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Mind maps, presentational knowledge and the dissemination of qualitative research

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Introduction

<http://intranet.yorks.ac.uk/cmsfiles/Interactivemindmap/Interactivemindmap/>

This short text is a linear and conceptual discussion that accompanies the non-linear and presentational mind map that you can access via the link above and through the Realities website. Both text and mind map are works in progress. The mind map because at the moment it is stalled through limitations of technological and time resources; this text because my thinking through of the ideas and motivations of what I am doing here are still in development. It seems appropriate to present both as working papers because I am still working on them; and because of the interest in the Realities group in approaches to conducting and disseminating social research. Doing and dissemination, of course, are part of the same process, as the form of dissemination impacts on the kinds of analysis and sense making that are carried out by the researcher – with this small scale exploration into mind maps discussed here I am, in part, trying to develop a tool which would enable these connections to be more explicit. It is these questions that are the focus of this paper, which explores my experience and thinking around the potential for interactive mind maps as a form of publication for social research.

It is also worth pointing out here that I am writing from the position of being an arts subject specialist rather than primarily a social scientist. Institutionally I am located within a theatre department, and the sociological work on audiences that I am discussing here is both motivated by and draws heavily upon my expertise in theatre and performance. In this context it would be possible to view my lack of a traditional grounding in social science expertise and methodologies as a weakness; or alternatively to view subject specialism in the arts as a strength and location within an arts faculty as an invitation to travel across disciplinary boundaries without some of the constraints that exist when attempting to satisfying all criteria within a disciplinary tradition.

The Challenge of Making Sense of Qualitative Data

One strand of my research over the last several years has been qualitative audience research, exploring how audiences experience and make sense of the dance and theatre performances that they see. Examples of this would include research into teenaged and young theatre audiences and a current project on

dance audiences. Qualitative audience research sets out to uncover, analyse and present richly detailed descriptions of how audiences experience live performance. It does so typically through talk-based enquiry – one-to-one interviews and focus groups – although I have also employed creative workshops to use drawings, movement or writing (see www.audienceswriting.blogspot.com for an on-going account of a project using creative writing as a workshop structure) to mediate the kinds of responses revealed. My interest in this area certainly included the methodological conundrum of how to research the ineffable, embodied and intangible elements of audience experiences of performance (see for example Reason 2010a and 2010b).

Whatever the exact methodological approach such research pursues it produces, like all qualitative people-based research, vast amounts of rich but complex 'data' that needs to be sifted through and made sense of. There are methodological and technological tools to help in this process, but effectively this data (and data always seems an inadequate and even inappropriate word in this context) is a raw material that is then shaped and moulded by the researcher into something that almost invariably takes the form of an analytically structured essay, chapter or book.

There is a lot to be said for this. Well-done, well-crafted pieces of writing can be accessible and enlightening. The edited, structured essay does literally make sense of what would otherwise remain a sheer mass of inaccessible raw material. A book can provide a stunning overview and detailed insight into a particular subject area. In doing so, inevitably, this process places a structure onto the material – it makes sense of the material in a way that is a mixture of finding sense from within and imposing it from without.

This making sense and making accessible is essential. It is the work of the researcher, which doesn't stop simply at the gathering of juicy bits of interviews but must also involve the work of insight and analysis. The discussion of mind maps that I present in this paper relates to both of these points, exploring the potential of the form to segue between operating as a tool to aid research process sense making and one that can be used as research dissemination. The distinctions and overlaps between how a form (such as a mind map or writing) are both tools of thinking¹ and of communicating are subtle. When working with my own raw material, however, I'm often aware that as well as making sense and making accessible, the written paper or book does other things as well that are a result of the form. In particular the written paper makes the material linear. While a well-written essay (particularly in an adventurously minded journal) may loop back upon itself and seek to make connections, it is always determined by the linear form of reading (left to right, top to bottom within our culture) and of structuring (beginning, middle, end).² It is of course true that a paper does not have to be read in a linear fashion, particularly on second or subsequent re-readings where the reader may begin to impose their own interests and narrative both upon an individual paper and across papers. However, although the linearity of a written paper is not absolute it is a significant factor not only in its reading and comprehension but also on the thinking and analytical processes of the author. This does a number of things, the most important perhaps being that it places emphasis on narrative and flow rather than on wholeness and connectiveness. The written paper is extraordinarily strong at unpicking and exploring conceptual moments; but particularly within the tradition of academic writing that seeks to draw the

reader into the detail of the argument is less able to make or communicate holistic knowledge.

