9. Reflect Review Appraise

This chapter provides a literature review of projects and theories from the field of reflective practice and practice-based research, that relate to the results of the Iceland project. Using this knowledge of reflective practice the chapter reflects and appraises the phases of the project related to cultural and practical learning through making. These project phases include: the apprenticeships with the six makers, practical experiments made with the makers and by the author, and the making decisions during the construction of the demonstration table and chairs. This chapter exposes the intuitive methods developed out of the practice of the author and participating makers during the Iceland project and puts them in context with existing reflective practice and related theory.

9.1. Literature Review of Reflective Practice

This literature review focuses on reflective practice and practice-based research, and how these relate to the project and its methods. This literature review does not exhaust all literature on reflective practice and practice-based research, but provides only the foundations and most relevant material on the subject.

9.1.1. Paradigm of Inquiry

This section is a short account of the present academic paradigm relevant to the field of reflective and practice-based research, which includes the most relevant and current ideas on reflective, action and practice-based research and where they have come from. Understanding the theoretical paradigm, in which reflective and practice-based research has developed, provides a philosophical foundation from which to consider the Iceland project.

Before considering the most present and relevant paradigm of inquiry it is useful to look briefly at previous ways of understanding knowledge.

> Among philosophers of science no one wants any longer to be called a Positivist, and there is a rebirth of interest in the ancient topics of craft, artistry, and myth-topics whose fate Positivism once claimed to have sealed.[36]

Positivism considers observation and experimental investigation as the only ways of gaining substantial knowledge. It has been the dominant methodology and paradigm of inquiry within science for the past 300 years.[37] Schon, a social scientist and a leader in the field of reflective practice, makes the point that positivism is no longer the most acceptable form of knowledge acquisition because it fails to recognize its own limited utility in practice.[38] Positivism has brought us knowledge especially in the sciences and given us an advanced understanding of the laws of nature[39], but it fails to account for an individual's interpretation of their environment or to provide a rigorous method of inquiring into tacit knowledge, unspoken/non-literary knowledge and knowledge acquired and demonstrated through practice.

The focus of the Iceland project has been the creative, dynamic and mostly unspoken but demonstrative and visual communication of practical knowledge, embodied in the actions of craft practitioners collaboratively designing and making artefacts. The paradigm in which this activity has taken place is most closely related to constructivism. Constructivism is summed up well by C. Gray and J. Malins, in their guide to the research process in art and design:

> …the constructivist paradigm is characterized by a 'relativist' ontology (multiple realities exist as personal and social constructions) and the epistemology is subjectivist (the researcher is involved); as a

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[36] D. A. Schon *The Reflective Practitioner, How Professionals Think in Action*. Ashgate, Aldershot, 1983, p. 48.

[37] C. Gray, J. Malins, *Visualizing Research: A Guide to the Research Process in Art and Design,* Ashgate, Aldershot, 2004, p. 19.

[38] Schon, p. 49.

[39] Schon, p.32 – 33.

> consequence, methodologies are hermeneutic (interpretative) and dialectic (discursive).[40]

Schon suggests that if the technical rationale of positivism cannot account for professional knowledge having practical competence in real, divergent situations,[41]

> Let us search, instead, for an epistemology of practice implicit in the artistic, intuitive processes, which some practitioners do bring to situations of uncertainty, instability, uniqueness, and value conflict.[42]

Within a constructivist paradigm the epistemology is subjectivist: the inquirer and the inquired act together as one and the findings are the outcomes of an interaction process between the two.[43]

In the context of the Iceland project the author and the selected makers worked together sharing their making experiences to both become inquirer and the inquired in the process of designing and making the table and chairs. The projects method of enquiry developed out of the author's designer/maker practice and was later shaped by the relationships with the selected makers, and not from theories in reflective practice. The methodology used to create this collaboration and sharing of making knowledge was predominantly naturalistic. The author in partnership with the selected makers looked to experience a new way of developing a table and chairs, and recognised the potential of learning from this activity. It maybe said that participation in the project was motivated by a recognition that this was an opportunity to learn and develop professional practice, and not one to develop a marketable table and chairs. The quantitative and qualitative elements of the project were additions beyond the more useful learning experience. On reflection the quantitative and qualitative additions were put in place to fulfil traditional expectations in academic research and provided only minor support to the

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[40] Gray, Malins, p. 19.

[41] Schon, p. 49.

[42] Schon, p. 49.

[43] Gray, Malins, p. 20.

more useful visual and physical learning experience. A constant processing of physical and visual experiences (experientially based knowledge) amongst the participants shaped the successive focusing of the making process[44]. The Iceland project was led by the dynamic, divergent and intuitive nature of the creative making process. Reflecting in action and reflection of action amongst the participants shaped the constant refocusing within the process of making the table and chairs.

9.1.2. Social Science and Anthropological Theories of Reflective Practice

The following theories from social science and anthropology are the most relevant theories for use in reflecting on the Iceland project. The Iceland project has looked to develop its own theories and methods out of the existing practice of the author and participant makers. This has been done for the development of appropriate theory for the designer/makers' field, where there is only recently emerging theory and no standard practice. It is useful to compare these developments in the Iceland project with known and relevant theories in other fields.

Schon describes reflection-in-action as thinking and learning while doing, and being aware of the knowing-in-action, while reflecting.[45] Reflection-in-action and knowing-in-action is what the professional practitioner uses to develop their specialised artful skill and to solve ever changing problems in workaday life. It is something often taken for granted and not put into words. Recognising one's own knowing-in-action and also reflecting on what is at hand is a challenging task to reflect on. Schon writes:

> There is some puzzling, or troubling, or interesting phenomenon with which the individual is trying to deal. As he tries to make sense of it, he also reflects on the understandings which have been implicit in his action,

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[44] Y. Lincoln, E. Guba, *Naturalistic Inquiry*, Sage, London, 1985, p. 11.

[45] Schon, p. 49-54.

> understandings which he surfaces, criticizes, restructures, and embodies in further action.[46]

This account of reflection-in-action makes explicit, for craft practitioners or makers, an area of their knowledge often overlooked and taken for granted. It provides a framework in which to try and become more conscious of the reflective process embodied in their practice. For the transfer of such knowledge Lincoln and Guba recommend the case study as the reporting mode of choice.[47] The Iceland project is a case study and is partly represented by the table and chairs, the multimedia DVD's of their making and the interviews with the makers. It is recognized that further reflection on the process by the author as facilitator of the project would be of value in transferring knowledge, especially back to the participating makers for further reflection by them.

P. Reason and H. Bradbury have a vision of reflective practice they call action research and give a working definition:

> …action research is a participatory, democratic process concerned with developing practical knowing in the pursuit of worthwhile human purposes, grounded in a participatory worldview which we believe is emerging at this historical moment. It seeks to bring together action and reflection, theory and practice, in participation with others, in the pursuit of practical solutions to issues of pressing concern to people, and more generally the flourishing of individual persons and their communities.[48]

Action research is a holistic approach to research focused on making the research relevant to the researchers and making the participants, traditionally the subjects, the researchers too. It has its roots in social science and methods of naturalistic inquiry. It has relevance to the Iceland project in providing a framework of enquiry and for unpacking the data or outcomes of participatory enquiry and analysing them for critical review. In his study of

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[46] Schon, p. 50.

[47] Lincoln, Guba, p. 11.

