

## Chapter 12 – Concluding Discussion

### 12.1 Some concluding reflections on my study

#### 12.1.1 How does this thesis differ from my original research concept?

In this concluding chapter of my thesis, I shall begin by looking back at my aims at the outset of my research and discuss how well I think I have fulfilled them.

As I discussed in Chapter 1, I started out on this study as a displaced biologist. I wanted to draw parallels between the biological systems that I knew about, and human systems about which, in academic terms, I knew very little. I wanted to conduct my study within the framework of a newly emerging research approach called Inclusionality, and within that framework I wanted to focus on issues concerning communication, systems, relationships and concepts of boundaries.

As with any new research study, I started out by finding my feet and acquainting myself with the research domain I had chosen. In my case, those early stages were a big challenge, as I'd moved into the domain of psychology, which was entirely new to me. Gradually I began to become familiar with the areas of psychology that were most relevant to my research, and the work that I have presented here does, I feel, add something new to both psychology and biology. The depth to which my study has become situated in psychology was not something that I envisaged from the start. At the outset I felt that I would be studying actual biological metaphors, rather than the philosophy and mechanism of metaphor itself, looking perhaps at what human businesses might learn from the way ant societies evolve and so on. I had a suspicion that some of the processes I was interested in might have more profound implications, but wasn't sure whether the extent of that would emerge through my study.

It was through my study of metaphor that I realised the significance that biological metaphors such as the flow-form network might have. At the outset of my study I didn't think that metaphor would play a large part in my work, as I wasn't aware of the breadth and depth of the existing literature on the subject. Later, I realised that metaphor is a thread that runs throughout my research, and consequently it features more strongly in the finished thesis than I originally supposed it would.

The inroads that I have made into Inclusional Theory were not unanticipated. From the outset I knew that I wanted to know more about Inclusional Theory, but when I began my research, Alan Rayner's own development of the Inclusional approach was also in its early stages. So increasing my own understanding of the subject was no mere matter of becoming familiar with the literature. I was watching a new research perspective develop while I myself was researching its application. This was exciting. I was, however, also acutely aware that although the principles of Inclusional Theory seemed to resonate with my own way of thinking, it was an approach that was empirically untested, had already been rejected by many in the scientific community, and because of its very novelty was unsupported by an academic precedence. I had to tread carefully. Moreover, if I was going to ground my research in such an approach, I had to be sure that I was convinced by it. Admittedly there were moments when I was very unsure, even sceptical. At times in the early stages of my study, Inclusional Theory seemed worryingly ethereal and elusive. Putting Inclusional ideas into words seemed to me like trying to hold a handful of sand, the harder one tried to hold onto the ideas in speech and writing, the more likely they were to slip through one's fingers.

As I progressed with my investigations, however, I found that this problem was one that lay at the heart of the conflict between Inclusional Theory and conventional points of view that are based on *positivistic* analysis. In a conventional paradigm, one of the hardest aspects to deal with in Inclusional Theory is its very elusiveness. Very often Inclusional Theory evades words and entrapment in language. This is because much of our own language and word use is intended to be *definitive*, words are chosen for their capacity to pin down meaning and to reduce ambiguity. By contrast, in an Inclusional approach one is often dealing with concepts such as flowing space/matter relationships, permeable or ambiguous boundaries, and the need for a reduction in definition. These are very hard things to do with a language that is all about definition. I myself sometimes found (and still do) that although the Inclusional model in my head was very clear to me, I couldn't write or speak about it without sounding "fuzzy" or imprecise.

This therefore has posed a major challenge to me in writing and presenting this thesis, far more so than I imagined at the beginning of my research. I think I set out believing that the ideas in my head would somehow transform into coherent

language at some stage, so I could write it all down. What I didn't envisage was the hard work it would take to achieve this transformation. I spent many long hours discussing Inclusional concepts with different people, including engineers, mathematicians, other biologists, psychologists and social scientists. In this way I tested new ways of saying things, hearing how they sounded in my head, gauging whether I was communicating the ideas effectively, and most significantly whether I believed what I was saying. This undoubtedly has helped, as the more I talked and wrote about this way of looking at things, the more I was convinced that Inclusionality was communicating something very interesting about the world, and also very new. My own study represents one of the first academic presentations of Inclusional research outside of the domain of biology, and I am very pleased to have achieved this.

As I shall discuss later in this chapter, through my study I have found that Inclusionality Theory could have significant implications not only for biology, but also for psychology. A development of models such as the flow-form network in psychology could bring Inclusionality even further towards acceptance by those involved in mainstream research. When I began my study, this certainly was not something that I had expected to find, and it is an unforeseen bonus.

