

Is there a basis in Neuroscience for NLP ?

Reflections on my practice from my participation in the AES programme

This is a formative paper, exploring the neuroscientific basis behind the emerging field of NLP. Taking a Psycho-Social approach also requires that the material is viewed not just with regard to the findings of this study, but also, that it is placed within a broader context of personal reflexivity and society.

The paper will describe the journey of my introduction to neuroscience and how the methodology of my private client practice has been changed from what I have learned. The primary models of NLP will be outlined and the NLP meaning of the word 'language' defined. Three case study examples from my practice experience will be presented to illustrate specific points and to investigate the possible correlations between neuroscience and NLP. This will include providing an overview of brain anatomy and an example of NLP methodology. In addition, I feel it is important to state that I have no philosophical allegiance to any particular therapeutic approach; neither am I partisan towards the field of NLP, having no interest in affording it any undue favour. In practice, my first and only interest is that of the wellbeing of my client.

Introducing Neuroscience

The first train of thought inspired from the initial AES lectures that introduced neuroscience, was a reflection on my level of knowledge, which was very poor. This struck a chord of discomfort because I have fifteen years experience as a teacher of NLP and yet I found I knew very little of the topic from which NLP has taken the first of its three names; Neuro Linguistic Programming.

All I had absorbed from my own training, and subsequent professional development, was that NLP has its eye focussed on both the cognitive elements of linguistics and transformational grammar, and also upon the unconscious programming dynamics of hypnosis and hypnotherapy. The neuro part of the name was only discussed in terms of the central nervous system and representational systems. Memories were said to be encoded in different sensory systems and stored in the unconscious, but there was not one occasion in which the anatomy of the brain or the biology of how this occurs was discussed. As the first lecture on neuroscience came to an end, I was unable to decide if I was more astounded to find that much of the neuroscience seemed to support the tenets of NLP, or whether my astonishment was born from the emerging realisation that this area may possibly be overlooked by the NLP community.

Survey: Neuroscience in NLP Training

Instinctively, I feel that the relationship between neuroscience and NLP is important, so I decided to conduct an internet micro-survey to see if I could gauge the extent to which NLP gives attention to, or ignores, the root of its name. Ten websites were randomly selected and the following question asked:

I'm just about to begin to write a paper for an Msc in Psychosocial Studies and I wondered if I might ask, have you ever encountered an NLP training course that taught Neuroscience or the biology of the brain in an explicit way ? If you run, or design, NLP training, do you include Neuroscience or the biology of the brain in an explicit way and what are your reasons for doing so, or not ... ?

I received six replies. Four said they did not cover the topic in an explicit way and had no knowledge of any courses that did. I was referred to an author by one reply and to a research project at Surrey University by another: <http://www.nlpresearch.org/>

It would appear that while some ground is tentatively covered in NLP training, the teaching of neuroscience that stands at the forefront of the discipline is woefully overlooked. This may be because there is only an interest amongst NLP practitioners and trainers to replicate what they themselves have been taught and to only direct NLP research into the areas of language and hypnotic programming, to the exclusion of neuroscientific theory, which would appear to be counter to the adventurous and exploratory spirit of NLP (Andreas 1989, introduction).

Or, it may be because the Neuro part of the name, Neuro Linguistic Programming, has no place in this field. Is there a basis in neuroscience for NLP ?

The Primary Models of NLP

There are a number of metaphorical frameworks, or models, employed within NLP (Bandler in Andreas 1991, foreword). A core model of NLP is to view thinking in one of two linguistic levels: surface structure and deep structure (Grinder and Bandler 1975, p. 137). The term surface structure is a phrase denoting the words used to express thought, while deep structure refers to the meanings and experiences associated with the words. Often these associations and experiences are unconscious, as is the word-selection process (Bandler and Grinder, 1975 p. 22).

In an NLP consultation, the practitioner will ask the client questions in a certain manner in order to elicit meanings and associations attached to the wording so that deeper issues can be reviewed and new possibilities explored (Bandler and Grinder, 1975 p. 41). NLP practitioners are taught that the deep structure associations are embedded within the unconscious memory in the form of representational systems; modalities of neural information, namely sights, sounds, and feelings (Bandler and Grinder, 1979 p. 82). In NLP these are called visual, auditory and kinaesthetic and some training schools also teach the practitioner to utilise olfactory and gustatory information (Indigo Eagle NLP Training, 2009). Auditory can refer to either external or internally generated sounds, such as the memory of sounds or internal narrative. Kinaesthetic can refer to either emotions, sensations or both (Stone, 2009).

