

Brain Space – by Lucas Derks

The brain is a 3-D structure and logically speaking this fact must somehow relate to spatial interventions in psychotherapy. When the client moves in space or when he moves an image to another location, this must in a way be reflected by some occurrence in the neural tissue of the brain. However, in most spatial psychotherapies there is little or no mention of the 3-D anatomy of the brain. And as Steve Andreas (2014) states; in general psychotherapy can do completely without neuroscience.

A major stand in the way in relating spatial interventions to the brain's anatomy, comes from the brain being positioned “all wrong” in the skull. That means that what is experienced left is happening on the right side of the brain and visa versa. And also what is seen in front is neurologically in the back of the head. The brain is largely positioned upside down: with the cortical connections to the body on the top. This makes it hard to envision where something should happen in the brain when a certain spatial change is experienced.

However some therapists claim their work impacts “mirror neurons” or “the amygdala” or “grid cells”. But when therapists mention the brain's anatomy, it seems primarily aimed at the rising of the prestige of their particular type of methods. The status of psychotherapy in society is low, but that of neuroscience is rather high.

Others really tried to explore the neurological processes involved in their form of spatial psychotherapy. Let us illustrate this with Frank Corrigan and David Grand (2013) summary of the mechanism behind their “Brainspotting” method:

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.

Later we will look at the spatial phenomenon that is central in Brainspotting: the eyes fixating on a location in mental space at the moment a person gets emotionally stuck with a traumatic memory. Even if the above is a correct description of the anatomical structures involved in this technique of exploration and in what follows when the client solves his or her issue that way,

it is still arguable whether these neural processes are unique for Brainspotting. But what makes Brainspotting unique is the recognition of the phenomenon of eye fixation and its clinical application.

Left and Right

It had been in neuro-psychology and neurology, where one works with patients with disrupted brains, where the significance of the brain having two hemispheres, that both have a different way of thinking has always been a central focus (Gazzaniga, 1970; Bishop, 2014)

Then, in the 1970s hemispheric differences were drawn in the center of psychological research (Gur, Gur and Marshalek, 1975). All human behavior and cognition could be related to these phenomena. No area of cognition and behavior was left out. Everything people did was evaluated on how this related to the division of labor between the cortical hemispheres (Bakan, 1978). The whole idea fascinated the audience and became hype in popular science. In the 1980s many new-age psychotherapies were explained on how they activated the more creative right hemisphere or helped to improve the connection between the two sides of the brain to stimulate a more coordinated (integrated) way of thinking. For instance, in the development of now reputed EMDR-therapy (Shapiro, 1995) the two brain hemispheres were part of the explanation for why the left-right eye movements made sense, that, make up the core of the method.

In its beginning in the 70s NLP had also notions of the right hemisphere housing the unconscious mind. And how a therapist could communicate with that hemisphere by speaking into the opposite ear or leading the imagery to a certain side. After waves of popular new age publications on this subject, most psychotherapy researchers were shied away.

Those who continued found that the lateralization of functions was not uniform in all people, but varied in an unexplainable way. Whitehouse and Bishop (2012) experimented with Doppler scanning and came to the following conclusion:

Verbal and visuospatial 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 asymmetry is an obligatory pattern of organisation, while statistical theories maintain this is a reflection of independent, probabilistic 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.

So it is not just fixed function on the left and on the right. For the work of psychotherapists brain research has created many stand in the ways: Like for instance that in schizophrenia and Asperger autism the left hemisphere seems to dominate the right one in a more than standard fashion (Baron-Cohen, 1991; McGilchrist, 2009). The latter neuro-physiological cause suggest that “talking therapy” will not help in such cases. For the remaining, spatial psychotherapy must be satisfied with the findings that specialized cells in the limbic system support the visuospatial functions that are found predominant in the right hemisphere in most people. And it must be the latter function that spatial psychotherapies make use of most.

McGilchrist (2009) refueled the fascination for the hemispheres in a beautiful way that makes it also interesting for psychotherapists again. He not only paints a picture of how damaged hemisphere cause behavioral and cognitive problems, 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 one side of the brain more than the other – and looks at the trouble this causes in society. He builds on 50 years of research and implicitly makes a case for a psychotherapy that takes also the left-right differences into account. Is that a form of IMDR? Should therapist activate one hemisphere by just addressing it?: “Hallo right side I like to talk specifically to you now...”