### **12.1.2 The strengths and shortcomings of my study**

In overall terms, I believe that the strengths of my own study are primarily in the theoretical work. The radical Inclusional basis of this thesis is, in my view, one of these strengths. As I've already discussed, Inclusionality is very different from conventional approaches in both biology and psychology, and as such offers a new and exciting approach to both. My own flow-form network model, which arose out of an Inclusional framework, has implications for the way that researchers from many disciplines think about process, contexts, and communication. For psychology, the flow-form network model could have significant theoretical and methodological implications; I shall discuss these in some detail later in this chapter.

Another strong aspect of this study is, I believe, how it bridges biology and psychology. As a biologist looking in on psychology I have a different perspective from those who are looking at the same topics but were "brought up in psychology". Coming into doctoral research in psychology without any previous background in the subject has been challenging, but my background in

biology meant that I could consider existing psychology topics in a different way. In this thesis, I have tried to communicate to a psychology audience what it means to “think like a biologist”. By learning to communicate my research in a way that engaged with psychology, I feel that I have brought insights to psychology about natural systems that might not otherwise have been readily accessible to psychologists.

The results of my empirical work are, I feel, less convincing. In some respects I feel that the empirical “Liveweek” study doesn’t support my theorising as effectively as it could do. There were a number of reasons for this, but I think that it is to a large part due to the fact that the study employed only quantitative analysis, rather than qualitative. As I’ve explained earlier, this was probably due to my background in biology, where quantitative methods predominate, and so these were the methods with which I was most comfortable. With hindsight, perhaps I should have explored other methodologies that would have better supported my theorizing about the data, particularly where the character of the data I’d gathered seemed to be transient or intangible.

In my data analysis, I focussed on resolving whether any communicative flow had been present or absent at Liveweek, rather than on the *quality* of the flow. But by using entirely quantitative methods, I wasn’t able to deduce anything about the qualities of the flows. I haven’t, therefore, been able to demonstrate much about the nature of the flow, or to say what *kinds* of flow forms emerged at Liveweek. Here in a sense I have been caught by my own perceptual constraints. As a biologist, accustomed to using quantitative techniques, I have always tended to favour null hypotheses to enquire about the world, which provide clear “is it this, or is it that?” answers. In a way this is ironic, since as a result of my theoretical research I already realised that positivistic analysis methods such as the null hypothesis were unlikely to provide all the answers I was looking for. On reflection, it is possible that the quantitative approach that I have taken indicates my own preference for the lack of ambiguity that a significant quantitative result appears to provide. It also suggests however, that I too have had my own inner conflict between myself as an “analytical scientist” and as an “Inclusional enquirer”; in my empirical study, conducted at an early stage in my research, it appears that the positivistic scientist prevailed.

A final point about my empirical research is that it was perhaps somewhat uni-dimensional, as I have concentrated on analysing the *spatial* dimension of the human interactions. In the Liveweek study, I judged whether people were interacting with one another on the basis of their spatial proximity, and then I analysed their communication and environments also on the basis of where they were physically located. I didn't look specifically at how the interactions altered over time. Consequently the study has not characterised any issues of temporality or transience in the communicative flow, and these aspects have therefore been relegated to discussion without being supported by empirical results.

Given the opportunity to conduct the whole study again, there isn't a great deal that I would alter about the theoretical work. I would, however, conduct the empirical research differently. I would definitely include some kind of qualitative analysis, and I would consider time as well as space as factors in the data analysis (for example I would look at communicative flow over time as well as in spatial terms).

## **12.2 The nature of what I have proposed in this thesis**

### **12.2.1 Flow-form network – ontology or epistemology?**

In Chapter 1 I mentioned that there is a distinction between *models* and *metaphors*, I have developed this in Chapter 4 (section 4.3.1). To recall here, metaphor has been described as a transdisciplinary device, where one thing is thought of as *if it were* another. So, if one were to think of a business network as if it were a fungal network, one would be applying a metaphor. A model, however, can be said to be a *representation* of how things are. So if one were to use the flow-form network concept as a representation of communication patterns in a business network, one would be applying it as a model.

At various stages in this thesis I have presented the flow-form network concept as both model and metaphor, without fully resolving which I prefer. In addition to this, as I also mentioned in Chapter 1, there is a third possibility, which is to treat the flow-form concept as a form of advocacy, that is, as a *suggestion* for future practice. So, for example, if one were to approach a company and use the flow-form network concept to suggest alterations to their practice or structure, one would be using the idea to advocate change.

The issue of whether one treats the flow-form concept as metaphor, model or in advocacy is significant, because it affects our perception of what a flow-form network is. It is therefore worth discussing some of the surrounding arguments.

It might be said that in biological terms, the existence of a flow-form network is an *ontological* claim. As I've already discussed, biological flow forms are often expressed as physical structures, a fungal network being a good example, so in this case a fungal network is clearly an ontological reality. In psychology, however, ontological reality is more open to determination in multiple ways. So it might be argued that in psychology the flow-form network concept would best be treated as a model (i.e. epistemological), that is, *one* of multiple possible interpretations of psychological ontology.

