foundation (or scaffolding) of all cognition. In social psychology the leading question will be: Where do people generally locate one another?

Social Mapping. Even the social realities of individuals with disparate upbringings will expose them to many basic similarities, for instance, in kinship, power, dependence, affiliation, social rules, and punishment. These shared experiences will cause them to construct social maps with some amount of overlap. Thus, as each of us is surrounded by large and important others in childhood, each of us will use the vertical dimension to encode *status* and use the words *high* and *low* to express it (Stephan, Liberman, & Trope, 2010). If most people frequently experience their loving caretakers at close range, they will encode affection, familiarity and affiliation with (temperature and) distance (Matthews & Matlock, 2010). If most people perceive their lovers to the front or on the right-hand side, they will tend to reserve those locations for them. Hence, what at first appears to be shared social intuition or metaphor might equally well be a product of collective exposure to universal patterns in human contact (Derks, 2002, 2005).

Space, society and politics. In the mid-1980s, post-modern geography developed a fresh view on the concept of space called *the spatial turn* (Warf & Arias, 2008). This development was largely based on the space concept of Henri Lefebvre (1991), in which space is not only a physical reality, but also a socially produced category for analysis and debate. Lefebvre dealt with the themes of space perception and the use and the possession of space. He pointed out that for orderly societal function, both citizens and government must represent space in similar mental maps (Crang & Thrift, 2000) and that this mapping is interwoven with the distribution of power and territorial claims.

Aside from being a psychiatrist, Jacob Levy Moreno also called himself a psycho-sociologist, and he believed that *sociometry* could also become a research tool in sociology and the political sciences. The social panorama model is similarly promising. It

claims that who a person believes he/she is within society is primarily a product of a three-dimensional unconscious construct of the self and the others, with humanity at large as the background. Keeping the locations of these images relatively stable helps a person to believe their social position is relatively permanent (figure 2).

Figure 2: A sketch showing the self within the social (and spiritual) panorama.

Status, identity and roots are probably the main drivers behind political behavior. But however stable such concepts are, they are not immune to change. Oetsch (2000, 2002) analyzed the creation of populist political power on the basis of the spatial imagery set in motion by politicians' suggestive communication. Populist speeches, for instance, may be full of the juxtaposition of *working people* and *elite*. This may help to create the image of a deeply divided society in which there is an inevitable conflict between the "top" (the state or the ruling class) and the "bottom" (ordinary people, the citizens). Populist politicians have frequently created the image of how *the little people* are facing *the system*, or how *normal citizens* will become overpowered by the *ruling class* or by *foreigners* (Oetsch, 2002).

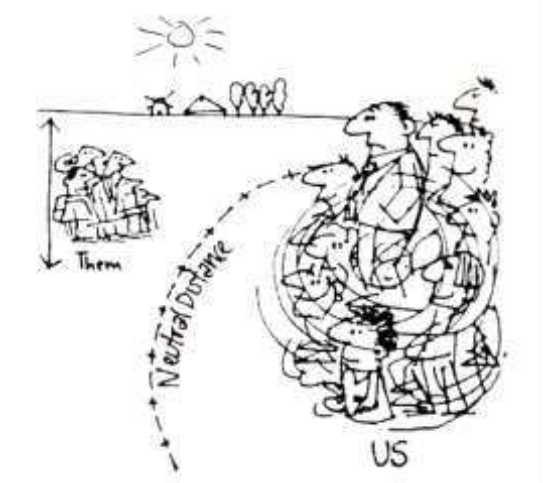

Figure 3: A demagogic panorama as a special case of a social panorama

4.5 Hypothesis

Relation equals Location. The hypothesis tested is: The emotional intensity and emotional quality of a relationship is determined primarily by the distance, the direction, the eye level and the direction of gaze of the social image that represents the target person. Thus, a change in the relationship implies that the social image will move closer, further away, up, down, sideways, or shift orientation. Moving the image in one or more of these ways will necessarily change the emotional quality and intensity of the relationship.

We chose *distance* as an independent variable in this study, since *social distance* has been explored within a variety of paradigms (Matthews & Matlock, 2010; Thorpe and Liberman, 2010; Hackenbracht & Gasper, 2013). In addition to testing this hypothesis, we also collected some additional data on the relative positions (i.e., *directions*) at which the images of loved ones are located *(left, right, front, back and inside)*, but we will not elaborate on this. The crucial role of the *direction of gaze* is supported by Weisbuch, Lamer & Ford (2013), who found this to be a core part of how people remember each other. However, for the sake of simplicity, the variables *eye level* and *direction of gaze* are not included in this study.

4.6 Origin of the Hypothesis

Linguistic hints. It was linguists who noticed the verbal expressions that give away the spatial nature of social imagery (Lakoff & Johnson, 1980; Lakoff, 1989; Lakoff & Johnson, 1999; Matthews & Matlock, 2010). [For instance: / a distant relation / we are close / high status / the opposition / we are keeping distance / the upper class / they are opponents / in-group versus out-group / all look up to him / we moved away from each other / we are supporters / he is backing me up / he is an outsider / she confronted me / they work side by side /.] These utterances were mostly regarded as metaphorical, but social panorama theory claims that they should be taken as literal expressions of the spatial configurations in social imagery (Derks & Hollander, 1996).

Clinical hints. As most issues in psychotherapy have to do with relationships, a multitude of therapeutic methods have evolved to help clients to cope with grief, abuse, hate, fear, divorce, envy, dominance, submission and the complexities of family life. Several of these methods make explicit use of spatial intervention; an anthropological survey might uncover ancient shamanic traditions that were already doing the same thing. In the 1960s, Virginia Satir developed the family sculpture method (Satir, Stachowiak & Taschman, 1994), in which the members of a client's family are encouraged to locate each other in a room according to how they felt about their ties (Haley & Hoffman, 1967). By intuitive shifting back and forth of these *living statues*, the sculpture was improved until all were satisfied with their positions. In family constellation therapy (Schlötter, 2005; Weber, 1994; Hellinger, 1996), a similar procedure is followed, but the family-members of the client are represented (role-played) by therapy group members. Although the therapists themselves may not describe it this way, the spatial manipulations are the most striking feature in constellation therapy.

In 1994 Derks and Walker began to treat large numbers of clients (both in a private practice and in a psychiatric clinic) on the basis of "relation equals location". This means that when clients complain about relationships, the "problematic persons" are in

the *wrong* places in their mental spaces. The locations of these persons' images are then traced by asking clients to point out with their eyes closed what the precise distance, direction, eye level and the direction of gaze of each image is. With some routine this becomes a simple procedure. However, identifying the positions to which the problematic images are to be moved and dealing with the complex resistance that may arise is more challenging. A variety of related procedures enables therapists to help to restructure their client's models of the social world in order to improve their quality of life (Battino, 2006). The reliability of the phenomena described and the fact that the method is applied worldwide, suggest that the principles of social panorama theory are universal.

For most clinicians, proving the effectiveness of their methods in double-blind clinical trials has a low priority. They often regard the worldwide popularity of a therapy as a sign of its validity and they seldom have the means and skills to conduct such studies (Wake, Gray & Bourke, 2013).

Tentative trails. Derks' (2002, 2005) initial probing aimed to test whether people use general *corners* for certain categories of people, such as strong, weak, trustworthy, and dangerous ones. Although this was not confirmed, these trials highlighted the role of space in social representation. This led to tests involving distance, orientation, front versus back, and height. The participants in these trials belonged to training groups and were asked to move the image of a friend further away or more to the side, turn it by 45 degrees, or to shift the gaze up or down. Surprisingly, they unanimously reported emotional shifts (Derks, 2002, 2006).

The locations of partners and ex-partners. In 2004 Derks explored with 239 students where they represented their loved ones in mental space. This was followed by a series of informal experiments that were included in social panorama trainings. Since 2007 these *partners and ex-partners experiments* have been carried out with at least 43 groups of between 12 and 180 participants. Most of the estimated 1000+ participants were mental health professionals. Since the aim of these experiments was experiential education and not to collect scientific data, they are not well documented. Most people are fascinated by intimate relationships; they are in relationships and have been in previous relationships. These relations are notoriously emotional and offer a great introduction into the underlying spatial mechanisms.

Procedure of the partners and ex-partners experiment. For preparation, the participants were shown a live demonstration of how one finds the location of the image of a (loved) person. The procedure comprises the following steps:

At the beginning 1) the social emotional feeling associated with the relationship with the target person is evoked by asking the participant *to experience the (general) feeling they link with being with that particular person*. When after some time the participant signals (by nodding) that s/he is aware of this feeling, s/he is 2) asked to point in the direction where the target person's image came up. The person leading the procedure then walks to the point indicated and tries to figure out by using his hands to estimate distance, direction, level of the target's eyes in relation to the participant's eye level, and 4) direction of the target's gaze.

(These three pieces of information – the location relative to the body center of the subject, the eye level relative to that of the subject, and the direction in which the image is looking – have proven to be sufficient information to work with in therapy.)

Once the participants have become familiar with the technique for accessing unconscious social images, they are paired up. Together they search for the locations where they keep the persons most dear to them and also the location of ex-partners who remain in some way (positively or negatively) relevant to them.

When all have found the locations of these (*former*) *loved ones*, the results are made visible to all. This is done by marking a 40 cm x 30 cm rectangle of tape on the floor to create a *self-position*, with a small triangle on one side to show the orientation of the nose. This rectangle is enclosed within a circle of about 1.8 m radius that represents the sphere of intimacy. Subsequently, all group members are asked to put sheets of paper labeled *partner* or *ex* around this one single self-position. The paper used for *partners* is of a different color to that for *exes,* and all sheets show the direction of gaze with pointers or noses. On their sheets, the participants also indicate the difference in eye level (e.g., "+5 cm" or "-3 cm") in relation to their own.

Figure 4: Photograph of a partners and ex-partners experiment conducted with 180 participants in 2010. The woman standing at the self-position is about to place her ex-partner sheet. The two different colors for partners and ex-partners are not visible in black and white. The distribution of the sheets placed by about 150 previous participants shows what usually occurs.

The participants then put their sheets one by one in the appropriate locations on the floor relative to the self-position (figure 4), stacking them on top of each other if necessary. Tape is used to hold the sheets in place. The result is a kind of *scatter plot* of the locations used.

The *partners and ex-partners experiment* creates an overview of how people generally locate their intimate relations (Derks, 2012). In the *partners and ex-partners experiments* we tend to find that partners are roughly distributed as follows: left 10%, front 60%, right 20%, back 5% and inside 5%. These results are obtained when one creates 4 90-degree horizontal radial segments. The front and back segments are halved

by the ventral-dorsal medial plane (i.e., the 90-degree forward visual field). The *on the inside* position is used for all images that overlap the self-position by at least one third. *Ex-partners* are generally located in all possible directions but at greater distances. The unconscious dynamics between images of partners and ex-partners may be the reason for seeking therapy, for instance, when the images of ex-partners are still within the intimate sphere and prevent solid bonding with a new loved one. Other reasons may be that one flesh-and-blood partner is represented in two different locations (bi-location), or that father and lover are located in the same place in mental space (shared location).

Clinical Experiment 24: An experiment with love

4.7 Method:

To the best of our knowledge, this study is the first attempt to test the "relation equals location" hypothesis on the basis of the theoretical framework described above. Hence, we adhered to a basic two-by-two pre-post design in which we were able to compare the measurements of participants within and between groups.

The participants in this study were randomly assigned either to an experimental group (asked to move the image of their beloved 3 times further away) or to a control group (instructed to think of their favorite pizza toppings instead of moving social images).

The participants were first asked to experience the feeling of love for their loved ones and focus on this for a minute. Next, the intensity of the feeling of love was measured using a 10-point semantic differential scale that ranged from very low to very high intensity. Since we considered that the request to locate the image could in itself intensify the emotions as a result of focusing attention on the image of the loved one, we interrupted the procedure with the measurement and then asked the participants to locate the image in mental space. However, since the participants needed to become aware of the locations of the images before we could ask them to move them, they next had to decide whether they sensed the image "*at your left, in front, at your right, at your back or inside of you".*

The experimental intervention consisted of a written instruction to move the image of the *loved one* to a location 3 times as distant. This intervention was chosen to change the location of the image of the loved one in a proportional manner because clinical pilot studies had shown that people use idiosyncratic scales in their social imagery. In general, however, the location for a loved one ranges from 5 to 70 cm from the center of the body. The suggestion to, for instance, shift the image by one meter would have had a disproportional impact.

The same 10-point scale was subsequently used again to measure the difference in intensity of the affect experienced.

The hypothesis was that encouraging the participants to place the images of their love ones at greater distance would reduce their levels of social emotion. This change would be noticeable in the second measurement of the intensity of the feeling of love. After the post-measurement the emotional process was checked qualitatively by asking the participants to describe in their own words what had happened.

Finally, the participants were asked to bring the image of the beloved back to its original location.

The null-hypothesis (i.e., relation does not equal location) would be accepted if moving the image of the loved one to 3x its original distance did not change the affect significantly more than thinking about the *non-spatial* control task (finding one's favorite pizza topping).