The NLP term for bringing deeper associations to the surface is known as Meta Model Questioning. (Bandler and Grinder, 1979 p. 70). Open questions are phrased to elicit specific neural information. The objective is not merely to discover the client's subjective experience, it is to build a linguistic map of the client's model with a view to making adjustments within

its landscape, thereby altering the client's subjective experience of the issue (Bandler and Grinder, 1975 p. 45).

Eliciting the neurological deep structure of a client's experience may typically take the following form (Bandler and Grinder, 1981, p. 61):

'When you think of that experience, what do you see ?'

'What do you feel ?'

'Are there any sounds associated with that experience ?'

'What kinds of things are you saying to yourself as you experience that ?'

'What do you say to yourself as you think of that now ?'

'Become aware of other sensations, how does your body feel ?'

'Notice your breathing speed ... the tension in your hands ... any smells or tastes associated with that experience'.

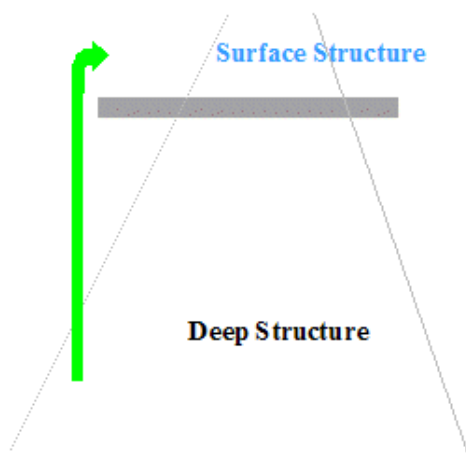
A second core model of NLP is that of the Milton Model. While observing the language patterns of the American hypnotherapist Milton Erickson, Richard Bandler and John Grinder found that Milton was able to achieve the opposite orientation to that of the Meta Model. He delivered language to a client, at the surface level of expression, in such a manner that it embedded itself into the deep structures of the client's experience. He achieved this by deliberately employing ambiguity in his sentence structures which, when delivered in certain tones of voice, for the client would prompt an inner search for meaning. As the client begins

their creative participation, their attention is turned inwards and the state of consciousness is altered (Grinder and Bandler 1975, page 17).

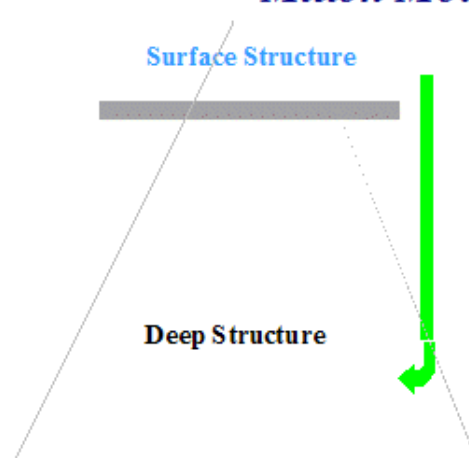
When used together, the Meta and Milton models provide the practitioner with the means to elicit information from the deep structure of a client and bring it to the surface level of expression and/or deliver language at the surface in a manner that will send it directly into the deep structure of the client.

The Meta Model & Milton Model Illustrated

Meta Model



Milton Model



(illustration; the author).

Language in NLP

In NLP, the term 'language' is used to denote all form of human communication, not only words. NLP practitioners are taught to incorporate specific tones of voice, body postures and how to adjust the speed of their speech in order to induce altered states of consciousness.



(illustration: Harrison 2001, p.44)

Hypnotic language patterns differ from ordinary speech. How their application may alter states of consciousness and regulate affect is a question that exceeds the scope of this paper and it is my intention to conduct a deeper investigation in a paper to follow.

