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# Family Therapy and the Theory of Logical Types

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*This paper re-examines the theory of logical types as it relates to family therapy. It examines the problems of Russell and Whitehead's original theory and the way in which it can provide an understanding of the nature of psychotherapy. Recent theoretical advances are discussed and some techniques specifically informed by the theory of logical types are discussed with reference to case material.*

## THE THEORY OF LOGICAL TYPES

"In so far as behavioural scientists ignore the problems of *Principia Mathematica,* they can claim approximately sixty years of obsolescence." (Bateson, 1973, page 250). Bateson was referring to the theory of logical types. This original theory, as well as Bateson's and other authors' subsequent contributions to an understanding of levels of abstraction, has very useful applications to the understanding and practice of therapy. Making this application is the broad aim of this essay. First, however, we must retrace the origins of the ideas to be used.

The theory of logical types, developed by Bertrand Russell in 1910 in collaboration with Alfred Whitehead (Whitehead & Russell, 1910), was an attempt to deal with the problems that levels of abstraction posed for mathematical logic and in particular the difficulties of self-referential paradox. Paradox had to be circumvented, particularly by mathematical philosophers, because it spoilt the purity of philosophical discourse. When a paradox was encountered, the whole argument generally had to be thrown out and a fresh attempt made to resolve the problem.

The difficulty of self referential paradox can be exemplified by the Cretan, Epimenides', statement, "All Cretans are liars". The problem here is that Epimenides is a member of the class 'Cretans', and thus 'liars', as well as a commentator on that class. Each hypothesis we make about Epimenides and Cretans entails its own denial.

The Theory of Logical Types attempted to deal with this troubling paradox. Basically things or items may be assigned to types which will vary according to their level of abstraction. An individual member (devoid of complexity) is the lowest type; a class of individuals is one type higher; a class of classes of individuals is one type higher, and so on.

The purpose of the hierarchy was to prevent whatever involves all of a collection from being taken as one of that collection. The class cannot be a member of itself, nor can one of the members represent the class. In this way, the question whether a particular class is a member of itself presents two distinct types and so is ruled out as meaningless.

Further, Russell argued that if one specified the logical level of a term or concept, self-reference would be prevented. In this way logical typing was to prohibit expressions such as Epimenides' statement that all Cretans are liars from oscillating between different logical levels of meaning (Keeney, 1983).

So paradox could be prevented and the discourse of philosophy kept pure. But legislating such purity in the philosophical laws and theorems did not prevent them from occurring in reality. This turns out to be a huge blessing.

Russell and Whitehead themselves became less and less certain of the integrity of the theory of logical types. They seemed to admit its importance while acknowledging some basic difficulties with it (Lowe, 1985, page 275), and later when Spencer-Brown (1973) invented his "Laws of Form" which showed how self-referential paradox might be accepted into logical discourse, Russell was said to be relieved (Lowe, 1985).

Probably the most basic challenge to Russell's Theory of Logical Types is one which was first enunciated by von Foerster and cited by Keeney (Keeney, 1983), but which is now basic to a whole stream of family therapy (Hoffman, 1985). Von Foerster claimed that, far from being outlawed, self-referential paradoxes can be used as conceptual building blocks for an alternative view of the world. An observer always participates in what he/she observes and so all statements, being statements by observers, are self-referential and hence laden with paradox (Keeney, 1983, page 30). This idea informs the difference between so-called 'first order' cybernetics in which the observer remains outside that which is observed and 'second order' cybernetics where the observer is included in the total arc (Hoffman, 1985). Bateson (surely a founder of so-called second cybernetics) re-introduced the Russellian assertion that no class can be a member of itself. "Theorists of behavioural science", he wrote, "commit errors which are precisely analogous to the errors of classifying the name with the thing named — eating the menu card instead of the

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dinner.'' (Bateson, 1973, page 251). So, Bateson said, errors were being made by confusing logical types, but he then, along with others like Wynne (1976) and Fry (1963), regarded this mixture of logical types to be the basis of creativity.

In particular, Bateson used his ''logical type'' analysis to understand learning and language (in 'The Logical Categories of Learning and Communication', 1964); schizophrenia (in 'Towards a Theory of Schizophrenia', 1956; 'Double Bind', 1969); and play (in 'A Theory of Play and Phantasy', 1955). All are reprinted in *Steps to an Ecology of Mind* (Bateson, 1973).

