



Heriot-Watt University
Research Gateway

Observing Observations: the reflective use of research methods in a study of internal rhetoric

Citation for published version:

Valentine, L 2005, 'Observing Observations: the reflective use of research methods in a study of internal rhetoric', Paper presented at 6th International Conference of the European Academy of Design, Bremen, Germany, 29/03/05 - 31/03/05.

Link:

[Link to publication record in Heriot-Watt Research Portal](#)

Document Version:

Publisher's PDF, also known as Version of record

General rights

Copyright for the publications made accessible via Heriot-Watt Research Portal is retained by the author(s) and / or other copyright owners and it is a condition of accessing these publications that users recognise and abide by the legal requirements associated with these rights.

Take down policy

Heriot-Watt University has made every reasonable effort to ensure that the content in Heriot-Watt Research Portal complies with UK legislation. If you believe that the public display of this file breaches copyright please contact open.access@hw.ac.uk providing details, and we will remove access to the work immediately and investigate your claim.

Observing Observations: the reflective use of research methods in a study of internal rhetoric

Dr Louise Valentine

Keywords

visual thinking, dialogue, mindfulness, intuition, rhetoric and questionnaire.

Abstract

The research reported in this paper is in the domain of rhetoric in relation to design thinking. However, unlike many studies in design, this study concentrates on the process of a designers thinking rather than design process thinking. While the original research looked at the both internal and external rhetoric (a designer's internal conversation and a designer's conversation with others), this paper concentrates predominantly of the former (internal rhetoric). The significance of discussing rhetoric from this perspective is that it maintains a relation between experiential and intellectual knowledge, and it attends to, rather than removes, uncertainty throughout the process of research. In doing so, insight into design thinking as a methodology for dealing with complexity is provided.

The methods used in the overall research programme to uncover a designers thinking were observation, interviews, and questionnaire. However, in the internal model of rhetoric, attention and emphasis was not given to the content of the data derived from these methods, but to the subject under investigation within these methods (i.e. design thinking within observation of design as a process; the practice of intuition on reflection of interview conversations, and the exposition of an assumption surrounding visual thinking through the construction of a questionnaire).

This paper attends to the method of questionnaire. It discusses the questionnaire as a means of bringing into awareness the unfolding nature of internal rhetoric, and as a way of exposing the process of decision-making resulting from the interaction between internal and external rhetoric. A description and explanation of the content and process of this aspect of the research is given. Furthermore, background and context to the use of design thinking as an approach to interrogating the relation between design history, theory and practice is provided.

Insight into the tacit dimension of one designer's thinking (the author's) is shared, and knowledge of the process and product of internal rhetoric presented. Discussion refers to the philosophy of mindfulness and the Bohmian method of dialogue. The attention is given to how these enrich communication of design thinking through: nurturing a designer's ability to attend to the present moment; listening to one's inner dialogue; recognising basic mindsets within one's approach to learning; working with ambiguous information in uncertain circumstances, and retaining a balance between subjective and objective perspectives of a situation.

Introduction

This paper focuses on the process of questioning the tacit dimension of one designer's thought process, in particular, the process of articulating assumptions surrounding the value of visual thinking. It was part of a doctoral inquiry, studying the activity of rhetoric: an investigation of the relationship *between* words and images rather than a study of the pattern of thought formed *through* words and images. This is achieved by stepping outside of design and observing design thinking by inhabiting the process of decision-making.

Attention is given to how one designer observed observations and why research methods were used as a means of reflecting on the internal process of thought. The significance of discussing rhetoric from this perspective is that it maintains a relationship between experiential and intellectual knowledge. It generates an awareness of uncertainty rather than removing it, and provides insight into design thinking as a methodology.

In this paper, internal rhetoric is presented as an activity filled with subtle yet significant statements: a way of producing collective meaning rather than providing a prescribed understanding. Traditional academic narrative, present an argument and lead to a distinct conclusion. In this case, the essence of study dictates that

there can be no conclusion. The significance of this argument is 'spread' across the entire paper, thus giving flexibility to the approach and allowing the subject of inquiry to be interrogated continually.