In addition to results in terms of the differences in emotional intensity, we also collected data about the location of the loved ones and about the participants' experiences as described in their own words. We did not analyze the data about the location of loved ones, since they were not relevant to this study. However, the qualitative textual data describing the experience of the participants were categorized, and the distributions from measurements of the *experimental group* and the *control group* compared.

Participants. The participants were 53 undergraduate social science students with a mean age of 26.7 who were attending two courses on social and intercultural communication at Johannes Kepler University Linz, Austria. The 22 males and 31 females were assigned randomly to an experimental group (n=25, instructed to move the image) and a control group (n=26, instructed to think of a pizza topping). Two respondents were removed from the sample because their questionnaires were incomplete.

Procedure and materials. In two identical sessions, held in September 2011 and February 2012, the participants were first asked to complete the task slowly, in a relaxed manner, and in absolute silence. Then they were handed a one-page questionnaire written in English and titled "Social Imagination Test". The conditions during these sessions were controlled to allow the necessary concentration.

After filling out sex and age, the participants were asked the question "Who is the person you love most?" Then they were instructed, "Please recall the general feeling of love for this person as strongly as you can. Take a minute to intensify this feeling." The latter request served to activate the unconscious image of the loved person.

The next instruction was "Please indicate the intensity of this feeling (by circling the number) on a scale from: (=1) very low intensity to very high intensity (=10)."

Next the questionnaire read "Find out where you imagine the loved other, while recalling this feeling of love."

The participants could select from "at your left, in front, at your right, at your back or inside of you."

The participants in the experimental group were then asked, "Please recall the feeling of love for the person you love most again." This was followed by "Move the image of that person to a place that is three times as far away from your body center as it was."

Control condition. It might be the case that people lose some of the intensity of the feeling of love when they have to recall it repeatedly. A control condition should enable

us to discriminate boredom from a change in emotional intensity as a result of the spatial intervention. The control group must be given no suggestion to relocate the loved one's image. We therefore instructed the control group to think of their favorite pizza toppings before measuring the intensity of love for the second time. The *pizza question* was successfully answered by all control participants – in hindsight, a more neutral task might have been preferable.

Semantic Check. The questionnaire included a semantic check at the bottom: "Please describe in your own words what happened." Subsequently, the participants were asked to restore the images of their loved ones back to their original location.

4.8 Results

Where were the loved ones located? The question "Where do you imagine the loved other, while recalling this feeling of love?" was identical for the experimental and the control group. The participants were asked to find the locations of their loved ones in order to become aware of the location of their (normally unconscious) images, which is a prerequisite for shifting them in a controlled manner. The locations of the loved ones, as shown in table 1, are not the focus of this study but a byproduct of the approach. The above-mentioned *partners and ex-partners experiments* tend to yield roughly 10% left, 60% front, 20% right, 5% back, and 5% inside. Analyzing the data, we found 3 *inside* responses in the *experimental* sample, which amounts to 12%. This high percentage probably compensated for some of the differences between the two groups, since – logically – images on the inside will move little if shifted to 3 times their original distance.

Table 1: The localization of loved ones in the present study of 52 participants.

Localization of loved ones	**Number**
Loved one at the left	3
Loved one in front	30
Loved one at the right	13
Loved one at the back	2
On the inside	4

Pre-measurement of the intensity of love. In the *experimental* group (n=25), the average intensity of love felt initially was M= 8.07 with a standard deviation SD=1.76. The average intensity of love felt in the control group (n=26) was M=7.48 with SD=1.47. A t-test for these two conditions yielded $t(25)=1.28$ with $p=.21$ and showed only a marginal difference.

Post-measurement of emotional intensity. After moving the image of the loved one to three times its original distance, the intensity of the emotion dropped from M=8.07 to M=6.28 with SD=2.41, where the pre/post $t(24)=3.54$ with $p\leq .001$. See figure 5.

The intensity of love after thinking of a pizza topping. After thinking about their favorite pizza toppings, the control group's average intensity of love rose slightly from

M=7.48 with *SD*=1.47 to *M*=7.65 with *SD*=1.88. The result of the pre/post t-test was *t*(25)=0.16. *p*=.87 and not significant.

The result of the post/post *t*-test comparing experimental and control groups showed a two-tailed *t*(50)=2.23. *p*=.03.

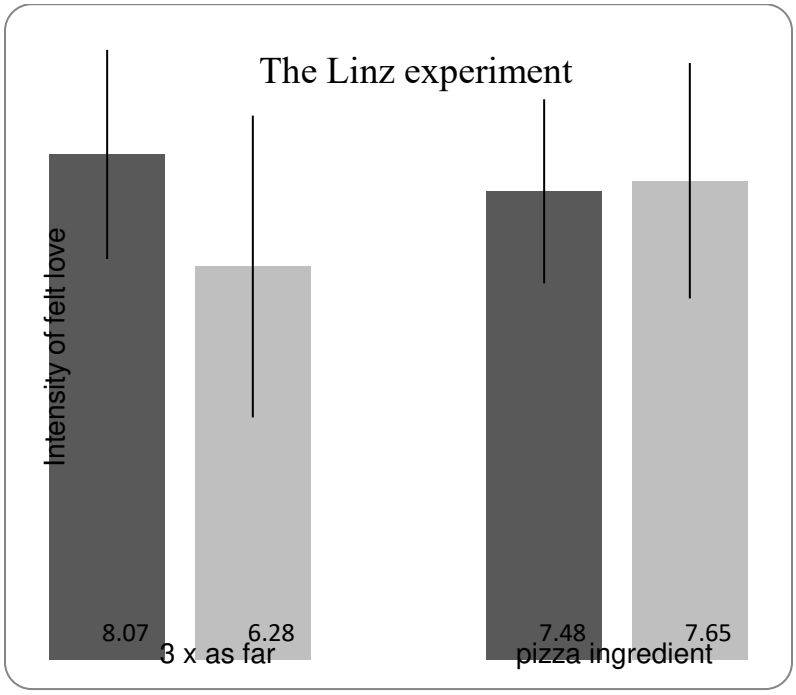

Figure 5: The Linz experiment

The semantic check. Most participants answered the semantic check question (22 and 19 in the *experimental* and the *control* group, respectively). Table 2 shows the results of the analysis in terms of five categories: 1) the emotion became stronger, 2) the emotion became weaker, 3) no change in the emotion, 4) a shift towards another emotion, 5) other responses.

Table 2: Results of changing the locations of the loved ones

	Reaction type				
Change type	Stronger	Weaker	Unchanged	Emotional Shift	Other
3 x as far	1	7	3	9	2
Pizza ingredient	8	0	5	1	5

A chi square test (*p*=.0004) indicated a significant difference between the frequencies of the semantic check distributions. The experimental intervention had high scores for the emotion weakening and shifting from love to another emotion. The control intervention tended to intensify the emotion or leave it unchanged. The categorized

answers in their original form are presented in the appendix. Note that four of them were translated from German.

4.9 General Discussion

Universal principle? The fact that all participants could locate their loved ones' images supports the universality of social panorama theory. Therapeutic workshops held in North and South America, Asia, Polynesia and all over Europe suggest that the social world is primarily a spatial construct and that this seems to be independent of culture. However, whether the positions of partners are influenced by culture, age, or gender is open for further exploration.

The present study indicates that the intensity of a social emotion can be influenced by suggesting that subjects move the relevant images to more distant locations in mental space. Our results show that the social emotion may change not only in intensity but also in quality, and may shift to another type. The intensity of this different type of emotion may be stronger, even when the image is placed further away.

State of consciousness. When experimenting with unconscious imagery, one needs to consider some basic lessons from psychotherapy. To begin with, the state of consciousness of the participants must be regulated such that they can gain access to the unconscious knowledge under scrutiny. In hypnotherapy, one speaks of *trance induction*. This is most often a preamble that helps the client to relax and slow down their thinking. Modern imagination therapy (Andreas & Andreas, 1989) found that very simple suggestions, such as "close your eyes, direct your attention inwards and relax" may suffice to prepare people.

Implicit suggestion and lack of feedback. The second concern in experimenting with unconscious social imagery is called *implicit suggestion*. Hypnotherapists have been aware that this undesired priming can be caused by any type of stimulus in the environment. This, of course, plays a role in all cognitive tasks, but becomes even more important when the task involves relaxed introspective exploration.

How to access the correct generalized images? Under clinical conditions, the therapist is able to influence a client's response on the basis of direct verbal and non-verbal feedback. If the client picks a concrete social memory instead of the generalized spatial image, the therapist may thus ask to look for a *more general image*. In the paradigm used in this study, it is assumed that the feeling of love is connected to the general image by way of synesthesia. In other words, focusing on the general feeling of love for the loved one will help to automatically access their general spatial image, since these two are linked. We regard this assumption to be the weakest part in proving that relation equals location because in the above-described procedure one does not know whether the subject focuses on a general feeling of love to access the general spatial image of the loved one. The semantic check shows that a subject might also access a specific memory of a past situation and then place that image at a greater distance. For instance: The subject sees his loved one on the other side of the dining table where she was sitting last Sunday. Next he moves her 3 times further away. This will distort the memory of the dinner, but will not have a significant effect on the general sense of the relationship.

Social distance and distance in mental space. Another aspect of this exploration is the distinction between *social distance* as used in the *social distance concept* (Bogarus, 1933; Matthews & Matlock, 2008; Williams & Bargh, 2008) and the *distance between the generalized images* of people in mental space. For instance, Joy Hackenbracht and Karen Gasper (2013) started an article with the sentence "Close others tend to elicit more intense feelings than distant others" (Hackenbracht & Gasper, 2013, pp. 94). In their study, they used *interpersonal closeness* as the dependent variable; this variable was determined by means of two tests: (i) The Friendship Intensity Measure (Selfhout, Denissen, Branje & Meeus, 2009), the scale of which ranges from 0=far acquaintance to 10=best friend and (ii) The Inclusion of Other in the Self Scale (by Aron, Aron & Smollan, 1992), a five-item questionnaire. In this study, Hackenbracht & Gasper (2013) proved that people use the intensity of their emotions in relation to what happens to friends (or acquaintances) to gauge the closeness of their relationships. Calibrating the tests for relational distance mentioned above against measures of mental space ("Where do you sense the image of your friend?") could make the theoretical concepts used more robust.

Construal Level Theory (Thorpe and Liberman, 2010) postulates that, among other factors, greater physical distance to an object causes people to think about it in more abstract terms, whereas a small distance makes it more concrete to them. Here we need to make clear that the present study does not involve *the physical distance to someone*, but only *the imagined distance*. In other words, the generalized mental image of a person can be represented fifty meters away in mental space, as estimated from the center of one's body, while at the same time the real person can be sitting on one's lap – as might conceivably happen in a brothel. However, the *social distance* felt in this extreme example ("But I don't feel any closeness to her") can be identical to the subjective *social distance* that Thorpe and Liberman wrote about..

Imagination in therapy and social attitudes. Although research tends to focus on pathological imagination, such as intrusive images after a traumatic experience (Brewin, James, Gregory, Lipton & Burgess, 2010), others recognized that *healthy* human cognition must be fabricated out of *sound* mental constructs (Andreas & Andreas 1989, Holmes & Mathews, 2010; Brewin, Gregory, Lipton & Niel, 2010; Ng, Krans & Holmes, 2013). This insight is gradually turning the improvement of the client's imagery into the central medium of action in psychotherapy (Pope & Singer, 1978; Battino, 2006; Arntz, 2012; Edwards, 2007). Social panorama theory is part of this development.

The value system underlying social panorama theory aims to balance and harmonize inter-human relationships. The central building block is the discovery that people use de-contextualized mental representations of others – so-called personifications – to construct their relationships to them. These are understood as spatially organized *mental holograms*, which during a real encounter, function as perceptual filters between the real individuals involved. Once they have established stable spatial images of one another, people seem to react only slightly to the real person in front of them, but respond mainly to their unconscious images – this is what sustains social attitudes (Walker, 2014).

Generalized images. The neural basis of generalization seems to consist of a shared set of neural connections that function as the linking pin in a conceptual category. It appears that through the rehearsal of a series of related concepts, the number of activated synaptic links will shrink after every trial, while at the same time the strength

of the shared connections will increase. In this way the brain automatically emphasizes the essence of the category. This engraining process causes the neural networks involved to become more simple and robust after every *use* and *rest* (Sinclair, 1982; Derks & Goldblatt, 1985; Derks & Sinclair, 2000, which results in a neural conduction with less resistance because fewer neurons are involved. After sufficient rehearsal, this speeds up processing to below the threshold of consciousness while reducing the mental effort required (Kahnemann, 1973, 2011; Schneider and Shiffrin, 1977). Recent functional magnetic resonance imagery (fMRI) research supports this, as it shows that all thought about *distance*, as in *social distance, spatial distance* and *temporal distance*, activates the same cortical areas (Parkinson & Wheatley 2013; Parkinson, Liu & Wheatley, 2014).

4.10 Conclusion

The present study supports social panorama theory, which states that people construct relations by projecting social images onto stable locations in mental space. This study has introduced a paradigm from cognitive therapy to social cognition research. The social panorama method is applied to a wide range of psychological issues, such as fear of public speaking, conflicts in families and teams, exclusion, hatred, submissiveness, grandiosity, negative attitudes towards the self, and problems with intimacy, love and affection. Researchers wishing to use a related approach can expect the potential for research to match that for therapy.

