Neuro-linguistic programming: Its potential for learning and teaching in formal education

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Abstract

In this paper we outline the nature of Neuro-linguistic Programming and explore its potential for learning and teaching. The paper draws on current research by Mathison (2003) to illustrate the role of language and internal imagery in teacher-learner interactions, and the way language influences beliefs about learning.

Neuro-linguistic Programming (NLP) developed in the USA in the 1970's. It has achieved widespread popularity as a method for communication and personal development. The title, coined by the founders, Bandler and Grinder (1975a), refers to purported systematic, cybernetic links between a person's internal experience (neuro), their language (linguistic) and their patterns of behaviour (programming). In essence NLP is a form of modelling that offers potential for systematic and detailed understanding of people's subjective experience.

NLP is eclectic, drawing on models and strategies from a wide range of sources. We outline NLP's approach to teaching and learning, and explore applications through illustrative data from Mathison's study. A particular implication for the training of educators is that of attention to communication skills.

Finally we summarise criticisms of NLP that may represent obstacles to its acceptance by academe.

Introduction

This paper briefly describes the origins and nature of NLP (for a more detailed account see Tosey & Mathison 2003). We then indicate its potential relevance to the theory and practice of education by reporting on initial findings from a doctoral study (Mathison 2003).

NLP seems to us to hold much potential for education at all levels, yet it also needs research and critical evaluation. Our broad intent is to help bridge the worlds of NLP and formal education.[i]

Neuro-linguistic Programming: background

Neuro-Linguistic Programming (NLP) was developed at the University of California at Santa Cruz in the 1970's. Its founders and principal authors were Richard Bandler, a student of (initially) mathematics and computer science, and John Grinder, a professor of linguistics. McLendon (1989) describes the emergence of NLP between 1972 and 1981.

NLP has since achieved popularity as a method for communication and personal development. It is used by professional practitioners of many kinds - managers, trainers, sales people, market researchers, counsellors, consultants, medics, lawyers and more. There is a need for data establish the level of activity, however the UK Association for NLP has listed over 50 training organisations. The website of the International NLP Trainers' Association (INLPTA)[ii] has listings of trainers in Austria, Denmark, France, Germany, the Netherlands, Sweden, Switzerland and Turkey (and in other countries throughout the world). We know of training courses taking place in Spain[iii] and in Italy, and are aware too of written contributions from Germany (Hager 1989, 1990, 1992), Norway (Gresslien and Aasmo 1982) and Romania (Holdevici 1990).

NLP is being applied in UK education, for example through the UK NLP network called `NLPEdNet'[iv], through interest from associations such as the Society for Effective Affective Learning (SEAL[v]), and through the practice of individual teachers and learners who have received NLP training. NLP is also a recognised mode of psychotherapy in the UK, accredited by the UK Council for Psychotherapy (assigned to the Experiential Constructivist Therapies section[vi]).

What is NLP?

The title, coined by Bandler and Grinder, broadly denotes the view that a person is a whole mind-body system with patterned connections between internal experience (`neuro'), language (`linguistic') and behaviour (`programming')[vii].

NLP has been defined in various ways, often in its promotional literature as (for example) `the art of communication excellence', or `the study of the structure of subjective experience' (McWhirter 1992). These definitions reflect a tension within NLP, in that it is both a technology for communication and personal development, and (as it claimed to be originally) a methodology or modelling process (Cameron-Bandler et al 1985; Dilts 1998a; Jacobson 1994).

Thus, although NLP has come to be identified as a mode of psychotherapy in Its own right, originally it was offered as a method capable of identifying the effective aspects of existing models of communication (Gestalt, TA etc.) for pragmatic purposes. Initially (see Bandler and Grinder 1975a, Grinder and Bandler 1976) Bandler and Grinder were interested in figures such as Carl Rogers, Fritz Perls and Virginia Satir because of their reputation for excellence. Other practitioners,

apparently informed by the same framework, seemed markedly different in effectiveness. Bandler and Grinder asked what was the `difference that made a difference' between the excellent practitioners and the others. Almost self-evidently, this was not the formalised theory being used. Instead they focused on patterns of communication and interaction used in practice.