I will summarise briefly some aspects of Bateson's theory of play because it is this which has most to do with psychotherapy.

Bateson concluded that play in animals and in humans is always accompanied by a meta-communication of 'This is play', meaning ''These actions in which we now engage do not denote what those actions for which they stand would denote'' (Bateson, 1973, page 152). In logical types, ''for which they stand'' is on one level and ''play activity'' is on the next. ''The playful nip denotes the bite, but it does not denote what would be denoted by the bite.'' (Bateson, 1973, page 153). In the theory of logical types, such statements are inadmissible as two different logical levels; two degrees of abstraction are being mixed together as one. Play is just one example of how real life does not always conform to Russell's ideal. Humour, art and psychotherapy are others.

The next step is that play bears a great likeness to psychotherapy which, according to Bateson, is ''an attempt to change the patient's meta-communicative habits'' (Bateson, 1973, page 164). The process of therapy must contain communication at a level meta with regard to the rules by which the patient operates. There must be communication about change in the rules. Bateson's metaphor for this was two players engaged in a game of canasta according to standard rules. While the rules are unquestioned by both players, the game is unchanging (i.e. no therapeutic change will occur — and many attempts at psychotherapy fail for this reason). At a certain moment, the players cease to play and start a discussion of the rules. Their discourse is now of a different logical type from that of their play. They may then return to play but with modified rules (Bateson, 1973). Notice that players avoid paradox by separating their discussion of the rules from the play and a similar process can be observed when young children attempt to change the rules of the game in the middle of play. Bateson notes that it is this separation which is impossible in psychotherapy. In therapy the rules are implicit but subject to change. Change in the rules occurs as part of the ongoing game and it is this combination of logical types within a single meaningful act that gives therapy the character, not of a rigid game like canasta, but that of an evolving system of interaction (Bateson, 1973, page 165). In play, Bateson sees paradoxes as a characteristic of an evolutionary step. Similar paradoxes are a necessary ingredient in that process of change which we call psychotherapy (Bateson, 1973). Therefore, therapy contains by its nature a paradox involving the level of interaction and the level of rules about

that interaction. Further than that, however, the therapist will be part of the family but will not act entirely as one of them. The therapist will be a therapist and a person. The family system and the therapeutic system are two levels of abstraction mixed together in the same activity. Normal or sociable ways of responding will and will not operate in this social encounter. Further, the therapeutic context will contain real-life conflicts but be about real-life conflicts and (as in paradox) in many therapies there will be a movement backwards and forwards, oscillating between these two levels.

The logical types issue in therapy is further illustrated by the very familiar metaphor ''the map is not the territory''. Bateson argues that language bears to the objects which it denotes a relationship comparable to that which a map bears to a territory. It is comparable also, it might be added, to that which family therapy bears to the daily life of the family. The licence to make alterations in therapy, or in the map, or in language, or in play (in all these elevated logical levels) is what informs all change. The territory does not change (Von Foerster, 1973), the family does not change (Varela, 1979); people's conceptions change and therefore their actions and interactions alter.

Von Foerster claimed once that the map was the territory (Segal, 1986). For radical constructivists, map and territory are the same. Bateson always pointed to the fact that map and territory are not the same but that at times we get them confused (creatively or in error). Bertrand Russell would always have kept map and territory completely distinct. But from a psychotherapist's point of view, map and territory must both be said to be necessary for a useful outcome.

In this way logical types, which are often confused, need separating out — 'the map is not the territory' does this. On the other hand, logical types which are subliminally confused may need to be consciously brought together or mixed so that they may be discriminated. Marshall McLuhan's ''The Medium is the Message'' is an example of this. Keeney (1983), quoting Lewis Carrol's *Sylvie and Bruno*, puts further light on this metaphor:

> ''That's another thing we've learned from *your* nation'', said Mein Herr, ''Map-making. But we've carried it much further than *you*. What do you consider the *largest* map that would be really useful?''
>
> ''About six inches to the mile.''
>
> ''Only *six inches*!'', exclaimed Mein Herr. ''We very soon got to six *yards* to the mile. Then we tried *a hundred* yards to the mile. And then came the grandest idea of all! We actually made a map of the country on the scale of *a mile to the mile*!''
>
> ''Have you used it much?'', I enquired.
>
> ''It has never been spread out, yet'', said Mein Herr. ''The farmers objected: they said it would cover the whole country and shut out the sunlight! So we now use the country itself as its own map, and I assure you it does nearly as well.'' (Keeney, 1982, page 51).