It is possible, therefore, to acknowledge the power and necessity of well-written, structured academic writing, but simultaneously to feel that this form shapes our way of thinking and knowing about the world. It shapes the way we think through and make sense of our data and therefore shapes the sense that we make. (In a moment of self-reflection I recognise that I am being slightly polemical here, adopting a form of argument that is perhaps encouraged by the form of expression, but accepting numerous caveats I think the point is valid.) Because of these and other concerns relating to questions of authorship and authority, there has been considerable attention within social research to the mode of writing adopted in presenting and reporting the research. Attention has also been paid to the use of creative, visual and art-based approaches to conducting and also reporting and disseminating research practices (for example Knowles and Cole 2008). Located as I am outside of social science I'm not going to recount or summarize for this tradition or these debates, except to articulate a particular interest in the moment when art becomes a research tool and to reflect upon how this methodological moment relates to the creative practice and traditions of the art as art. This is an area that I believe is particularly valuable to explore as the methodological questions raised by creative, art-based approaches to social research and those raised in the recent emphasis of practice-based research within the arts should be mutually supportive and iterative – particularly in terms of the emphasis in practice-based research on embodied and different forms of knowing (see for example Smith and Dean 2009). What I want to do initially is to briefly work through my own points of reference, particularly in terms of the desire to expand our concept of knowledge and how this links to the manner in which we disseminate that knowledge.

Forms and ways of knowing

A useful way of thinking through how different kinds of knowledge relate to different forms or ways of knowing is John Heron's description of four interwoven ways of knowing: experiential, presentational, propositional and practical (Heron 1996). Experiential knowledge is gained through direct encounter and lived experiences.³ Propositional knowledge is the form of knowing that has been given primacy in western knowledge systems, exemplified by the formal academic paper or research monograph that is the predominant form of dissemination within the humanities and social sciences. Practical knowledge is only manifested or known through doing or the ability or do. Finally, there is presentational knowledge, which is often overlooked and is somewhat slippery to comprehend, and which John Heron describes in terms of being manifest in 'an intuitive grasp of the significance of patterns as expressed in graphic, plastic, moving, musical and verbal art-forms' (Heron cited in Seeley and P. Reason 2008: 4).

One of the particular strengths of presentational knowledge is its holistic value. Suzanne Langer's articulation of the difference between discursive and non-discursive knowledge is useful here:

There are presentational/aesthetic forms of representation and discursive/propositional forms, which are fundamentally different. For

example, presentational forms represent wholes, while discursive forms represent parts; presentational forms represent tacit knowledge, while discursive forms represent explicit knowledge. (Langer cited in Seeley and P. Reason 2008: 4)

In particular I am interested in the potential for visualisations of material to communicate in what Elliot Eisner describes as an 'all-at-once-ness' (Eisner cited in Knowles and Cole 2008: 44) and which utilise our learnt ability to take in graphic patterns:

Visualization of data makes it possible for researcher, analysts, engineers, and the lay audience to obtain insight into these data in an efficient and effective way thanks to the unique capabilities of the human visual system, which enables us to detect interesting features and patterns in a short period of time (Wijk 2006: 1)

For the purposes of this paper this 'all-at-once-ness' can be schematically contrasted with the tendencies of the written document to communicate in a temporally linear fashion: one-after-another rather than all-at-once. The difference, however, is more than simply the temporal process by which the reader or viewer accesses the material, but also the impact of different engagements with the material on our sense of the material itself. It means different things because we have experienced it differently.

Working Visually with Data

The visual representation of data, therefore, is not just a potentially effective means of communication but also, crucial, part of my organic process of working and therefore part of the process by which I make sense of material. For myself the process of beginning to make sense of or find routes through the unordered mass of material that interviews or participative workshops generate is a combination of an informed (arts subject specialist) consideration, a systematic coding and defining (utilising, for example, NVIVO or similar software) and also an intuitive process of visual mapping. I often find myself sitting on the floor with several A1 sheets of paper and different colour marker pens, post-it notes, scissors and reams of printed transcriptions constructing various mind maps and other graphic representations that both record and construct pathways through the material. However, if we consider such mapping in terms of the discussions of Heron, Langer, Wijk and others then this statement of intuition becomes rooted more firmly within a conceptualisation of presentational knowledge.⁴ Typically my use of mind maps is part of my own processes of beginning to think with and through the material, using our visual ability to spot patterns, shapes and connections as a form of analysis. I suspect that a lot of researchers think visually in this fashion and I am interested in how the form of thinking impacts upon what is thought. Inevitably these impacts include pragmatics and the limitations of space and dimension – what can be shown on a flat piece of paper in a legible form. For myself the use of mind maps as a form of thinking also literally allows me to think in different shapes, in spirals, in loops and waves, in radial circuits, in the recurring patterns that ground the chaotic mess. There is without doubt a grammar to this work, informed by visual sense making. Although rarely intended for publication, occasionally these mind maps make it into the public domain, such as Figure 1 that records topics raised by teenaged