[48] P. Reason, H. Bradbury, Inquiry and participation in search of a world worthy of human aspiration, Introduction to P. Reason & H. Bradbury (Eds), *Handbook of Action Research: Participative Inquiry and Practice* (pp. 1-14). London, Sage 2001, <http://www.bath.ac.uk/> (accessed 8 August 2005).

action research cases, *Participation in Human Inquiry*, Reason makes an interesting observation that the initiators of projects go to great lengths in

> …developing participatory group relationships. The group first has to be created and established with enough clarity of purpose and method that it has some chance of success, a culture of collaboration developed over time, and then space has to be provided for initiatives from participants to take over and transform the inquiry beyond the original dreams of the initiator.[49]

The unpacking of the inquiry within the Iceland project has been achieved partly through the collaborative making of the table and chairs, with the participants leading the process beyond the author's initial designs. Further unpacking is provided in the reflection on the makers' journey section of this chapter (page 152). Other aspects of action research that are relevant to the Iceland project are some of the motivations and aims behind it. This is illustrated by Reason's argument,

> …that the creation of knowledge is in the hands of the rich and powerful elements of an increasingly global society, and works to enhance their interests against those of the disenfranchised majority world.[50]

With this in mind an aim of action research is to,

> …empower people at a second and deeper level through the process of constructing and using their own knowledge [learnt through action research]: they "see through" the ways in which the establishment monopolizes the production and use of knowledge for the benefit of its members.[51]

In the case of the Iceland project the making knowledge of the makers was illustrated clearly as developing the design of the table and chairs. This is often covered over by the presence of the 'designer' who comes with a proposal to the maker, who then has to subsequently develop it during a prototype-making phase. The designer then walks away with an amended

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[49] P. Reason, *Participation in Human Inquiry*, Sage, London, 1994.

[50] P. Reason, Learning and Change through action research, 2001, <http://www.bath.ac.uk/> (accessed 8 August 2005).

[51] Reason, 2001.

design he calls solely his own, including licensing and royalty rights. This is endemic in a hierarchical, non-democratic and repressive situation, and does not put the maker in a fair situation. This type of situation may be rare in a developed country like Iceland, but perhaps not untypical in a developing country. In the Iceland project the author's motivation has been in part to expose the disenfranchisement of the makers. In the multimedia interview presentation of Geir Oddgeirsson, he points to this situation when in response to the question by the author,

> "where will your skills be, in influencing the product brief".[52]

Geir Oddgeirsson responds through his interpreter and workmate, Björn Hrafnsson,

> "we are not architects, we don't have, you know, legal taste. For example an architect comes with or a designer comes with a chair, you cannot say to him it's ugly, but you can say it's impossible to sit in it. So you have to be a diplomat."[53]

Geir Oddgeirsson does not want to offend the designer, and at the same time he does not want to make a bad chair. So suggestions for the design changes have to be made diplomatically, and, unfortunately for Geir Oddgeirsson, he retains no rights invested by him in the design.

Action research does not make a separation between the knower and what is to be known, in other words, the researcher does not distance himself from the subjects or participants,

> … action research is rooted in each participant's in-depth, critical and practical experience of the situation to be understood and acted in.[54]

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[52] T. Hawson, 'Transcription of interview with Geir Oddgeirsson and translator (Geir´s work mate) Björn Hrafnsson'. 23 July – 24 July 2003, Multimedia Disc 2, T. Hawson, 2003, (DVD).

[53] Hawson, 'Transcription of interview with Geir Oddgeirsson', (DVD).

[54] P. Reason, Learning and Change through action research, 2001, <http://www.bath.ac.uk/> (accessed 8 August 2005).

This description fits well with the making activities of the Iceland project participants, who expressed their criticism and knowledge of the situation in the decisions made in making the table and chairs. Another aspect of action research described by Reason that is useful to compare with the Iceland project is,

> …that truth is not solely a property of formal propositions, but is a human activity that must be managed for human purposes which leads action research practitioners to take into account many different forms of knowing-knowledge of our purposes as well of our ideas, knowledge that is based in intuition as well as the senses, knowledge expressed in aesthetic form such as story, poetry and visual arts as well as propositional language, and practical knowledge expressed in skill and competence.[55]

Translating this to the Iceland project, truth is to be found in making artefacts, the process and the outcomes, and the motivations behind making. The Iceland project has engaged the participants in consciously exposing the truths behind making. It has not challenged them to provide an in-depth and critical review of their participation in words, this would be un-natural to their making practice.

There are similarities between action research and the participatory research described by B. Hall, A. Gillette and R. Tandon in their book *Creating Knowledge: A Monopoly? – Participatory Research in Development*. This book published in New Delhi by the Society for Participatory Research in Asia, is written from a social anthropological perspective and calls for a democratic and humanistic approach to participatory research. The following quote emphasises the importance of the subjects of research to be involved in the research themselves as active participants, and how this teaches critical thinking and the implications of the finished research to the community it was researching.

> If I am interested in knowing the people's ways of thinking and levels of perception, then the people have to think about their thinking and not be only the objects of my thinking. This method of investigation which

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[55] Reason, 2001.

> involves study-and criticism of the study-by the people is at the same time a learning process. Through this process of investigation, examination, criticism and reinvestigation, the level of critical thinking is raised among all those involved.
>
> Thus, in doing research, I am educating and being educated with the people. By returning to the area in order to put into practice the results of my investigation, I am not only educating and being educated; I am also researching again, because to the extent that we put into practice the plans resulting from the investigations, we change the levels of consciousness of the people, and by this change, we do research again. Thus, there is a dynamic movement between researching and acting on the results of the research.[56]

If the consciousness of the participating makers has changed as a result of the Iceland project and the author returns to them this thesis presentation, this will be a continuation of the reflective research and constitute post-doctorate work.

With no mention in the text to reflective practice or action research, A. Collins, J. Seely Brown and A. Holum's article in the American Educator, 'Cognitive Apprenticeship: Making Thinking Visible', has many similarities to this subject and the Iceland project. Coming from a pedagogical perspective their description of the traditional apprenticeship and how this can be interpreted to develop methods of teaching reading, writing and mathematics, by participatory, naturalistic and heuristic methods is useful. Some of their thoughts are that,

> …standard pedagogical practices render key aspects of expertise invisible to students. Too little attention is paid to the reasoning and strategies that experts employ when they acquire knowledge or put it to work to solve complex or real-life tasks.[57]

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[56] B. Hall, A. Gillette & R. Tandon, (Eds.). (1982). *Creating Knowledge: A Monopoly? - Participatory Research in Development*. New Delhi: Society for Participatory Research in Asia, p. 30.

[57] A. Collins, J. Seely Brown, A. Holum, Cognitive Apprenticeship: Making Thinking Visible, *This article originally appeared in the Winter, 1991 issue of American Educator, the journal of The American Federation of Teachers.* <http://www.alite.co.uk/readings/motivation/motivation5.htm> (acsessed 31 August 05).

These are familiar ideas to reflective practice and action research and many of the basic underlying ideas in this paper on ‘cognitive apprenticeship’ are similar. The methods given in this paper to facilitate the use of these ideas in teaching practice are specifically useful in looking at the relationship between the makers and the author, and the transfer of knowledge between them. The definitions of the aspects of traditional apprenticeship: modeling (master providing a demonstration), scaffolding (support given to apprentice to carry out the task), fading (slow removal of scaffolding), and coaching (overseeing the learner)[58], provide a frame work to look at the author’s traditional apprenticeship experience with the participating makers. This framework is also used to support the idea of teaching the thinking behind actions, ‘cognitive apprenticeship’, which is useful in looking at the way in which the author explained the ideas behind the project’s design process to the participating makers.

The social sciences and anthropology have during the 20th century begun to look at knowledge and go about finding it in places that are ever changing and from an individual’s or communities perspective. They have made the subjects of research the researchers and exposed knowledge and knowing in action, intuition and experiences. They suggest that the reflection, reinterpretation and redistribution of this knowledge be shared with the researched, by a democratic and humanly responsible process, to gain substantial consensus.