The territory must never do for the map otherwise language, play and the whole enterprise of psychotherapy would go missing in the darkness.

Once it is clear that separating logical types and thus preventing paradox is impossible as a law or injunction,
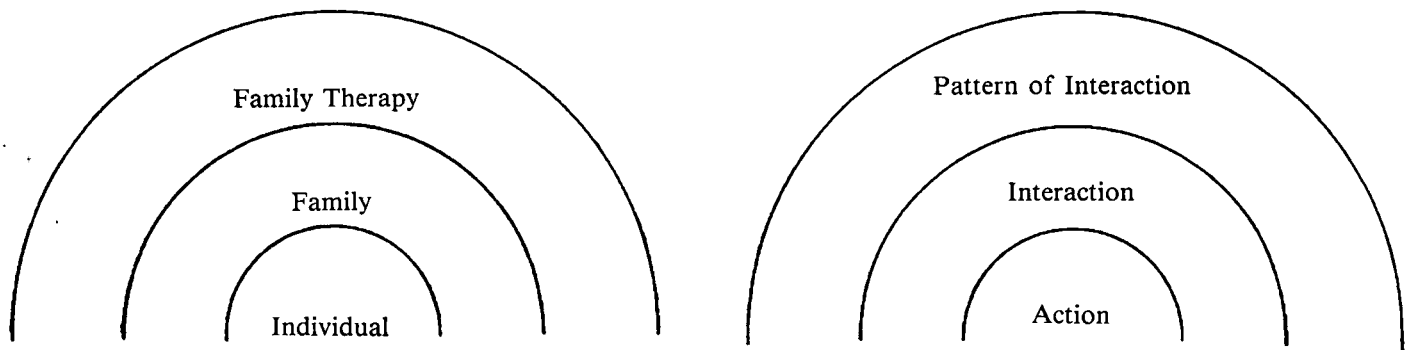
Figure 1 (two nested-arc diagrams side by side)

Left diagram (outer to inner): Family Therapy / Family / Individual

Right diagram (outer to inner): Pattern of Interaction / Interaction / Action

**Figure 1**

logical types become useful as a descriptive tool — a way of drawing distinctions.

Keeney's contribution to the application of logical types is in highlighting the recursive nature of any so-called hierarchy of types. Such a hierarchy of types, like any linear formulation, is useful provided we remember that it is a segment of a larger recursive process. Keeney writes:

> Occasionally it is useful to unwind a recursive process and pin it on a structure of logical types. Such a method is like paper chromatography, where we get a linear record of a chemical process. This linear perspective provides a difference that enables us to discern previously inaccessible patterns. We can work with logical typing in a similar fashion as long as we think of it as a tool for marking orders of recursion (Keeney, 1983, page 58).

A way of keeping this recursive or systemic nature in our minds, while talking about logical types, is instead of seeing hierarchies as a linear structure with discrete levels, to see them as a series of Russian dolls or an incorporated and nested series of levels (See Figure 1).

This nested quality of logical types serves to address some of the problems which theories stressing hierarchy have engendered. A set of Russian dolls makes one whole, but also can be seen as component parts: "If we keep both punctuations, our epistemology is richer." (Keeney, 1983, page 47).

A further contribution Keeney makes to the discussion of logical types is his preoccupation with aesthetics and pattern rather than science and reduction. He writes: "Since an individual or family enters a therapist's office with established patterns of punctuation, the therapist must have a way of punctuating their punctuation (or an epistemology about their epistemology)." (Keeney, 1983, page 27). This is similar to Bateson's idea of a communication meta to the rules by which the patient is operating: "If you want to think about their categories you have to have an epistemology that is more abstract than the categories into which they divide life" (Keeney, 1983, page 27).