When studying flow-form networks in many natural systems, however, the flow itself is not immediately obvious. This is so even in a fungal mycelial network. In a fungal network, the hyphal tubules themselves are not the communicative flow; instead they are the products of a flow process, manifested both in the growth of plastic cell wall boundaries and in the movement of protoplasmic fluid within these boundaries.

Nevertheless, in a fungal network flow-form patterns are manifested in a physically tangible manner. Because we can see the hyphal tubes, we can see where the flow is. Other biological networks are similar. Think, for example of the networks formed by herds of wildebeest as they cross the Serengeti plain, which I mentioned in Chapter 6. The collective movement of these creatures creates paths across the plain that look like flow-form networks. These trails are effectively the imprint of a flow-form network, but they are not the flow itself – the animals are, and their trails are the result of the dynamic interaction between flow and environment.

It is indeed possible that a biological network might express flow-form patterns without leaving any physical representation of the network itself. What if the wildebeest I've just described were walking over a hard surface that created no footprints? The animals would still have been expressing flow-form patterns, only without leaving a map of where they'd been.

What I am trying to demonstrate is that the absence of a physical manifestation of a flow-form network does not necessarily mean that flow does not exist in an ontological sense. For example, in many human social systems, although communicative flow might be occurring, there may be no physical manifestations of flow that are readily recognizable as network structures. Other than leaving footprints on a snowy landscape, or in the sand on a beach, we usually don't lay down physical networks according to the flow-form patterns in which we engage. Moreover, as I have suggested in my discussion of the Liveweek study, communicative flow might take the form of emotions or other insubstantial flows, such as excitement and interest, or creative ideas. I believe therefore that the flows in a human system might often actually be "intangible", rather than materially manifested.

So, in this thesis, what am I arguing for – flow-form network as metaphor, or as model? Actually I am arguing for neither, and both. This is because in the Inclusional approach that I have chosen, we don't have to resolve this issue. In an Inclusional view, all things are permeated and related with one another by space, which flows through and around every thing. Therefore, in an Inclusional approach, it does not make sense to consider one thing in isolation from all else, as such an abstraction cannot exist in reality (space can never be excluded). This does not only apply in the physical world, but also extends to epistemology and thought. No one idea, model, concept or perspective can be Inclusionally regarded in complete abstraction or isolation from its contexts. The notion of a dualistic division (such as literal/metaphor) is therefore non-evident in Inclusionality as things can exist as BOTH one thing AND another. It might sound as though I am trying to evade the issue, and not choose one approach or another, but in reality, it is by choosing *not* to choose that we can gain most. It could be argued that by not resolving which approach I am advocating, I have weakened my case for flow-form networks as a concept. However, in aligning myself with an Inclusional approach in my research, I am leaving the question

open, as to resolve it one would be limiting the scope of the work in a very non-Inclusional manner.

### **12.2.2 Advocating flow-form networks**

So, given that I've chosen not to resolve the metaphor/model issue, where might this lead us in terms of advocating the flow-form network concept? Regardless of whether we use the concept as model or metaphor, the flow-form network represents a new and radical conceptual schema. As we have seen, and illustrated with examples of networks from the natural world, flow-form networks are not constructed from discrete nodes that become connected together, rather they are formed from systems of pipes or tubes that become congruent with one another. Flow-form networks comprise flexible conduits that enable their content to flow. These flow-form networks have differentially permeable boundaries that sometimes permit their fluid contents to move into and out of the network, and at other times prevent it from crossing. The flow-form network exemplifies a structure that is flexible and adaptable, while remaining resilient; it is dynamically responsive to inner and outer contexts, and inherently communicative with both inner and outer domains.

I believe that the flow-form network concept has immense practical potential in a human organizational context. Unlike the conventional network model, wherein an organization is treated as a collection of discrete "nodes" (which may represent both people and objects) that have to be connected to one another, the flow-form concept treats an organization as an intrinsically connected system. In a flow-form network paradigm, the people are inextricable from their surroundings. Yet unlike in an extreme holistic view, where everything is related to everything else in a boundary-less homogeny, in a flow-form network boundaries are present, but they are differentially permeable. This enables features to be distinguished, while remaining inherently connected with one another. Understanding how the flow-form network model works, and how it may exist within a human organization, could bring profound insights. For example, in a healthy flow-form network, an event in one area of the network is automatically communicated to another, without any explicit action: the reciprocal flows of content and space, both around and through the interconnected pathways of the network automatically brings this about. Likewise, understanding how boundary-sealing and boundary opening might affect local responses of a network, and how these also may be communicated

through the network as a whole could bring insight in a human organization; for example in a merger situation, or perhaps when responding to a computer virus attack.