9.1.3. Visual, Social and Anthropological Research

Although the following literature on the use of image in social and anthropological research does not refer to the terms ‘reflective practice’ or ‘action research’, a brief review is provided, as the image is clearly a reflective tool in research. J. Collier, an anthropologist, uses photography and film to help understand human behaviour. In his book *Visual Anthropology:*

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[58] Collins, Seely Brown, Holum.

Photography as a Research Method, he makes some relevant points concerning the appropriate use, and the limitations of, visual media in research. Collier points out that,

> Film is the tool for analysis of process where technology innovation or subtle abstraction on technological change is needed.[59]

This statement helps to confirm the use of film/video to record the making of the table and chairs and some of the making action witnessed by the author during his apprenticeship experiences. The following quote from the same book further validates the use of film/video in capturing those moments of design decision while making and the relationship between the makers and the author at those moments.

> Only the moving picture film can record the realism of time and motion, or the psychological reality of varieties of interpersonal relations.[60]

Collier also makes the point that visual media in research remains illustrative in its nature and has its limitations.

> …we have not succeeded in completing research with the camera unless we can place the photographs aside in our final statement. The part of our study which has not been interpreted in this way remains illustration, not research conclusion…[61]

M. Banks a reader of social and cultural anthropology at the University of Oxford, in his book *Visual Methods of Social Research* reminds us, that the researcher who records visual media in the field should do so in collaboration with the subjects of his research and perhaps has no choice but to do so.[62]

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[59] J. Collier, *Visual Anthropology: Photography as a Research Method*. London, Holt, Rinhehart and Wiston, 1967, p.128.

[60] Collier, p. 129.

[61] Collier, p. 67.

[62] M. Banks, *Visual Methods in Social Research*, Sage, London, 2001, p. 119.

9.1.4. Practice-Based Research in Art and Design

The use of artefacts and visual material to document the creative process or narrative comes naturally to designer\makers. To designer/makers, professional practice is predominantly visual and physical in nature. In designer/maker practice, visual media, physical processes and artefacts provide stimulation for holistic and non-linear creative thought processes that develop innovation. Likewise the tacit and experiential knowledge of the designer/maker is embodied in the related visual media, physical processes and artefacts. If designer/maker practice-based research is to be articulated and its creative narrative exposed, visual media and artefacts must be employed. Professor C. Rust (from the Art and Design Research Centre at Sheffield Hallam University) writes of the advantages of visual media and artefacts in communicating tacit knowledge and related thought processes behind creative innovation. He considers his experiences in supervising design-related PhD projects and writes:

> It was apparent that the collection of drawings and 3D objects provided a record of the research in which all aspects of the work could be seen and encompassed, in a holistic fashion by the researchers.[63]

In the same paper Rust describes how the use of a record of artefacts aids the researcher:

> The artefact record was quite different from written notebooks which do not provide a complete picture ‘at a glance’ and require their owner to maintain a complex mental picture (not accessible to collaborators) of their work if they are to navigate and exploit their records.[64]

The following two quotes from the same paper by Rust describes some of the reflective potential of images and artefacts to the research process:

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[63] C. Rust, ‘Design Enquiry: Tacit Knowledge and Invention in Science’, Sheffield Hallam University, Art and Design Research Centre working paper 8 July 2003, <http://www.shu.ac.uk> (accessed 8 August 2005), p. 7.

[64] Rust, 2003, p. 8.

> The provision of a rich set of images or artefacts provides an environment in which an individual can dwell in their work and employ their tacit knowledge.[65]
>
> … a designer's ability to embody ideas and knowledge in artifacts can give us access to tacit knowledge, and can stimulate people to employ their tacit knowledge to form new ideas.[66]

The designer, in research, can develop their role by making artefacts to assist and/or communicate the design process or demonstrate a design. Rust writes:

> If an energetic and able designer can find any role at all in a research environment they can quickly develop that role by creating and deploying artefacts that affect the work in hand and demonstrate their ability to make a difference.[67]

In the Iceland project, knowledge regarding design-and-make practice, embodied and communicable within artefacts and images, was used to continuously analyse, reflect (holistically) and reform the 'essentially experiential and heuristic'[68] research process. The artefacts and images used as a reflective and communicative tool amongst project participants also becomes the archive or narrative of the designing and making journey.

With regard to the subject of reflection in design inquiry, Tim Marshall and Sid Newton from the School of Design, at the University of Western Sydney, Australia, in their paper given at The Research into Practice Conference 2000 at the University of Hertfordshire (UK), suggest the following:

> Design inquiry might therefore be described in terms of reflective practice itself: as a conversation with the situation where understanding the back-talk from the situation is essential to the process of inquiry itself. In the context of reflective practice, Schon (1983) proposes story-telling as an effective genre for the translation of research back into practice. Story-

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[65] Rust, 2003, p. 8.

[66] Rust, 2003, p. 12.

[67] Rust, 2003, p. 13.

[68] K. Bunnell, 'The Integration of New Technology into Ceramic Designer-Maker Practice', PhD Thesis, Robert Gordon University, Aberdeen, 1998, (CD-ROM), p. 86.

> telling discloses relevant themes, rather than theories. Story-telling both facilitates and actively promotes a transformation of the story themes into a specific situation context. In this sense, the stories themselves represent design knowledge.[69]

Having described design inquiry as a form of reflective practice, Marshall and Newton go on to propose that:

> In place of scientific inquiry we propose scholarly design. In this sense, design inquiry (as with scientific inquiry) represents a valid form of scholarship. The value of design inquiry is as a contextual and situated engagement with practice: it is a means of grounding research in practice. The validity of this engagement is not embodied in the rigour with which a particular method is applied, but rather the agency the enacted propositions carry with them for practice: the facility of the research work to reframe or provoke further action.[70]

Marshall and Newton position scholarly design as a valid form of academic research. In designer/maker research it is important that the knowledge embodied and communicated in visual media, making processes and artefacts holds enough information to make the design-and-make process transparent to those within the knowledgeable peer group. If this communicable knowledge is reflected upon and put back into action during the research process, this can be considered 'scholarly' making. It is important however that this reflective activity is made transparent and accessible to a broad academic community. This makes 'generalizable answers'[71] from case studies transferable to other fields. Ken Friedman, Professor of Leadership and Strategic Design from the Norwegian School of Management in his address at the 'Sensuous Knowledge 2' conference, Norway, 2005, reminds us

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[69] T. Marshall, S. Newton, 'Scholarly Design as a Paradigm for Practice-Based Research", paper at The Research into Practice Conference 2000, The Centre for Research into Practice, biennial international conference at the University of Hertfordshire (UK) 2000, <http://www.herts.ac.uk> (accessed 6 November 2005).

[70] Marshall, Newton, 2000.

[71] K. Friedman, 'Theoretical and Philosophical Challenges in Artistic Research and Development', Address delivered to Sensuous Knowledge 2, Norway, November 2005 (from correspondence with K. Friedman, December 2005).