In family therapy, the obvious movement towards increasing abstraction would be from the action presented by the clients to the interaction (not always presented), to the pattern of interaction. "Forgetting about these broader patterns is what gets us into trouble" (Keeney, 1983, page 58). Watzlawick *et al.* (1974) assert that change always involves the next higher level (for example, position, motion,

acceleration). Put simply, access to the next higher logical level of abstraction provides a possible way out of a static system in which problems have been maintained. As such, it would be an important tool for the practice of psychotherapy.

## THE PRACTICAL APPLICATION OF LOGICAL TYPES TO FAMILY THERAPY

In the previous section it was suggested that, in general terms, psychotherapy contains mixed logical types and consequent paradox. This occurs because, like play, the level of the interaction and the level of the rules about that interaction are simultaneously being addressed.

This places the therapist in a position of being both a member of the family and not a member of the family, and it means the therapy will be real-life but also about real life. From this general proposition that combined logical types form some of the bases of psychotherapy, specific techniques and ideas for the practice of therapy emerge, using logical types as a metaphor.

The nested layers of types remains the visual metaphor. Two such nests may be as shown in Figure 1 above.

These three nests mirror exactly the logical types suggested by Russell and Whitehead (Figure 2).

Some very basic techniques in family therapy may be understood in terms of logical types. Classes are collections of entities with specific characteristics common to all of them, but entities do not usually belong to one class only. Classes are not tangible objects but are constructs of the mind. So, not only are these classes capable of variation and change, but in addition assignment to a given class is a matter of choice. It is precisely this construction of classes
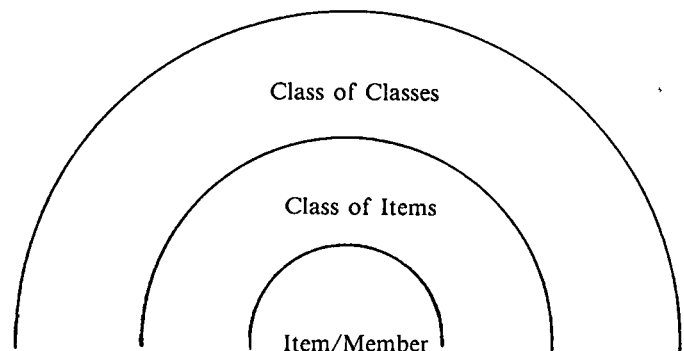
Figure 2 (nested-arc diagram, outer to inner): Class of Classes / Class of Items / Item/Member

**Figure 2**

and the assignment of items to those classes which forms the basis of what family therapists refer to as reframing. (See Watzlawick *et al.,* 1974, for further exploration of this theme). · ·

Double description, Bateson's idea that information and change flow from the comparison of two or more things, has generated many techniques in family therapy (White, 1986), most notably the whole range of so-called difference questioning (Tomm, 1987). Almost always these techniques move the action into the interaction and move the interaction into an examination of patterns of interaction. They are therefore precisely analogous to the combining of logical types.

Two further methods emerging from the theory of logical types, which the author has experimented with, also depend on the mixing of logical levels. Each will now be discussed with reference to case examples.

### 1. Meta-Symptoms

This idea emerges from the observation that sometimes when people become angry they become more angry as a result of perceiving themselves to be angry. Children confirm this observation by often referring to being either 'angry' or 'angry-angry'. In a similar fashion depression can be depressing and this is often called despair. One hears of people being sick of being sick and anxious about their fears. It appears that these two levels of symptom are analogous to the logical levels described above. The method currently being experimented with in relation to these symptoms and meta-symptoms is simply to get people to identify these meta-symptoms and begin work, not on the symptom itself but on the meta-symptom. Parents and other family members are often very helpful in efforts to change meta-symptoms. Often this helpfulness far exceeds their motivation to deal with the original symptom, with which they have become bored and frustrated. Frequently it seems, change in a meta-symptom occurs in parallel with similar changes in the symptom. This method appears to give family members a starting point for a way out of the difficult relationships and behaviours within which they find themselves caught.