At the outset of this study I asked what would happen if we were to look at a human organization as if it were a natural network. Natural networks are reflections of flow-form, so if one is to look at a human organization as if it were a natural network, one is looking to see whether it has aspects of flow-form organization. When I studied a human system in this manner (in my Liveweek study), I believe that I found some features of flow-form communication, *enmeshed* in conventional structures. As I discussed earlier, it is possible that the quantitative tools that were used to investigate the system produced a restricted picture. Indeed, I would suggest that an entire flow-form network *might* have existed at Liveweek, but the positivistic tools that were used to study it caused its full structure to remain hidden. Alternatively, the fragments of flow-form that I discovered could have been a true reflection of the communication structure. Suppose that the latter were true, it could have major implications for the way that we think about organizations. I believe that many human organizations often have unconnected fragments of flow-form networks within, but that these fragments often exist within an environment where constructed structures (which may be constructed nodal networks, or other kinds of structure, such as rigid organizational hierarchies) have been superimposed. The natural flow-forms therefore have become intertwined with artificial structures, working around and within the rigid framework that characterizes many constructed human systems.

This raises the exciting prospect that one might be able to look at any organization and find fragments of flow-forms within. One might even be able to anastomose the pathways between these fragments to create larger integrated flow-forms, which could fundamentally alter the way in which organizations communicate. I believe that application of the flow-form model is likely to be most successful where the people involved have an understanding of what flow-form actually is and what it implies. So, implementing a flow-form network metaphor will, in my view, have as much to do with bringing an understanding of the model to people, as with putting it into action.

## 12.3 The status of my research in the academic domain

### 12.3.1 What the flow-form concept might contribute to psychology

So, in view of the fact that this thesis is initially being presented to an audience of psychologists and social scientists, what specifically does it add to the existing body of knowledge in psychology? It has been suggested that that the principal news to psychologists in this thesis is the notion that *process* might be conceived of as a flow, rather than as a series of discrete events or states that become sequentially conjoined.

Allow me to illustrate this with a few brief examples. Firstly, as I explained in my discussion of models of communication in Chapter 3, the Shannon and Weaver model of information transmission is a classic example of a sequence-based model of process, where communication is treated as a sequence of state changes in the agents (or communicators) involved. In Chapter 4 (on metaphor) I have provided other examples of this discretist approach to thinking about process. Lakoff and Johnson, for example, viewed metaphor as a means of transference of concepts between one schema and another (Lakoff and Johnson, 1980). To view metaphor as a means of *transfer* between schemas, one must first treat cognitive thought itself as segmented into discrete blocks of related ideas and concepts. So the cognitive model of Lakoff and Johnson model thus assumes that thought is “packageable” into discrete schemas which become connected by metaphor. Similarly, Fauconnier and Turner’s “multi domain” model of metaphor, suggests that metaphors are created when the mind superimposes one “schema map” onto another (Fauconnier and Turner, 1995). But here again, one can see that this necessarily treats cognitive processes as being distinguishable into discrete schema maps.

The division of process into discrete segments that may be connected to one another is also evident in network theory. As I have explained in some detail in Chapter 5, conventional network theory describes networks as systems of discrete nodes that become connected to one another. These nodes may represent people, organizations, or even molecules in a biological system. The connections between them represent a change in state in one manner or another, ranging from the simple “buys newspapers from”, to “undergoes cellular

respiration to produce". The conventional nodal network is therefore another example of discretist thinking about process.

Some might argue that a non-discretist approach to systems is already accounted for by self-organization and complexity theory, where the behaviour of a system is considered to be the result of *emergent* patterns that cannot be explained in terms of the individual alone (Holland, 1998; Cohen and Stewart, 1995). It could be argued that these approaches also account for fluid processes in a system, and as a result are akin to my own ideas on flow-form. I would argue however that in complexity theory the focus tends to remain centred on the behaviour of the *individual*, albeit in the context of whole systems. Essentially, complexity theory describes flow in terms of interaction between "agents", where any emergent fluid-like behaviour is explained by the effects of *nonlinear* interactions (see Holland, 1998).

According to Rayner (personal communication, 10<sup>th</sup> March 2006), accounting for emergence and flow in a system through nonlinearity and feedback processes is a means of accounting for what in Inclusionality theory is described as *space*. By contrast, in an Inclusional view, it is recognized that it is the presence of *space* in a system that permits flows to occur. The application of nonlinear mathematics, and of feedback processes is, according to Rayner, a way of forcing a chaotic system to account for the presence of space, and effectively "introduces space through the back door", rather than explicitly acknowledging that the space itself is an inherent factor in the system's dynamics.

Cohen and Stewart do acknowledge the need for a move away from thinking of complex systems in terms of interaction between individual parts. To quote the authors directly:

"...what we need is a theory of features, an understanding of how the geographies of spaces of the possible conspire to create new patterns and combined dynamics. Such a theory would see weather as the motion of cyclones and rain clouds, not as the motion of billions of tiny, indistinguishable particles of fluid." (Cohen and Stewart, 1995).