> …that it is not experience itself, but interpretation of the experience that makes us learn.[72]

In C. Gray and J. Malins's book *Visualizing Research,* they describe reflective practice, in relation to research:

> Reflective practice therefore attempts to unite research and practice, thought and action into a framework for inquiry which involves practice, and which acknowledges the particular and special knowledge of the practitioner. It is a framework that encourages reflection in different ways. Retrospective reflection - 'reflection-on-action' - is a critical research skill and part of the generic research processes of review, evaluation and analysis. 'Reflection-in-action' is a particular activity of professional practitioners and involves thinking about what we are doing and reshaping action while we are doing it. In this sense it is improvisational and relies on feeling, response and adjustment. Schon likens it to conversation, especially in relation to design. He suggests that designing is a 'reflective conversation with the materials of a situation' (Schon, 1983, chapter 3, p. 78).[73]

This description of reflective practice interpreted from the designer/makers point of view suggests that 'reflection-on-action' is a legitimate academic framework to reflect on the physical actions of the designing and making process. Likewise 'reflection-in-action' can be interpreted as being subjective in nature and peculiar to the individual, and the process of designing while making suits very well Schon's suggestion of a 'reflective conversation'.

With regard to the inevitable one-sided view and lack of objectivity of the 'practitioner-researcher', Gray and Malins provide a strategy of peer review to combat this problem:

> It can be addressed to some extent by always exposing ideas and practices to other professionals for feedback, support and advice. In seeking the views of others, which will inevitably be subjective, we can develop inter-subjective views, which are less likely to be one-sided. Of course, keeping a critical view of your research at all times is essential. However, the advantages of the practitioner-researcher role are compelling: your 'insider' knowledge, experience and status usually lends your research credibility and trustworthiness in the eyes of your peers, that is, you are not an 'external' researcher. Most importantly, you are inquiring

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[72] Friedman, December 2005.

[73] Gray, Malins, p. 22.

> as a reflective practitioner, acknowledging the complexity, dynamism and unpredictability of the real world.[74]

During the process of designing and making the table and chairs during the Iceland project, the participant makers, who were effectively part of the research team, provided peer review. This designing and making process, however, was further reviewed by the touring exhibition and is presented in this thesis for extended peer review.

Throughout the Iceland project it was apparent that methodological models of collaborative designer/maker research practice were not known to the author. The lack of standard practice in designer/maker research practice made it necessary to invent methods and borrow them from other fields. In practice-based design research, Gray, Ure and Malins write that:

> Adopting a practice-based methodology entails making use of the inherent knowledge, understanding and experience of the practitioner, acquired through the designer's own informal research, but to which a further 'toolbox' of practice-based strategies could be added or invented. This is entirely logical since the research questions, methods and outcomes are derived from, and applied to, issues of direct relevance to the field.[75]

They go on to say that borrowing 'pseudoscientific or social science methodologies'[76] may be inappropriate or unsympathetic to the nature of the designer's enquiry. This is all fuel to support the specific development of methods for the Iceland project, which were drawn from a mix of sources including the existing practice and experiences of the author and collaborating makers. Instead of the scientific idea of transferable methodology, Gray and Malins suggest a notion of

> … explicit 'rules of conduct' specifically related to an individual's research project, allowing a clear understanding of procedure (transparency), but

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[74] Gray, Malins, p. 23.

[75] J. Malins, J. Ure, C. Gray, 'The Gap: Addressing Practice-Based Research Training Requirements for Designers', Sheffield Hallam University, 1999, <http://www.shu.ac.uk> (accessed 8 August 2005).

[76] Malins, Ure, Gray.

> acknowledging that complete transferability is not achievable, nor perhaps desirable.[77]

This incomplete transferability of a set of rules of conduct, specific to an individual's research, fits within a constructivist paradigm where research findings are specific to the inquirer and inquired, but aim to generate knowledge for which there is substantial consensus.[78]

Within the Iceland project consensus was sought within the group of participant makers for the development of methods and the outcomes of practice. The outcomes of the project's collaborative practice (the table and chairs) were exhibited in order to achieve a consensus on whether the artefacts successfully expressed indigenous Icelandic crafts as had been intended (exhibition tour and survey provided on page 113).

Dr Anne Douglas from the Centre for Research in Art and Design at Gray's School of Art, Aberdeen, in her paper delivered at the RADical conference, Aberdeen, 1994, presented the relationship between practice and research in her own work as a practice-led sculptor researcher. Douglas explains that the creative process can be observed as a phenomenon in the development of methodology.[79] In the same paper Douglas goes on to write:

> The individual orientation of artistic practice requires the kind of methodology which can admit choice and the structure within which choice can be exercised. Methodology in this sense does not contain procedures which could disprove the thesis (the positivist view point). It simply acts as a prism through which a set of beliefs can be examined. It is relative not absolute in nature.[80]

It was important throughout the Iceland project for the creative process to be given the same freedoms enjoyed by designer/makers working outside

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[77] Gray, Malins, p. 18.

[78] Gray, Malins, pp. 19 - 20.

[79] A. Douglas, 'Relationship between Practice and Research: The crafting of a metaphor', from the, RADical Conference Preceedings '94, at the Centre for Research in Art & Design Gray's School of Art, Aberdeen, 1994, p. 9.

[80] Douglas, 1994, p. 11.

research. What the research element of the project provided was a framework in which the creative process could develop freely while making a visual and audio record of actions and events for later reflection. Reflecting on the actions and events of the project facilitated learning, and the new knowledge gained was used to influence the subsequent elements of the designing and making process.

Within recent debate about practice-based research in art and design M. Thomas has asked the following question:

> Can practice-based research in a university environment create work of real aesthetic merit and true research value?[81]

In answer to this question Dr Anne Douglas provides the following and also explains the focus of such research.

> I think one of the great dangers of the expectations of research is that it can solve everything. There is no guarantee within research that you are going to produce the fantastic piece. What it is trying to address is the thinking, issues and conditions around which art is made. There is no guarantee that you will have, as Susan Tebby says, the masterpiece at the end. No research does that, not even medicine.[82]

Douglas went on to initiate the 'On the Edge' research project in 2001, at Gray's School of Art, Robert Gordon University, Aberdeen. This project initially looked at the role and value of visual arts in remote rural areas,[83] in the context of living in Northern Scotland.[84] More recently the project has moved on:

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[81] M. Thomas, 'Editorial: Practice-based research', *Digital Creativity*, Vol. 15, No. 1, 2004, p. 1.

[82] A. Douglas, 'Question and Answers Session', RADical Conference Proceedings '94*,* at the Centre for Research in Art & Design Grays School of Art, Aberdeen, 1994*,* p. 31.

[83] A. Douglas, 'Biographical Statement', *Research Personnel*, Gray's School of Art, Robert Gordon University, Aberdeen, <www2.rgu.ac.uk/subj/ats/research/home.html> (accessed 11 December 2005).

[84] Gray's School of Art, Robert Gordon University, 'On the Edge Research Project' <http://www.ontheedgeresearch.org/> (accessed 11 December 2005).

> In 2005 we have arrived at a new position in which art is an action between individuals within the everyday. We are currently exploring the value of art practice in these terms.[85]

As a Senior Research Fellow, Douglas':

> … postdoctoral research has focused on the formulation of an approach to art making that is participatory and exploratory - where individuals with diverse perspectives are involved in determining what kind of art should be made.[86]

Douglas' 'On the Edge' project has much in common with the Iceland project. Both are interested in the cultural value of artists'/makers' work, are practice-led and involve and engage creative practice participants within the research process.

> I am interested in developing approaches to visual art practice that evolve a creative relationship with specific place and culture, in particular cultures undergoing radical social and economic change. I am particularly interested in generative metaphor as a specific tool for sharing poetic images that in turn shape the way we understand processes and our behavior towards them.
>
> My artistic practice has undergone a transition from 'maker of objects', artistic practice as an individually authored activity, to 'maker of situations' through the development of focused art projects from a research base. Formal research offers me a framework for sharing explicit questions on the value of art across disciplines. Visual art research can, I believe, offer unique insights into this area of thought.[87]

The 'On the Edge' project is unlike the Icelandic project in that the participants in the inquiry involved individuals and organisations responsible in different ways for the provision of culture[88] and visual arts practice; whereas the Iceland project's inquiry involved only artists and makers as participants and was not concerned directly with individuals and organisations responsible for the provision of culture. The author would

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[85] <http://www.ontheedgeresearch.org/>

[86] <http://www.ontheedgeresearch.org/>

[87] Douglas, 'Biographical Statement'.