The Territory of the Map: Brain Anatomy, Memory and Unconscious Programming in Neuroscience and NLP

The understanding in NLP is that memories are not recorded on some kind of photo-plate in the brain, but rather, that memories are discretely encoded and stored in different modes of the individual's neurology (Bandler 1985, p. 21). I was pleasantly surprised to learn in the first neuroscience lecture that findings from this field confirm that memory is distributive. The NLP model of memory encoding appears to correlate with the implicit memory structure of the amygdala (Wilkinson 1996, p.25). During my research for this paper I was introduced to another model of brain anatomy that suggests a basis in neuroscience for NLP theory. This additional model that refers to the evolution of its architecture is known as the Triune Brain (Cozolino 2002, p. 8). MacLean's theory suggests there are three distinct regions within the brain's topography which have evolved from the origins of life and remain adaptive, undergoing a constant 'use-dependent development' (Cozolino 2002, p. xv). Each of these regions performs a different type of function, with new layers becoming increasingly complex (Cozolino 2002, p. 8):

The Reptilian Brain is a core region which has changed little through its evolutionary history and is responsible for activation, arousal, reproductive drives and the homeostasis of the organism. One area of NLP developed by Ernest Rossi is that of Psychobiology. Rossi worked with Milton Erickson towards the end of Erickson's life and in 1987 published the Psychobiology of Mind Body Healing (Rossi 1993). This pioneering work proposed models of hypnotic language that would interact directly with the visceral and physiological levels of experience. It may be the case that Psychobiology works with the Reptilian Brain.

Wrapped around the reptilian brain is the Paleomammalian Brain, or Limbic System and its functions are that of learning, memory and emotion. This area of the brain also appears to correlate with the theories of both Rossi; Psychobiology and Milton; programming the unconscious.

The higher and more recent layer is the Neomammalian Brain. This region, the cerebral cortex and the corpus callosum, is the area responsible for conscious thought and self awareness and would seem to correlate with the cognitive features of the NLP Meta Model and transformational grammar (Bandler and Grinder 1975, p. 27).

However, further study reveals that MacLean's model of the Triune Brain is somewhat simplistic. Each region continues to evolve and adapt, and they are interconnected by a complex network of bands of nerve fibres that connect not only the left and right hemispheres horizontally, but also vertically as well. It is estimated that the brain contains around, '...100 billion neurons; each one connected to its neighbours by approximately 5000 synapses. A million new connections can be made or broken each second.' (Philips 2009, p.29). The brain can organise and prioritise information and regulate the entire body while navigating the external environment successfully, in milliseconds (Damasio 2000, p.67).

The Limbic System is responsible for the emergency response system of the brain. It functions precognitively, inducing an immediate and total brain-body response. During an emergency, the cortex, where a more measured view may be taken, is informed while the amygdala activates the response process. The amygdala is the storehouse for unconscious conditioned emotional patterns and responses. These are often formed in the first three years of life, before the long-term memory and explicit memory systems of the hippocampus

develop (Wilkinson 2006, p.25). NLP also teaches that the unconscious stores conditioned responses and calls this process Anchoring (Bandler and Grinder, 1979 p. 79)

The precognitive stimulus, before it is experienced in awareness as an emotion, is known in neuroscience as affect. The manner in which affect is regulated, whether it manifests in different emotional forms such as panic, fear, care, rage (Panksepp 2008, p.124), is cast by the template or 'emotional repertoire' built from having survived traumatic experiences (Wilkinson 2006, p.25). The amygdala is both the seat of reactive responses and learning (Wilson, p.25), and of an evolving and adaptive system. This implies that it is possible to recondition the limbic system to react or respond in different ways (Fonagy et al 2004, p.93). This potential for adaptation correlates exquisitely with the core principles of NLP (James and Woodsmall 1988, p.96).

Once an emotional response has begun, commands are sent to the body and other regions of the brain by two systems; chemical and electrochemical. The resultant change in the system is global and it is possible for the state of the entire organism to be modified from a response triggered by a relatively small area of the brain (Damasio 2000, p.67). Much of the orientation of NLP technique focuses on state control using cognition. Frequently, a client is taught to use what is effectively a tool for affect regulation, via an internal narrative language (Bandler and Grinder 1981, p. 62). In *Affect Regulation and the Origin of the Self*, Schore affirms that there is a correlation between the mechanisms of affect and cognition (Schore 1994, p. 315). Folensbee (2007) cites LeDoux (1996), suggesting that the process of recovering implicit memories, bringing implicit or unconscious memories into conscious awareness, also brings them into the explicit memory system. He writes:

This process is not the same as uncovering a repressed memory; a conscious memory which was previously driven from awareness by psychodynamic defences which may later be recalled. It is hypothesised that in moments of severe trauma the hippocampus is deactivated and the event itself is not encoded in declarative memory, (Folensbee 2007, p.118).

During such an event, the memory is stored within the amygdala, the region which has come to the fore with regard to regulating and controlling the system's responses. Psychobiology suggests that the memory of an event experienced during an altered state of consciousness is stored in a part of the unconscious which is irretrievable after a return to the normal state. This is referred to by Rossi as State Dependent Memory (Rossi 1993, p.80).