The approach to reading this paper demands an open-mind and an understanding that there are times when questions are not immediately answered, or statements instantly explained. Rather, they are carried with the researcher through the investigation until a level of understanding that allows articulation of her thoughts, and the knowledge gained has been reached. This affects the 'pace' or 'speed' of reading and (more often than not) demands the reader to 'pause' very regularly.

Reading is viewed as an act of engagement. As such, the approach to communicating this study calls for the reader to engage both with him/herself, as well as with the inquiry. The intention is to keep the reader active. This methodology gives the reader an opportunity to reflect on his/her own intuitive processes whilst gaining insight into the author's intuitive process. This results in there being times when the reader will not feel comfortable when reading because s/he will be experiencing ambiguity. This is a necessary and important aspect of the work as an ambiguous environment is the context in which a designer's decision-making is often made. At these times, the reader is invited to do nothing: to simply enjoy listening to the thoughts that their thinking invokes, and to observe the dynamic tacit activity that accompanies silence. This 'silent absorption' is an integral part of the designer's thought process and is the subject under investigation.

Mindfulness and Design

A parallel between design and mindfulness was drawn as the process and product of the discipline of mindfulness is inextricably interwoven: it is both a means and an end – a philosophy and a method. Mindfulness is an awareness and understanding of one's own mind and how it influences one's perceptions and actions. The cognitive aspects of mindfulness, as adopted by Hanh (1991), Kabat-Zinn (1994), Langer (1989, 1997) and Bentz & Shapiro (1998) are that it is a way of seeing which causes and maintains inter-connections. It is an approach to inquiry that draws a person's attention and awareness to the impermanence and uncertainty surrounding a problem.

Encapsulating the essence of this approach, Kabat-Zinn, cited in Bentz and Shapiro (1998: 39) said,

'Inquiry doesn't mean looking for answers, especially quick answers which come out of superficial thinking. It means asking without expecting answers, just pondering the question carrying the wonder with you, letting it percolate, bubble, cook, ripen, come in and out of awareness, just as everything else comes in and out of awareness. Inquiry is not so much thinking about answers, although the questioning will produce a lot of thought that look like answers. It really involves just listening to the thinking that your questioning invokes...'

Whilst attention and awareness are universal human qualities, '*in our society, we tend to take these capacities for granted and don't think to develop them systematically in the service of self-understanding and wisdom*' (Kabat-Zinn, 1994). Within design, mindfulness can enhance the richness of information contained within indeterminate problem solving. It can do this by supporting the inclusion of a designer's subjective qualities of judgement and experience during decision-making. Through careful and systematic

self-observation of one's own mind, mindfulness helps an individual deal with the turbulence that surrounds chaotic circumstances. Whilst it does not remove the natural environment, it provides an individual with a deep sense of knowing: a richer understanding of oneself and how to engage with uncertainty.

Mindfulness encourages a willingness to look deeply at one's present moments, to listen to one's inner dialogue, and to nurture an appreciation for the present moment. It enhances the quality of an experience and the potential decisions, whilst at the same time giving rise to instantaneous or at least short-term propositions (Kabat-Zinn, 1994; Hanh, 1991). Mindfulness is a process that teaches an individual to understand thought as a system of complex relationships. The practice deepens the capacity to concentrate on what one is doing as one is doing it: it awakens the mind and takes hold of one's own consciousness whilst performing any task. As Hanh (1991: 40) explained:

'When we have thoughts, we are those thoughts...We are both the mind and the observer of the mind. Therefore, chasing away or dwelling on any thought isn't the important thing. The important thing is to be aware of the thought. This observation is not an objectification of the mind: it does not establish distinction between subject and object...Mind can only observe itself. '

By developing a mindful approach to inquiry, an individual learns to recognise and be open to accepting that there are basic mindset(s) hiding within oneself, that undermine one's true learning potential. These assumptions influence one's perceptions and actions, and can have debilitating effects on the process of learning. Indeed, the power of mindfulness is that it can free an individual

from rigid habits of learning and offer a more flexible and productive approach to problem solving, as Langer (1997: 4) promotes:

'A mindful approach to any activity has three characteristics: the continuous creation of new categories; openness to new information; and an implicit awareness of more than one perspective. Mindlessness, in contrast, is characterized by entrapment in old categories; by automatic behaviour that precludes attending to new signals; and by action that operates from a single perspective.'