NLP writing and practice show influences from a wide array of fields; Gestalt therapy (Perls 1969), person-centred counselling (Rogers 1983), transformational grammar (Grinder and Elgin 1973), behavioural psychology, cybernetics (Ashby 1965), the Palo Alto school of brief therapy (Watzlawick et al 1967), Ericksonian hypnotherapy (Bandler and Grinder 1975b; Grinder et al 1977), and perhaps most importantly the cybernetic epistemology of Gregory Bateson (Bateson 1972). NLP adopts the TOTE (test-operate-test-exit) mode of functioning (Miller, Galanter and Pribram 1960). These processes depend on the dynamics of calibration and feedback (Wiener 1965, Bateson 1972).

Incidentally, we note that NLP is not a uniform field. For example, since the 1980's Grinder has concentrated on `new code' NLP (DeLozier and Grinder 1987[viii]), which takes an intentionally more holistic (i.e. whole body-mind) approach than the more analytical style of early NLP, a direction that has incorporated interests in (for example) shamanistic practices.

NLP, Teaching and Learning

NLP appears to hold much potential for teaching and learning. There are, for example, profound implications of adopting an underlying cybernetic epistemology in the practice of education. There are many possible examples of applications at the level of technique in education and training (e.g. Lyall 2002). NLP is commonly used to offer solutions to problems encountered in teaching, for example to do with classroom management.

Briefly, we might characterise an NLP approach to teaching and learning as follows:

- The teacher- learner relationship is a cybernetic loop, a dynamic process in which meaning is constructed through reciprocal feedback; not a transmission of information from one individual to another, separate, individual.
- People act according to the way they understand and represent the world, not according to the way the world `is' (i.e. `the map is not the territory').
- Of prime interest in NLP are the ways in which people represent the world internally, through sensory imagery (principally visual, auditory and kinaesthetic) and language. NLP is particularly interested in the way internal representations are structured, both in themselves (e.g. the location, size, brightness etc. of visual imagery), and dynamically (e.g. as

sequences). NLP assumes that the structure of internal representation shows regularities for, and is unique to, each individual.

- NLP also assumes that there are systematic relationships between this structuring and that individual's language and behaviour. A learner's internal representations and processing are reflected, in various ways, in their language[ix] and their external behaviour (e.g. non-verbal behaviour). (NLP courses train participants to observe and utilise these aspects).
- Skills, beliefs and behaviours are all learnt (e.g. skills have corresponding sequences of internal representation, often referred to as `strategies'[x]). Learning is a process through which such representations and sequences are acquired and modified.
- An individual's capacity to learn is influenced strongly by their neuro-physiological `state' (e.g. a state of curiosity rather than a state of boredom), and by their beliefs about learning and about themselves as learners (rather obviously, beliefs that one is capable of learning and that learning is worthwhile and fun are considered more useful than their opposites). Such states and beliefs are also learnt and susceptible to change.
- Such modification happens through communication between teacher and learner, which takes place through verbal and non-verbal channels, both consciously and unconsciously. The functioning of which human beings are conscious, and which can be controlled consciously, represents only a small proportion of total functioning.
- All communication potentially influences leaning. Crucially, teachers' language and behaviour influence learners on at least two levels simultaneously; both their understanding of the topic in question (e.g. the dynamic structure of their internal representations), and their beliefs about the world, including about learning.[xi]
- It follows that awareness of choice about one's own language patterns and behaviour as a teacher, and sensitivity to and curiosity about their influence on and interaction with learner's internal representations, are crucial to effective teaching and learning.

In essence, teaching is a process of (a) creating `states' that are conducive to learning; and (b) facilitating learners' exploration and/or enhancement of their internal representations; (c) to lead towards the desired goal or outcome of the context.