Case Study Example: One

The neuroscience taught on the AES course has opened new perspectives for me, enriching my understanding of my craft, even at this early stage of investigation. One insight emerging from this study is that NLP technique appears to be more effective when dealing with issues that carry an affective charge. I would like to illustrate this possibility by recounting my experience of a corporate client I shall call 'Peter'.

Peter was the HR director of one of the city of London's leading companies and had asked me to assist him in accelerating the speed with which he could further develop his golfing skills. I met up with him and one of his colleagues at a London golf club and spent almost an hour using a selection of techniques which will be discussed further in this paper. At the end of the consultation, as we were preparing to part company, Peter mentioned that he was

feeling nervous about another matter. It transpired that he was to give his first after dinner speech that night. The occasion was his best friend's 50th birthday and the importance of the occasion added to the pressure. We had used all but ten minutes of our time allocated for the use of the room, and so I asked if he could spare a moment before testing our morning's work on the green. In a state of heightened awareness and creative spontaneity, I succinctly guided him through a series of brief techniques that ordinarily would take at least a whole afternoon to accomplish. The situation was highly charged from his distress and the accumulated tension was being released through a symphony of emotions ranging from fear and panic to relief and uncontrollable giggles.

It was more than a week before I had the opportunity to talk to Peter and ask how he had found the work we had undertaken and what the results were. He reported that he was a little disappointed with the outcome he found on the golf course and the work we did seemed to have hardly made any difference. The verdict at this stage was not just that it was not worth the time we had spent but also that perhaps the efficacy of NLP may be questioned. Peter said that he was not particularly bothered by this finding because he only saw the golfing skills work as an entertaining experiment which carried almost no emotional investment for him. However, rather than tell me the news with an air of despondency, he could hardly contain a sense of excitement as he began to recount his experience of the after dinner speech. He was astounded to find that it went far better than he would ever have expected. As he finished his speech he won a standing ovation and was asked afterwards if he was a barrister because his manner and delivery were so professional. Within a week he had received two further invitations to speak again.

The NLP and Neuroscience Correlations of Case Study Example: One

Peter's response could be explained in a variety of ways from both an NLP and neuroscience perspective:

Rapport building:

Sufficient rapport was not established during the golf skills work and this was reflected in the poor results obtained. One of the tenets of NLP is that in order to facilitate an environment within which change or transformation may occur, the practitioner must have a clear and unpoluted perception of the client's model of reality. Entering the client's model is called 'pacing'. Once pacing has been established, the practitioner then leads the client towards resolution by changing their own internal state (Bandler and Grinder, 1979 p. 79). There is insufficient space within this paper for a deeper exploration of 'pace and lead', however, on the surface it appears very similar to the model of 'transference and counter transference' found in psychoanalytic psychotherapy (Bateman and Holmes 1995, p95). A basis for the concept of utilising rapport via pacing and leading is supported in neuroscience by the discovery of mirror neurons in 1995 by Jeannerod, Arbib, Rizzolatti and Sakata (Cozolino 2002, p.186). Mirror neurons fire when an action is either performed or observed and may also play a role in forms of procedural learning, namely modelling, and synchronous collective actions such as dancing.

State elicitation:

The fact that Peter had only a little emotional investment with the golf-skills project could be attributed to the position that playing golf held within his personal value system.

Alternatively, it could be attributed to my inability to draw his emotional relationship with playing golf to the surface for re-direction.

Anchoring:

Anchoring is a technique described by Anthony Robbins as Neuro Associative Conditioning (sporthealth4u.com, 2009.), in which the practitioner includes a new added element into the client's experience while the client is recalling a memory or experiencing a particular state (Bandler and Grinder, 1979 p. 83). The added element is a neurological stimulus, most usually kinaesthetic, such as a hand touch on the client's shoulder, but it can also a visual picture or an audio stimulus such as a word or specific tone of voice. The ubiquitous phenomenon of anchors being 'set up' and then 'fired' can be observed in the comedian's catch phrase, the lovers' song and the bread shop's allure.