Mindfulness can support transparent communication of indeterminacy, as it is a philosophical orientation that guides an individual's choices. It can teach them to adapt their knowledge and understanding to unique situation(s). In this respect, the discipline has a profound relevance for design as it can deepen a designer's awareness of his/her process of thought, thereby heightening an ability to communicate why design does and does not have a subject matter. Indeed, by enriching the qualities of attention and awareness, mindfulness can provide a designer with tools to question why design has a rhetorical approach to reasoning, what the significance of a visual way of thinking is and where intuitive decisions are made. Thus equipping the designer with the skill of communicating design as a discipline.

Concerned with '*examining who we are, with questioning our views of the world and our place in it, and with cultivating some appreciation for the fullness of each moment we are alive*' (Kabat-Zinn, 1994) mindfulness provides a means of interrogating ones approach to decision making. It draws attention to conflicting assumptions and encourages an individual to retain a plurality of perspectives. In doing so, pre-conceived ideas are removed and a

holistic perspective to problem solving can be attained and maintained.

Reducing reality into compartments destroys the ability to see the inter-dependence of all phenomena (Kabat-Zinn, 1994). This notes Hanh, is a false view of reality as a *'person isn't some private entity travelling unaffected through time and space as if it is sealed off from the rest of the world by a thick shell...We are life and life is limitless'* (Hanh, 1991: 49). Achieving and retaining a balance between the internal and external focus of an individual's thinking process is the essence of mindfulness. Designers, by developing an understanding of mindful inquiry can use knowledge of mindfulness to give voice to the tacit dimension of their thinking.

A Context for Inquiry

Mindfulness implies openness to and awareness of multiple perspectives with a flexibility and responsiveness to new information. It is a difficult and intensive discipline, as opening oneself to new information is concerned with changing the inner self by removing (for example attitudinal) constraints, and by encouraging the receptivity to ideas of others.

Teaching visual thinking to novice art and design students was the context in which mindfulness was practised. Although the word 'practice' can be used to indicate an activity with a repetitive nature, it is meant in this instance to describe the cultivation of mindfulness. The essence of teaching was to develop an ability to keep one's attention focused on one's visual thinking in an attempt to communicate efficiently and intelligently one's tacit knowledge.

In situations when one is not alone, it is harder to practice mindfulness. However, perseverance with the practice in busy environments develops the ability to maintain greater concentration. Whilst concentration is a characteristic of mindfulness, the ability to concentrate should not be confused with mindfulness. Concentration focuses attention, whereas mindfulness decides where the attention will be focused and detects when attention strays (Hanh, 1991).

The Method of Dialogue

Dialogue is a means of allowing an individual to hold a 'vision' whilst embracing the widest and most creative aspects of problem solving. It is a responsive tool, and although it is an intensive discipline of openness and listening, it is a method that facilitates an ability to see the inter-dependence of the subject and object of knowledge (Bohm, 1996; Yankelovich, 1999).

The essence of dialogue is that it expands the horizons of an individual; deepens conversation; directs discussion into unknown dimensions, and does not lead to a conclusion because there is no agenda. Within a dialogue, there is no attempt to accomplish any useful purpose since the assumption(s) behind what is defined as 'useful' limit the value of a dialogue and block the unfolding meaning (Bohm, 1985).

The method of dialogue was chosen as a vehicle for externalising the researcher's assumptions concerning the significance of visual thinking as the aim was to draw attention to the experience of visual thinking and to bring into awareness the unfolding nature of the tacit dialogue. Bohmian Dialogue (1985, 1991, and 1996) was used for externalising the tacit dimension of one's thinking process.

'...dialogue is a multi-faceted process, looking well beyond typical notions of conversational parlance and exchange. It is a process which explores an unusually wide range of human experiences: our closely held values; the nature and intensity of emotions; the pattern of our thought processes; the function of memory; the import of cultural myths; and the manner in which our neurophysiology structures moment-to-moment experience. Perhaps most importantly, dialogue explores the manner in which thought – viewed by Bohm as an inherently limited medium, rather than an objective representation of reality – is generated and sustained at the collective level. Such an inquiry necessarily calls into question deeply held assumptions regarding culture, meaning, and identity. In its deepest sense, then, dialogue is an invitation to test the viability of traditional definitions of what it means to be human, and collectively to explore the prospect of an enhanced humanity' (Nichol, 1996: vii).