Unlike in a complexity theory approach, my flow-form network theory does not focus on distinguishing between individual agents. Rather it describes network flows as “streams” that are not composed of interactions between individuals, but which are patterns that emerge through the action of the continuous (and automatic) flow of space around, through and within a system.

Throughout this thesis, I have highlighted how shifting from a conventional “block-like” thinking of process and system structure towards a model based on the principles of Inclusional flow (the flow-form network) can alter our perception of a system. Suppose we were to think about psychological process not as a series of changes through various discrete states of being, but as a fluid process of transformation? Flow-form networks suggest that processes could be represented as networks of fluid and *interconnected* paths. According to the Inclusional perspective on how these networks function, these paths are *distinct* but *not separated dynamic expressions* of their context, and as such could represent process as a fluid transformation through a heterogeneous medium or environment.

Allow me to develop this idea a little further and suggest an example of how this fluid-like view of process might affect how we perceive a psychological topic; since I’ve already discussed it at length in this thesis, I’ll use metaphor as my example. As I have explained above, Lakoff and Johnson’s theory of metaphor, which is widely acknowledged as the founding basis of modern metaphor theory, is based on the idea of discrete “schemas” of thought that become connected to one another. Others, however have suggested otherwise. Chia, for example, who has studied organizations from a perspective not greatly dissimilar from my own, has presented a different view (see Chapter 4, section 4.3 for further detail). In one paper, Chia says that metaphor is a means of “de-ossifying thought”; it is a means of moving from a state where one thinks in terms of static “states”, “entities” and “attributes” to one where one thinks in terms of “flux” and “transformation” (Chia 1996). According to Chia, metaphor is a means by which we can make thoughts “move”. It seems to me that Chia is arguing for a model whereby metaphor is considered to be a facilitator of *flow*.

Let us consider an image of a natural flow-form network. It’s evident from the photo below (Figure 12.1) that natural examples of flow-form networks can be aesthetically beautiful. Another illustration would be the video I have seen of a

fungal mycelial network photographed at intervals during its development and replayed at speed, the flow-patterns that emerge are elegant and fascinating to watch.



Figure 12.1 Venation pattern on an ivy leaf (*Hedera helix*) in autumn.

Flowing visual patterns such as this appeal to the pattern-loving sense of our minds. When images of natural flow-form patterns are presented as a metaphor for human organizational structure, they can provoke new and exciting organizational insights. In essence, the visual representations of natural flow-form networks are themselves acting as facilitators of flow of understanding and insight. Perhaps, as well as being a metaphor in its own right, the flow-form network model might actually begin to explain how metaphorical thought works. Might it be that the communicating effect of metaphors *between* and *through* different topic domains is actually an indication of flow-form? Metaphor communicates within and between shared domain spaces. So one might surmise that, the flow-form network is both metaphor *itself*, and a *model* of how metaphors might work.

I am not alone in suggesting such a view. In a recent paper on metaphor Abrams wrote: "Mind like water shifts and flows, and is not fragmented. Ideas

are not “linked together” at a given stable point remaining largely separate from one another. Ideas are not like links in a chain at all - not self-contained but attached - but are fused with one another, some more, some less intensely.” (Abrams, 2002). Abrams went on to suggest that metaphor arises out of this fluidity of cognition, rather than by connections being made between distinct schemas of thought.

### **12.3.2 How this thesis contributes to the debate on tools and methodologies in the social and natural sciences**

As I have demonstrated and discussed throughout this thesis, most conventional positivistic tools are not suited to the study of flow-form networks. These tools, which often work by breaking a system down into smaller parts, tend to disrupt any flow processes that exist within it. Moreover, many conventional methods of analysis disagree at a fundamental level with an Inclusional perspective, since they tend to excise parts of a system from their contexts, and to ignore the manner in which the common medium of space creates implicit relationships between every thing. If we are to pursue further research into flow-form networks, there is therefore a need to develop novel methods, or alternative ways of using conventional methods to reveal and characterize flow-form structures.

In terms of my own empirical research, in the Teamwork study I chose to use existing quantitative analytical tools, but I attempted to use them in a manner that I believed would minimize their limitations in a system where I suspected flow-forms might be present. I do think that this worked, but only to a limited extent. As I have discussed earlier in this chapter, the outcome was somewhat ambiguous, and although I felt that there were indications that some kind of flow-form might be emerging, the methods I had used were unable to characterize the flow. I was left with an uneasy feeling that the patterns that I had found might have been merely artifacts, or illusions generated by the analysis process itself, while the real nature of the system remained elusive and unexplored.