[88] <http://www.ontheedgeresearch.org/>

position his practice within the Iceland project as, as Douglas puts it, a 'maker of situations' and as a formal researcher with 'a framework for sharing explicit questions on the value of art [indigenous crafts] across disciplines'.[89]

From discussions at the Sensuous Knowledge 2 conference in Norway, in November 2005, T. Mjaaland interprets Douglas' meaning of artistic research within the context of the 'On the Edge' project:

> Artistic research, according to Douglas, creates a space for questions that is not, to the same extent possible within artistic practice itself. Thus research is more than exploration (which might be understood as a more open-ended process), but rather a *structured interrogation through the practice of art.*[90]

Designer/maker research in the context of the Iceland project can be interpreted in the same way as Mjaaland's description of Douglas' artistic research, as a 'structured interrogation' through designer/maker practice.

Closer to professional design practice, and specifically new product development inside companies, the Centre for Design Innovation, within the Birmingham Design Research Group, at the University of Central England, has made live observations of decision making to identify and study critical decision points. The 'critical decision points' in new product development are useful points of reference for reflection and understanding the nature of this creative, non-linear and non-logical process. The project leader, Professor Bob Jerrard, briefly describes the reflective potential of this research:

> The knowledge resulting from this research would contribute greatly to the companies studied as a reflective tool for their creative practice. It will also be informative to other small companies NPD [New Product Development] process in reflecting their decision-making and risk assessments. The academic audience would benefit from the outcomes of this research as a

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[89] Douglas, 'Biographical Statement'.

[90] T. Mjaaland, 'A summary from discussions in Group D', Chair: Nils Gilje, from the conference, Sensuous Knowledge 2: Aesthetic Practice and Aesthetic Insight, at Solstrand, Norway, 9 - 11 November 2005, p. 12.

> further development to the knowledge in the fields of creativity, knowledge communication, designing and design management.[91]

It is of relevance to the Iceland project to recognize the importance of critical decision points in the designing and making of the table and chairs. During the designing and making process it was a strategy of the Iceland project to try to capture in photographs, audio recordings and video these decision-making-moments, specifically design decisions made during the making process, for later reflection.

9.1.5. Practice-based Research in Art and Design in Iceland.

The following Icelandic academics in the fields of art, design, craft and technology were contacted and asked for any information regarding practice-based research in Iceland:

- Jóhannes Thordarson, Dean of the Department of Design and Architecture, Iceland Academy of the Arts,
- Kristjan Steingrimur, Dean of the Department of Visual Arts, Iceland Academy of the Arts,
- Gudrun Helgadottir, Department of Rural Tourism, Holar University College, Iceland,
- Gisli Thorsteinsson, Assistant Professor in the Department of Craft, Design and Technology, Iceland University of Education,
- Jón Erlendsson, Knowledge Network in the Engineering Department, University of Iceland,
- Halldor Gislason, Dean of the Department of Design at Kunsthogskolen i Oslo, National Academy of the Arts, Norway.

From the correspondence with the above Icelandic academics it is clear that there is, and has been, little practice-based research in the area of art, design and craft, in Iceland. The only practice-based research that was found was Gisli Thorsteinsson's project. In correspondence with the author on 8 December 2005, Gisli Thorsteinsson described his PhD project as 'action

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[91] B. Jerrard, 'Risk Taking in Design – an investigation of critical decision points in new product development', Centre for Design Innovation, Birmingham Design Research Group, <http://www.biad.uce.ac.uk> (accessed 16 August 2005).

research but in the area of Innovation Education using a Virtual Reality Learning Environment.' Gisli Thorsteinsson's research makes case studies of 'Innovation Education' design projects in schools and shows how the use of 'Virtual Reality Learning Environments' can aid communication and development within these projects.

There is no academic institution in Iceland concerned with postgraduate studies or research in craft practice. In Iceland there is little happening in the research field of art and design as a whole, and this situation is confirmed in a survey of art and design universities in Nordic and Baltic countries, conducted by Designium, The New Centre of Innovation in Design, at the University of Art and Design Helsinki. In this report Hanna Heikkinen writes the following about the current situation in the design field:

> The situation for the most designers in Iceland is challenging. There is much creativity but only few manufacturers. To get something produced, the designers have to probably do it themselves or look abroad, both options requiring a lot of resources.
>
> Therefore, the Iceland Academy of the Arts has established an interdisciplinary design program, which focuses on concept more than craft, and with an emphasis on marketing and business training.
>
> When it comes to Iceland and Lithuania, the whole design sectors are in need of comprehensive development programs. [92]

9.1.6. Video in Practice-based Research

B. Hutchinson, P. Whitehouse and P. Bryson, have written a workbook; *Modern Media and Reflective Practice*, for the Post Graduate Diploma/Master's Degree in Education, at the University of Ulster. This provides clear guidance on the use of video in action research and reflective

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[92] Hanna Heikkinen, *INNOVATION NETWORK OF ART AND DESIGN UNIVERSITIES IN NORDIC AND BALTIC COUNTRIES Preliminary Survey*, Designium, The New Centre of Innovation in Design, University of Art and Design Helsinki, 2004, http://www.learningbusiness.fi/portal/research_insights/reports (accessed 7 December 2005), pp. 45 - 57.

practice in teaching. The Iceland project used video to make a record of the predominantly visual transfer of knowledge between makers while making, and to provide a tool for later reflection of practice. Of particular relevance to the Iceland project, the workbook of Hutchinson, Whitehouse and Bryson argues for the value of video in capturing more than just what people say:

> What is much more satisfactory for getting an unbiased record would be to use a tape recorder or better still, capture the event on video. The video has the added advantage of letting us see the gestures people are making as well as hearing what they say; but more importantly it lets us see the situation in which the event is taking place which adds to the meaning of what is being said.[93]

Video-recording teaching practice and the context in which it takes place for later reflection by the teacher is an empowering reflective tool. In the Iceland project the authors use of video in recording elements of the designing and making of the table and chairs in partnership with the participant makers is an reflective tool for all concerned. The situations and actions recorded during the Iceland project are open to a number of perceptions. Knowledgeable peers and outsiders to the designing and making process can independently review the projects situations and actions from the relatively unbiased multimedia record (multimedia discs 1 – 7). The multimedia record is relatively unbiased because, although the photographic and video footage cannot lie, the situations and actions recorded and edited were the choice of the author. It was the intention of the author to record and present the situations and actions in a consistent manner. The record was made within guidelines (page 64 and 106) to provide for consistency of representation between the interaction interviews and during the making process, allowing for independent review. In Hutchinson, Whitehouse and Bryson's words, 'this openness of the medium is particularly suited to the exploratory nature of

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[93] B. Hutchinson, P. Whitehouse, P. Bryson, *Modern Media and Reflective Practice,* Workbook from the Post-Graduate Diploma/Master's Degree in Education, University of Ulster, 1995, p. 6.

action research'[94] and 'the use of video is closely associated to the ethics of action research.'[95]

The Iceland project's focus is the visual and tacit knowledge communicated through making and the context in which it takes place and thus the use of video and photography is an appropriate method for later reflection.