Dialogue encourages an individual to observe and recognise the presence of every feeling that arises within one's system of thought. It is an approach that deepens the ability to work and cope with change. In a dialogue an individual's role is to listen: to suspend judgement and concentrate on understanding a situation from an alternative perspective. Whilst pausing for thought creates periods of silence which can create anxiety within the user, the silence (or small pockets of quiet) is a fundamental characteristic of dialogue. Silence presents the opportunity to reflect on a situation as it evolves. As such, it must be learned to be valued and understood rather than intimidated by, as it is the tool that facilitates an ability to 'see' one's assumptions.

The purpose of using dialogue within the study was to give attention to the process of questioning and to develop an ability to see the assumption(s) lying behind visual thinking. Thereby deepening an awareness of thought as a system and providing a basis from which to begin dissolving the assumption(s). However, the difficulty with dissolving one's assumption(s) is that one's mindset cannot be

viewed as a problem rather the situation must be viewed as a paradox for reasons that Bohm (1996:70-72) succinctly articulated,

'If I say I am going to look into my mind but I don't consider my assumptions, then the picture is wrong because the assumptions are looking. That is a common problem of introspection. You say, "I am going to look at myself inwardly," but the assumptions are not looked at – the assumptions are looking...

...very often, the first question you ask will contain the very presuppositions that should be doubted...Somewhere "back in the back" is somebody who is observing what is wrong, but he is not being observed. The very "wrong" things, which he should be looking at, are in the one who is looking, because that is the safest place to hide them. Hide them in the looker, and the looker will never find them.'

An individual can conduct a dialogue, but this is unusual due to the high level of anxiety associated with exercising one's assumptions and challenging one's opinions and views (Bohm, 1996; Ellinor and Gerard, 1998). Dialogue was chosen as a method to provide insight into what it means *to be* a designer and *to use* visual thinking. It was not used to provide a generalised visual thinking statement in an attempt to change existing definitions; rather it was a way of becoming aware of one's personal assumption(s).

Teaching Visual Thinking as a Design Process

Ambiguity is an inherent aspect of a design process, however, learning to communicate the role of ambiguity within design thinking is not. It requires a designer to give attention and awareness to his/her process of thought in relation to the nature of the present moment.

Learning how to engage with the indeterminate nature of the present moment requires an individual to approach a situation mindfully. S/he must learn to purposefully pay attention to the present moment in a non-judgemental way. To encourage and support this approach to design problem solving, a series of seminars was designed. The aim was to develop an ability to communicate design thinking in relation to the nature rather than the content of a problem. The objective was to draw the student's attention to the experience of thinking: to bring into awareness the unfolding nature of dialogue that results from working with indeterminacy. Thereby shifting the emphasis of design when communicating from a technical activity to a discipline of thought.

Group work, whilst being the context for dialogue was also the approach to managing a large volume of student (168) within a short time scale (40 direct teaching hours over 20 weeks). There were five main groups with between 31 - 35 members in each and all five groups were further divided into 5 - 7 smaller sub-groups. Group work was the approach to teaching students how to engage with indeterminate problem(s), as it is a means of sharing the experience of design thinking: an opportunity to listen to a variety and diversity of perspectives when working with ambiguity (Buchanan and Vogel, 1994). Working through groups was also used as a way of nurturing the student's ability to express the difficulty associated with understanding an indeterminate problem, and to become familiar with the process of design problem solving (Bligh, 2000).

The students were asked to undertake an investigation where the aim was to deepen an ability to transfer information and/or knowledge of design in a coherent manner. The objective was for the student to demonstrate to him/herself the kind(s) of useful

information that can be captured through visual thinking, and to develop an approach to 'seeing' a pattern for decision making when dealing with indeterminate (open-ended or transient) problem(s).