In the light of neuroscience, however, it would seem that the issue of the golf skills did not carry a powerful affective charge for Peter, whereas the after dinner speech did. Affect may be thought of as the precognitive sensation of the intensity of experience (Deleuze 1978, p.1), and there was a high degree of affect involved which manifested for Peter in a set of fears; fear of failure, social embarrassment and letting down his dearest friend. It might be the case that the potential for change and transformation within NLP technique is dependent on the

magnitude of affective charge. If one were to rephrase this suggestion using NLP terminology, one would say; it is dependent on the intensity of the state experienced by the client in the moment of the work being done. Richard Bandler, one of the founders of NLP, refers to this as the propulsion system (Callaghan, 2009). One perspective of NLP is that much of the work is focussed upon the orientation of the client's internal direction (James and Woodsmall 1988, p.148). In helping the client to alter the trajectory, the subsequent chain of responses, actions and reactions open new pathways which lead the client to an entirely new destination.

The Illusion of Representation: Challenges from Neuroscience to NLP

It may appear at this stage of the paper that neuroscience does offer a supportive basis for NLP and a judgement may be drawn. However, it remains inconclusive and any such deduction may be premature. Neuroscience also offers challenges to NLP which may require that NLP re-examines its model of subjective experience and that it too may have been caught in the illusion of the Cartesian split (Edelman and Tononi 2000, p.4).

For example, navigating reality requires not only that we move safely through space; we must also manage ourselves in time. It has been shown that we have the capacity for explicit and implicit memory; a relationship with the past, and an adaptable response system that enables us to deal with the present in both an automotive, emotional and highly complex way. Edelman and Tononi assert that although it may be tempting to say that the brain represents information, such as the memories of images and sounds, there is no mechanism within the brain for doing this. Memory is distributive and the core consciousness is not organised by sensory modality, such as visual or auditory. Domasio states, 'Core consciousness can be used by any sensory modality and by the motor system to generate knowledge about any object or movement' (Domasio 2000, p218). Neural signals do not carry a pre-selected code for encoding and '... there is no homunculus in the head to read the message', (Edelman and Tononi 2000, p.94). Moreover, the global mapping system, related to the hippocampus, basal ganglia and cerebellum, is not a store for fixed or coded attributes to be recalled and assembled in a replicative manner, but rather, they are the result of a continual process of synaptic changes that involve rehearsed selection among sets of pathways with similar outputs (Edelman and Tononi, p.97). Edelman and Tononi concur with Pinker that while language lends itself to the symbolism of describing experience in representational terms, the denotations for words are concentrated in the neocortex (Pinker 2007, p.332).

Navigating the Map: Introducing the Neuroscience of How Consciousness Emerges.

The Time Line theory of James and Woodsmall (James and Woodsmall 1988, p15) finds a parallel in Domasio's assertion that human consciousness has a sense of a self that is both permanent and evolving towards an unfolding or developing future (Domasio 2000, p219). In each given moment there are thousands of possible directions, or neural pathways for our thoughts to take. Dennet likens these countless choices to a pandemonium state of consciousness within which a process of selection among many possible options takes place (Dennet 1993, p241). Edelman and Tononi describe Selectionism and Reentry; an ongoing process during which neural pathways are reactivated and reinforced. If reactivation does not occur, or becomes more infrequent, then the route of that pathway can degenerate (Edelman and Tononi 2000, p.85). For those engaged in the practice of talking therapy in a general sense, it is both reassuring and potentially fruitful to have contemporary neuroscience confirm that the application of language can influence changes in neural activity (Cozolino 2002, p.146) and neural pathways can be strengthened by repetition (Folensbee 2007, p.117). This also lends support to the core principles of NLP; that language can be applied to assist a person to bring resolution and transformation to an issue or problem in a manner that does not always necessitate an exploration of the client's history and may be achieved in a faster time frame than other approaches within the talking therapy arena (Bandler and Grinder 1979, p.101).