Acknowledgements: We thank Willem de Haan for his help. We also thank Leo Pannekoek, who conducted a series of unpublished imagination experiments on the feeling of love in the early 1980s at the Clinical Psychology Division at Utrecht University in the Netherlands.

Appendix: Table 3: Verbal Comments of the Results Experienced

A: 3 x as far condition: 22 responses from 25 subjects
Please describe in your own words what happened?

1) Stronger
   - Imagination produces strong real feelings and a response in the body /

2) Weaker
   - Lost encourage, lost friend, gained distance /
   - Person more distanced, more difficult to imagine, less feelings /
   - As the person was far away, my feelings were lower for this person, and I couldn't see the face of the person clearly /
   - Feelings get less intensive when the person moves (3 times) away /
   - Person wasn't very clear to see with long distance /
   - The person is far away, not reachable /
   - Nearly the same as before, a little less feelings /

3) Unchanged
   - Nothing special happened to me /
   - Intensity was the same, location not relevant /
   - Intensity did not change, but the distance was noticeable /

4) Emo-shift
   - Very sad, like the person don't want to come over to me, like she doesn't feel the same (as I do) /
   - Does he goes away or come he to me?; bad feeling /

I lost myself, as if a part of me is ripped /
The good feeling turned into a rather bad one /
Short Unhappiness /
I feel more distance, it moves me sad /
by moving the picture, the feeling was not much lower intensity, but felt slightly negative.
Returning was a very good feeling /
I felt very uncomfortable, like losing something /
I don't liked it that this person is so far away /

5) Other

I feel a little bit strange, like I was dreaming /
He was too far away, I wanted to embrace him /

B: Favorite pizza ingredient condition: 19 responses from 26 subjects
Please describe in your own words what happened?

1) Stronger

I'm not quite sure, maybe afterwards the feelings were stronger /
Experience very intense; I saw her and could smell her /
At first the most loved person was scaled at 8, then after the thought experiment on 9 /
Feelings become more intensive on this scale /
The image was on my mind. The intensity of my feeling was higher /
The loved person came closer I would love to have dinner with the person, comes closer, the desire grows; real good feeling., I would be prepared after thinking of a favorite pizza /
The person stood again in front of me, but nearer and we kissed and hugged /
Positive association with the loved one was strengthened /

2) Weaker

3) Unchanged

I am very happy that he exists /
Positive feelings toward that person from beginning on. Visualizing was easy & I felt close. Pizza was disturbing. Value on scale didn't change /
The feelings during the first part were more intensive, than in the second part. I don't know exactly my favorite pizza /
Nothing really changed /
I was happy, but there was no change in emotions /

4) Emo-shift

The feelings change a little when you think of something else in between /

5) Other

Don’t understand the link btw. The person and pizza. Hard to define ONE person. Love more persons, but in a different way /
I thought of little moments I recall with this person /
I thought about him, our long & intensive relationship & our very special & unique moments /
I don't like these questions /
The feelings for the Pizza were bigger than the feelings for the person /

References

Alarco'n, R. D. & Frank, J., eds. (2011). The psychotherapy of hope: the legacy of persuasion and healing. Baltimore: Johns Hopkins University Press.

Alberini, C. M., (2007). Reconsolidation: the samsara of memory consolidation. Debates in neuroscience, 1(1):17-24.

Allday, E., (2011). Revision of psychiatric manual under fire. San Francisco Chronicle. November 26.

Amabile, T. M., (1983). The Social Psychology of Creativity. New York: Springer.

Amabile, T. M., (1996). Creativity in Context: Update to the Social Psychology of Creativity. Boulder, CO: Westview Press.

Andreas, C., (2015). Wholeness Process Participant Manual, 2007-2015, V2015, www. WholenessProcess.org.

Andreas, C., & Andreas T., (1994). Core Transformation: Reaching the Wellspring Within. Moab, Utah: Real People Press.

Andreas, C., Andreas, S., Faulkner, C. & McDonald, R., (1994). NLP: New Technology of Achievement. New York: William Morrow.

Andreas, S. Andreas, C., (1989). Heart of the Mind. Moab, Utah: Real People Press.

Andreas, S., (2001). Building Self-Concept. Anchor Point Magazine, July, 15(7): 7.

Appel, J. K., & Kim-Appel, D., (2010). The multipath approach to personality (MAP): A metaperspective. Journal of Transpersonal Research, 2(2): 108-115.

Arkowitz, H., (1995). Common factors of change in psychotherapy. Clinical Psychology: Science and Practice, 2(1): 94–100.

Arntz, A., (2012). Imagery rescripting as a therapeutic technique: Review of clinical trials, basic studies, and research agenda. Journal for Experimental Psychopathology, 3(2): 189-208.

Aron, A., Aron, E. N., & Smollan, D., (1992). Inclusion of other in the self scale and the structure of interpersonal closeness. Journal of Personality and Social Psychology, 63(4): 596-612.

Assagioli, R., (1965). Psychosynthesis. New York: The Viking Press.

Austin, A., (2013). Metaphors of Movement. Training Manual.

Ayduk, Ö., & Kross, E., (2010). From a distance: Implications of spontaneous self-distancing for adaptive self-reflection. Journal of Personality and Social Psychology, 98(5): 809-829.

Ayres, A. J., (2005). Sensory Integration and the Child: understanding hidden sensory challenges (25th anniversary ed., rev. and updated / by Pediatric Therapy Network; photographs by Shay McAtee. ed.). Los Angeles, CA.

Baars, B., (1988). A Cognitive Theory of Consciousness, Cambridge: Cambridge University Press.

Bailey, D., (1997). Computational Model of Embodiment in the Aquisition of Action Verbs. Ph.D. Dissertation. Berkeley: University of California.

Bakan, P., (1978). Two Streams of Consciousness: A Typological Approach. In: Pope, K. & Singer, J. (eds.), The Stream of Consciousness. New York: Plenum Press: 159-184.

Baldwin W. J., (1995). Spirit Releasement Therapy: A Technique Manual Paperback use pre formatted date that complies with legal requirement from media matrix.

Ballif, B., (1981). The significance of the Self-Concept in the Knowledge Society. In: Lynch, M., & Norem-Hebeisen, A., Computer Science Division, EECS Departement. University of California, Berkeley: 251-260.

Bandler, R., (1985). Using Your Brain for a Change. Moab, Utah: Real People Press.

Bandler, R., (1999). Treating Nonsense with Nonsense: Strategies for a Better Life. Interview by Ronnie Amsler, Zuerich: NLP Institut Zuerich.

Bandler, R., (2008). Get the Life You Want: The Secrets to Quick and Lasting Life Change with Neuro-Linguistic Programming, Deerfield Beach, Florida: Health Communications.

Bandler, R., & Grinder, J., (1975a). The Structure of Magic I. Palo Alto: Science and Behavior Books.

Bandler, R., & Grinder, J., (1975b). Patterns of the Hypnotic Techniques of Milton H. Erickson, M.D. Part 1. Cupertino, CA: Meta Publications.

Bandler, R., & Grinder, J., (1979). Frogs into Princes. Moab, Utah: Real People Press.

Bandler, R., & Grinder, J., (1982). Reframing: Neuro-Linguistic Programming and the Transformation of Meaning. Moab, Utah: Real People Press.

Bandler, R., Grinder J., & Satir, V., (1976). Changing With Families. Palo Alto, CA: Science and Behavior Books.

Bar-Anan, Y., Liberman, N., & Trope, Y., (2006). The association between psychological distance and construal level: Evidence from an implicit association test. Journal of Experimental Psychology, 135(4): 609-622.

Bar-Anan, Y., Liberman, N., & Trope, Y., (2006). The association between psychological distance and construal level: Evidence from an implicit association test. Journal of Experimental Psychology, 135(4): 609-622.

Bargh, J. A., Chen, M., & Burrows, L. (1996). Automaticity of social behavior: Direct effects of trait construct and stereotype priming on action. Journal of Personality and Social Psychology, 71(2): 230-244.

Baron-Cohen, S., (1991). The Theory of Mind Deficit in Autism: How specific is it? British Journal of Developmental Psychology, 9(2): 301-314.

Barsalou, L.W., (2012). The human conceptual system. In: M. Spivey, K. McRae, & M. Joanisse (eds.). The Cambridge handbook of psycholinguistics. New York: Cambridge University Press: 239-258.

Barsalou, L.W., (2015). Can cognition be reduced to action? Processes that mediate stimuli and responses make human action possible. In: Engel, A.K., Friston, K.J. & Kragic, D., (eds.). Where's the action? The pragmatic turn in cognitive science. Strüngmann Forum Reports, Vol. 18. Cambridge, MA: MIT Press.

Barsalou, L.W., (2016). Situated conceptualization: Theory and application. In: Y. Coello & M. H. Fischer (eds.). Foundations of embodied cognition. East Sussex, UK: Psychology Press (in press).

Bates, E., & Dick, F. (2002). Language, gesture, and the developing brain. Developmental Psychobiology, 40(3): 293–310.

Battino, R., (2006). Expectation: The very brief therapy book. Carmathenshire, UK: Crownhouse, Bancyfelin.

Beahrs, J., (1982). Unity and Multiplicity: Multilevel Consciousness of Self in Hypnosis. New York: Brunner-Mazel.

Beaulieu, D., (2003). Eye Movement Integration Therapy. The Comprehensive Clinical Guide. London: Crown House Publishing Ltd.

Beck, A.T., (1975). Cognitive Therapy and the Emotional Disorders. International Universities Press.

Beenhakker, C., (2016). Black Matter; Depressie en mentale ruimte. Een experimentele pilotstudie naar de psychologische methodiek Depression in Awareness Space als behandelmethode voor depressie in een therapeutische context. Eindscriptie HBO Bachelor Toegepaste Psychologie.

Bem, D.J., (1967). Self-Perception. An Alternative Interpretation of Dissonance Phenomena. Psychological Review, 74: 183-200.

Bennett, M. R & Hacker, P. M., (2001). Perception and memory in neuroscience: a conceptual analysis. Progress in Neurobiology. Dec; 65(6): 499-543.

Bergen, B. K., (2012). Louder Than Words: The New Science of How the Mind Makes Meaning. New York: Basic Books.

Berne, E., (1961). Transactional Analysis in Psychotherapy. New York: Grove Press.

Besnard, A., Caboche, J., & Laroche, S. (2012). Reconsolidation of memory: A decade of debate. Progress in Neurobiology, 99(1): 61-80.

Bickel, B., (1997). Spatial operations in deixis, cognition and culture: Where to orient oneself. In: Belhare, J. Nuyts & E. Pederson (eds.). Language and conceptualization. New York: Cambridge University Press: 46-83.

Bishop, D. V. M., (2015). The enigma of cerebral lateralisation. Developmental Neuropsychology SEPUniversity of Oxford. Raising Awareness of Language Learning Impairments: www.youtube.com/RALLIcampaign.

Bluck, S., (2003). Autobiographical memory: Exploring its functions in everyday life. Memory, 11(2): 113–123.

Bodenhamer, B. G. & Hall. L.M., (2000). Time lining in Aktion: Abenteuerreisen in der Zeit. Angewandtes NLP. Paderborn: Junfermann.

Bogardus, E. S., (1933). A Social Distance Scale. Sociology and Social Research, 17: 265–271.

Borghi, A. M., Flumini, A., Natraj, N., & Wheaton, L. A., (2012). One hand, two objects: Emergence of affordance in contexts. Brain and Cognition, 80(1), 64-73.

Bostic-St. Clair, C., & Grinder, J., (2001). Whispering in the Wind. Scotts Valley, California: J & C Enterprises.

Bowerman, M., & Choi, S., (2001). Shaping meanings for language: Universal and language-specific in the acquisition of spatial semantic categories. In: Bowerman, M. & Levinson, S. (eds.). Language acquisition and conceptual development. Cambridge, UK: Cambridge University Press: 475–511.

Bowerman, M., & Choi, S., (2003). Space under construction: Language-specific spatial categorization in first language acquisition. In: Gentner, D. & Goldin-Meadow, S. (eds.). Language in mind. Cambridge, MA: MIT Press: 387-428

Braganza, D. J., (2015). Nurturing Psycho-Spiritual Growth and Integration through the Core Transformation Process. Department of Pastoral Counseling and Spiritual Care Loyola University Maryland.

Brauchle, G., (2011). Erklärungsmodelle zur Entstehung und Aufrechterhaltung der Posttraumatischen Belastungsstörung. Journal für Psychologie, 19(3): 1-34.

Brewin, C.R., Gregory J. D., Lipton, M., & Burgess N. (2010). Intrusive images in psychological disorders: Characteristics, neural mechanisms, and treatment implications. Psychological Review, 117(1): 210–232.

Broadbent, D. E., (1958) Perception and Communication. Oxford: Pergamon Press.

Broca, P., (1861). Perte de la parole, ramollissement chronique et destruction partielle du lobe antérieur gauche du cerveau. Bulletin de la Société Anthropologique, 2: 235-238.

Brown, P. & van der Hart, O., (1998). Memories of Sexual Abuse: Janet's Critique of Freud, A Balanced Approach. Psychological Reports, 82(3): 1027–1043.