To encourage and support the students to strive and maintain a plurality of perspectives, a visual of the process of problem solving was presented. It had four facets: searching, finding, thinking, and communicating. These were inter-dependent processes; intrinsically related and required the results of each process to be questioned in relation to at least one other. Whilst all of the processes happened independently, the associated series of decisions within one provided a basis for contemplating decisions within the other three. Being mindful when approaching the management of the investigation was encouraged because it can support an individual when dealing with ambiguity, which is a characteristic of pluralism. The result of each process provided a basis for questioning all others. It was this inter-connectivity, which was the focus of discussion when the model was visually presented and discussed with the groups.

Collection and Reflection

The investigation was separated into two inter-related parts. 'Collection' was the first part. It began by asking the students to search, find, and store a variety of general and simple design statements from a theoretical and practical perspective. Through a series of four seminars, visual methods were introduced to the students as a means of engaging with rich textual information about design. The iterative process associated with visual methods was used as a way of deepening student's theoretical understanding of design from a practical perspective. In particular, mapping methods

and colour coding techniques were used to manage the complexity and high level of ambiguity (Buzan and Buzan, 2000; Craig, 2000).

Within the seminar programme, the work of Nigel Cross was used to familiarise the designers with the theoretical language *of design* and to begin to understand the theoretical framework(s) *for design*. In particular, '*Natural Intelligence in Design*' (Cross, 1999) initiated the process of learning how to read and understand verbal design information. The process of interpretation was documented and this was used to heighten student's awareness of the processes of looking and listening to new information. Attention was directed towards encouraging individuals to document his/her thought process: to put down on paper the content of their internal conversation when faced with an unfamiliar situation. The objective was to draw attention to how they as individuals privately engage with the unfamiliar. By exposing how one engages with unfamiliar information the opportunity to share one's approach to understanding and to question how appropriate one's approach is arises. The ability to identify where appropriate changes can be made can also develop through this approach to learning (Langer, 1997).

A series of tasks were given to the students to complete between the seminar sessions. The students undertook these individually and the results (including the experience of conducting the tasks) were used as a basis for initiating group discussion during each seminar. Group work presented the students with an opportunity to learn from each other. It was a platform for discussing their decision-making process. It was also a way of arriving at a decision or series of decisions for the individual student when completing the tasks. For example, group work enabled students to discuss where and how to

find appropriate design statement(s); how to determine the appropriateness of a statement for investigation; where to begin planning the process of problem solving, and how to begin using visual methods for thinking and communicating information about design.

The second part of the investigation (entitled 'reflection') focused on deepening an understanding of design. It did this by developing the ability to question design theory and communicate from a visual perspective. The process of reflection built upon the student's understanding of both their thinking process and design, gained through the process of collection. Once again, attention was given to the complementary processes of looking and listening. However, in this phase attention was directed towards learning how to engage with non-verbal design information. A series of lectures teaching the students how to mindfully approach interpretation of non-verbal information was presented. These supported a further series of four seminars as they were a basis for discussion and provided practical examples of design theory in practice. In particular, the work of London based product designers Richard Seymour and Richard Powell, were used to exemplify the use of group work in design problem solving. The partnership between London based fashion designer Hussein Chalayan and Scottish based product designer Paul Topen (1999; 2000), was used to exemplify a visual approach to interpreting conceptual thinking within non-verbal information.

The process of reflection was documented within a sketchbook and was referred to as a 'design journal'. The 'journal' was a record of an individual student's process of decision making over a period of 14 weeks; an exposition of the rhetorical process of their thinking when faced with unfamiliar information and an ambiguous definition of a

problem. It encompassed a collection of visual techniques that collectively provided each student with an approach to questioning design theory and practice.

The programme was designed to challenge the students. It was difficult and required a sustained and substantial investment of time and effort. The significance and value of the investigation was realised by the student's on completion. To conclude the experience of an indeterminate problem solving process, the student's were invited to participate in a survey.

Questionnaire Design

A questionnaire was designed and it was divided into five sections: group work; collecting information; reflecting on information; conducting an investigation, and a general overview. As the intention was to elicit intuitive responses and to understand the attitude(s) and value(s) of the group (Nachmias and Nachmias, 1996) the questions within each section were primarily concerned with subjective experience(s) rather than a student's factual knowledge. The majority of questions were closed as they are easy to ask and quick to answer (Nachmias and Nachmias, 1996). This was an important characteristic as the context for conducting the survey was limited to 90 minutes due to the University timetable for students in the visual disciplines. Closed questions were used because the objective of the questionnaire was to guide student(s) to declare their agreement or disagreement with a clearly stated point of view (Nachmias and Nachmias, 1996).