The methods I chose to use at Liveweek were primarily quantitative rather than qualitative. I felt that choosing quantitative methods would enable numerical or statistical patterns, if there were any in the system, to be more readily distinguished than through qualitative analysis. The problem however, was that these tools proved to be very limited where the patterns within the system were less than distinct. In these circumstances I was trying to use the quantitative methodologies to entrap intangible aspects of human communication patterns, which as I've found, is something that they are not very good at. The essence of things that are intangible is that they elude one's grasp. But the purpose of many quantitative tools is to highlight the patterns that are well defined, lifting them out from the noise of their "background" contexts so that we might see them more distinctly. Clearly then, the two are incompatible.

My Liveweek study suggested that as well as being intangible, the communicative medium in a human flow-form network might also be *transient* or inconstant. Sometimes flow-forms might be strongly expressed, at other times they may be reduced or unapparent. This dynamic, inconstant nature of the flow means that it is not ideally suited to the "snap-shot" type analysis that is essential to most quantitative research methodologies. Unlike the transactional relationships in a nodal network, which could be recorded as instances or occurrences that may be marked as a line between nodes on the network map, these transient flow-forms would need some kind of dynamic analysis to characterize them properly. To use an analogy, when standing by a river, one may see the water passing and recognized it as flow. One may also catch a little of the water in a cup and study it (which is essentially what I was doing with the communicative flow in my dialogue analysis), but this doesn't necessarily tell one about the *dynamics* of flow that are created within the system. Physicists and engineers have developed methods for studying the dynamics of fluid flow (Moran and Shapiro, 1992); now the challenge in the domain of flow-form networks is to develop methods for studying dynamic human communicative flow.

In broader terms my thesis has, I feel, highlighted the considerable conceptual and methodological differences between biology and psychology, and the flow-form concept may have significant implications for how we conceive of both social and biological systems. As Robson (2002) points out, many methodological approaches in the social sciences are quite different from those

in the biological sciences. In the biological sciences most researchers seek to create theories by rigorous observation or investigation of real-world phenomena; these theories may then be applied in real world contexts. Robson argues that the approach in the social sciences can be quite different, as here theories are often *developed* through their application in real world contexts. According to Robson, perspectives that recognize that there is an active and symbiotic link between researcher and researched are becoming increasingly common in the social sciences. In approaches such as action research, says Robson, there is a genuine exchange of knowledge between researcher and researched, which is quite different from lab-based experiments.

This kind of approach, where the researchers themselves are believed to be part of the system that they are researching, is seen very rarely in the natural sciences. By contrast, in the natural sciences it is much more common to make a clear distinction between the researcher and the subject of research. Here, it is not unusual to refer overtly to “reducing experimenter effects” (e.g. Field and Hole, 2003), and natural scientists often cite the need for the experiment to be reproducible by any other scientist as the reason for this (Porush, 1995).

It is my view that Inclusionality, and my flow-form model in particular bring further depth to “active” research methodologies. They represent a framework that explains and gives depth to the relationships between researcher and researched, situating and connecting them in terms of spatial flow processes, rather than expressing the relationship between researcher and research subject as one of detachment, or entirely independent observation.

### **12.3.3 Potential methodologies to use in further research on flow-form**

How then might we study flow-form networks in future research? I approached this study wanting to use several different methods to investigate the communicative flows within the Liveweek event. In the end I used mostly quantitative methods, which as I've just discussed, caused problems. For future research of the flow-form network concept, I still feel that an approach that combines quantitative and qualitative methodologies is a good one, but there is a need to develop the qualitative side further. Qualitative techniques should enable us to characterize the *nature* of the flow, rather than to work out simply whether it does or does not exist.

In practical terms, there are various ways we could use qualitative methods to bring the character of flow in a flow-form network to light. In a human system such as Liveweek, it would be relatively easy to do this, as we could ask the participants themselves about the system that they were acting within. The aim would be to find whether, and if so how, they think of themselves within the system, and whether the notion of flow resonates with them or not. We could for example ask them about what they think about themselves relative to any “upward and downward streams” in the system. Asking about the participants’ perceptions of their *contexts* would also be important, as this could give an indication of the way in which they perceive the boundaries between themselves and their environments (i.e. the boundary between their inner and outer contexts). I think that it would be of use to employ the Inclusional language of space, inner and outer contexts and so on, to see whether they resonate more with some people, and less with others. We could ask the members of a system or organization to imagine that flows might exist in what they and their organization do, and then ask them what they think the flow is like – is the flow rapid and smooth, or do they perceive any blockages to flow in the system? We could also enquire about people’s attitudes over *time*; do they change, are they static? From all these qualitative data, it might even be possible to create a “map” or some other representation of the subjective perceptions of flow within a system.