Language and Internal Imagery

Now we illustrate some aspects of the above through findings from the second author's doctoral study of the links between language and internal imagery, with reference to implications for teachers' use of language in educational settings (Mathison 2003). This study illustrates the way that NLP can assist understanding of the subjective experience of learners, consistent with NLP's

original emphasis on being a methodology, and also indicates potential as a research tool.

Mathison's study has explored (adult) learners' experience at two levels, through structured interviews; first, the differences in internal imagery that correspond to people's responses to micro-variations in the wording of a question or statement; and second, a teacher's influence on students' beliefs about learning.

The outcome of Bandler and Grinder's initial work, NLP's `meta-model' (Bandler and Grinder 1975a, Grinder and Bandler 1976), identifies language patterns that are believed to reflect basic cognitive processes. Mathison has, to our knowledge, been conducting the first formal testing of NLP's models of, and assumptions about, language patterns. Her enquiries also indicate that remarkably little attention is given in UK teacher training policy or practice to theories or skills of teacher-learner communication.

Internal Representations and the Role of Language in Teacher-Learner Interactions

One of the most important beliefs within NLP is that we use all our senses to code experience internally. The technical term for this is `internal representation' (the word `imagery' does not immediately conjure up the role of hearing, feeling, tasting, smelling, and movement in the coding of experience).

NLP considers that verbal reports may be literal accounts of people's inner experience. Thus when a person describes what they can `see in their mind's eye', NLP assumes that the person is experiencing internal visual imagery (which may be outside their awareness). Furthermore the qualities and characteristics of that imagery are significant, and relate in systematic ways to other aspects of that person's experience (e.g. feelings, beliefs, behaviour and so on).

Internal imagery[xii] appears in personal development (e.g. Glouberman 1989), psychotherapy, sports psychology and elsewhere. What NLP adds is a systematic model of distinctions within that imagery, called `submodalities' (Bandler 1985; Bandler and MacDonald 1988), which are thought to be related to physiological responses in the body; and an approach to how such images are connected in sequences of thought processes and related behaviour (known as `strategies', Bandler and Grinder 1979 p.28).

Mathison designed a series of statements, each with intentional but subtle variations in wording, asking respondents to 'introspect' and report on how their responses were affected.

For example, one question[xiii] explored the effects of changing the adjective 'wrong' to the adverb 'wrongly'. This deceptively simple pair of linguistic constructions only differed by two letters. Yet the two versions, the first using an

adjective, the second using its adverbial form, did not fail to produce different responses. It was summed up by Kathleen, who said *"wrong is so negative, it couldn't have been any worse, whereas wrongly means it was ... (pause) slightly wrong."* She went on to reflect on her responses to the two types of wording.

Kathleen: I did it wrong... it's a black and white still picture, and I've no choice in the matter, and that's it, but I did it wrongly, slightly over here, (indicating the imagined location of the first picture) it's still to the right of the first picture, and .... I've a very unpleasant feeling about the first picture, I've an unpleasant[xiv] *K, but this one is not quite a strong, I still feel I have... there's a choice there... (pointing to the location of the second picture).*

J. OK, yeah.

Kathleen: that I have a choice to improve , if I did it wrong then that's it. You know. (...) you did it wrongly gives me room to make it better. Wrongly notices some things that I've done wrongly so I can make that better, but with wrong I'm going to have to start all over again, I must have done a big boo boo.

Steve gave a very detailed description of his responses to the two forms. Particularly interesting was the bodily responses that he reported about the two wordings.

Steve: The kinaesthetics of wrong and wrongly are different as well. They're not particularly strong but there's a sense of relaxation, I felt more relaxed, in the second part where I'm doing something wrongly, I don't feel as tense as when I was told I did it wrong. And you don't even know what it is! (Laughter)

He went on to describe the different responses to 'wrong' and 'wrongly' in these words.

Steve: OK. (long pause) well, if I did it wrong, then it seems that that's it. Stuck, whereas if I did something wrongly it gives me a sense that there is some kind of possibility that I might be able to do it better the next time. If you tell me I did something wrong, it was wrong.