An Example of NLP Methodology

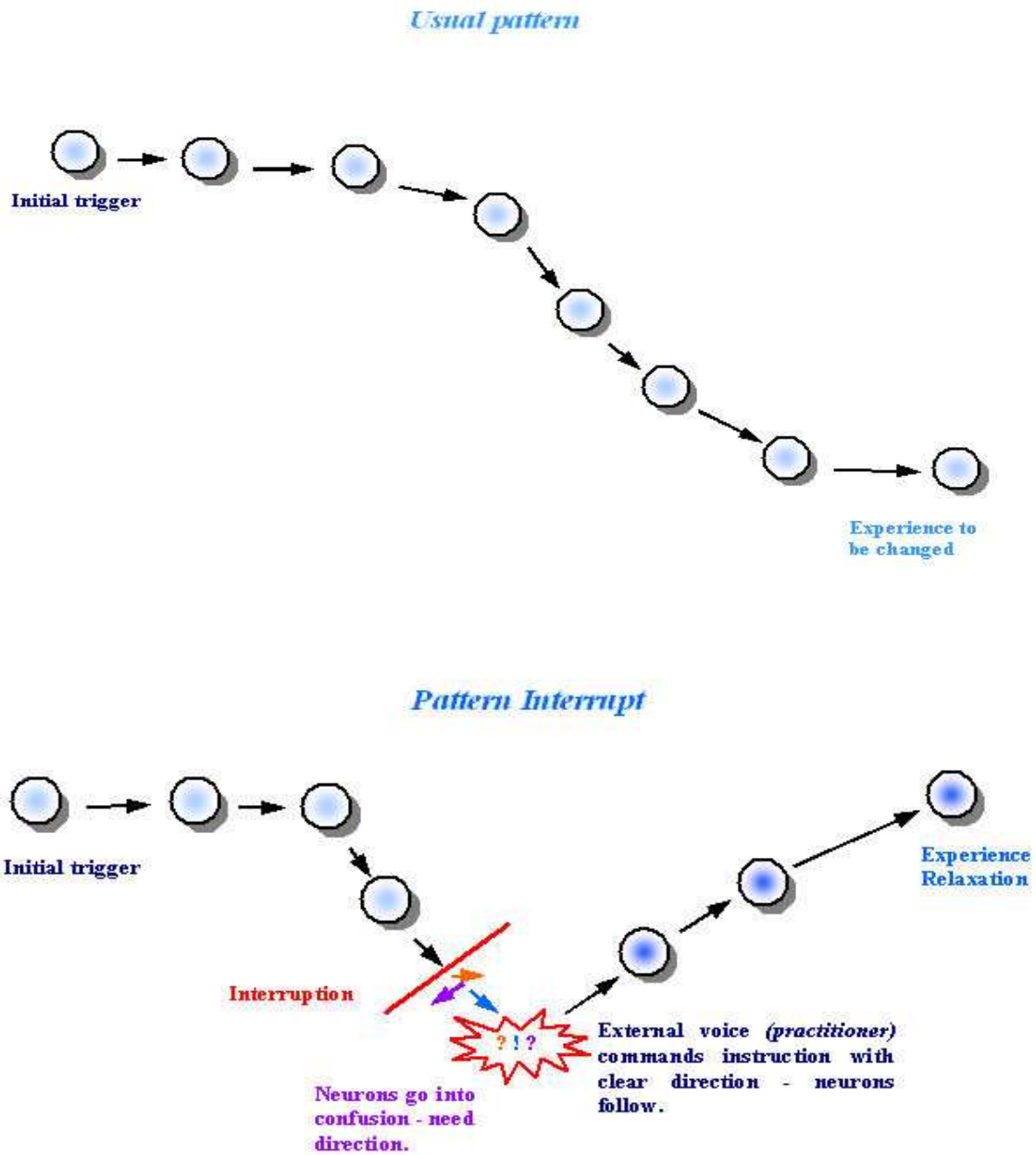
I would now like to illustrate this using one of the methodologies from NLP practice (Harrison 2001, p.29). The NLP practitioner:

- a) Gains rapport with the client.
- b) Identifies the problem for which the client is seeking assistance and elicits its linguistic deep structure; the Meta Model.
- c) Identifies, together with the client, the ideal solution/resolved state and checks thoroughly that any such change will be beneficial for the client as a whole and that both the conscious and unconscious mind of the client will find such changes acceptable.
- d) Guides the client through a process of change and transformation, systematically utilising a series of cognitive and/or hypnotic tools and techniques.
- e) Anchors the changes into the client's perception of the future so that the transformation will endure and remain part of the client's adapted reality.

Wilfred Bion is one of many authors from a diverse spectrum of disciplines who have written on the act or art of transformation; to move to a form beyond that held in the present (Bleandonu 1994 p.199). The chaotic epicentre of the formless moment of change, between the deconstruction of the old and the generation of the new, also rests at the heart of NLP (Harrison 2001, p.245). A deceptively simplistic metaphor for illustrating this process can be found in a neuro-disruptive technique from the canon of NLP: the Pattern Interrupt.