Bruin, K. J., Kenemans, J. L., Verbaten, M. N., & Van der Heijden, A. H. C., (2000). Habituation: An event-related potential and dipole source analysis study. International Journal of Psychophysiology, 36(3): 199–209.

Bunzel B., Schmidl-Mohl B., Grundböck A, Wollenek G., (1992). Does changing the heart mean changing personality? A retrospective inquiry on 47 heart transplant patients. Qualitative Life Research, 1(4): 251-256.

Burgess, N., (2014). The 2014 Nobel Prize in Physiology or Medicine: A Spatial Model for Cognitive Neuroscience. Institute of Cognitive Neuroscience and Institute of Neurology, University College London.

Burgess, P. W., & Shallice, T., (1996). Confabulation and the control of recollection. Memory 4(4): 359–411.

Butler B. C., Eskes, G. A., & Vandorpe R. A., (2004). Gradients of detection in neglect: comparison of peripersonal and extrapersonal space. Neuropsychologia 42(3): 346-58.

Cahill, S. P., Carrigan, M.H., & Frueh, B. C., (1999). Does EMDR work? And if so, why?: a critical review of controlled outcome and dismantling research. Journal of anxiety disorders, 13(1-2): 5-33.

Campbell, J., (1994). Past, Space and Self, Cambridge, Mass.: MIT Press.

Carry, M., Manning, C.G., Loftus, E. F., & Sherman, S. J., (1996). Imagination Inflation: Imagining a Childhood Event Inflates Confidence that it Occurred. Psychonomic Bulletin and Review, 3(2): 208-214.

Castonguay, L. G., Boswell, F. J., Constantino, J. M., Goldfried, R. M. & Hill, E. C., (2010). Training implications of harmful effects of psychological treatments. American Psychologist 65(1): 34–49.

Castonguay, L. G., Muran, J. C., Angus, L. E., Hayes, J. A., Ladany, N., & Anderson, T. (eds.) (2010). Bringing psychotherapy research to life: understanding change through the work of leading clinical researchers. Washington, DC: American Psychological Association.

Chambless, D., (2002), Beware the Dodo Bird: the dangers of overgeneralization. Clinical Psychology: Science and Practice, 9(1): 13–16.

Chemero, A., (2003). An outline of a theory of affordances. Ecological Psychology, 15(2): 181-195.

Cialdini, R. B., (1984). Influence: The Psychology of Persuasion. New York: Harper Business.

Cienki, A., (1998a). Metaphoric gestures and some of their relations to verbal metaphoric counterparts. In: Koenig, J.-P. (ed.). Discourse and cognition: Bridging the gap. Stanford, CA: CSLI: 189-205.

Cienki, A., (1998b). STRAIGHT: An image schema and its metaphorical manifestations. Cognitive Linguistics, 9: 107–150.

Clark, J. M., (1996). Contributions of inhibitory mechanisms to unified theory in neuroscience and psychology. Brain and Cognition, Feb;30(1):127-52.

Clark, D. A., & Beck, A. T., (2011). Cognitive therapy of anxiety disorders. Science and practice. New York [u.a.]: Guilford Press.

Clark, H., (1973). Space, time, semantics and the child. In: Moore, T. (ed.). Cognitive development and the acquisition of language. New York: Academic: 27–63.

Cogen, C., (1977). On three aspects of time expression in ASL. In: Friedman, L. (ed.). On the other hand. New York: Academic: 197–214.

Colle, W., & Rademaker, J., (2015). EANLPt Conference 2015-04-11, lecture. Amsterdam.

Corrigan, F., & Grand, D., (2013). Brainspotting: Recruiting the midbrain for accessing and healing sensorimotor memories of traumatic activation. Medical hypotheses 80(6): 759-766.

Crang, M., & Thrift, N., (2000). Thinking Space, Critical Geographies. London and New York: Routledge.

Crick, F., (1984). Functions of the thalamic reticular complex: The searchlight hypothesis. 4Proceedings of the National Academy of Sciences USA 81: 4586-93.

Crits, C., (1997). Limitations of the Dodo bird verdict and the role of clinical trials in psychotherapy research: comment on Wampold et al. Psychological Bulletin 122(3): 216–20.

Dahl, Ø., (1995). When the future comes from behind: Malagasy and other time concepts and some consequences for communication. International Journal of Intercultural Relations, 19(2): 197–209.

Dale, M. A., & Lyddon, W. J., (1998). Sandplay: A constructivist strategy for assessment and change. Journal of Constructivist Psychology, 13: 135-154.

Dalgleish, T., & Brewin, C. R., (2007). Autobiographical memory and emotional disorder: A special issue of Memory. Memory, 15(3): 225–226.

David, D., (2003). Rational Emotive Behavior Therapy (REBT): The view of a cognitive psychologist. In: Dryden, W. (ed.). Rational emotive behaviour therapy : theoretical developments. New York: Brunner-Routledge: 13-139.

David, D., (2005). Rational Emotive Behavior Therapy in the Context of Modern Psychological Research. In: Cautin, R.L. Lilienfeld, S.O. (eds), Encyclopedia of Clinical Psychology. Wiley-Blackwell.

Davis, J. I., Gross, J. J., Ochsner, K. N., (2011). Psychological distance and emotional experience: What you see is what you get. Emotion, 11(2): 438-444.

De Shazer, S., (1989). Wege der erfolgreichen Kurztherapie. Stuttgart: Klett-Cotta.

DeCicco, T.L., & Stroink, M.L., (2007). A Third Model and Measure of Self-Construal: The Metapersonal Self. International Journal of Transpersonal Studies 26: 82-104.

DeLozier, J., & Grinder, J., (1987). Turtles All the Way Down: Prerequisites to Personal Genius. Scotts Valley, CA: Grinder & Associates.

Derek, G., Johnston, R., & Pratt, G., (2009). Dictionary of Human Geography: Mental maps/cognitive maps (5th ed.). Hoboken: Wiley-Blackwell.

Derks, L.A. C., Oetsch, W. O., & Walker, W., (2016). Relationships are Constructed from Generalized Unconscious Social Images Kept in Steady Locations in Mental Space. Journal of Experiential Psychotherapy, 19(1), March: 3-16.

Derks, L.A.C., (2002). Sociale Denkpatronen; het veranderen van onbewust sociaal gedrag. Utrecht: Servire.

Derks, L.A.C, Walker, W. & Oetsch, W. O. (2014). Mental space psychology. On: www.mentalspaceresearch.com.

Derks, L.A.C., (1983). Geheime Psychologie: Een theoretische basis voor de therapiemethode van Bandler en Grinder. Manuscript.

Derks, L.A.C., (1989). Psychotherapie een Kwestie van Wennen. Amsterdam: William James Foundation.

Derks, L.A.C., (1995). Exploring the Social Panorama. NLP World, 2(3), November: 28-42.

Derks, L.A.C., (1997). Family Systems in the Social Panorama. NLP World, 4(1).

Derks, L.A.C., (1998). De Levenlijn. Eindhoven: Son Reproservice.

Derks, L.A.C., (2000). Das Spiel sozialer Beziehungen. NLP und die Struktur zwischenmenschlicher Erfahrung. Stuttgart: Klett-Cotta.

Derks, L.A.C., (2003). Alien Lessons. Anchorpoint 17(5).

Derks, L.A.C., (2005). Social Panoramas; Changing the unconscious landscape with NLP and psychotherapy. Camarthen, Wales: Crown House Publishing.

Derks, L.A.C., (2012). Immer die falschen Männer. Kommunikation & Seminar 21, October: 14-17.

Derks, L.A.C., & Goldblatt, R.T., (1985). The Feed Foreward Conception of Consciousness. A Bridge Between Therapeutic Practice and Experimental Psychology. The William James Foundation. Available on: www.sociaalpanorama.nl/artiekelen.

Derks, L.A.C., & Hollander, J. (1996a). Essenties van NLP. Servire, Utrecht.

Derks, L.A.C., & Hollander, J., (1996b). Exploring the Spiritual Panorama. NLP World, 3(2).

Derks, L.A.C., & Hollander, J., (1998). Systemic Voodoo. Anchor Point, 12(3), March.

Derks, L.A.C., & Sinclair, J. D., (1990). Racing the Turbo Brain. Amsterdam: William James Foundation.

Derks, L.A.C., & Sinclair, J. D., (2000). Expanding the neuro in NLP: a new taste in general psychology. www.socialpanorama.com: articles.

DeWalt, K. M., & DeWalt, B. R., (2002). Participant observation: a guide for fieldworkers. Walnut Creek, CA: AltaMira Press.

Dilts, R., (1984). Applications of Neuro-Linguistic Programming. Cupertino, CA: Meta Publications.

Dilts, R., (1990). Changing Belief Systems with NLP, Cupertino, CA: Meta Publications.

Dilts, R., & DeLozier, J., (2000). Encyclopedia of Systemic Neuro-Linguistic Programming and NLP New Coding, Santa Cruz, CA: NLP University Press.

Dilts, R., & McDonald, R., (1996). Tools of the Spirit. Cupertino, CA: Meta Publications.

Dilts, R., Hallbom, T. & Smith, S., (1990). Beliefs, Pathways to Health and Well-Being. Portland, Oregon: Metamorphous Press.

Döring, J., & Thielemann, T., (eds.) (2008). Spatial Turn. Das Raumparadigma in den Kultur- und Sozialwissenschaften. Bielefeld: Transcript.

Droste, F. G., (1977). Bij wijze van Spreken; over taal, gedrag en communicatie. Ambo: Baarn.

Duba, R. M., (2000). Links-rechts aandacht patroon. Cursus materiaal in de SETH hypnose opleiding.

Eagleman D. M., (2005) How does the timing of neural signals map onto the timing of perception? In: Nijhawan R., (ed). Problems of space and time in perception and action. Cambridge, UK: Cambridge University Press.

Eagleman D. M., & Holcombe, A.O., (2002). Causality and the perception of time. Trends in Cognitive Science, 6: 323-326.

Eagleman, D. M., Tse, P. U., Buonomano, D., Janssen, P., Nobre, A. C., & Holcombe, A. O., (2005). Time and the Brain: How Subjective Time Relates to Neural Time. The Journal of Neuroscience, 25(45): 10369-10371.

Eagly, A., & Chaiken, S., (1995). Attitude strength, attitude structure and resistance to change. In: R. Petty, R. & Kosnik, J. (eds.), Attitude Strength. Mahwah, NJ: Erlbaum: 413–432.

Earley, J., (2012). Resolving Inner Conflict. Larkspur, CA: Pattern System Books.

Eccles, J. C., (1980). The Psyche: The Gifford Lectures. New York: Springer.

Edelman, G. M., (1987). Neural Darwinism: The Theory of Neuronal Group Selection. New York: Basic Books.

Edelstien, M. G., (1981). Trauma, trance and tranceformation. New York: Brunner Mazel.

Edwards, D., (2007). Restructuring implicational meaning through memory-based imagery: Some historical notes. Journal of Behavior Therapy and Experimental Psychiatry, 38(4): 306-316.

Eells, T. D., (2007). Generating and generalizing knowledge about psychotherapy from pragmatic case studies. Pragmatic Case Studies in Psychotherapy 3(1): 35-54.

Ellis, A., (1961). Rational therapy applied. Balanced Living, 17: 273-278.

Ellis, A., (1994). Reason and Emotion in Psychotherapy: Comprehensive Method of Treating Human Disturbances. New York: Citadel Press.

Ellis, A., (2001). Overcoming destructive beliefs, feelings, and behaviors. Amherst, NY: Prometheus Books.

Emmerik, van A.A.P., Kamphuls, J.H., Hulsbosch, A.M., & Emmelkamp, P.M.G. (2002). Single session debriefing after psychological trauma: A meta-analysis. The Lancet, 360, September 7: 766-771.

Emmorey, K., (2001). Space on hand: The exploitation of signing space to illustrate abstract thought. In: Gattis, M. (ed.). Spatial schemas and abstract thought. Cambridge, MA: MIT Press: 138–147.

Emmorey, K., (2002). Language, cognition and the brain: Insights from sign language research. Mahwah, NJ: Lawrence Erlbaum Associates.

Erickson, M. H., (1967). Advanced techniques of hypnosis and therapy; Selected papers, edited by Haley, J.; Orlando, Florida: Grune & Stratton.

Erickson, M. H., Rossi, E. L. & Rossi, S. I., (1976). Hypnotic Realities; The Induction of Clinical Hypnosis and Forms of Indirect Suggestion. New York: Irvington Publishers.

Ernst, E., & Canter., P. H., (2005). The Feldenkrais Method-A systematic review of randomised clinical trials. Physikalische Medizin, Rehabilitationsmedizin, Kurortmedizin 15(03): 151-156.

Eskapa, R., (2012). The Cure for Alcoholism: The Medically Proven Way to Eliminate Alcohol Addiction. Dellas: BenBella books.

Evans, V., (2003). The structure of time. Amsterdam: John Benjamins.

Evarts, E. V., (1967). Mind Activity: Sleep and Wakefulness. In: Quarton, G.C, Melnechuk, Th. & Schmitt, F.O. (eds.) The Neurosciences. A Study Program. New York: Rockefeller University Press.