theatre audiences in response to a performance of Shakespeare (reproduced in Reason 2006). More typically, however, these visualisations are concealed within a process that moves to a final output in the form of a written paper. What is immediately lost in this process are those particular forms of knowing that the visual presentations allows, which include a holistic overview and a greater complexity of structure than can be communicated in a written paper.

The mind map presented in Figure 1 is a formalisation of paper and pen mind maps that I drew in the process of working with the material produced from that particular project. It was presented alongside a written paper more or less as an afterthought. Indeed, it was reproduced in such a small and cramped manner that beyond the sensory impression of a tangled mess that it presented (itself not inappropriate) I doubt if it was readable – certainly it did not have an aesthetic or graphic qualities that invited reading. It did, however, make me more consciously interested in the potential for mind map to act not just as a means of thinking with data but also as a form of communications of data.

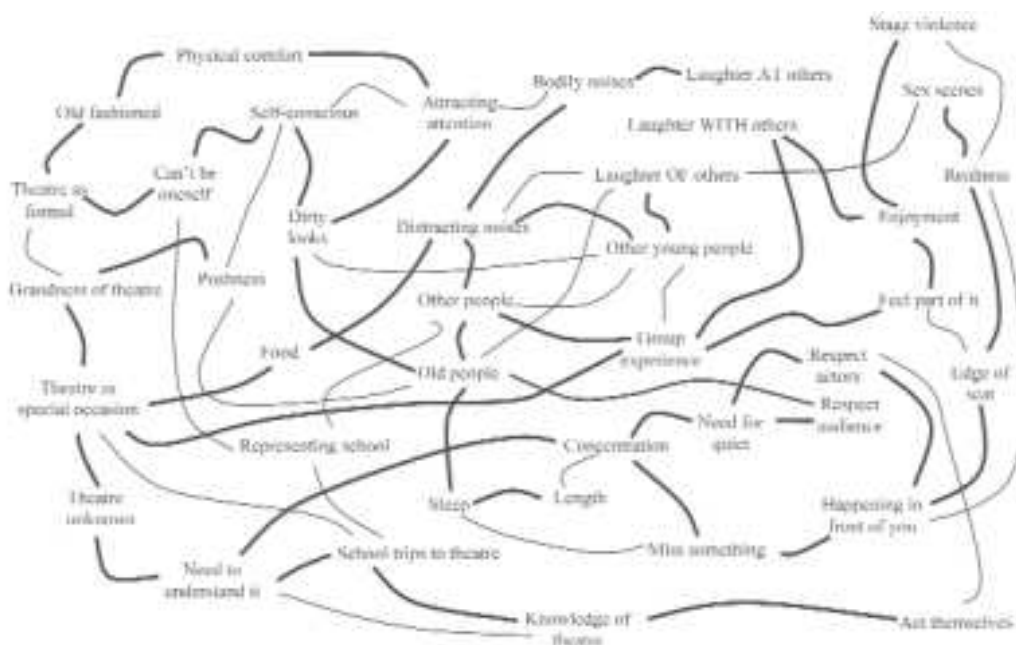


Figure 1. Mind map of teenage audiences talking about theatre

Developing the use of mind maps to present data

For a more recent project, therefore, I wanted to develop my use of visualisations beyond the important role they played within my analytical process and into the public domain. This is as part of the AHRC funded Watching Dance project (www.watchingdance.org) and was particularly motivated by the collaborative and interdisciplinary nature of the project where I found myself presenting research in progress at team meetings in a manner that would at times involve unrolling my previously private and preliminary mind maps on A1 sheets of paper. At the same time I was frustrated by the lack of interactivity that the drawn mind map provided and suspected that the answer could be in some interactive, online version of the mind map.