Visual Thinking Questionnaire

A questionnaire was used as a means of communicating the key elements of the teaching programme without intrusively re-iterating individual learning outcomes, and it was also a way of gaining insight into the value and significance of the teaching programme from the user's perspective.

To analyse and evaluate the content of the questionnaire would have provided information concerning an approach to learning and teaching design. It would not however, have provided a platform for exposing this designer assumptions concerning visual thinking, which was the research objective.

The value of the questionnaire to this research was as a facilitator of dialogue. The process of constructing questions was a stepping-stone: a means of providing a base from which to interrogate the researcher's thinking and articulate her assumption(s). It drew upon the variety of comments, opinions, and views presented by the student's throughout the teaching programme as these had challenged the researcher to reflect on her decision making process regularly and to do so from a diversity of angles.

Questions generated by the group(s) throughout the 20-week teaching programme were specifically related to the individual person or group which they were part of. For example, how do you use brainstorming within a group, or how can you begin to use mapping techniques to record the content of a discussion, and how does a group begin to interrogate the result of their brainstorming session or group discussion? Whilst answers, be they descriptions and/or explanations were given at the time (which the questions were asked), reflection on the reasoning (behind the responses)

produced thoughts. These were carried by the researcher in her head after the lectures and seminars were finished.

The resultant internal process of reflection gave rise to a particular series of questions: why are the processes of looking and listening to verbal and non-verbal information important to the process of visual thinking? Why is the exposition of one's internal decision making process important to developing an understanding of design, and why are visual methods appropriate for facilitating the exposition of a tacit dialogue?

Exposition of an Assumption: visual thinking

The information a person perceives to be relevant is often guided by their tacit presuppositions, which are often irrational and interrogated by questions that are full of contradiction. These assumptions which profoundly affect the perspective from which one chooses to listen, and directs how information is collected, gathered, and structured, are dangerous as they exacerbate the confusion which surrounds a problem (Bohm, 1996). To become aware of one's assumptions one must listen, and as Bohm discussed, listening is an ability not simply concerned with accurate, conscientious and empathetic sensitivity to words and their meaning, but one which involves attending to the misperceptions of an individual's spoken intent. To approach and understand the process of listening from this perspective, he remarked, can lead to new meaning *when* communicating rather than on reflection of communication.

'In ...a dialogue, when one person says something, the other person does not in general respond with the same meaning as that seen by the first person. Rather, the meanings are only similar and not identical. Thus, when the second person replies, the first person sees a difference between what he meant to say and what the other person understood. On considering this difference, he may then be

able to see something new, which is relevant to both his own views and to those of the other person. And so it can go back and forth, with the continual emergence of a new content that is common to both participants. Thus, in a dialogue, each person does not attempt to make common certain ideas or information that are already known to him. Rather it may be said that two people are making something in common i.e. creating something new together' (Bohm, 1996:2).

Although the researcher did not hold a dialogue with the group of students, group work was the environment in which dialogue was practised. It was a way of generating and listening to question(s) being formulated in the researcher's mind in an attempt to observe the reasoning behind the content and structure of the visual thinking programme.

Within this study, access to the tacit activity of visual thinking was gained by drawing on the philosophy of mindfulness and by engaging in the method of dialogue, thereby allowing the experience of visual thinking to be shared and the designer researcher's assumption to be articulated. The following five (out of the 10) perspectives on one assumption provide insight into the tacit dimension of this designer's thinking. They present this designer's understanding of visual thinking in relation to the *nature* rather than the content of a design problem.

- Visual thinking is an inherently complex process, requiring acute skills to look, listen, and question subjective and objective information in uncertain circumstances. It is a predominantly non-verbal mental activity of theoretical contemplation through practical deliberation, and is directed towards providing insight with a view to reaching respectively a propositional conclusion or a decision to act.