J. You're looking up and your eyes are moving.

Steve: I'm looking at a picture and I can see... it's one frame, even though it's not framed, and I see a process doing an exercise that I'm doing where.... I can see two different outcomes. ... it doesn't stop... like underneath there's a marker that says 'wrong' and then there's nothing in the future, there's a sort of blankness, and I can see myself doing something better, it's wrong, and I've stopped, and I'm going over, and I've done it wrongly, and I'm looking at what it is that I'm doing wrong, and trying to change it. That's what's going on. (my emphasis).

It appears as if for Steve, the word 'wrong' in the context of giving feedback, produces what could be a 'digital' response, one where there is clear discontinuity, because the internal representation appears to come to a sudden stop. It is as if future possibilities had been expunged from his program. On the other hand, the response to 'wrongly' could be compared to an analogue process, as it appears to elicit the experience of continuing into future possibilities. The former does not seem to presuppose the possibility of change, whereas the latter does. Five of the six respondents spontaneously volunteered the information that they sensed the critical difference between how they constructed the two events to be the amount of choice available to them.

The idea that some forms of words can increase or decrease the amount of choice available within an internally constructed (and perhaps problematic) situation is intriguing. How people use their senses internally, and the kinds of internal representations they create, are believed to be unique to every individual. NLP does not claim that there are universal regularities in the specific content or structure of such imagery, (except that the senses are always used as an interior coding device) and so emphasises the need to gather information about each individual's `map of the world'. This has clear implications for the practice of teaching and learning and is in tune with a constructivist perspective.

Learner's Beliefs about Learning

In a second phase of the research Mathison considered students' changes in the complex abstractions that they had constructed about learning, and about themselves as learners, before and after participating in an NLP course[xv].

The interviewees' transcripts showed that changes had occurred in constructs which they had about themselves as learners. There had been alterations particularly in the connections and generalisations that formed part of the 'internal' architecture of their constructs. Sometimes these changes were dramatic, sometimes only slight.

A priority in the analysis of these transcripts was to look for changes in connections at higher logical levels than those of the internal representations and sub-modalities, (which were exhaustively inquired into in the first phase of the research). The transcripts hint that what is happening in the cognitive mapping at higher levels of abstraction correlates with changes in internal representations about the person's experience of learning.

The analysis yielded five such patterns.

1. The power of the theme of failure.
2. Changes in people's beliefs about learning.
3. Changes in their views of themselves as learners,
4. Changes in their views about their own abilities and future activities.

5. The apparent links between what happens at higher logical levels, and to internal representations and sub-modalities of the conceiver.

For example, in response to the question `Do you think the way in which you can now learn has changed?', Steve said:

Steve: Absolutely. Yes. I believe that now I don't have... I suppose before I had a fear of sitting down, studying and stuff like this because I felt that maybe it was a waste of time when I could have used that time to do something practical, and I would have been afraid that the outcome wouldn't have been as desirable as I want it, that fear has gone, and now I believe that within certain limits that I can learn just about everything, anything really, well maybe I couldn't learn anything, everything, but I'd be willing to give it a go, and I think that I would use as much of a model of NLP or how J. managed to teach us, I would apply that to any new methods of learning or parts of it. It might not all be useful, but certain parts of it I would use.

This text indicates that Steve had originally constructed the nominalisation[xvi] *learning* as connections between elements such as *studying = sitting down = learning theoretical material = waste of time.* The cause effect pattern[xvii] is shown in his statement that his *original mode of studying would not lead to success.* It is also associated with fear, which could be a kinaesthetic response. The locus of control is experienced as external.

The subsequent change in language is marked in the transcript. Not only has the fear gone, but he now believes himself to be more likely to be capable of learning. He reports that he now perceives more future possibilities for himself; in cybernetic terms he experiences a greater *future* potential, having generated more outcomes for himself to which he can calibrate. There appears to be a link between his changing construct of himself, and his own future. This brings in the factor of time as possibly an additional dimension in people's constructs.