Bateson referred to a so-called dormitive principle. This is the phenomenon by which the name given to a behaviour becomes an explanation for that behaviour; for example, a set of bizarre or unusual behaviours is referred to as schizophrenia and then these behaviours are in time conceptualized as being the product of schizophrenia. The principle behind separating symptoms from meta-symptoms and dealing first with the latter is to reverse the dormitive principle or to offer insurance against it. The principle of meta-symptoms aims to put people first in charge of the level which would supply the name and after that encourage them to take charge of the behaviour itself. When dealing with children, and particularly adolescents, one of the most striking and helpful examples of this process is to utilize the concept or frame of reputation. Reputation can be separated from actual behaviour and a start made on beating the reputation before a start is made on beating the behaviour which gave rise to the reputation. A sense of mastery over reputation often leads on to mastery over the original

behaviour. For example, Chad was a 14 year old boy constantly in trouble for stealing and lying. Midway through the interview, he explains some things about his lying.

*Chad:* And when I lie, right, I go red in the face because I feel guilty, and then when I feel guilty about something I go red in the face and they reckon I'm lying.

*Therapist:* I see.

*Chad:* So, if I feel guilty or something then they reckon I've lied because I've gone red in the face, but really I'm just feeling guilty.

*Therapist:* So when you feel guilty, you go red in the face and your parents assume that you've been lying. So you need to tell them differently when you're guilty and when you've been lying.

*Chad:* Yea, but they wouldn't understand; they wouldn't care.

*Therapist:* Ah, but how do they know at the moment when you've been lying?

*Chad:* Because I go red in the face.

*Therapist:* Any other way?

*Chad:* No.

*Therapist:* So you lie honestly, do you?

*Chad:* Eh?

*Therapist:* So you lie honestly, do you?

*Chad:* I don't understand.

*Therapist:* Well, I mean, somebody who always goes red in the face when they lie is always telling people that they're lying .... and that means they're lying honestly. (*Chad nodding his head*) Do you always lie honestly, or do you sometimes lie dishonestly and get away with it......?

A common example of how meta-symptoms can restrain change, if they are not dealt with first, is that of the worry and concern about a problem becoming greater than and detaching from the problem itself. In the following vignette this process has led to initiative and responsibility being placed all round the system with the likely effect of no change in the problem:

Shirley was a 16 year old girl presented with her mother because of severe behaviour problems, mostly in the context of other children. Shirley's mother and father were separated, and Shirley lived at home with her mother and her older brother.

*Therapist:* Who's more worried about the problem, you or your Mum?

*Shirley:* Mum.

*Therapist:* Who's more worried about the problem, you or your Dad?

*Shirley:* I don't know.

*Therapist:* Who's more worried about the problem, you or your brother? He's been 16 and probably got into trouble himself. Is he worried about the trouble you're in?

*Shirley:* Yes.

*Therapist:* Is he more worried than you are?

*Shirley:* I don't know.

*Therapist:* But you're pretty sure that your mother is more worried than you are?

*Shirley:* Yes.

*Therapist:* How come?

*Shirley:* I don't know.

*Therapist:* So, what? Your Mum invents solutions for your worries, does she?

*Shirley:* Sometimes.

*Therapist:* So your Mum worries more about your worries than you worry about your worries and sometimes she then tries to invent solutions about your worries? Is that right?

*Shirley:* (*Laughing*)

*Therapist:* Are there too many worries in there?
(*Mother and daughter grinning*)

*Therapist:* You see, I'm worried that if your mother comes to me more worried about your worries than you are, I might become more worried about your mother's worries, and it'll just pass on up the line, you know, and nobody will be worried about their own worries, and they'll all be worried about everybody else's worries. (*Pause*)
Now, that's all very well when you're two years old. When Shirley was two and she had asthma .....

Sometimes the problem with the problem is not immediately evident and clients expect therapists to be interested in asking questions only at the problem level where things are more certain and therapeutic leverage is difficult.

Tina was a 13 year old girl who had been refusing to go to school for much of the previous two years. She had been seen by many clinicians, to no avail. In the first session the therapist asked Tina about the problem, in the presence of her mother and father.

*Therapist:* Tina, you said you were nearly 13. Is that right?

*Tina:* Yes.

*Therapist:* How do you spell your name?

*Tina:* TINA.

*Therapist:* What's the problem from your point of view? Are there problems?

*Tina:* I can't go to school.