- Visual thinking methods are a gateway for listening to and observing rhetoric as a tacit process of decision-making. Through drawing, a conversation is conducted between the mind of the drawer and the physical process of drawing itself. Attention to and awareness of the mind's contribution to the conversation, allows an individual to listen to the tacit dimension or rhetorical pattern of decision-making. Attention and awareness of the process of drawing allows an individual to observe rhetorical reasoning. However visual thinking also facilitates attention and awareness of a third perspective: the relation between looking and listening, which is also an activity of rhetoric.
- Visual thinking is a form of interpretation where the objective and subjective processes of looking and listening occur simultaneously. The value of being able to combine both processes is that it facilitates an understanding of the content and process of problem solving as it happens, thus providing the observer with an ability to read and question constantly changing situations. This ability to interpret unpredictable scenarios commands an individual to establish a close working relationship with the internal perspective of thought. Recognition of this attribute facilitates a deeper awareness of the tacit dimension of visual thinking, and subsequently provides a platform from which to document and question the dialogue. Thereby contributing to an understanding of design as a discipline of thought.
- Visual thinking creates and preserves a total understanding by holding the objective and subjective perspectives of a situation together. It is a holistic perspective. It is also a means of achieving a holistic perspective. In recognising that there are two levels on which to communicate the value of visual thinking and its place within

design, an individual can strengthen his/her response to theoretical and practical questions, and can articulate the relation between theory and practice within indeterminate problem solving.

- Visual thinking is an ability to 'see' the intangible (for example the emotional and sensorial) characteristics that inform an individual's understanding when assessing and addressing a situation. Through a sensorial evaluation i.e. visual interpretation and exposition of intuition(s) and feeling(s) that arise within a situation, visual thinking can translate the associated words into images.

The Process of Questioning

In this paper, the process of questioning was explored through the relation between looking and listening to visual and verbal information concerning design thinking. The paper presented how mindfulness can enrich communication of design thinking by nurturing a designer's ability to attend to the present moment; listen to one's inner dialogue; recognise that there are basic mindsets within one's approach to learning; work with ambiguous information in uncertain circumstances, and retain a balance between subjective and objective perspectives of a situation. It described and explained the content and process of a teaching programme. In doing so, it provided a background and context to my understanding of the value of visual thinking as a tool for developing an ability to question design history, theory and practice. The content of the questionnaire was not discussed as it referred to the objectives within the teaching and learning programme, rather than the objective of the research inquiry. The purpose of the questionnaire was to attend to the practice of visual thinking and to produce written statements; to bring into awareness the unfolding nature of the private conversation I was having with my visual thinking whilst using visual thinking.

On reflection, the conversations held with (the Design History, Theory, and Practice Course Director) Marlene Ivey, concerning the visual thinking programme I was leading, were influential, in that they guided my actions during teaching. With regard to this research, the learning environment played a significant, albeit an indirect, role. The decision to teach, and the process of teaching were attended to in this inquiry. However, the value of having a mentor to discuss one's ideas was not fully acknowledged. There was no evidence of the discussions with Marlene, and yet, on reflection of the process of exposing my assumption concerning visual thinking, these conversations were a vehicle for examining my thoughts.

Looking back on my communication of the use of a questionnaire to facilitate dialogue, I realise that I present the product of my dialogue (i.e. five out of ten perspectives on my assumption concerning visual thinking) and the context in which dialogue was facilitated. However, I do not completely attend to the process of exposing these assumptions. The assumptions were articulated on reflection of the three research projects and not simply through the questionnaire. To facilitate further articulation of the tacit dimension of this designer's thinking, a series of conversations directly questioning the unspoken process of decision making will be held with people who were an indirect but influential aspect of the communication process.

Bibliography

ARNHEIM, R. (1969) *Visual Thinking*. Berkeley, Los Angeles & London: University of California Press.

ARNHEIM, R. (1980) A Plea for Visual Thinking. In Mitchell, W.J.T. (Ed) (1980) *The Language of Images*. Chicago, London: University of Chicago Press.

ARNHEIM, R. (1993) Sketching and the Psychology of Design. In Margolin, V. and Buchanan, R. (Eds) (1995) *The Idea of Design*. Cambridge, Massachusetts and London: MIT Press.