Eveleigh, R.M., (2015). Inappropriate long-term antidepressant use in primary care: a challenge to change. Radboud Universiteit Nijmegen, Netherlands.

Eysenck, H. J., (1952). The Effects of Psychotherapy: An Evaluation. Journal of Consulting Psychology, 16: 319-324.

Farelly, F., & Brandsma, J., (1989). Provocative Therapy. Cupertino, CA: Meta Publications.

Fauconnier, G., (1997). Mappings in Thought and Language, New York: Cambridge University Press.

Fauconnier, G., & Turner, M., (2002). The Way We Think; Conceptual Blending and the Mind's Hidden Complexities. New York: Basic Books.

Fehmi, L., & Robbins, J., (2008). The Open Focus Brain; Harnessing the Power of Attention to Heal Mind and Body. Boston, Mass.: Trumpeter Books.

Feldenkrais, M., (1977). Awareness through movement: health exercise for personal growth. New York: Harper and Row.

Filip, G., (2007). Freuds Psychologie van het Oordeel. Gent: Idesça.

Fillmore, C. J., (1982). Towards a descriptive framework for spatial deixis. In: Jarvella, R.J. & Klein, W., (eds.). Speech, place and action: Studies in deixis and related topics. New York: Wiley: 31–59.

Fiske, S.T., (2012). Warmth and competence: stereotype content issues for clinicians and researchers. Canadian Psychology/Psychologie Canadienne 53(1):14–20.

Folette, V.M., Ruzek, J.I. & Abueg, F.R., (1999). Cognitive-Behavioral Therapies for Trauma. East Sussex, England: Guilford Press.

Fournier, J. C., DeRubeis, R. J., Amsterdam, J. A., Shelton, R. C., & Hollon, S. D., (2016). Gains in employment status following antidepressant medication or cognitive therapy for depression. The British Journal of Psychiatry, 206(4): 332-338.

Frank, J. D., (1971). Therapeutic factors in psychotherapy. American Journal of Psychotherapy, 25(3): 350–361.

Frank, J. D., & Frank, J., (1991). Persuasion and healing: a comparative study of psychotherapy. Baltimore and London: Johns Hopkins University Press. (3rd ed.)

Freedman, J., & Combs, G., (1996). Narrative Therapy: The social construction of preferred realities. New York: Norton.

Freud, S., (1920). Jenseits des Lustprinzips. Leipzig: Internationaler Psychoanalytischer Verlag.

Fuller Torrey, E., (1972). The Mind Game: Witchdoctors and Psychiatrists, Emerson Hall. Republished in 1986 as Witchdoctors and Psychiatrists: The Common Roots of Psychotherapy and Its Future, Harper and Row (paperback) and Jason Aaronson Inc.

Gallese, V., (2015). Embodied simulation and the space around us: The perspective of cognitive neuroscience. Keynote at the ICSC Rome, september 9, 2015.

Gazanniga, M., (2015/1970) Tales from Two Sides of The Brain. New York: Harper Collins.

Gentner, D., (2001). Spatial metaphors in temporal reasoning. In M. Gattis (Ed.), Spatial schemas and abstract thought (pp. 203–222). Cambridge, MA: MIT Press.

Gergen, K. J., (1998). The Saturated Self, dilemmas of identity in contemporary life. New York: Basic Books.

Gerstein, G. L. & Kirkland K. L., (2001). Neural assemblies: technical issues, analysis, and modeling. Neural Networks, 14: 589-598.

Gershon, M., (1998). The Second Brain, Harper Collins, New York.

Gessmann, H. W., (2013). Humanistische Psychologie und Humanistisches Psychodrama. In: Gessmann, H. W. (ed.), Humanistisches Psychodrama, Vol. 4. Duisburg: Verlag des PIB: 27-84.

Gibson, J. J., (1977). The theory of affordances. In: Shaw; R.E. & Bransford, J. (eds.), Perceiving, acting, and knowing. Hillsdale, NJ: Lawrence Erlbaum Associates.

Giedke H., & Schwärzler F., (2002). Therapeutic use of sleep deprivation in depression. Sleep Med Rev, 6(5): 361-77.

Glaudemans, W., (2014). Boek van de Levensmissie; een weg naar vervulling. Ankh Hermes. Utrecht: VBK.

Goddard Blythe, S., (2012). Correcting the facts; Abnormal primitive reflexes in behavioral optometry and vision therapy. Journal of Behavioral Optometry, 23(5): 138-142.

Godden, D., & Baddeley, A., (1975). Context dependent memory in two natural environments. British Journal of Psychology, 66(3): 325–331.

Goldin-Meadow, S. (2003). Hearing gesture: How our hands help us think. Cambridge, MA: Belknap.

Goldin-Meadow, S., & Alibali, M., (1999). Does the hand reflect implicit knowledge? Yes and no. Behavioral and Brain Sciences, 22(5): 766–767.

Goldin-Meadow, S., & Mylander, C., (1984). Gestural communication in deaf children: The effects and non-effects of parental input on early language development. Monographs of the Society for Research in Child Development, 49(1, Serial No. 121): 1–121.

Goldin-Meadow, S., Butcher, C., Mylander, C., & Dodge, M., (1994). Nouns and verbs in a self-styled gesture system: What's in a name? Cognitive Psychology, 27: 259–319.

Goodale, M.A., & Milner A.D., (1992). Separate visual pathways for perception and action. Trend in neurosciences, 15(1): 20–5.

Goretti, G. R., (2006). The crisis of psychoanalysis and psychoanalytical training: The suffering of the candidate on the long road towards qualification. The International Journal of Psychoanalysis, 87(3): 827–842.

Gould, P., & White, R., (1993). Mental maps. New York: Routledge.

Gray, R. M., & Bourke, F., (2015). Remediation of intrusive symptoms of PTSD in fewer than five sessions: a 30-person pre-pilot study of the RTM Protocol. Journal of Military, Veteran and Family Health, 1(2): 13-20.

Gray, R., & Bourke, F., (2015). Results from a Pre-Pilot Trial of the Reconsolidation of Traumatic Memories Protocol for Post-Traumatic Stress Disorder.

Grimley, B., (2015). What is Neurolinguistic Programming, (NLP)? The development of a grounded theory of NLP within an Action Research Journey. Department of Psychology University of Central Nicaragua.

Grinder, J., & Bandler, R, (1976). The Structure of Magic, Vol II: Science and Behavior. Palo Alto CA: Books Inc.

Grinder, J., & Bandler, R., (1981). Trance-Formations: Neuro-Linguistic Programming and the Structure of Hypnosis. Moab, Utah: Real People Press.

Grinder, J., Pucelik, R. F., & Bostic-St.Clair, C., (2012). The Origins of Neuro Linguistic Programming. Bethel, USA: Crown House Publishing.

Groh , J. M., (2014). Making Space How the Brain Knows Where Things Are. Harvard: Harvard University Press.

Grove, D. J., & Panzer, B., (1989). Resolving Traumatic Memories; Metaphors and Symbols in Psychotherapy. Irvington, New York: Ardent Media.

Grove, D., (1998). The Philosophy and Principles of Clean Language; Talk given at the clean language research day in London, 13 november 1998.

Gur, R. E., Gur, R. C. & Marshalek B., (1975). Classroom seating and functional brain asymmetry. Journal of Educational Psychology, 67(1): 151.

Hackenbracht, J., & Gasper, K., (2013). Feeling more and feeling close; Affect intensity influences judgments of interpersonal closeness. Social Cognition, 31(1): 94-105.

Hackmann, A., James, B. L., & Holmes, E. A., (2012): Imaginationstechniken in der Kognitiven Therapie. Weinheim: Beltz.

Haley, J. & Hoffman, L., (1967). Techniques of family therapy. New York: Basic Books.

Haley, J., (1976). Problem Solving Therapy. New Strategies for Effective Family Therapy. San Francisco: Jassey-Bass.

Hall, E. T., (1966). The Hidden Dimension. New York: Doubleday.

Hall, E. T., (1990). The Silent Language. New York: Anchor Books.

Hall, L. M. & Bodenhammer, B. G., (1999). The Structure of Excellence; unmasking the meta-levels of submodalities. Grand Junction, Colorado: E.T. Publications.

Hall, L. M., (2000). Meta-States: Mastering the Higher States of Your Mind. Neuro-Semantics Institute. Grand Junction, Colorado: E.T. Publications.

Hall, L. M., Bodenhammer, B. G., Bolstad, R., & Hamblett, M., (2001). The Structure of Personality; Modeling 'personality' Using NLP and Neuro-Semantics. Camarthen, Wales: Crown House Publishing.

Halpenny, E. A., & Linzmayer, C. D., (2013). 'It was fun': An evaluation of sand tray pictures, an innovative visually expressive method for researching children's experiences with nature. International Journal of Qualitative Methods, 12: 310-337.

Hanh, T. N., (1975). The Miracle of Mindfulness; The Manual of Meditation. Boston, Mass.: Beacon Press.

Hannemann, R.A., Riddle, M., (2001). Introduction to Social Network Methods. University of California: Riverside.

Hansen, B., (2010). Was Sie über NLP wissen sollten! Bargteheide: Psymed-verlag.

Harris, L.T., & Fiske, S.T., (2007). Social groups that elicit disgust are differentially processed in mPFC. Social cognitive and affective neuroscience, 2(1): 45–51.

Hart, van der, O., (1991). Trauma, Dissociatie en Hypnose. Amsterdam: Swets & Zeitlinger.

Hart, van der, O., Brown, P., & Van der Kolk, B., (1989). Pierre Janet's Treatment of Post-traumatic Stress. Journal of Traumatic Stress, 2(4): 379-395.

Hayes, S. C., Barnes-Holmes, D., & Roche, B., (Eds.). (2001). Relational Frame Theory: A Post-Skinnerian account of human language and cognition. New York: Plenum Press.

Hayes, S. C., Luoma, J., Bond, F. W., Masuda, A. & Lillis, J., (2006). Acceptance and Commitment Therapy: Model, processes and outcomes. Behaviour research and therapy, 448(1): 1-25.

Hebb, D. O., (1949). The Organization of Behavior. New York: John Wiley & Sons.

Hellinger, B., (1995). Ordnungen der Liebe; Ein Kurs-Buch von Bert Hellinger. Heidelberg: Carl Auer Verlag.

Hellinger, B., (1996). Ordnungen der Liebe. Heidelberg: Carl Auer Verlag.

Hellinger, B., & Beaumont H., (1998). Love's Hidden Symmetry. What makes love work in relationships. Phoenix, Arizona: Zeig, Tucker & Co.

Helmholz, H., (1867). Handbuch der Physiologischen Optik. Leipzig: Leopold Voss.

Hilgard, E., (1977). Divided Consciousness. New York: Wiley.

Hill, C., (1978). Linguistic representation of spatial and temporal orientation. Proceedings of the Berkeley Linguistics Society, 4: 524–538.

Hoenderdos, H. T. W., (1994). Toepassing van Veranderingstechnieken. Stichting voor Hypno-, Gedrags en Verbaaltherapie, Velserbroek.

Hoerl, C., (1998). The Perception of Time and the Notion of a Point of View. European Journal of Philosophy, 6: 156–71.

Hoffman, K., Schneider, M. & Haberzettl, M., (1996). Body Mind Management in Action: NLP, Body, Trance, Feldenkrais. Paderborn: Junfermann.

Hofmann, S.G., Asnaani, A., Vonk, J. J., Sawyer, A.T., & Fang, A., (2012). The Efficacy of Cognitive Behavioral Therapy: Review of Meta-analyses. Cognitive therapy and research, 36(5): 427-440.

Hogan, S., & Coulter A. M., (2014). The introductory guide to art therapy: Experiential teaching and learning for students and practitioners. London and New York: Routledge Taylor and Francis.

Holmes, E. A. & Mathews, A., (2010). Mental imagery in emotion and emotional disorders. Clinical Psychology Review, 30(3): 349-362.

Hopf, J. M. & Mangun, G.R., (2000). Shifting visual attention in space: an electrophysiological analysis using high spatial resolution mapping. Journal Clinical neurophysiology, 111(7): 1241-1257.

Hopkins W. D., & Cantalupo, C., (2010). Left-right spatial discrimination and the evolution of hemispheric specialization: some new thoughts on old ideas. In: Dolins, F.L & Mitchell, R. W. Spatial Cognition and Spatial Perception. Cambridge: Cambridge University Press: 456-474.

Hollander, J., Derks, L.A.C., & Meijer, A., (1990). NLP in Nederland, Utrecht: Servire.

Hollander, J., Derks, L.A.C., & Tanebaum, B., (1996). The Modelling of Magic. NLP World, 3(3).

Hollander, J., (1999). NLP and Science; Six recommendations for a better relationship. NLP World, 6(3).

Hollander, J., (2012) Making Thinks Better by Making them Worse. Bethel, CT: Crown House.

Hollander, J., Derks, L.,Wake, L., & Grimley, B., (2016). The Elder Collums. NLP leadership Summit, 2016.

Hollander, J. & Malinowski, O., (2010). Effectiveness of NLP: Interrupted time series analysis of single subjects data for one session of NLP coaching. Instituut voor Eclectische Psychology.