If we then consider what modal operators[xviii] are implied within his two distinct constructs about learning, then it seems that he has moved from a position of '*having to',* to one of '*wanting to'*. There has been a shift in his experience of the locus of causality. Thus, for the conceiver, not only past and present are part of the mental architecture of complex abstractions, the dimension of the future has a real and dynamic presence.

It appears that having experienced a different approach to learning, one where the emphasis was on teaching by directing process through communication, influenced the way the participants themselves thought about teaching (even though the course had not been about teaching).

The changes people experienced in their beliefs about themselves as learners may have affected how they subsequently acted. Ina's extract indicates her

realisation that it was important for learners to feel comfortable, and that 'fun' should be a part of her learners' experience. The main difference in her subsequent approach to teaching is hinted at in the following extract, where she describes the changes in what she attends to.

Ina: You see, I'm not concentrating on the way I teach, I'm concentrating on the way I'm getting feedback, whether I'm making sense, whether I'm getting through to them, whether they understood me, so I'm more aware of that, whereas in any teaching course you're always more aware of your style, your technique, (...)

Teaching therefore seems carry messages about more than one level of abstraction. Not only does it involve the transmission of information, it may also create beliefs about the nature of the activity which people are engaged in. According to Bateson (1972) learning, and learning about learning are of two different logical types. The higher level of `learning about learning' results in more profound changes in people's beliefs about learning, and about themselves as learners. These are changes in the processes guiding learning, rather than the content of the topic. They involve changes in factors such as the abstractions that people have built which form their beliefs about learning, their vision of their own future, their constructions about themselves as learners, all linking to the images, sounds, bodily sensations, tastes and smells that seem to be such an essential part of human information processing.

Teaching is as much about 'languaging' the content of the lesson, as it is about influencing the ways in which the knowledge is constructed, through communication. In our view, this indicates that teachers need to be aware of the separation between the content of their topic, and the processes whereby the topic is to be learnt.

Criticisms of NLP

We hope these brief extracts from Mathison's study illustrate some aspects of the NLP approach summarised earlier, and the potential of an NLP perspective for understanding processes of teaching and learning. Equally, we hope they underline the potential value of empirical research into some of the received knowledge in NLP.

We conclude by listing some criticisms of NLP, grouped into two main categories, with brief comment rather than a full response. These particularly concern the as yet tentative relationship between NLP and the world of academe, apparently characterised to date by mutual suspicion and even hostility.

NLP has received little attention in academic research or publishing to date. There is a sporadic literature in several fields. These include education (Craft 2001), training and development (e.g. Lee 1993; Thompson et al 2002; Trickey 1997), and management (e.g. Ashok and Santhakumar 2002; Georges 1996).

Much of this literature explores applications of NLP to the field of practice in question. Research interest, from experimental psychology, consisted mainly of studies in the 1980's that examined NLP's `eye movement' model. These studies, many of which are summarised by Bolstad (1997), found no basis for acceptance of the model.

Otherwise, publication in NLP has primarily been by and for those in the NLP community. There are numerous books by key developers (authors such as Bandler, Grinder, Dilts and others), and copious editions communicating NLP more widely. The most comprehensive reference source is Dilts' (2000) `Encyclopedia of NLP'. There has been one attempt at a journal in an academic style, `NLP World'[xix], which was published from 1994 - 2001.

It seems unlikely that a handful of unfavourable experimental studies accounts for this lack of academic interest. NLP's Californian origins and its initial, explicit anti-theoretical stance, no doubt contribute to this situation. Early statements from the originators of NLP dismissed interest in articulating or acquiring theory, for example; `We have *no* idea about the "real" nature of things, and we're not particularly interested in what's "true". The function of modeling is to arrive at descriptions which are *useful*.' (Bandler and Grinder 1979 p.7). Bandler and Grinder's intent, perhaps, was to stay close to experience and avoid abstract discussion about truths of human experience. It seems that this stance has persisted, even if it is not shared by all leading NLP practitioners. Dilts (e.g. 2000), McWhirter (2002) and Robbie (2000), for example, clearly see the need to engage with the theoretical dimension of NLP.