There are certainly some striking uses of mind maps available online that affirm belief in their potential. I like for instance the visual thesaurus (www.visualthesaurus.com), an interactive dictionary and thesaurus that creates word maps between meanings and related words.⁵ There are, additionally, lots of mind mapping tools available online both free and proprietary,⁶ the most prominent of all being Tony Buzan's iMindMap, Buzan being a leading developer of work in this area and a man who claimed to have invented mind maps (<http://www.knowledgeboard.com/item/2980>). What is interesting about these mind map is that there is a clear intention for them to be not just tools for thinking but also for communication. The graphic qualities construct an invitation to browse, to linger and to follow connections.

A further influence on me was the mind map style diagram included as the primary interface on *Imaginary Evidence*, an interactive CD archive produced by British theatre company Forced Entertainment. The diagram presents a web of interlinking thematic possibilities that invite the user to navigate through the company's twenty year history in a manner very distinct from that of a typical chronological archive. One might, for example, travel from a point labelled 'Alcohol' to 'Failure' to 'Interruptions' to 'Sleep' in a manner that is at once meaningful (the connections are not random) but also makes the user very aware that they are not definitive. It is always explicit that the pathway does not have to be this way, and moreover that it will never be the same way twice. This seems to me to be importantly and epistemologically different from both the archive (in this particular context) and also the written paper, which hides its contingency behind a gloss of singularity and the permanence of print. In a simple manner, therefore, awareness of the fluidity of connections is an important impact of using webs rather than narratives as communication formats.

My own process of exploring what could be done using mind maps to not just think with data but also to communicate with a wider audience was inevitably limited by budget, time and lack of the specific technical skills and knowledge that would be required. However, with the help of the University of Manchester's Humanities Teaching and Learning team we adapted a piece of free software and began exploring its potential for what I had in mind. Figure 2 presents the initial interface of the mind map, which also acts as a graphic representation or holistic overview of the terrains which the audience research for the Watching Dance project covers. In particular it visually asserts my increasing engagement with the motivations (and pleasures) that different audiences seek out from their experiences of dance. You can also imagine the many hand-drawn Venn diagrams that were produced prior to this point, which were moments of thinking through data in contrast to which the crisp graphics of this diagram presents itself very clearly as a moment of communicating an interpretation.



Figure 2. Watching Dance Mind Map – initial interface.

The graphic appeal of the particular software we used was one of its advantages. The process, however, was also one of frustration, where pragmatics and technical limitations directed much of what was possible. Not only in terms of the resulting appearance of the mind map but also, crucially, in terms of what and how it communicates. Many of these limitations – to do with the sequential coding of an xml document, for example – are too technical and tedious to go into here. They are also entirely technologically contingent and therefore not of any conceptual interest. They have, however, resulted in me having to make choices where I could EITHER maintain the colour coding of themes OR ensure that I followed all the connections identified on my original paper mind map. Most disappointingly the software I used made it impossible to realise my original intention of the user being able to click through from each 'node' of the mind map to a static web page that would provide more detailed information and analysis in the form of raw transcribed material, video clips, conceptual analysis and so forth. Instead I have had to limit the mind map to briefer text that pops up when the cursor is held over a particular node (these are not all complete). I would, therefore, be very curious as to whether other, better, more flexible pieces of software are available or could be developed that would enable this kind of presentation of data to be produced more easily and realised more effectively.

These technical limitations aside I believe the mind map as it stands is an interesting artefact and also an opportunity to explore what happens when a tool for thinking becomes a tool for communicating. I am curious therefore as to whether and how this kind of mind map has any real utility. Putting this to one researcher, whose work I respect, his response was that after a while he finds even his own graphic representations of data mind-bendingly complex and cannot access or find interest in those of others. The point is well made, for

while able to present the complexity of connections it is possible that visualisations such as these are too complex and inaccessible to the passing viewer beyond a surface communication of complexity itself. This mind map, for example, presents a lot of information and discussion that is also available in published articles (for example Reason and Reynolds 2010, 'Kinesthesia, Empathy and Related Pleasures 2010) in a manner that is perhaps more readable and far more detailed.