*Therapist:* Why is that a problem?

*Tina:* (*Pause*). . . I don't know.

*Therapist:* What's the problem with not being able to go to school?

*Tina:* I don't know.

*Therapist:* Why is not going to school a problem?

*Tina:* Because of work.

*Therapist:* What about work?

*Tina:* Because it's hard at times.

*Therapist:* But you wouldn't have to work if you didn't go to school.
(*Pause*)
Sorry I'm getting confused. I say, what's the problem? You say, not going to school. I say, what's the problem with not going to school. How come not going to school is a problem?

*Tina:* I don't know.

*Therapist:* Who is it a problem for?

*Tina:* For me.

*Therapist:* For you, why? — Isn't it nice at home?

*Tina:* Nods

*Therapist:* So what's the problem? I mean what's the problem with kids not going to school?

*Tina:* It isn't.

*Therapist:* It isn't. I mean when I came to work today I noticed as I usually do. I drove up West Coast Highway. And ah there were about thirty kids surfing and it was school time. They seemed to be having a good time, it's a nice sunny day. So what's the problem? Do you want to go to school?

*Tina:* No.

*Therapist:* You don't want to go to school. So what's the problem with not going to school?

*Tina:* I don't know.

*Therapist:* Why is it a problem that you're not going to school? (*Pause*) Is it a problem for your parents that you don't go to school?

*Tina:* Nods

*Therapist:* It is. Is it a problem for you?

*Tina:* Yes for me.

*Therapist:* In what way is it a problem for you?

*Tina:* I don't go to school.

*Therapist:* Ya, are you missing out on anything?

*Tina:* Yes.

*Therapist:* What?

*Tina:* Work.

*Therapist:* Work. Okay. Why is work important?

*Tina:* So I can get a good job.

*Therapist:* So you can get a good job! Oh! What kind of job do you want?

*Tina:* To be a vet nurse.

*Therapist:* Vet nurse! You mean a nurse for helping animals who are sick?

*Tina:* Yes.

*Therapist:* And what kind of schooling would you need for that?

*Tina:* Lots.

*Therapist:* Yeah, how much? Year 12 or Year 10.

*Tina:* Year 12.

*Therapist:* So 9, 10, 11, 12; is that four years?

*Tina:* Yes.

*Therapist:* So you've got 4½ more years of school to go, so you have enough schooling to become a vet nurse. Is that right?

*Tina:* Yes.

*Therapist:* How badly do you want to become a vet nurse?

*Tina:* I've always wanted to be one. I used to pick up the bugs.

*Therapist:* So how badly do you want to be a vet nurse, more badly than you want to go to school or not? Do you want to be a vet nurse badly enough to go to school?

*Tina:* Yes.

*Therapist:* How much of you wants to go to school? Do you know about percentages? I'll draw it for you. I want to know how much of you wants to go to school and how much of you wants to stay at home.

*Therapist:* (*drawing*) That's all of you. If you were over the middle you'd go to school all the time; if you were under, you wouldn't go to school all the time.
How much of you wants to go to school (*drawing*) Stop me.

*Tina:* Stop.

*Therapist:* Just under there?

*Tina:* No, on it.

*Therapist:* So half of you wants to go to school and half of you doesn't want to go to school?

*Tina:* Yes.

*Therapist:* How much of you wants to be a vet nurse? (*Drawing*) Stop me.

*Tina:* Stop.

*Therapist:* The whole of you wants to be a vet nurse. Which part is winning at the moment. No-one's ever right on half-way.

*Tina:* I'm under.

*Therapist:* About there? You've still got that much that wants to go to school. When do you want to go to school?

*Tina:* I don't know.

*Therapist:* I mean, when does it feel like you'd like to go to school. Do you ever wake up in the morning and say, yes, I'd like to go to school today. I want to be a vet nurse and it will be O.K. at school today. When do you feel like that?

*Tina:* I don't know, I think it's when it's sunny.

*Therapist:* When it's sunny. So did you feel like that today?

*Tina: Nods.*

*Therapist:* So sunshine has something to do with it. Well Western Australia might be a good climate for you to go to school in then. I mean, I think they have just about more sun in Western Australia than anywhere else in the world. So you've chosen quite a good climate. A much better climate here than where your Mum was in Holland. In Holland I wouldn't hold out much hope for you.