After the interest among psychotherapists had waned off in the 90s, a clear practical tool for using the difference in cognitive activity in both hemispheres was developed by Allen C. Sargent (1999) entitled: *The Other Mind's Eye: The Gateway to the Hidden Treasures of Your Mind*.

Crucial experiment 1: Switch Hemisphere

- 1) Find a memory that 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 memory, 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 memory, then do the next: Imagine to open the door of the car (brain) get out and walk along the back side to the other side of the car (brain) and then get in and sit at the other side.
- 4) Now think of the memory from the other side of the car (brain).
- 5) Notice the difference in view and emotions.

Conclusion:

Some level of awareness of hemispheric activity seems to be sensed by most people who tried this out. This experiment does also suggest that, the problem was dominantly experienced from one side of the brain. This side seemed to use a limited view that gave rise to negative emotions that kept the problem going (Duba, 2000). Here the “something completely different” is shifting ones attention to “the other minds eye”. It seems a reliable technique to make different views available that help to resolve or neutralize the emotional issue.

The question, whether this sensation of unilateral activity is a result of suggestion or does constitute a real human capacity, can probably only be answered when this experiment is combined with neuro-imaging correlates.

Off into deep mental space

The human “brain space” is not only divided in its left-right parts but also in its vertical structures or its central versus outer structures. Some therapists argue that “real” and “deep” and “permanent” emotional and personality change takes the involvement of the lower part of the brain: the brain stem for instance. In the same line of thinking the limbic system has become a popular “deep” part, as witnessed by methods like “Limbic Coaching” (see Kurpanek).

For a Martian anthropologist with an interest in the history of psychotherapy it is obvious that through the ages, 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, where ones own method is deep and results in lasting effects. A critical review of this distinction is necessary, since it is easy to be adsorbed by the public and therefore easy to use in marketing but it is not based on substantial evidence. As an illustration of this point I like the reader to evaluate the following (fictive) advertisement:

Energy Hop is a brand new here-and-now therapy that only removes your symptoms and leaves your personality intact. The effects of one, 45 minutes session may last as long as 3 months. So remain the person you are and maintain your lifestyle, but now without your phobias, dilemmas, compulsions, addictions, fears, anxieties, stresses and conflicts.

Would you buy that? In the marketing within the field of psychotherapy one may find the following polarities between “deep” versus “superficial”:

- | | |
|-------------------------------|--|
| deep | superficial |
| - strong and lasting results. | - brief, faint and no lasting results. |

- treating causes.
- making “real” changes.
- deep hypnotic trance is used.
- deep regression to childhood or previous lives or previous generations.
- deep intense emotions are expressed without any humor.
- confrontational.
- deep brain and body structures are thought to be involved, like the gut and the limbic system.
- treating symptoms.
- making “fake” changes.
- only wake state chatting is used.
- just looking at the here and now and the future.
- little tears, laughter, logic, humor and concrete examples.
- soft.
- cortical structures in which cognitive processes take place.

Additionally, in combination with “deep” and “superficial” the competing brands of therapy are also frequently accused of being “commercial” or/and “unscientific”.

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

The belief that emotional change is depending 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 led to the belief that emotions are recorded in the limbic system and that emotional, traumatic, memories can only be changed by including these “deep” parts of the brain.

Such a view automatically degrades all more “superficial” (cortical) approaches, because of their supposed incapacity to cause permanent emotional change. The author believes that such a disqualification is unjustified by failing evidence.

The urge to draw conclusions about brain functions on the base of fMRI research is very strong within the neuro-scientific circles themselves (since that is of cause this type of research its purpose); its high-tech character also helps to convince research sponsors and does excite the media more then vague talking or imagery.

But although the neuro-imaging methods can spot the brain area with an increased blood flow in a reliable way, it does not automatically give away the cognitive activity in that region. It might even be of an inhibitory nature, so that it is making visible the blocking or repressing of the very cognitive process that is looked for. In other words, conclusions about where in the brain a certain

cognitive activity takes place can be too swift 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 are a too slow and inaccurate tool to pinpoint the location that is affected by a psychotherapeutic intervention. Thus, it is probably so that the limbic system cannot 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 moment during our evolution a complete brain by itself. This logically means that all mental functions that a creature normally needs must be in part still processed by the limbic system too. It appears that the limbic system has more “read only memory (ROM)”: fixed systems for certain tasks (like 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. Conclusion: a therapist may use enhanced emotional expression as his way of making the client do “something completely different”, which does not necessarily mean that he is changing the clients “deeper” brain structures more than a colleague who is just chatting and witting.