Hutchinson, Whitehouse and Bryson provide the following guidance for the action researcher using video:

> We are a society of face savers, you must be aware of the threat of the medium and seek to assure those you use the medium with. You must attempt to suppress your own ego and respect the individuals who participate with you in this project. Always be overt with your aims and intentions, let people get used to the camera, you are not directing you are observing, video in this project is assisting your observation. Therefore you should aim to record as typical as scene as possible, the only way to achieve this is to use the camera with people rather than on them. One last point is always to remember why you are using the camera, to challenge your own perceptions and learn more about yourself and your practice, you are the subject in front of the lens not the controller behind it.[96]

The above recommendations match up with the methods employed in the Iceland project (page 72 and chapter 6.1. page 106) and are considered in this chapter, section 9.2 Reflections on the 'Makers' Journey' (page 152).

S. Braden from the University of Reading considers the use of video in collaborative action research as a reflective tool, in his 1998 PhD thesis, 'A Study of Representation Using Participatory Video in Community Development: From Freire to Eldorado'. The following quote from Braden regarding the use of video to reflect collectively, makes the point that such shared reflections consolidate a group's identity, allowing for the collective imagination to be communicated:

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[94] Hutchinson, Whitehouse, Bryson, p. 30.

[95] Hutchinson, Whitehouse, Bryson, p. 30.

[96] Hutchinson, Whitehouse, Bryson, p. 30.

> It tests identity coherence, and when this is done within the insider world, it offers the freedom to reflect and to imagine collectively – and then perhaps, to represent and communicate or re-presentation to others.[97]

Within the Iceland project the interaction interview process and the collaborative nature of the project created and nurtured the collective imagination among the participant makers. The multimedia presentations of the interaction interviews and the making process presented with this thesis (multimedia discs 1, 2 and 7), strengthens the collective imagination of the participants in developing new methods of practice and further projects.

9.1.7. Collaborative Visual Arts Practice

Karen Scopa completed her PhD thesis at Robert Gordon University, Aberdeen, in 2003, on the subject of developing strategies for interdisciplinary collaboration from her own and other visual-art practitioners' practice. Scopa writes:

> …this appears to be one of the first practice-led, formal research projects to directly address strategies for engaging interdisciplinary collaborative projects (between a visual artist and other practitioners).[98]

To assist with the reflections on the Iceland project it is useful to consider a summary of Scopa's findings regarding key qualities observed in successful collaboration:

> …the following four key qualities present in successful collaboration and lacking in unsuccessful collaboration were identified:
>
> - Common ground: the presence of common understanding established within the shared space created between collaborators, upon which a shared creative vision is developed.

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[97] S. Braden, 'A Study of Representation Using Participatory Video in Community Development: From Freire to Eldorado,' PhD Thesis, Department of Agricultural Extension and Rural Development, University of Reading, 1998, p. 102.

[98] K. Scopa, 'The Development of Strategies for Interdisciplinary Collaboration from the Visual Arts,' PhD Thesis, Robert Gordon University, Gray's School of Art and Design, 2003, p. 248.

- Shared Creative Vision: the presence of common aims and expectations of collaboration developed through dialogue, negotiation and the establishment of shared collaborative values.
- Shared ownership: the presence of an equal sense of shared authorship, control and responsibility in achieving a collaborative outcome, which is felt by all collaborators.
- Mutually Beneficial Transformation: the presence of a shared openness and willingness to learn from and about co-collaborators through the shared creative processes and to be challenged and changed through the collaborative process.[99]

The above findings of Scopa's study closely match the author's experience of collaboration with the makers during the Iceland project. These experiences are discussed further in, 9.2 Reflections on the 'Makers' Journey'(page 152).

9.1.8. Summary of Theories Relating to 'The Makers' Journey'

The Iceland project has taken place within a constructivist paradigm, where the author has worked alongside the participating makers as co-researchers in reflecting on their collaborative practice while designing and making the table and chairs. Throughout the project this reflective process has continued to inform and shape the creative process.

The social science and anthropological theories of the mid to late twentieth century have provided a framework of theory and methods of reflective and practice-based research. These theories and methods of reflective and practice-based research appear to be most relevant in the development of research in designer/maker practice.

The use of visual media including video is suited to reflective and practice-based research. It is particularly suited to the Iceland project and designer/maker practice, which has a focus on visual and unspoken means of communication.

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[99] Scopa, p. 183.

The field of reflective and practice-based research in art and design is a new and rapidly expanding one, with much debate concerning theory and methods. It is important to recognize the value of developing theory out of art and design's own fields of practice and to value the individual nature of such research.[100] If designer/makers are to have a position in research, they must take responsibility for communicating to a broad audience, by providing peer-reviewed explanations of their reflective making practice.[101] Collaborative and reflective designer/maker practice can be seen as a method of peer reviewing practical and visually led activities within the field. However, these activities must be exposed to members of the community outside the field by using commonly understood language.

During the process of collaborative designing and making within the Iceland project a photographic, audio and video record was captured with a focus on, what is described in Jerrard's book as, 'critical decision points'[102]. This record of 'critical decision points' presents elements of the participant makers' working methods in a new way and perhaps reveals previously unnoticed and taken for granted aspects of their practice. This record of the participating makers' practice becomes a useful point of reference for reflection and understanding the nature of their creative, non-linear and non-logical process. These reflections provide insight and new knowledge, which may then inform and reshape subsequent practice.

One of the most important outcomes of reflective and practice-based research in the field of art and design is the narrative of the journey and the interpretation of this, and not necessarily the artefacts produced at the end, as Dr Anne Douglas has said,

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[100] Gray, Malins, p. 18.

[101] Friedman, December 2005.

[102] Jerrard.

> There is no guarantee within research that you are going to produce the fantastic piece. What it is trying to address is the thinking, issues and conditions around which art is made.[103]

A survey of academics and literature from the field of art, design and technology in Iceland has revealed that little in the way of practice-based research exists and the academic 'design sectors are in need of comprehensive development programs'.[104]

9.2. Reflections on the 'Makers' Journey'

This section of the chapter consists of the author's reflections on the different phases of the 'makers' journey' in designing and making the table and chairs during the Iceland project. References are included where relevant to the reviewed literature on reflective and practice-based research. The different phases of the designing and making process reflected on by the author include:

- **Apprenticeships.** Working alongside the six participating makers and carrying out the interaction interviews.
- **Practical Experiments.** Artefacts made by the author and collaboratively with the participating makers, as learning aids and experiments, as part of the designing and making of the project table and chairs.
- **Making decisions.** Decisions made by the participating makers and the author on the design and methods of making the table and chairs.

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[103] Douglas, 1994, p. 31.

[104] Heikkinen, p. 45-57.

9.2.1. Apprenticeships

Professor Peter Senker in a paper concerned with the formal training of apprentices for the Teaching and Learning Research Program, University College Northampton, provides a useful definition of 'apprenticeship':

> … 'apprenticeship' is defined very broadly to encompass the learning of workers entering an occupation for the first time, regardless of the type of occupation involved or the qualifications (if any) required for entering the occupation.[105]

The author's experience of being an apprentice for one or two weeks to six different makers during the project provided insight into the visual and physical knowledge and material culture embodied in their work (page 71). The previous experience of the author as an accomplished maker himself gave him the observation skills for him to absorb this new knowledge efficiently. Less experienced makers beginning their training have less insight into making and therefore less is learnt when they observe other skilled makers. The requirement of video recording the author's apprenticeship experience as a reference for reflection within the Iceland project enhanced his observations. The following article, titled 'The Three Ways to Watch and Learn' was written by the author for the Iceland project newsletter *A Craftsman*. This newsletter was distributed by e-mail to all involved and interested in the project.