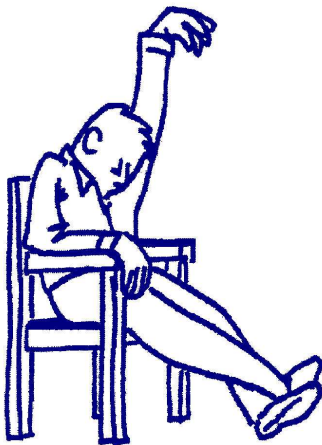
The NLP practitioner may utilise the pattern interrupt technique to disrupt a habit or repeating behaviour. For the NLP practitioner, the content of what is repeating is less important than the process; the sequence of the steps of the behaviour that link together to form the repetitive action. As the client demonstrates the repeated action, the practitioner suddenly interrupts the behaviour. This momentarily causes the client to become bewildered and confused. At that precise moment of controlled pandemonium, the practitioner directs the client's thinking with short concise instructions, towards the new goal or behaviour (Harrison 2001, p.20).

A Simple Illustration of The Pattern Interrupt Technique



One pattern interrupt method is a hypnotic arm-leverage technique, sometimes known as the Dreaming Arm (Harrison 2001, p.28). The practitioner interrupts the client's expectation of what may occur by asking the question, 'May I borrow *that* arm?'. By denoting the required arm as 'that', a sense of dissociation of ownership is induced; the arm is now an 'othered object' for the client. Lifting the arm into the air by placing a finger beneath the wrist, the practitioner states, 'I want your unconscious, now, to take control of that arm and hand, and I am not going to tell you lower that arm any faster than ...'.

At this point, a command is given by the practitioner, for example; 'you have him/her close their eyes and begin to relax more and more deeply ... and that arm and hand will only lower at the same pace with which you take him/her now into a deep state of comfort, peace and relaxation'.



This approach to therapeutic intervention is exemplified in the following case study:

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Is there a basis in Neuroscience for NLP ? Reflections on my practice from my participation in the AES programme

MSc Psycho-Social Studies – Affect Emotion & Society - Student no.08031825. January 2009

Case Study Example: Two

A client, who for this paper shall be known as Amy, reported that she was so scared of the dental experience that she always had to undergo general sedation. This involved adjusting her diet the day before, taking two days off work; one for the dental visit and another to recover. Her husband also had to take a day off work to accompany and care for her.

I arranged to have a consultation with her on the morning of her next dental appointment. We spent a short time discussing the situation before guided her into a relaxed state. Once Amy was lightly relaxed, I performed the dreaming arm technique, instructing her unconscious to generate a new set of neuro associative responses at each stage of the dental experience; to have Amy's shoulders relax when she saw the outside of the dentist's building, and to have her internal narrative make an 'ahhhh', sound as she opened the door and smelt the interior of the waiting room. I also suggested that at the sound of the dentist drill, her unconscious take her into deepening states of peace, comfort and security, for this and every future dental experience. All of these transformational processes were to have been completed before her arm and hand had lowered and returned to their natural restful position.

The work was so successful that her dentist contacted me and asked if I would be willing to offer my services to other patients with similar fears. Amy's consultation took place in 1996, thirteen years before this paper was written and the results are still successful for her today. The following table shows how the therapeutic process of the NLP methodology used with Amy and Mary seems to correlate with the neuroscience discussed in this paper.

NLP and Neuroscience: Correlations

	Stages of the therapeutic process, expressed in NLP terminology		Stages of the therapeutic process, expressed in Neuroscience terminology
Stage		Appears to correlate with	
1	Rapport and Pace		Knowledge of Mirror Neurons used to induce relaxation and reduce resistance to change.
2	Relaxation and light trance		Initiation of the dissolution of unwanted neuro-pattern using metaphor and reframing while regulating the client's affect.
3	Ecology check		Creation of new synapse connections and neural pathways.
4	Dreaming Arm: Pattern Interrupt		Induction of pandemonium and creative environment and stimulation of affect.
5	Suggestions: commands for change		Re-direction of affect into new pathways, previously constructed during the ecology check.
6	Future Pace: Anchoring Establishment of new emotional responses		Neuro associative conditioning sustained with the cooperation of the amygdala and limbic system.

Case Study Example: Three

I would like to offer a third case example to illustrate how my learning from the AES course has changed my relationship with NLP. I have modified my working methods in a number of ways including changing the style of metaphorical approach from computing to neuroscience. Clients appear more willing to explore painful memories once the dynamics of affect regulation and the transformational alchemy of ‘owning and yet containing’ (Sasportas 1985, p 79) has been explained to them.