The therapist's movement to the next higher logical type, in this case the problem with the problem, often produces therapeutic leverage. On the other hand, it is interesting to observe that a therapist's movement to a less abstract level of logic or to a mixing together of logical types in a haphazard and unprepared way may, in fact, originate many muddles.

For example, Janine, a 9 year old girl and her mother were being asked about their difficulty. Janine was clearly more forthcoming than her mother.

*Therapist:* So what's the problem that you've come about?

*Mother:* Well I'm concerned about Janine worrying at night.

*Therapist:* (*turning to Janine*) What do you worry about at night?

Here the therapist's question is potentially adding to an already muddled system by moving too soon to the least abstract level. This falls in with the prevailing frame and is therefore unlikely to result in change. Bateson said, "If you want to think about their categories you have to have an epistemology that is more abstract than the categories into which they divide life." (Keeney, 1983, page 27).

### 2. The Child is Father to the Man

The second method which directly and deliberately mixes logical types depends on discriminating and then combining the individual's level in a family with one or more of that person's role levels in that family. For example, parents who are concerned about their children are partly concerned about their own childhood. Because of this, these parents talk about the way they were parented, and hence about the parenting they are currently doing. The method involves combining the two logical levels of any statement about parents and children.

Daniel was the father in a family of five. He was married to Barbara and the couple had four children: two boys of 18 and 16, a girl of 13 and a boy of 10. One problem in the family was that Daniel couldn't get on with the oldest two boys. They were clearly his rivals, young men with intelligence and good looks. The youngest two children had no problems in their family. In time it emerged that Daniel was the youngest of three in his family of origin and his older brother and sister had severe conflicts with their dictatorial father. Daniel explained how he spent his childhood observing these clashes and working out how not to have them himself. Consequently, he had never crossed his own father in forty years; he had learnt very well. However, Daniel had built up 'entitlement', as Nagy would call it (Boszormeny-Nagy & Spark, 1984): entitlement to be treated with respect and not to be crossed. But his eldest sons took him on at every occasion and his vain attempts to dictate to them only made things worse. Daniel was asked what, from his carefully acquired information when he was a younger brother, had he discovered that would help his father in his terrible relationship with his two oldest children? Daniel's response was to sit back in his chair and say, "That is the very best question you could have asked me." The ensuing discussion produced a number of new ideas for Daniel to try in the relationship with his children. His apparently objective status when viewing his own childhood experience significantly altered his perspective on the subject of the battle he was engaged in with his two children.

There are frequent opportunities to use this method to explore how people's relationship with their children plays out aspects of their own childhood, but it might also be used profitably in reverse. An example of this is to ask the out-of-control teenager, "As a mother yourself one day, not so far off, what would you do if you had a 14 year old daughter who wanted to.....? Would you be worried about her?"

In experimenting with the use of logical types in family therapy, two factors return again and again as of central importance. The first is the *position* that the therapist occupies in the system he or she is dealing with; the second is the *timing* the therapist uses in intervening in the system. Both of these axes, position and time, are crucial in what happens with the logical levels in a system, and it appears to be the freedom to move position to intervene at a specific time that is the most fundamentally therapeutic lever that a family therapist has.

## CONCLUSION

Bateson wrote: "Our central thesis may be summed up as a statement of the necessity of the paradoxes of abstraction. It is not merely bad natural history to suggest that people might, or should, obey the theory of logical types in their communications; their failure to do this is not due to merely carelessness or ignorance. Rather, we believe that the paradoxes of abstraction must make their appearance in all communication more complex than mood signals, and that without these paradoxes the evolution of communication would be at an end. Life would then be an endless inter-

change of stylised messages, a game with rigid rules unrelieved by change or humour'' (Bateson, 1973, page 166).

The fundamental issue which emerges from the study of the theory of logical types is that logic (and the theories which are constructed for its use) is important in rigorously understanding and describing what therapists do, but these theories should never be believed in as a model for how the world works or how therapy works. This is because the world is illogical next to our logical maps of it. When held up against mathematical logic, Nature fudges it and family therapy is an imaginative and creative process which depends on this.

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