So what does this interactive mind map do that the paper could not? Well it certainly provides the opportunity for users to find their own pathways through the information. Figure 3, for example, presents what appears if you click on Kinesthetic Pleasures, with the text on the right what appears if the cursor is held over the 'sounds of movement' node. Within the paper the material was presented largely sequentially, here the connections are presented all at once. Graphically things sitting next to each other always infect or inform each other, acting as collage, so that for example for the viewer the kinaesthetic always sits next to the emotional. The format also presents some objects as linked in multiple places – personal memories for example is visually stressed as a nexus between the kinaesthetic, the emotional and the interpretive – while others are more isolated. It is then up to the user as to whether they gravitate towards or find interest in the fringes or in the heart of the tangle – with the user therefore making their own epistemological decision as to where interpretative interest should rest – while remembering that at a different moments on the mind map (for it is not a static document) the margin becomes the centrepiece (on clicking on sounds of movement for instance). Similarly the user is also free to be directly by curiosity, free to construct their own particular path.

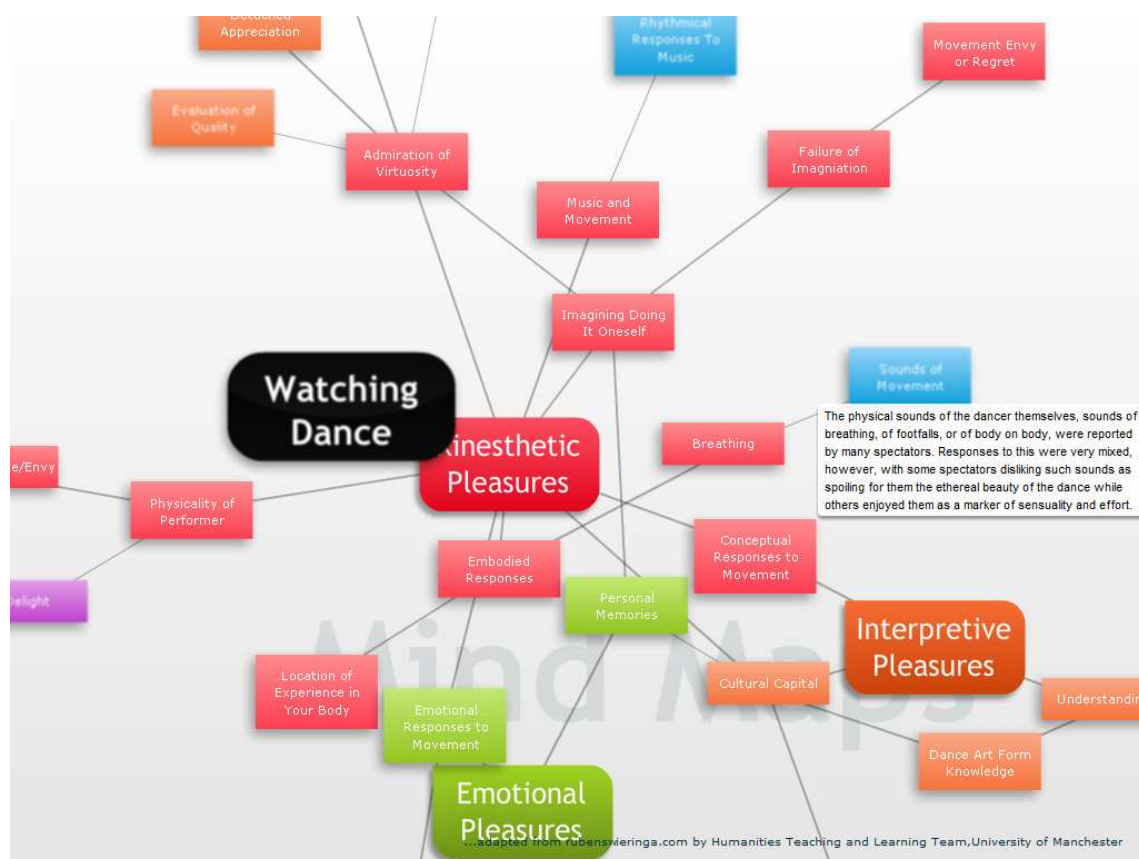


Figure 3. Selected screenshot from Watching Dance Mind Map.

The interactive mind map seems to me to contain an implicit invitation to browse, a bit like Wikipedia or any other hyperlinked document invites the user to follow the connections. In this sense it almost does not matter what threads are followed or how the user engages with the material as there is instead, on all but the most superficial usage, an almost automatic experiential engagement with a sense of depth and complexity. At the same time, however, I recognise that awareness of complexity in itself is not satisfying and therefore my objective, unrealised in the incomplete mind map as it currently stands, was that the mind map could become an interface through which other researchers might access the data to construct their own narratives. If each node linked through to both analytical discussion by myself but also to raw data (transcribed interviews, reproduced participant drawings and other texts) then the mind map would become a kind of archive that could be searched and used by other scholars.