As I mentioned a moment ago, despite the problems associated with quantitative analysis of flow, I feel that quantitative methods could still be used to analyze flow-form. Unlike in my Liveweek study however, where the quantitative methods were used to find whether or not flow was present, in future work I would shift the focus to finding *levels* of flow. In a human system this could be achieved in various ways. For example, in an online environment, we could count how many people visit a web site, before tracking the path that they take onwards from that site (this would be fairly easy to do from a technical IT perspective). It would also be interesting to introduce some kind of temporality to this quantitative analysis. One possibility would be to somehow map any tangible (and visible) flows over time. I have found a way of doing this (unfortunately after the Liveweek event, or I would have tried it there), using a camera with infrared film. One could set up a camera at some suitable vantage point over a collection of people, such as those at Liveweek, or perhaps some other communal situation, such as a train station or a supermarket. Leaving the

infrared camera on a single exposure for a length of time would catch the movement of people as “trails” on the image, showing the collective flow patterns that they have created.

We could employ techniques such as this, which make visible representations of actual flow patterns, in combination with qualitative studies of the perceptions and attitudes of the people within the system. In this way we would end up with a set of results that tangibly indicates or *evokes* the patterns of a human flow form network, which also characterizes the *nature* of the flow in greater detail.

#### **12.3.4 Possible research programmes which might follow from the adoption of the flow-form network model**

So where might the research presented in this thesis lead to next? There are a few immediate projects that come to mind that develop the Liveweek study. There is also, I feel, the exciting prospect of developing the flow-form network concept in a wider research programme, which might begin in psychology, but could equally be adopted in other domains. In the following section I shall present some of my thoughts on the specific areas first, before moving on to discuss some more generic research and application ideas that emerge from this study.

##### ***12.3.4.1 Projects that expand on the Liveweek study***

After the Liveweek event, the organizers were keen to apply some of the collaborative work concepts in a “real-life” construction design situation; they wanted to use “Teamwork” principles on a live construction project. Sadly, although the idea was discussed in some depth, the project didn’t progress any further than the planning stage as it became blocked at many stages by apparently insurmountable practical and contractual issues. Nevertheless, I feel that the messages that emerged from Teamwork could, with further investigation, be applied in a real-life organizational situation. Firstly, however, I believe that further research needs to be conducted in real-life contexts, with particular emphasis on the nature of networks, and flow-form communication in such situations. To be able to apply the new ideas that emerged from Liveweek, one would need first to find out the nature of the differences between the Liveweek situation and real-life collaborative design projects that are run along conventional lines. One way of doing this would be to conduct a study on a real-life collaborative design project, which used a similar set-up to my Liveweek

study, but that ran over a much longer period. One could use similar multi-method techniques to identify patterns of communication within and between the organizations and people involved, co-ordinating the results to gain insight into the communicative flow patterns within.

#### ***12.3.4.2 Investigating the role of IT in generating and supporting flow-form communication patterns***

Another area where I believe the flow-form network concept could have immediate impact is in the study of computer-mediated communication. As I noted in Chapter 11, computer technology played a key communicative role in the collaborative design process at Liveweek. Currently, in most conventional construction projects, teams of designers from different companies are not physically co-located for the duration of the project. They therefore rely heavily on a variety of distance-spanning modes of communication, which includes telephone and computer-mediated communication. It would be interesting to investigate how computers are used in conventional business situations, to include the extent to which they act as communicative tools, whether this differs from the way in which computers were used at Liveweek, and significantly, whether computer technology acts as a means of facilitating flow-form patterns in such an environment.

This leads me to suggest another, more general avenue for research into flow-form networks. It would be of interest to learn the extent to which IT may be used as a tool to support and generate flow-form communication patterns in human systems. During Liveweek, the team members clearly used IT as a means of communicating information between different disciplines, as well as between different cultures, languages, skill levels and communicative styles. I feel that it is entirely possible that, like metaphor, IT could be considered as a tool that facilitates flow-form communication. Research on this topic would need to be conducted in an Inclusional fashion that considers not only IT as a tool, but also the contextual situations in which it is used, to include physical environments, human social and communicative contexts and so on.

#### **12.3.4.3 Other research possibilities, in psychology and elsewhere**

It is not difficult to think of other arenas where a model of flow-form interaction might be useful. Some that come to mind include human flow patterns in crowds and other social groupings (such as the railway station and supermarket contexts that I have already mentioned, to a wider business/organizational context, which might include logistics, supply chain management and so on. One might also see the potential of this kind of thinking if it were applied to communications in security operations, intelligence, or research into terrorist behaviour.

In contrast to conventional network theory however, I choose not to propose here that flow-form networks might be condensed into a model (mathematical or otherwise) that might be *proven* to exist in all these domains. Rather, I am suggesting that thinking of the processes within and around these human systems as fluid-like behaviours may bring light to some of the ontological features that we may observe. The flow-form concept has, I believe, much potential as a *way of thinking* about social systems and human behaviour. Its representation of *process* as a flowing dynamic feature of a system offers a new and different perspective within the holographic reality of the social sciences, and as such, its potential is very wide indeed.