The level of NLP training activity, publication, and apparent widespread use in contemporary society, including in education, appear to merit research attention, regardless of whether one accepts NLP as theoretically supportable.

Questions about Theory

One prominent question about NLP concerns its theoretical base. For example, Craft (2001) questions, appropriately, the extent to which NLP can be said to have a coherent theoretical base, compared with being a collection of models and practices. We suggest that NLP may be regarded as a transdisciplinary (Gibbons et al 1994), in the sense that it draws on sources from academe and from elsewhere, and has been generated through application more than being deduced from axioms.

It seems unarguable that to become regarded as academically credible there is a need for NLP to be more thoroughly theorised, particularly to consider how it relates to and differs from existing theoretical perspectives such as semiotics, phenomenology, discourse analysis, and more[xx]. We do not assume that all those involved in NLP necessarily desire this, and we acknowledge that such a

concern may reflect our own experience at the boundary between NLP and academe.

The language of NLP as practised and as communicated in trainings (such as the aphoristic expression of the presuppositions, see above), represents a mismatch with academic expectations, and may lead to NLP being dismissed as (for example) `airport bookstore psychology'. This is not to suggest that such aphoristic expressions are inherently invalid, rather it is to note the expectation of a more thorough working through of the underlying theoretical structure of NLP.

There is a problem common to other psychotherapeutic traditions (such as psychoanalysis, Transactional Analysis, and more) if NLP aspires to offer both a method of practice and a theory of human nature and behaviour. In this respect the early pragmatic emphasis of Bandler and Grinder may well be justified; in other words, should the theory behind NLP as method be articulated using other theoretical frameworks?

There is also the question of to what extent NLP has taken account of related theoretical developments, and to what extent its models are oversimplified or outdated. For example, the need for updating of NLP's core models of language, by taking cognisance of developments in linguistics, is acknowledged by developers in the field such as Robbie (2000) and McWhirter (2002).[xxi]

There has therefore been little exploration of the above questions. Nor has there been much opportunity for potential insights from NLP to challenge contemporary theories. The complementary challenge for academe is that, to the extent that the NLP's claims about phenomena are valid, are existing theories adequate to account for them? This seems a potentially fruitful dialogue, but one that to date has not taken place.

NLP as a Movement

Other typical criticisms of NLP concern its nature as a movement.

NLP appears to be a relatively closed community, if indeed those who have become trained in NLP can be regarded as a `community'. (One might ask whether academe appears any less closed or exclusive to outsiders). It is, in our experience, a field characterised by strong interests in the innovation and application of models and techniques for human development, but also (in our perception) one in which there is little critical evaluation of its own theories and practices.

This is distinct from the routine empirical testing of models that takes place in all NLP training courses. Without the dimension of critical reflection, it may be difficult to decide to what extent participants are trained primarily to observe data that confirm the NLP model in question. Whilst the rhetoric of NLP is actively to

encourage participants to pursue their own empirical testing of NLP models, it is debatable to what extent training courses in practice facilitate the exploration of counter-evidence.

This, of course, is also pertinent to trainings in many comparable modalities (e.g. psychotherapies). Nevertheless, to a sociologist the acquisition of the language, behaviours and perspectives of NLP might well resemble a process of initiation or socialisation (see also Tosey 1991).

Research into NLP is undoubtedly needed, for example in order to evaluate practitioners' claims and to represent the views and experiences of clients. `Users' - training course participants and clients - sometimes seem to have little voice except as testimonials for trainers' publicity. To the best of our knowledge, there is little or no independent evaluation of, or evidence base for, the effectiveness of NLP. While efficacy studies in fields such as counselling and psychotherapy as a whole are fraught with difficulty, such evaluation of NLP would be of great value. Otherwise the field may rely overmuch upon the accumulated experience and anecdotes of the practitioner/developer community - perhaps much like psychoanalysis when it was first developed.