> Having been an apprentice to my father and to many other skilled craftsmen after him, and now being a skilled craftsman in wood furniture myself, I have been reflecting on the experiences of my short apprenticeships with the different Nordic craft practitioners involved in the Iceland Project. When I set out to be a craftsman it took me a very long time to learn the skills that I needed. Now I practise with great confidence in my specialist area, fashioning my own tools and developing my own working practices. When I had the opportunity to learn new skills from craft practitioners in other fields and in their own workshops for the first time, I was very surprised at how transferable my skills were and how quickly I could learn. When considering new and acceptable forms of academic

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[105] P. Senker, 'An Exploration of the Nature of Apprenticeship', Teaching and Learning Research Program, University College Northampton, <http://www.tlrp.org/project%20sites/IILW/>, (accessed 31 August 2005).

> reference for craft practitioners, it is impossible to ignore the importance of observation. Craft practice is learned predominantly by observation and mimicking crafts people's skills in using tools and manipulating materials. Inuit children are taught many activities when they are very small and before they are physically able to try the real thing. To learn how to paddle a kayak a child is sat on the parent's knee facing forward, while the parent mimics the action of paddling a kayak with the child's hands inside their own. My father taught me to saw a piece of wood in the same fashion but with a real saw and a real piece of wood. He simply put my hand inside his on the saw handle. Any child that learns skills by mimicking physical actions must learn more quickly. While observing another craft practitioner at work the unskilled apprentice does not easily understand what they are looking at, or what telling signs will give them the clues to do the same. A skilled craft practitioner learns easily and copies the same actions successfully with a little practice. The artistic and skill-seeking craft practitioner not only learns the skills of others quickly but can identify the transferable elements of a practice and successfully combine them with their own skills knowledge.[106]

The timescale in which the author's apprenticeships were conducted was a short period of one or two weeks. In this short period of time visiting the makers it was not possible to witness the full potential of their skills, or to understand and learn all the technical knowledge they have of their materials and processes, and the cultural content of their work. It was, however, long enough to gain a sense of empathy with the makers and their work. The focused approach to the apprenticeships, with the structured interview and the shared understanding between the author and the makers of the design brief that they were to resolve together, brought to the surface demonstrations of physical and visual knowledge that satisfied the shared aims. The period of time taken for the apprenticeships was too short to adequately learn the maker's skills and related information in order to carry out the occupation independently. In a traditional apprenticeship, the apprentice may be bound by contract for a number of years to a master,

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[106] T. Hawson, 'The Three Ways to Watch and Learn', issue 3 of the newsletter, *a craftsman,* 2004, <http:/www.thomashawson.com> (accessed June 2005).

learning by observing demonstrations by the master and doing a lot of repetitive and preparative work until they are confident to see a job through themselves. A modern apprenticeship sometimes combines on the job learning with formal training provided by a further education college or other institution. A commitment by the author to do any amount of repetitive work was offered during his short apprenticeships. The author offered to do the mundane jobs in the workshops in order to earn the makers two mornings of time to complete the formal interviews. The author showed willing and enthusiasm in doing workshop maintenance, and this won the favour and respect of the makers visited. The author felt that such work was a pleasure when carried out in someone else's workshop as it was a great way to study the contents, layout and work in progress. The knowledge gained by the author sweeping up in another maker's workshop will have been greater than that of an inexperienced apprentice doing the same thing.

The time spent by the author with the selected makers during the apprenticeships or interaction interviews and while making the table and chairs was a process of two-way communication, sharing knowledge and learning (multimedia discs 1, 2, 7). While working alongside the selected makers a continual dialogue was maintained verbally and visually and by physical demonstration. The author asked questions about the maker's work and the makers asked questions about the project. This communication continued to inform the research and develop new forms of critical thinking, changing 'the levels of consciousness'[107] of the author and the participating makers. Having this communication in the workshops provided readily available material to illustrate some of what was said in the interaction interview presentations and to carry out small experiments (page 76). These research experiments exposed the otherwise hidden tacit knowledge of the author and participant makers, so the work could be considered, 'in a holistic fashion by the researchers'[108]. These experimental artefacts, and images of

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[107] Hall, Gillette, Tandon, p. 30.

[108] Rust, 2003, p. 7.

them, allow for other makers 'to employ their tacit knowledge to form new ideas'[109].

The author was a traditional apprentice to the makers and they were cognitive apprentices to the author.[110] These definitions of apprenticeship are provided in an article by American researchers concerned with teaching and learning, Allan Collins, John Seely Brown, and Ann Holum:

> in traditional apprenticeship, the process of carrying out a task to be learned is usually easily observable. In cognitive apprenticeship, one needs to deliberately bring the thinking to the surface, to make it visible…[111]

The author provided 'scaffolding'[112] for the makers to understand the project's plan, objectives and proposed methods, by explaining the thoughts and experiences that began and developed the project. These open explanations gave emphasis to the continual reflective thought process that went into developing the project. For example, the story of how the author saw new potential in sharing making knowledge between makers after visiting the boat builder Peter Matheson as part of the development of the Iceland Parliament Speakers Chair (page 18) provided 'scaffolding' or support for the makers to understand the aims of the collaborations. The author's reflections on this experience were explained and the makers were invited to consider and explain their own reflection on their collaboration with the project. The author made every effort to consider openly the makers' reflections and demonstrate his willingness to change the project plan or design of the table and chairs, sharing ownership of the project and design. This shared ownership and equal sense of authorship provided for 'mutually

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[109] Rust, 2003, p. 12.

[110] Allan Collins, John Seely Brown, and Ann Holum, 'Cognitive Apprenticeship: Making Thinking Visible', http://www.21learn.org/arch/articles/brown_seely.html, accessed 1 October 2005.

[111] Collins, Brown, Holum.

[112] Collins, Brown, Holum.

beneficial transformation'[113]. This gave value to the makers' commitment and raised the level of their enquiry and effort in problem solving during development of the table and chairs.

During the sharing of visual and physical knowledge between the participating makers of different nationalities and the author, it was not apparent that differences in language hindered the process. It became apparent to the author that between him and the participating makers there existed a common method of communication through visual language, gesture and physical demonstration (page 71). This form of communication was direct and natural to the participants and for the purposes of the project. The use of video and photography to record this communication and the presentation of it in the interaction interview presentations was more appropriate than a fieldworker's inscribed notebook. Video and photography as a record of material reality provides selective but specific information, 'with qualifying and contextual relationships that are usually missing from codified written notes.'[114] However biased the author may have been in his selection of the visual information recorded, this information cannot lie and it will remain open to reinterpretation among the participants and other researchers. The openness of the visual medium, and the explicit way it exposes the context of situation, matches the 'ethics of action research'[115].

The main objective of the apprenticeship phase of the project was for the author to experience and learn Icelandic crafts and making knowledge from the selected makers, asking them specifically how their specialised knowledge could contribute to the designing and making of a table and chairs to satisfy the agreed design brief (page 55). It was hoped that this method of collecting cultural making knowledge would enable the author to propose outline designs for artefacts that would express Icelandic culture. Later in the

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[113] Scopa, p. 183.

[114] Collier, p. 10.

[115] Hutchinson, Whitehouse, Bryson, p. 30.

project these proposed designs were to be amended by the selected makers on paper and during the making process. The proposed method of multi-disciplinary input into the designing and making of a table and chairs (interaction plan, page 57) to express Icelandic culture was the hardest part of the project to explain or for the selected makers to be convinced of. All of the makers did accept their role as cultural mediums (carrying into the future craft traditions), but some found it harder than others to realise the potential of becoming more conscious in expressing this in their work. The author openly explained to the selected makers the thinking behind his commitment to try and express cultural elements of the makers' work into a shared process of designing and making a table and chairs suitable for batch production and export from Iceland.