ARNHEIM, R. (1996) Drawings in design. In Arnheim, R. (1996) *The Split and the Structure*. London: University of California Press

BENTZ, V. M. and SHAPIRO, B. (1998) *Mindful Inquiry in Social Research*. Newbury Park, London, New Dehli: Sage Publications.

BLIGH, D. (2000) *What's the Point in Discussion?* Exeter, Oregon: Intellect Books.

BOHM, D. (1980) *Wholeness and the Implicate Order*. London: Routledge.

BOHM, D. (1985) *Unfolding Meaning*. London and New York: Routledge.

BOHM, D. (1992) *Thought as a System*. London and New York: Routledge.

BOHM, D. (1996) On Dialogue. In Nichol, L. (Ed) (1996) *On Dialogue, David Bohm*. London and New York: Routledge.

BONNICI.P. (1999) *Visual Language: the hidden medium of communication*. Switzerland: RotoVision SA.

BUCHANAN, R. (1985) Declaration by Design: Rhetoric, Argument and Demonstration in Design Practice. In Margolin, V. (Ed) (1989) *Design Discourse*. Chicago and London: The University of Chicago Press.

BUCHANAN, R. and VOGEL, C. M. (1994) Design in the Learning Organization: Educating for the New Culture of Product Development. *Design Management Journal*, Fall. 39-46

BUCHANAN, R. (1995) Rhetoric, Humanism and Design. In Buchanan, R. and Margolin, V. (Eds) (1995) *Discovering Design*. Chicago: University of Chicago Press.

BUZAN, T. & B. (2000) *The Mind Map Book*, (Millennium Edition). London: BBC Worldwide Limited.

- BYGRAVE, S. (1993) *Kenneth Burke: Rhetoric and Ideology*. London: Routledge.
- BYRON, K. (1999) *Inventions and Inventing: Finding Solutions to Practical Problems*. London: The Institute for Cultural Research.
- CHALAYAN, H. (1999) *Echoform: autumn winter 1999/2000*. Video. Private Collection
- CHALAYAN, H. (2000) *after words: autumn winter 2000*. London: Depend. Video. Private Collection
- CRAIG, M. (2000) *Thinking Visually*. London: Continuum.
- CROSS, N. (1999) Natural intelligence in design. *Design Studies* 20, 1. 25-39.
- FITZ, H. K. (2001) *Intuition, Its Nature and Uses in Human Experience*. Delhi: Motilal Banarsidass Publishers.
- GELB, M. (1995) *Mind mapping*. Simon and Schuster. London.
- HANH, T.N. (1991) *The Miracle of Mindfulness*. London: Rider
- KABAT-ZINN, J. (1994) *Wherever You Go There You Are*. New York: Hyperion
- LANGER, E. J. (1989) *Mindfulness*. Massachusetts: Perseus Books.
- LANGER, E. J. (1997) *The Power of Mindful Learning*. Reading, Massachusetts: Perseus Books.
- McKEON, R. (1987) *Rhetoric, Essays in Invention and Discovery*. Woodbridge, CT: Ox Bow Press.
- MOUSTAKAS, C. (1990) *Heuristic Research*. Newbury Park, London, New Dehli: Sage Publications.
- NICHOL, L. (Ed) (1996) *On Dialogue, David Bohm*. London and New York: Routledge.
- NICHOL, L. (Ed) (1998) *On Creativity, David Bohm*. London and New York: Routledge.
- POLANYI, M. (1966) *The Tacit Dimension*. New York: Doubleday & Company, Inc.

POPPER, K. (1999) *All Life Is Problem Solving*. London: Routledge.

ROBSON, C. (1993) *Real World Research*. Oxford & Cambridge, Massachusetts: Blackwell.

YANKELOVICH, D. (1999) *The Magic of Dialogue*. London: Nicholas Brearley.

Bibliographic Details:

Dr Louise Valentine
School of Design
University of Dundee
13 Perth Road
DUNDEE, DD1 4HT
Scotland

L.Valentine@dundee.ac.uk

(00) 44 1382 345 295

Dr Louise Valentine is currently Acting Course Director, Master of Design programme at the University of Dundee. She is also an AHRB Postdoctoral Research Fellow, investigating, *Past, Present and Future Craft Practice: exploration of the interrelations between skill, intent, and culture*.