Finally, it is common (based on the reported experience of our own students) for people to have experienced NLP as overly instrumental and even `manipulative'. This is concerning and interesting. One possible source may be the influence of, or peoples' perceptions of, the founders. Bandler is often characterised as a maverick genius, prepared to take outrageous actions in order to achieve an outcome (see McLendon 1989); and Grinder was (also according to McLendon 1989 p.9a) involved in covert activities in connection with the US army. Equally, NLP is a technology easily available to members of the public, and it may be seized upon to achieve `quick fixes'. NLP is no different from other related fields of practice in that wide variations in style of usage may exist. What is interesting is that instrumental use of NLP, in our view, violates the (systemic) presuppositions on which it is purportedly based.

Summary

In this paper we have described the nature and origins of NLP; outlined its theoretical base; considered its relationship to theories of learning and development, and its approach to teaching and learning; reported examples from a recent research study; and indicated criticisms that NLP may need to address if it is to become accepted as a theory and practice in the field of teaching and learning.

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Notes:

i. We have each been trained in NLP, the first author to `Master Practitioner' level in the UK (in 1992), the second beyond Master Practitioner level to acquire Trainer status (accredited by Richard Bandler). We have gained much from using NLP in our professional practice in higher education, as a topic for research, and as qualitative research tool (for example, Tosey and Mathison 2002).

ii. http://www.inlpta.com/ , accessed 9.9.2003. There are a number of competing NLP accrediting bodies or professional associations worldwide, such as the INLPTA.

iii. http://www.sensorysystems.co.uk/index1.htm , accessed 9.9.2003.

iv. http://www.new-oceans.co.uk/ednet/index.htm , accessed 12.9.2003

v. http://www.seal.org.uk/ , accessed 9.9.2003

vi. http://www.psychotherapy.org.uk/ , accessed 12.9.2003

vii. NLP has no direct connection to neuro-science, or to computer programming. It is entirely separate from the field of `Natural Language Processing' which also uses the acronym NLP.

viii. see also http://www.nlpwhisperinginthewind.com/index.htm accessed 12.9.2003

ix. A core model of NLP, its `meta-model' of language (Bandler & Grinder 1975a), based on transformational grammar, identifies prominent patterns of language that are considered to reflect typical patterns in internal representations.

x. One well-known example in NLP is that of the `spelling strategy' (Bandler and Grinder 1979 p.33), which identifies the sequences of internal representations and imagery used in spelling, and claims to differentiate between effective and ineffective strategies. Identifying such a strategy is a simple example of a process of modelling.

xi. Mathison's doctoral study is particularly concerned with this latter, epistemological function of language.

xii. Which includes visual, auditory and kinaesthetic dimensions

xiii. Question 9. Think of something you might have done better. What are the differences between saying to you '*you did that wrong,* and *you did that wrongly?'*

xiv. K denotes the kinaesthetic representational system, which includes feelings and body sensations.

xv. The questions that formed the bases for these interviews were:

- Why did the student decide to do the course?
- What did he or she think they would achieve?
- What do they think they will achieve now that they had done the course?
- What did they think was different about the course?
- What did they think was different about the way they learned?
- What has changed about their ideas about learning?
- How do they think they may have changed as individuals?
- What are the sub-modality differences between their memories of previous experiences of learning, and that on this NLP course?

xvi. `nominalisation' is one of the NLP meta-model language patterns, referring to a word in noun form that describes a process (e.,g. `relationship', `learning')

xvii. `cause-effect' is one of the NLP meta-model language patterns, referring to a causal linkage between A and B

xviii. `modal operators' (of necessity and possibility) are one of the NLP meta-model language patterns (words like `must', `should' `could', `can', `might', `will')

xix. http://www.unil.ch/angl/docs/nlpworld/ , accessed 12.9.2003

xx. Mathison's study does include theoretical comparisons with related perspectives on language and cognition, for example, the work of Fauconnier (Fauconnier 1997; Fauconnier and Turner 2002).

xxi. The NLP approach appears similar to the learning theory of Vygotsky (1939), and may add a dimension by identifying language structures that influence learning. It appears to be supported in some respects by work in related fields (e.g. Talmy 1985; Johnson 1987; Fauconnier 1997; Fauconnier and Turner 2002).

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