Holms, E. A., & Mathews A., (2010). Mental imagery in emotion and emotional disorders. Clinical Psychology Review, 30(3): 349–362.

Hopf, J., Boehler, C. N., Schoenfeld, M. A., Mangon, G. R., & Heinze, H. J., (2011). Attentional Selection for Locations, Features, and Objects in Vison. In: Mangon, G. R., (ed.). The Neuroscience of Attention; Attentional Control and Selection. New York: Oxford University Press: 3-29.

Höppner, G., (2001). Heilt Demut, wo Schicksal wirkt? Evaluationsstudie zu Effekten des Familien-Stellens nach Bert Hellinger. München: Profil.

Hout, M.A. van den, & Engelhard, I. M., (2012). How does EMDR work? Journal of Experimental Psychopathology, 5: 724-738.

Hoyt, M. F., & Talmon, M., (2014). Capturing the Moment: Single-session therapy and walk-in services. Carmathenshire: Crownhouse.

Hubble, M. A., & Duncan, B. L. & Miller, S. D., (1999). The Heart & Soul of Change; What works in Psychotherapy. American Psychological Association, Washington, DC.

Iverson, J., & Goldin-Meadow, S., (1998). Why people gesture when they speak. Nature, 96: 228.

Iverson, J., & Thelen, E., (1999). Hand, mouth and brain: The dynamic emergence of speech and gesture. In: Núñez, R. & Freeman, W. (eds.). Reclaiming cognition: The primacy of action, intention, and emotion. Thorverton, UK: Imprint Academic: 19-40.

Isert, B., & Rentel, K., (2000). Wurzeln der Zukunft; Lebensweg-Arbeit, Aufstellungen und systemische Veraenderung. Paderborn: Junfermann.

Jacobson, S., (1986). Meta-cation; New improved formulas for thinking about thinking. Cupertino, CA: Meta Publications.

James, T., & Woodsmall, W., (1988). Time Line Therapy and the Basis of Personality. Cupertino, CA: Meta Publications.

James, W., (1901). Frederic Myers's Service to Psychology. The Popular Science Monthly, 59: 380–389.

Janov, A., (1970). The Primal Scream: Primal Therapy the Cure for Neurosis. NewYork: Dover Publications.

Janet, P., (1904). L'Amnesie et la dissociation des souvenirs par l'émotion. Journal de psychologique, 5: 417-453.

Janet, P., (1911). Létat mental des hystériques. Paris: Félix Alcan.

Janet, P., (1889). L'Automatisme Psychologique. Paris: Félix Alcan, Paris (Reprint 1971, Paris: Societé Pierre Janet).

Jaynes, J., (1976). The Origin of Consciousness in the Breakdown of the Bicameral Mind. Boston: Houghton Muffin.

Jefferson A., Singer, J.A., & Conway M. A., (2011). Reconsidering therapeutic action: Loewald, cognitive neuroscience and the integration of memory's duality. International Journal of Psychoanalysis, 92(5): 1183-1207.

Johnson, M., (1987). The body in the mind: The bodily basis of meaning, imagination and reason. Chicago: University of Chicago Press.

Johnstone, K., (1990). Impro; Impovisatie en theater. Amsterdam: International Theatre & Film Books.

Kahneman, D., (1973). Attention and effort. Englewood Cliffs, N.J.: Prentice-Hall.

Kahneman, D., (2011). Thinking, fast and slow. New York: Farrar, Straus and Giroux.

Koestler, A., (1967). The Act of Creation. A Study of the Conscious and Unconscious in Science and Art. New York: Dell.

Köhler, W., (1947). Gestalt psychology. New York: Liveright.

Kant, E., (1781). Critik der reinen Vernunft. Riga: Johann Friedrich Hartknoch.

Kapleau, P., (1989). The Three Pillars of Zen: Teaching, Practice and Enlightenment. New York: Anchor.

Kassin, S. M., & Kiechel K. L., (1996). The Social Psychology of False Confessions: Compliance, Internalization, and Confabulation. Psychological Science, 7(3): 125-128.

Katie, B. & Mitchell, St., (2002). Loving What Is: Four Questions That Can Change Your Life, New York: Harmony Books.

Krakauer, S. Y., (2000). Treating Dissociative Identity Disorder. East Sussex, England: Brunner Routledge.

Kikuchi, H., Fujii, T., Abe, N., Suzuki, M., Takagi, M., Mugikura, S., Takahashi, S. & Mori, E., (2010), Memory repression: brain mechanisms underlying dissociative amnesia. Journal for Cognitive Neuroscience, 22(3): 602-13.

Kolk, van der, B., (2014). The Body Keeps the Score – Brain, Mind and Body in the Healing of Trauma. Penguin Random House.

Kolman, H.C., (1938). Compliance, identification, and internalization: Three processes of attitude change. Journal of Conflict Resolution, 2(1), 51-60.

Konkel, S., (2013). Auswirkungen auf die aktuelle Befindlichkeit der angewandten Intervention New Behavior Generator aus dem Neurolinguistischen Programmieren im Vergleich zu einem Smalltalk. Universidad Central de Nicaragua.

Korzybski, A., (2010). Selections from Science and Sanity: An Introduction to Non-Aristotelian Systems and General Semantics. Edited by L. Strate, with a Foreword by B. I. Kodish. New York: Barnes & Noble.

Kroger, W. S., (2008). Clinical and Experimental Hypnosis in Medicine, Dentistry and Psychology. Revised Second Edition. Philadelphia: Wolters Kluwer/ Lippincott Williams & Wilkins.

Kendall P. C., & Comer J. S., (2010). Research Methods in Clinical Psychology. In: Barlow, D.H. (ed.). The Oxford Handbook of Clinical Psychology. Oxford: Oxford University Press: 52-75.

Kendon, A., (1990). Gesticulation, quotable gestures and signs. In: Moerman, M., & Nomura, M., (eds.), Culture embodied. Osaka, Japan: National Museum of Ethnology: 53-77.

Kendon, A., (2000). Language and gesture: Unity or duality? In: McNeill, D., (ed.), Language and Gesture. Cambridge, UK: Cambridge University Press: 47-63.

Kendon, A., (2004). Gesture: Visible action as utterance. Cambridge, UK: Cambridge University Press.

Kim, J. S., Weisberg, Y. J., Simpson, J. A., Oriña, M. M., Farrell, A. K & Johnson, W. F., (2015). Ruining it for both of us: The disruptive role of low-trust partners on conflict resolution in romantic relationships. Social Cognition, 33(5): 520-542.

Lakoff, G., & Johnson, M. (1980). Metaphors we Live by. Chicago: University of Chicago Press.

Lakoff, G., (1987). Woman, Fire and Dangerous Things. Chicago: University of Chicago Press.

Lakoff, G., (1989). Some empirical results about the nature of concepts. Mind and Language, 4(1-2): 103-129.

Lakoff, G. & Johnson, M., (1999). Philosophy in the Flesh. New York: Basic Books.

Langacker, R. W., (1991). Concept, image, symbol: The cognitive basis of grammar. Berlin: Mouton de Gruyter.

Langacker, R. W., (1991b). Foundations of cognitive grammar: Vol. 2. Descriptive applications. Stanford, CA: Stanford University Press.

Lankton, S. R., & Lankton, C. H., (1983). The Answer Within; A Clinical Framework of Ericksonian Hypnotherapy. New York: Brunner Mazel.

Lawley, J., & Tompkins, P., (2000). Metaphors in Mind; Transformation troughthrough Symbolic Modeling. London: The Developing Company Press.

Lawley, J., & Tompkins, P., (2003). Clean Space: Modeling Human Perception through Emergence. Anchorpoint, 17(8), September.

Lefebrve, H., (1991). The production of space. Cambridge: Cambridge University Press.

Lehman, D., (1990). Brain Electric Microstates and Cognition: The Atoms of Thought. In: John, E.R., et al. (eds.), Machinery of the Mind. New York: Springer: 209-224.

Lewin, K., (1946). Action research and minority problems. Journal of Social Issues, 2(4): 34-46.

Lewin, K., (1951). Field Theory in Social Science. New York: Harper and Row.

Lewis, S.J., (2003). Do one-shot preventative interventions for PTSD work? A systematic research synthesis of psychological debriefings. Aggression and Violent Behavior, 8: 329-343.

Levinson, S., (1996a). Language and space. Annual Review of Anthropology, 25: 353–382.

Levinson, S., (1996b). Relativity in spatial conception and description. In: Gumperz, J., & Levinson, S., (eds.), Rethinking linguistic relativity. Cambridge, UK: Cambridge University Press: 177-202.

Levinson, S., (2003). Space in language and cognition: Explorations in cognitive diversity. Cambridge, UK: Cambridge University Press.

Loftus, E. F., (1997). Creating False Memories. Scientific American, 277(3): 70-75.

Loftus, E. F., & Ketcham, K., (1994). The Myth of Repressed Memory. New York: St. Martin's Press.

Lopez Da Silva, F. H., Vos, J., Mooibroek, J. E., & Van Rotterdam, A., (1980). Partial Coherence Analysis of Thalamic and Cortical Alpha Rhythms in the Dog. In: Pfurtscheller, G., et al (eds.), Rhythmic EEG. Activities and Cortical Functioning, Amsterdam: Elsevier: 33–59.

Magnuson, S., & Sangganjanavanich, V. F., (2011). Effective techniques: Using sand trays and miniature figures to facilitate career decision making. The Career Development Quarterly, 59: 264-273.

Majid, A., Bowerman, M., Kita, S., Haun, D., & Levinson, S., (2004). Can language restructure cognition? The case for space. Trends in Cognitive Sciences, 8: 108–114.

Mandler, G., (1979). Thought Processes, Consciousness and Stress. In: Hamilton, V., & Warburton, D. M., Human Stress and Cognition. New York: Wiley.

Mandler, G., (1984). Mind and Body, Psychology of Emotion and Stress. New York: Norton.

Nebylitsyn, V. D., (1966). Fundamental Properties of the Human Nervous System. New York: Plenum.

Maselli, A., (2015). Self location and its relation to body ownership in full body illusion. Lecture at: CSCI Rome 2015.

Masselink, R. & Jong, de, J., (2013). Handboek Appreciative Inquiry – Co-creatie van vernieuwing in cultuur, bedrijf en samenleving. Nieuwerkerk aan den IJssel, NL: Gelling Publishing.

Matthews, J. L., & Matlock, T., (2008). Effects of social information on distance estimation. Poster presented at the 30th Annual Cognitive Science Society, Washington, D.C.

Matthews, J. L., & Matlock, T. (2010). The Spatial and Temporal Underpinnings of Social Distance. In: Hölscher, C., Shipley, T.F., Olivetti Belardinelli, M., Bateman, J.A. & Newcombe, N.S. (eds.), Spatial Cognition VII. Proceedings of the International Conference Spatial Cognition 2010: 19-30.

Matell, M. S., & Meck, W.H., (2000). Neuropsychological mechanisms of interval timing behavior. BioEssays, 22(1): 94–103.

Markus, H., Smith, J., & Moreland, R. L., (1985). Role of the Selfconcept in the Perception of Others. Journal of Personality and Social Psychology, 49(6): 1494-1512.

Mavromantis, A., (1987). Hypnagogia: The Unique State of Consciousness Between Wakefullness and Sleep. New York: Routledge.

Mayberry, R. I., & Jaques, J., (2000). Gesture production during stuttered speech: Insights into the nature of gesture–speech integration. In: McNeill, D., (ed.), Language and gesture. Cambridge, UK: Cambridge University Press: 199-213.

MacCulloch, M., (2006). Effects of EMDR on previously abused child molesters: Theoretical reviews and preliminary findings from Ricci, Clayton, and Shapiro. Journal of Forensic Psychiatry & Psychology, 17(4): 531-537.

Manea, A. I., (2016). On the Emergence of Mental Space in Psychology; an Interveiw with Lucas Albert Charles Derks. Europe's Journal of Psychology, 12(2): 304-308.

McDonald, R., (1997). Brief Therapy; An Introduction to NLP and Emotional Transformation. Workshop handouts: 29, 30 & 31 oktober 1997, IEP, Nijmegen.

McGilchrist, I., (2009). The Master and His Emissary: The Divided Brain and the Making of the Western World. New Haven, Connecticut: Yale University Press.

McGrath, C. L., Kelley, M.E., & Holtzheimer, P.E., (2013). Toward a neuroimaging treatment selection biomarker for major depressive disorder. JAMA Psychiatry. 70(8): 821-829.

McGrath, C. L., Kelley, M.E., & Dunlop, B.W., (2014). Pretreatment brain states identify likely nonresponse to standard treatments for depression. Biological Psychiatry. 76(7): 527-535.

McNeill, D. (Ed.), (2000). Language and gesture. Cambridge, UK: Cambridge University Press.

McNeill, D., (2005). Gesture and thought. Chicago: University of Chicago Press.

McTaggart, R., (1996). Issues for participatory action researchers. In: Zuber-Skerritt, O., (ed.). New Directions in Action Research. London: Falmer Press: 243-256.

Mead, G. H., (1934). Mind Self and Society. Chicago: University Press of Chicago.