Concluding remarks

It is absolutely certain that in future projects I will continue to use mind maps as thinking tools to assist in my working through and understanding of research material. More uncertain is whether I will pursue their potential to also be tools for communicating research findings and for archiving research data. Certainly I wouldn't suggest that the mind map, or indeed other visualisations of data, should replace the written paper and additionally until the technology is more accessible and advanced the time involved in the process is prohibitive. However, I do think that if as researchers we are interested in making explicit our methodological processes then it is valuable to recognise that both the form of our thinking and the form of our dissemination can influence what we think and what we communicate. I do also believe that the visual qualities, the all-at-once-ness, and the possibilities for the user to follow their own threads through a mind map are valuable qualities that we should utilise as we seek to enhance our ability to communicate complex real life research.

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¹ That writing (or indeed talking) is a tool of thinking is widely understood. I frequently use to the two following statements with MA students when asking them to consider how the process of writing is also a process of thinking

'How can I know what I think till I see what I say?'
(E.M. Forster)

"Between my finger and my thumb
The squat pen rests.
I'll dig with it."
(Seamus Heaney)

² One area of interesting work that questions these conventions is by Bella Dicks, who has explored the potential for hypermedia and hypertext to allow the non-sequential and polymorphic dissemination of research. Dicks cites Jeff Todd Titon's definition of hypertext:

Hypertexts are non-linear. Several writing spaces can appear on the screen simultaneously... In a hypertext, the reader is always offered multiple pathways through the information, and the reading will be different depending on which pathways are chosen and what is read and not read (cited in Dicks and Mason 1998: 3.2)

For Dicks the key attraction of hypertext is this possibility to create 'multiple links between both the data assembled and the interpretative texts which comment upon these data'. Dicks herself points out some of the potential criticisms of this position, which include that the computer directed hypertext could be considered limiting. With the reader pointed towards particular connections the reader is inevitable less able or inclined to seek out alternative connections of their own. There is also the difficulty that although the hypertext invites attention to the tracing of pathways

through texts and data its tendency is at each particular moment of choice to be focused upon that particular moment. If you think about Wikipedia, one of the largest hypertexts available, this becomes apparent. While the links and pathways are available to follow in the moment they are not available to know in macro.

³ It could be argued that a prominent strand of ethnographic social research is interested in uncovering the experiential knowledge of its participants/subject, in a process that then renders or disseminates policy -orientated practice knowledge or academic -orientated propositional knowledge. One interesting area of activity that focus on communicating experiential knowledge in a manner that is itself experiential is the use of poetry in social research, where it can be used as a tool in the analysis and reporting of research data (Faulkner 2009: 20). The attraction of poetry as a form of dissemination for social research is its potential to allow 'scholars to discover and communicate findings in multidimensional, penetrating and more accessible ways' (Cahnmann cited in Prendergast et al 2009: xxiv). In particular, the power of poetry in reporting social research is its perceived ability to communicate the embodied and lived experience. Cannon Poindexter, for example, presents edited, participant-voiced poems taken from interviews where the goal is to:

evoke the reader's emotional response and produce a shared experience. Poetry [...] can be an effective way to reconstruct and confirm the lived experience of others while challenging researchers to learn about their abilities to communicate qualitative inquiry in a different way (Poindexter cited in Prendergast et al 2009: xxvii)

Poetry as research publication, therefore, could be considered an approach designed to communicate more strongly experiential knowledge. The strength of this approach is that in engaging with the material the reader is allowed access to something of the original experiential force and provided greater opportunity for empathy. The reader is then implicitly invited to begin the process of synthesis and analysis for themselves. There are limitations here as well, for such experiential material inevitably emphasises the particular, the rich and complex and the singular. In inviting empathy it reduces distance and perhaps hinders the process of synthesis and analysis.

⁴ I have also often used processes of visualisation – such as mind maps or spider diagrams – with participants in interviews or focus groups as a way of working with their intuitive ability to read and create visualisations of their own knowledge.

⁵ For links to various cool (but not necessarily useful) information visualisations see <http://knowledgevisualization.blogspot.com/>

⁶ For a more complete summary of what is available that I could manage see this wiki-list http://en.wikipedia.org/wiki/List_of_mind_mapping_software