#### **12.4 What has been proposed in this thesis about the relationship between Inclusionality theory and psychology**

In this penultimate section of this chapter, I would like to clarify what the philosophical framework of Inclusionality (on which I have based so much of my theorizing), might add to the domain of psychology.

In one sense, I have used Inclusionality theory in this thesis as a conceptual bridge between biology and psychology, as a transdisciplinary tool perhaps. Others have created similar connections between our understandings of inner psychological and outer corporeal and social worlds. For example, Harré (2002) wrote about an integrated “scientific psychology” where the psychological (P) is situated within the context of a human organism (O), and which is inherently related to the molecular functioning of the brain and body (M). Harré said it was not possible to understand the psychological in isolation, because all human activity is grounded in and enabled by bodily processes and neural activity.

Cromby (2004) develops on this idea and suggests that one might connect social constructionist theory with neuroscience. According to Cromby, it is not correct to look at these two subjects in a dualistic sense, rather they are inherently connected, just as Harré suggested with the inner psychological and the corporeal. Cromby suggests the relationship between the social self and the embodied self (i.e. physical/neurological) is transformative (i.e. they transform one another), and that their co-created trajectories also shape future actions. Cromby points out that the interpersonal self (the embodied psychological self) is always situated within *society*. This is a spatio-temporal situatedness that contextualizes the interpersonal self within history and culture of a society, as well as in day-to-day interactions.

I believe that Inclusionality theory could be important to psychology, as it is a framing that enables us to understand this kind of *interconnectedness*. The Inclusional approach has some resonance with approaches to social science that permit a plurality of viewpoints to co-exist. But it also presents an *explanation* for why the co-existence of multiple perspectives can work. Inclusionality theory explains that all things are inherently connected as a consequence of the fluid permeation of *space* throughout our worlds, inner outer and universal. According to Inclusionality, ontological and epistemological worlds intermingle and co-exist with one another. That which is corporeal, explicit, material or tangible is inextricable from that which is non-material, space, intangible or implicit. Significantly, the Inclusional view does not create a holistic homogeneity, since the presence of dynamic boundaries enables unique identities to be sustained. It is these boundaries that relate forms with their worlds, both inner and outer, but they also distinguish one thing from another.

Inclusionality theory also suggests something important about the theory of methodologies used to enquire about a system. In an Inclusional approach, alternative points of view are considered to be necessary because it is the very differences between them that create *meaning*. It is the dynamic interplay between varying points of view that creates distinction and identity. In an Inclusional view, the world expresses itself through varying degrees of concurrence and dissonance between inner and outer contexts, and it is by studying these relationships that we can begin to understand it.

What is perhaps most exciting about the Inclusional model for psychology is that it perceives social and psychological processes as *fluid* transformations. Our social existences are not purely the result of explicit action between people, or of transactional dialogues or discourse. Rather, they are the result of fluid interactions between inner and outer contexts. The flow-form network model serves as an illustration of this, but it is the Inclusional principles that give it grounding.

### **12.5 A concluding statement on my own intellectual journey through this research**

To conclude, I will summarize my thoughts on the journey that I have made through my doctoral research study and in preparing this thesis. I started out on this research as a biological scientist. I was trained in the methods of scientific analysis, which I knew well and liked using. As a result of my contact with Inclusionality theory, I also had an idea that in questioning the manner in which we might investigate natural systems, we might also reveal things about human systems. The interdisciplinary nature of what I proposed to study meant that I could ground my study either in the natural sciences, or in psychology. Since I encountered more cooperation and interest in psychology than in biology, it was there that I registered my study. At the outset however, I had very little knowledge of any kind of psychology, so the work that I have presented here is also an account of what I have learned about psychology, and particularly of critical approaches to psychology. I am at heart still a biologist, but now I do at least feel that I know enough about the relevant aspects of psychology and social science to demonstrate what my research might mean to the domain of psychology.

I have also considerably developed my understanding of Inclusionality theory. I have watched the theory itself being developed by Alan Rayner and others, and I have myself contributed something new and relevant in the form of my work on flow-form networks.

I have discovered that methodology is very important in research of this kind. My empirical study took place at a relatively early stage in my research process, and the bulk of my theorizing therefore happened afterwards. I approached the empirical study from the perspective of an “observer” and tried to implement quantitative analysis techniques to capture some of the intangible flows within a

human system. I have subsequently realized that there are other ways of doing this that might be more successful, and now believe that an approach that incorporates qualitative techniques as well as quantitative ones would have been more appropriate.

I intend to continue researching along these lines in the future. I would like to develop on Inclusional perspectives of communicative flow, and particularly on ways of analyzing and communicating these perspectives. I feel that there is considerable scope to do this, both within the domains of psychology and in other areas, and perhaps even to develop a novel interdisciplinary programme of research on the subject.