While undertaking the AES module, a new client began her therapeutic journey with me. At the age of thirty two she decided to resolve very serious issues from her childhood. Her extended family had recently discovered that she had been raped by her father and were reacting with powerful emotions. This had stirred up a host of repressed issues and memories for her, which now required urgent resolution. My knowledge of mirror neurons enabled me to more confidently pace and lead her into a relaxed state, reducing anxiety and easing her fears of exploring the past. I offered two metaphorical frameworks based on neuroscience and of the distinction between the sensation of affect and the meaning attributed to it; enabling her to reframe the emotion and its associated memories. Combining an understanding of the neuroscience of her experience with the application of NLP techniques meant she was able to self regulate the affective charge and modify subsequent emotion more easily (Fensbee 2007, p117). While her journey of transformation is not yet complete, being able to change her relationship with her history is enabling her to construct a new internal narrative in which she is the joyful participant of her present and the designer of her future, rather than the victim of a troubled past. On the day of writing the conclusion of this paper she was delighted to inform me that she had just become engaged.

Conclusion:

In this paper I have reflected on how being introduced to neuroscience on the AES programme has both informed and adapted my NLP practice. I have shown this by recounting my experience of being introduced to theories new to me and how these compare with NLP models of understanding language, memory and the process of change. Three case studies were presented to illustrate possible correlations between neuroscience and NLP perspectives.

While the scope of this formative paper is not that of a thorough investigation, it does suggest that there may be a basis in neuroscience for NLP. In addition, there may also be a place within NLP for neuroscience. There is most certainly a case for further research and development in this area, and it is my intention to use the findings gained from the research outlined in this paper as a platform upon which to conduct further study and investigation.

Bibliography:

Bateman, Anthony and Holmes, Jeremy, *Introduction to Psychoanalysis*, 1995, Rotledge.

Bleandonu G, *Wilfred Bion: his life and his works 1897 – 1979*, 1994, Free Association Books Ltd.

Callaghan Philip, *True Motivation : Creating a Personalised Propulsion System*,
http://www.selfgrowth.com/articles/True_Motivation_Creating_a_Personalised_Propulsion_System.html, sourced; 5th January 2009.

Cozolino, Louis, *The Neuroscience of Psychotherapy*, 2002, W. W. Norton.

Damasio Antonio, *The feeling of What Happens*, 2000, William Heinerman.

Deleuze G, *Lecture Transcripts on Spinoza's Concept of Affect*,
http://www.goldsmiths.ac.uk/csisp/papers/deleuze_spinoza_affect.pdf, sourced: 8th January 2009.

Dennet Daniel C., *Consciousness Explained*, 1993, Penguin Books Ltd.

Edelman Gerald M. and Tononi Giulio, *Consciousness: How matter becomes imagination*, 2000, Penguin Books Ltd.

Folensbee Rowland W, *The Neuroscience of Psychological Therapies*, 2007, Cambridge.

Fonagy Peter, Gergely Gyorgy, Jurist Elliot, Target Mary, *Affect Regulation, Mentalization and the Development of the Self*, 2004, Other Press.

Harrison, M., *The Master Practitioner Suite Volumes One, Two and Three*, 2001, Tao Te Publishing.

Indigo Eagle NLP Training,

<http://www.indigoeagle.com/index.php?page=whatisneurolinguisticprogramming>, sourced:
4th January 2009.

Panksepp, Jaak, *Affective Consciousness*, in *The Blackwell Companion to Consciousness*, edited by Max Velmans and Susan Schneider, 2008, Blackwell Publishing Ltd.

Philips Helen, *Beautiful Minds*, featured in New Scientist magazine, 4th October 2008, Reed Business Information.

Pinker Steven, *The Stuff of Thought*, 2007, Penguin Books Ltd.

Rossi E. L., *The Psychobiology of Mind-Body Healing*, 1993, Norton.

Sasportas H, *The Twelve Houses*, 1985, Aquarian Press.

Schore Allen N., *Affect Regulation and the Origin of the Self*, 1994, Lawrence Erlbaum Associates.

Sport Health4u: Neuro Associative Conditioning, <http://www.sportshealth4u.com/nac.html>
(sourced 31st December 2008).

Stone Dr J, *Clinical Hypnotherapy; Improve your Health and Wealth*,
<http://www.chicagohypnosis.info/NLPhypnosis.htm>, sourced; 4th January 2009.

Wilkinson M, *Coming into Mind*, 2006, Routledge.