Meador, C. K., (1992). Hex death: Voodoo magic or persuasion. Southern Medical Journal, 85(3): 244-247.

Mehlhorn, I., (1999). Therapeutisches Klettern, Diplomarbeit an der Universität Potsdam.

Mervis, C., (1984). Early Lexical Development. The Contribution of Mother and Child. In: Sophian, C., (ed.). Origins of Cognitive Skills. Hillsdale, New York: Erlbaum.

Miller, J. G., (1941). Unconsciousness. New York: Wiley.

Miller, W. R., (2000). Motivational Enhancement Therapy: Description of Counselling Approach. In: Boren, J. J., Onken, L. S., & Carroll, K. M. (eds.). Approaches to Drug Abuse Counselling, New York: National Institute on Drug Abuse: 89–93.

Minuchin, S., & Fishman, H. Ch., (1981). Family Therapy Techniques. Cambridge, Mass.: Harvard University Press.

Mix, K. S., Smith, L.B. & Gasser, M., eds. (2009). The Spatial Foundation of Cognition and Language: Thinking Trough Space. Oxford University Press, Academic.

Moreno, J. L., (1951). Sociometry, experimental method and the science of society. An approach to a new political orientation. New York: Beacon House.

Moreno, J. L., (1991). Die Grundlagen der Soziometrie. Opladen: Westdeutscher Verlag.

Moscovici, S., (1983). The phenomenon of social representations in: Farr, R.M. & Moscovici, S. (eds.) Social Representation. Cambridge: Cambridge University Press: 3-69.

Munakata, Y., Herd, S.A., Chatham, C.H., Depue, B.E., Banich M. T., & O'Reilly, R. C., (2011). A unified framework for inhibitory control. Trends in Cognitive Sciences, 15(10): 453-459.

Naätanen, R., (1975). Selective Attention and Evoked Potentials in Humans: A Critical Review. Biological Psychology, 2: 237-307.

Naätanen, R., (1982). Processing Negativity, Evoked Potential Reflection of Selective Attention: Review and Theory. Psychological Bulletin, 92: 605-40.

Narayanan, S., (1997). Embodiment in Language Understanding: Sensory-Motor Representations for Metaphoric Reasoning About Even Descriptions. Ph.D. Dissertation, Department of Computer Science, University of California Berkely.

National Academy of Science (1988). Enhancing Human Performance: Issues, Theories, and Techniques. Washington: National Academy Press.

Neisser, U., (1967). Cognitive Psychology. New York: Appleton-Century Crofts.

Neisser, U., (1976). Cognition and reality : Principles and implications of cognitive psychology. New York: Freeman.

Ng, R. M. K. & Krans, J., & Holmes, E. A., (2013). Mental Imagery and Psychopathology: Examples of Post-traumatic Stress Disorder and Bipolar Disorder. In: Lacey, S. & Lawson, R. (eds.) Multisensory imagery. New York, London: Springer: 365–384.

Nicosia, G., (1994). A mechanism for dissociation suggested by the quantum analysis of EEG. Paper International EMDR Annual Conference.

Nijenhuis, E. R. S., Van der Hart, O. & Steele, K., (2004). Trauma related structural dissociation of the personality. Trauma Information Pages website, January. Web URL: http://www.trauma-pages.com/a/nijenhuis-2004.php.

Núñeza, R. A., & Sweetser, E., (2006). With the Future Behind Them: Convergent Evidence From Aymara Language and Gesture in the Crosslinguistic Comparison of Spatial Construals of Time. Cognitive Science 30(3): 1–49.

Ojanen, M., (1996-2002). The Tampere NLP study. Unpublished paper Department of Psychology, University of Tampere, Finland.

Ojanen, M., Kotokopri, S., Kumpula, S., Tankklu, M., Vadén, T., Vikevainen-Tervonen, L., Kiviaho, M., & Hiltunen, S., (2004). Solution form therapy - results of NLP-based psychotheray.

O'Keefe, J., (1976). Place units in the hippocampus of the freely moving rat. Experimental Neurology, 51(1): 78-109.

O'Keefe, J. & Nadel, L., (1978). The Hippocampus as a Cognitive Map. Oxford: Oxford University Press.

Osborne, A., ed. (1996). The Teachings of Bhagavan Sri Ramana Maharshi In His Own Words, V.S.Ramanan, Tiruvannamalai, SouthIndia.

Phan, K.L., Wager, T., Taylor, St. F,. & Liberzon I., (2002), Functional neuroanatomy of emotion: a meta-analysis of emotion activation studies in PET and fMRI. Neuroimage, 16(2): 331-48.

Oetsch, W.O., (2000). Haider Light. Handbuch für Demagogie. Wien: Czernin.

Oetsch, W.O., (2002). Demagogische Vorstellungs-Welten. Das Beispiel der FPÖ. In: Hauch, G., Hellmuth, Th., & Pasteur, P. (eds): Populismus. Ideologie und Praxis in Frankreich und Österreich. Innsbruck-Wien: Studienverlag: 93 – 104.

Oetsch, W.O., & Lehner, J., (2006). Jenseits der Hierarchie. Status im beruflichen Alltag aktiv gestalten. Weinheim: Wiley-VCH.

Öhman, A., (1979). The Orienting Response, Attention and Learning: An Information Processing Perspective. In: Kimmel, H.D., van Olst, E.H. & J.F. Orlebeke: The Orientation Reflex in Human. Hillsdale, N.J.: Erlbaum.

Parkinson, C., & Wheatley, T., (2013). Old cortex, new contexts: re-purposing spatial perception for social cognition. Frontiers in Human Neuroscience 7(645):1-7.

Parkinson, C., Liu, S., & Wheatley, T., (2014). A common cortical metric for spatial, temporal, and social distance. The Journal of Neuroscience. 34(5): 1979-1987.

Papies, E. K., Pronk, T.M., Keesman, M., & Barsalou, L.W., (2015). The benefits of simply observing: Mindful attention modulates the link between motivation and behavior. Journal of Personality and Social Psychology, 108(1): 148-170.

Pavlov, I. P., (1927). Conditional Reflexes. Oxford: Oxford University Press.

Somatic experiencing: using interoception and proprioception as core elements of trauma therapy. In Frontiers in Psychology, Volume 6, Article 93, 1-18

Peirce, C. S., (1982). The Writings of Charles S. Peirce: A Chronological Edition, (eds. M. Fisch, C. Kloesel, E. Moore, N. Houser et al.) Bloomington In: Indiana University Press.

Phan, K. L., Wager, T., Taylor, S. F. & Liberzon, I. (2002). Functional neuroanatomy of emotion: a meta-analysis of emotion activation studies in PET and fMRI. Neuroimage. Jun;16 (2): 331- 48.

Poidevin, le, R., (2015). The Experience and Perception of Time. The Stanford Encyclopedia of Philosophy. (http://plato.stanford.edu/archives/sum2015/entries/time-experience)

Pöppel, E., (1978). Time Perception. In: Held, R. et al. (eds.). Handbook of Sensory Physiology, Vol. VIII: Perception, Berlin: Springer-Verlag: 713-728.

Popper, K., (1963). Conjectures and Refutations: The Growth of Scientific Knowledge. London: Routledge.

Posner, M. I., (1980). Orienting of attention. Quarterly Journal of Experimental Psychology, 32(1): 3–25.

Prochaska, J. O., (1984). Systems of Psychotherapy: A Transtheoretical Analysis. Homewood, Illinois: The Dorsey Press.

Rahman, A., (2008). Some Trends in the Praxis of Participatory Action Research. In: P. Reason, P. & Bradbury, H. (eds.). The Sage Handbook of Action Research. London Sage: 49–62.

Reiner, M., Renner, W., Schütz, P., & Dond, R., (2010). Effects of Neuro-Linguistic Psychotherapy on psychological difficulties and perceived quality of life. Counselling and Psychotherapy Research, 10(1): 39-49.

Rizzolatti, G., & Gentilucci, M., (1988). Motor and visual-motor functions of the premotor cortex. In: Rakic, P., Singer, W., (eds.). Neurobiology of Neocortex. Chichester: John Wiley: 269–284.

Rodriguez-Ortiz, C. J., & Bermúdez-Rattoni, F., (2007). Neural Plasticity and Memory: From Genes to Brain Imaging. Boca Raton (FL): CRC Press/Taylor & Francis.

Rosen, S., (1982). My voice will go with you. The teaching tales of Milton H. Erickson. New York: W.W. Norton.

Rotenberg, V., (1984). Search Activity in the Cortex of Psychosomatic Disturbances, of Brain Monoamines and REM Sleep Function. Pavlovial Journal of Biological Sciences, 19(1): 1-15.

Rubin, D. C., (1996). Remembering our Past: Studies in Autobiographical Memory. Cambridge: Cambridge University Press.

Sandler, W., & Lillo-Martin, D., (2001). Natural Sign Language. In: M. Aronoff, M., & J. Rees-Miller, J., (eds.) Handbook of Linguistics. Hoboken, N.J: Wiley-Blackwell: 533-562.

Satir, V., (1972). Peoplemaking. Palo Alto, CA: Science and Behavior Books.

Satir, V., (1978). Your many faces. Millbrae, CA: Celestial Arts.

Satir, V., Bandler, R., & Grinder, J., (1976). Changing with families: a book about further education for being human. Palo Alto, CA: Science and Behavior Books.

Satir, V., (1983). Conjoint family therapy. Palo Alto, CA: Science and Behavior Books.

Satir, V., Stachowiak, J. & Taschman, H. A. (1994). Helping Families to Change. New York: Jason Aronson.

Schacter, D. L., (1996). Searching for Memory: the Brain, the Mind, and the Past. New York: Basic Books.

Schacter, D. L., Norman, K.A., & Koutstaal, W., (1998). The Cognitive Neuroscience of Constructive Memory. Annual Review of Psychology, 49: 289–318.

Schlötter, P., (2005). Vertraute Sprache und ihre Entdeckung. Systemaufstellungen sind kein Zufallsprodukt – der empirische Nachweis. Heidelberg: Carl Auer.

Schneider, W., & Shiffrin, R. M., (1977). Controlled and Automatic Human Information Processing; Detection, Search and Attention. Psychological Review, 84(1), 1-66.

Selfhout, M., Denissen, J., Branje, S., & Meeus, W., (2009). In the eye of the beholder: Perceived, actual, and peer-rated similarity in personality, communication, and friendship intensity during acquaintanceship process. Journal of Personality and Social Psychology, 96, 1152-1165.

Schwartz, R. C., (1995). Internal Family Systems Therapy, Guilford Press.

Sethi, Y., (2009). Does the Process of Family Constellations Improve Relationships and Wellbeing? https://de.scribd.com/document/196330789/Research-on-Hellinger.

Shakow, D., (1976). What is clinical psychology?. American Psychologist, 31(8): 553–560.

Shapiro, F., (1995). Eye Movement Desensitization and Reprocessing; Basic Principles, Protocols, and Procedures. East Sussex, England: Guilford Press.

Shazer, de, S., (1982). Patterns of Brief Family Therapy: An Ecosystemic Approach. New York: Guilford Press.

Sinclair, J. D., (1982). The rest principle: A neurophysiological theory of behavior. New York: Lawrence Erlbaum.

Singer, J. L., (1974). Imagery and daydreaming; Methods for psychotherapy and behavior modification. New York: Academic Press.

Singer, J. L., & Pope, K., (1978). The power of human imagination: new ways in psychotherapy. New York: Plenum Press.

Singer, J. L., (1990). Preface. A Fresh Look at Repression, Dissociation, and the Defenses as Mechanisms and as Personality Styles. In: Singer, J. L. (ed.) Repression and Dissociation. London: The University of Chicago Press: xi-xxi.

Sparrer, I., & Von Kibèd, V.M., (2000). Ganz im Gegenteil: Tetralemmaarbeit und andere Grundformen systemischer Strukturaufstellungen – für Querdenker und solche, die es werden wollen. Heidelberg: Carl Auer.

Sparrer, I., (2001). Wunder, Lösung und System. Lösungsfokussierte Systemische Strukturaufstellungen fuer Therapie und Organisationsberatung. Heidelberg: Carl Auer.

Sperry, L., (2001). Spirituality in Clinical Practice. East Sussex, England: Brunner-Routledge.

Spiegel, D, & Bloom JR., (1983). Group therapy and hypnosis reduce metastatic breast carcinoma pain. Psychosomatic Medicine, 45(4): 333-339.

Spiegel, H., & Spiegel, D., (1978). Trance and Treatment: Clinical uses of Hypnosis. New York: Basic Books.

Stam, J. J., (1998). Bringing the Roots of Organizations to Light. Anchor Point, July, (http://www.talentmanager.pt/download/JanJacobStam.pdf).

Stephan, E., Liberman, N, & Trope, Y., (2010). Politeness and psychological distance: A construal level perspective. Journal of Personality and Social Psychology, 98(2): 268-280.

Stipancic, M., Renner, W., Schütz, P. & Dond, R., (2010). Effecs of Neuro-Linguistic Psychotherapy on psychological difficulties and the quality of life. Counselling and Psychotherapy Research, 10(1): 39-49.

Stone, H., & Stone, S., (1993). Embracing Our Selves: The Voice Dialogue Manual. Belvedere Tiburon, CA: Nataraj Publishing.

Stone, H., & Stone, S., (2007). The basic elements of Voice Dialogue, Relationship, and the Psychology of Selves; Their origins and development. In: Stone, S.. & Stone, H. The Voice Dialogue Anthology. Explorations of the Psychology of Selves and the Aware Ego Process. Delos: 7-49.

Schneider, W., & Shiffrin, R. M., (1977). Controlled and Automatic Human Information Processing, Detection, Search and Attention. Psychological Review, 84: 1-66.

ShalIice, T., (1978). The Dominant Action System: An Information Processing Approach to Consciousness. In: Pope, K. & Singer, J. L., The Stream of Consciousness: Scientific Investigation into the flow of Human Experience. New York: Plenum Press.

Shapiro, F., (2001). Eye Movement Desensitization and Reprocessing: Basic Principles, Protocols, and Procedures. New York: Guildford Press.

Shazer, de, S., (1982). Patterns of Brief Family Therapy: An Ecosystemic Approach. New York, Guilford Press.

Shinohara, K., (1999). Epistemology of space and time: An analysis of conceptual metaphor in English and Japanese. Nishinomiya, Japan: Kwansei Gakuin University Press.

Sinclair, J. D., Eskapa, R., & Sinclair M., (2014). How Opioid Antagonists Reduce the Craving for Alcohol. Oct 13 (http://cthreeeurope.com/2014/10/16/how-opioid-antagonists-reduce-the-craving-for-alcohol-part-one/)

Sinclair, J. D., (1982). The Rest Principle: A Neurophysiological Theory of Behavior. New York: Lawrence Erlbaum.

Sokolov, E. N., (1975). The Neural Mechanisms of the Orienting Reflex. In: E.N. Sokolov, E.N., & Vinogradova, O.S. (eds.), Neural Mechanisms of the Orienting Reflex. New York: Wiley: 217-235.

Spivey, M., Richardson, D. & Zednik, C. (2010). Language is spatial, not special: Using space for language and memory. In: Smith, L., K. Mix, & Gasser, M., (eds.), Spatial Foundations of Cognition and Language. Oxford: Oxford University Press: 16-40.

Spivey, M. J., & Dale R., (2012). Eye movements both reveal and influence problem solving. The Oxford Handbook of Eye Movements. Oxford: Oxford University Press: DOI: 10.1093/oxfordhb/9780199539789.013.0030

Sweetser, E., (1998). Regular metaphoricity in gesture: Bodily-based models of speech interaction. In: Actes du 16e Congrès International des Linguistes. Oxford, UK: Elsevier.

Tavares, R. M., Mendelsohn, A., Grossman, Y., Williams, C. H., Shapiro, M., Trope, Y., & Schiller, D., (2015). A Map for Social Navigation in the Human Brain. Neuron 87(1): 231–243..

Trope, Y., & Liberman, N., (2010). Construal level theory of psychological distance. Psychological Review, 177: 440-463.

Todorov, A., Mandisodza, A.N., Goren, A., & Hall, C.C., (2005). Inferences of competence from faces predict election outcomes. Science 308: 1623–1626.

Todorov, A., Said, C.P., Engell, A.D., & Oosterhof, N.N., (2008). Understanding evaluation of faces on social dimensions. Trends in Cognitive Sciences, 12(12): 455–460.

Thomas, M., & Tsai, C. I., (2011). Psychological Distance and Subjective Experience: How Distancing Reduces the Feeling of Difficulty. Journal of Consumer Research, 39(2): 324-340.

Tompkins, P., & Lawley, J., (2003). Clean space: Modeling human perception through emergence. Anchor Point, 17(8).

Tonti, M., & Gelo, O. C. G., (2016). Rate of speech and emotional-cognitive regulation in the psychotherapeutic process: a pilot study. Research in Psychotherapy: Psychopathology, Process and Outcome 2016; volume 19: 102-112.

Tversky, B., (1991). Spatial mental models. In: Bower, G.H. (ed.), The Psychology of Learning and Motivation: Advances in Research and Theory 27. New York: Academic Press: 109-145.

Tversky, B., (1993). Cognitive maps, cognitive collages, and spatial mental models. In Frank, A.U. & Campari, I. (eds.). Spatial information theory: A theoretical basis for GIS. Berlin: Springer: 14-24.

Tversky, B., (1997). Spatial constructions. In: Stein, N., Ornstein, Tversky, B. & Brainerd, C. (eds.). Memory for emotion and everyday events. Mahwah, N. J.: Erlbaum: 181-208.

Tversky, B., (1999). Talking about space. Contemporary Psychology, 44: 39-40.

Tversky, B., (2015). The Cognitive Design of Tools of Thought. Review of Philosophy and Psychology. 6(1): 99-116.

Tversky B., & Kessell, A., (2014). Thinking in action. Pragmatics & Cognition, 22(2): 206-223.

Tversky, B., (2012). Visualizing Thought. Topics in Cognitive Science, 3(3): 499-535.

Tversky, B., J. Heiser, L. P., & Daniel. M. P., (2009). Explanations in gesture, diagram, and word. In: Coventry, K.R., Tenbrink, T. & BatemanJ.A. (eds.). Spatial language and dialogue. Oxford: Oxford University Press: 119–131.

Tversky, B., (1991). Spatial mental models. In: Bower, G.H. (ed.). The Psychology of Learning and Motivation: Advances in Research and Theory 27: 109- 145.

Uleman, J. S., & Bargh, J. A., (Eds.). (1989). Unintended thought. New York: Guilford Publications.

Varga von Kibéd, M., (2001). Wie wir durch Aufstellungen Handlungen einladen, sich in uns zu manifestieren. Bemerkungen über einige religionsphilosophische Aspekte der Aufstellungsarbeit. In: Weber, G. (ed.): Derselbe Wind lässt viele Drachen steigen. Heidelberg: Carl Auer: 43-53.

Varga von Kibéd, M. (1998): Systemisches Kreativitätstraining: Tetralemma-Aufstellungen und Aufstellungsarbeit mit Drehbuchautoren. In: Weber, G. (ed.): Praxis des Familien-Stellens. Heidelberg: Carl Auer: 504-509.

Varga von Kibéd, M., (2014). In the video on YouTube: Mental Space Psychology.

Varga von Kibéd, M., (1995). Ganz im Gegenteil. Querdenken als Quelle der Veränderung. München: Graphic-Consult.

Varga von Kibéd, M., & Sparrer, I., (1998). Strukturaufstellungen. In: Weber, G., (ed.) Praxis des Familien-Stellens. Heidelberg: Carl Auer.

Vecera, S. P., & Rizzo, M., (2003). Spatial attention: normal processes and their breakdown. Neurologic Clinics of North America, 21(3): 575–607.

Vecera, S. P., & Farah, M. J., (1994). Does visual attention select objects or locations?. Journal of Experimental Psychology, 123(2): 146–60.

Vygotsky, L. S., (1978). Mind in society: The development of higher psychological processes. Cambridge, MA: Harvard University Press.

Wake, L., Gray, R. M., & Bourke, F. S., (2013). The Clinical Effectiveness of Neurolinguistic Programming; a critical appraisal. London and New York: Routledge, Taylor & Francis.

Walker, W., (1996). Abenteuer Kommunikation; Bateson, Perls, Satir, Erickson und die Anfänge des Neurolinguistischen Programmierens (NLP). Stuttgart: Klett-Cotta.

Walker, W., (2008). Private Communication on video (YouTube, MrMonteCinto: Points of view in the world of NLP).

Walker, W., (2011). Was ist das Soziales Panorama? Article on the homepage of: The International Laboratory of Mental Space Research.

Wampold, B. E., & Imel, Z. E., (2015). The great psychotherapy debate: the evidence for what makes psychotherapy work (2nd ed.). New York: Routledge.

Warf, B., (2008). Time-Space compression; Historical geographies. London and New York: Taylor & Francis.

Warf, B., & Arias, S., (2008) (eds.). The spatial turn. Interdisciplinary perspectives. London and New York: Taylor & Francis.

Watkins, J. G., (1947). Hypnotherapy of War Neuroses. New York: Ronald.

Webb, J., (2015). BBC News, 17 March 2015, From the section Science & Environment.

Weber, G., (1994). Zweierlei Glück; Die systemische Psychotherapie Bert Hellingers. Heidelberg: Carl Auer.

Weber, G., (1998). Praxis des Familien-Stellens; Beiträge zu systemische Lösungen nach Bert Hellinger. Heidelberg: Carl Auer.

Weber, G., (2001). Derselbe Wind lässt viele Drachen steigen. Heidelberg: Carl Auer.

Weisbuch, M., Lamer, S.A., & Ford, B.Q., (2013). Memory for eye gaze: Accuracy, bias, and the role of facial emotion. Social Cognition, 31(6): 686-695.

Wernicke, C., (1874). Der Aphasische Symptomencomplex. Breslau: Cohn und Weigert.

Wiggins, J., (1979). A psychological taxonomy of trait-descriptive terms: The interpersonal domain. Journal of Personality and Social Psychology, 37(3): 395–412.

Wiggins, J., Phillips, N., & Trapnell, P., (1989). Circular reasoning about interpersonal behavior: Evidence concerning some untested assumptions underlying diagnostic classification. Journal of Personality and Social Psychology, 56(2): 296–305.

Williams, L. E., Huang, J. Y., & Bargh, J. A., (2009). The scaffolded mind: Higher mental processes are grounded in early experience of the physical world. European Journal of Social Psychology, 39(7): 1257-1267.

Williams, L. E., & Bargh, J. A., (2008). Keeping one's distance: The influence of spatial distance cues on affect and evaluation. Psychological Science, 19(3): 302-308.

Windt, J. M., Nielsen, T. & Thompson, E., (2016). Does Consciousness Disappear in Dreamless Sleep? Trends Cognitive Science, October 17. pii: S1364-6613 (16) 30152-8.

Wolberg, L. R., (1948). Medical Hypnosis. Volume 2. New York: Grune & Stratton.

Wolberg, L. R., (1949). The practice of hypnotherapy. New York: Grune & Stratton.

Yablonsky, L., (1981). Psychodrama: Resolving emotional problems through role-playing. New York: Gardner.

Young, M. E., (1997). Implicit processes in the development of causal knowledge: A connectionist model of the use of human cues. In: Van den Broek, P. W., Bauer, P. J., & Bourg, T. (eds.). Developmental spans in event comprehension and representation: Bridging fictional and actual events. Hillsdale, NJ: Lawrence Erlbaum Associates: 29-50.

Zajonc, R., (1984). On the primacy of affect. American Psychologist, 39 (2): 117–123.

Zeig, J. K., (1980). A Teaching Seminar with Milton H. Erickson. New York: Brunner Mazel.

Zondag, R., (2010). Ik zal stil naar je luisteren. Uitgever: A.J.G. Strengholt's Books.

Curriculum Vitea of Lucas Albert Charles Derks

After his birth on November 19, 1950, the family moved in Februari of 1951 from Oosterbeek to Utrecht. He has a two years older sister. His early results at school were bothersome. His father who was a skilled technician died in 1959. After printing school (diploma 1968) he went to the Art School (diploma 1973). Within that period he was very actively involved in mountaineering and from 1970 on, also in running, he is still practicing both sports.

From age ten on his talent in the visual arts had been the guiding line.

From 1973 upto 1976 he was teaching drawing and painting at the "De Werkschuit" Zeist/Bilthoven. He followed a didactical training. He was mainly painting in oil and tempera: solo exposition in 1980 and 1983.

From approximately 1970 on he developed a stong interest in psychology and started a full time study social psychology in 1976; masters degree 1982. He spend six months in Africa during his university years. His thesis was on pragmatism. He became acquaintent with the work of Bandler and Grinder (NLP) in march 1977. Followed in 1983 a NLP practitioners training with the New York training Institute for NLP; 1985 NLP masters training at the Institute for Eclectic Psychology in Nijmegen Holland. From 1982 active as a therapist on the base of NLP. From 1980 to 1986 also working as a researcher for several important Dutch art museums (Het Rijksmuseum; Het Centraal museum, Van Gogh museum; Maritiem museum Prins Hendrik) subject: Visitor behaviour at large expositions. In 1986 he choose to devote himself exclusively to NLP and related things. Then he co-founded The William James Foundation that, was dissoved in 2006. He published a novel that was awarded in 1992 and an other novel in 2009. Lucas wrote about seven psychology books. He teamed up with the Dutch NLP trainers Jaap Hollander and Anneke Durlinger. Ever since he is doing free-lance jobs as a trainer at the Stichting voor Educatieve en Therapeutische Hypnose; SON Opleidingen BV te Eindhoven; Instituut voor Eclectische Psychologie and many other places in the Netherlands, Belgium, France, Germany, Hungaria, USA, Finland, Suriname, Poland, Japan, Serbia, Brazil, England, New Zealand, Poland, Lithuania, China, UK, Romania, Russia, Greece, Croatia, Malta and Austria. From 1993 on, he became involved in the develeopement of new methods in the field of social systems: The Social Panorama. The connection between the pragmatic field of NLP with social psychology has become his mayor activity over the last decade.

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