The author explained that Icelandic making traditions were becoming undervalued in this area and a project that would expose the future value of the makers' cultural assets might create enthusiasm. It was also suggested by the author that if these cultural assets could not be woven into the future outcomes of the makers work, including artefacts that could become manufactured goods, then it would be to the detriment of their society's culture. When trying to explain these thoughts to the selected makers it was difficult to provide full explanations or examples of the Icelandic making knowledge that could be transferred to the design of the demonstration artefacts. When the makers were asked during their interaction interview what elements of their work could be transferable to the design and making of the demonstration artefacts the replies were vague and non-specific. The following quote from Fjolnir Hlynsson's edited interview (multimedia disc 1) gives an example of the type of answers given. The author asked:

> Considering your skills how do you think you would best influence the project product [demonstration artefact]?

Fjolnir Hlynsson's reply was:

> My knowledge of how the Nordic elements that you are looking for in the thing [demonstration artefact], I would know something about them because, I am of this Nordic origin, and I thereby have them in me. [116]

The non-specific comments on the makers' transferable making knowledge underlines again the importance of visual and physical making demonstrations as the most appropriate communication method for makers. It may have been more appropriate for the makers to have been asked to make experimental artefacts to answer these questions instead.

The apprenticeships succeeded in the exchange of making-knowledge and ideas about the use of such learning between the author and the makers. This communication was mainly visual and physical in nature. For the benefit of developing ideas to answer the design brief it may have been more appropriate for the author and the participating makers to have made together a greater number of experimental artefacts. However, it was observed by the author that making experimental artefacts with the participating makers greatly enhanced the communication of tacit, visual and contextual knowledge. The video and photographic record of the experimental artefacts and the making of them shares the knowledge invested in them.

9.2.2. Practical Experiments

Practical experiments refer to the artefacts made by the author and participating makers during the apprenticeship phase of the project (page 76), and to experiments made during the designing of the table and chairs. During the designing process drawings, scale models and mock-ups of tables and chairs were made as practical experiments. This material can be seen, as Chris Rust from Sheffield Hallam University describes it, 'as a record of the research in which all aspects of the work could be seen and

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[116] T. Hawson, 'Interaction Interview with, Fjolnir Hlynsson, Sculptor, Iceland, June 2003.' *Fjolnir Talk,* 11 minutes and 17 seconds, Multimedia Disc 1, T. Hawson, 2003 (DVD).

encompassed, in a holistic fashion by the researchers.'[117] The researchers in the Iceland project include the participating makers, who were given images of the drawings, models and mock-ups to offer their feedback during the design phase (page 82).

The participating makers as co-researchers also took part in the making of practical experiments during the apprenticeship phase. Some, but not all, of these practical experiments were made to influence the design of the table and chairs. The most illustrative examples of these were the aluminium castings made by the author under the direction of Gretar Thorvaldsson (multimedia disc 2). They included the casting of a spoon (fig. 16, page 80) and an abstract form (fig. 17, page 80). The intention of this experimental making was to see how the faceted knife cut marks from the wooden patterns would be reproduced in the finished castings and how the different surface treatments affected this. The knowledge from these experiments in surface treatment was used in the making of the table and chairs.

The experimental pieces made by the author and Gretar Thorvaldsson were learning experiences for both parties (fig. 16, 17, page 80). It demonstrated to Gretar Thorvaldsson the creative potential of working in partnership with another maker from a different discipline. It was a new experience for Gretar Thorvaldsson to feel an equal share and responsibility in a creative project outside the family business. By doing most of the required workshop labour in making the table and chair components, the author minimised the financial cost for Gretar Thorvaldsson to participate in the project. This reduction in financial costs encouraged Gretar Thorvaldsson's participation in the project. The author further reduced the cost of Gretar Thorvaldsson's participation by carrying out menial duties around the workshop. The project gave Gretar Thorvaldsson the opportunity to take part in an exploratory creative process outside his day-to-day working practice, with minimum financial implications to his business. During the time spent by the author working alongside Gretar Thorvaldsson, enthusiasm and commitment to the project was developed

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[117] Rust, p. 7.

and a new understanding of both parties own working practices and potential was shared. The author was inspired by the depth and quantity of knowledge it was possible to absorb during the experimental making experience within the company and workshop of another maker from a different discipline.

Having completed the apprenticeship phase of the project the author assembled a record of the practical experiments made by him and the participating makers, including artefacts, sketches, photographs, video and audio recordings. The author used this record during the development of design proposals for the project table and chairs as references and as a means of reflecting on the apprenticeship experiences he had had with the different makers. The visual, tacit and contextual knowledge held in this multimedia record informed the design of the table and chairs. By looking, touching and hearing this multimedia record throughout the design process, the author was enabled to relive the apprenticeship experiences and remember the knowledge learnt from the participating makers. This process facilitated the author's intention to embed in the design of the table and chairs as much of the visual, tacit and contextual knowledge learnt from the participating makers as possible. During the design phase some additional experimental making was carried out in the author's own studio workshop. The author, while making the felted Viking trader's helmet (page 40) in his own studio during the design phase, strengthened his memory of the knowledge learnt from his apprenticeship with Asa Hatun (wool worker from the Faroe Islands selected to participate in the designing and making of project artefacts, page 35). These methods of reflecting while making and designing have been developed intuitively out of the author's existing practice as a designer/maker. The Iceland project has adopted a practice-based methodology and, as Gray, Ure and Malins describe, this 'entails making use of the inherent knowledge, understanding and experience of the practitioner, acquired through the designer's own informal research'.[118] Gray, Ure and

[118] Malins, Ure, Gray.

Malins go on to suggest that a ‘‘toolbox’ of practice-based strategies can be added or invented.’[119]

The author’s invented toolbox of strategies includes the interaction plan (page 57) that was partly invented out of his own practice as a designer/maker. This practice-based research strategy was developed in consultation with the Icelandic makers who were asked to consider the interaction plan. The interaction plan included, recording and presentation methods of the collaborative process of designing and making the table and chairs (Appendix 6 Final Interaction Interview Questions and Presentation Structure, page 207, and 6.1 Method of Recording the Making Process, page 106). These recording and presentation methods were developed to provide a multimedia narrative of the designing and making of the table and chairs to non-makers and makers outside of the project. This multimedia narrative also provided the participating makers with an additional means for reflecting on their practice and actions within the project. These methods of reflecting on practice and actions within the project have been new experiences for the participant makers and the author. These reflective methods have provided for the participant makers, the author and outsiders to the project, an ‘interpretation of the experience that makes us learn.’[120]

Learning within the project is demonstrated by the development of the democratic and sensitive commitment made by the participants to the collaborative effort. After the interaction interviews and apprenticeship phase, the project participants had time to reflect on this experience and the project interaction plan (page 57). The project was an unusual and unfamiliar experience for all the participants. An example of the depth and openness of communication between the project participants is provided on the multimedia disc 7, ‘Making the Table and Chairs’ (DVD),[121] which shows

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[119] Malins, Ure, Gray.

[120] Friedman, December 2005.

[121] T. Hawson, ‘Making the Table and Chairs, 2004.’ 9 minutes and 10 seconds, Multimedia Disc 7, T. Hawson, 2004. (DVD)

Gretar Thorvaldsson, Thorhildur Thorgeirsdottir and the author developing surface finishing and construction details. The project received from the participants a sensitive and democratic approach to the collaborative reflection-in-making experience and in return offered an opportunity for learning.

The activities of the project can be considered as a scholarly designer/maker's inquiry[122] and a rigorous 'reflective conversation'[123] with materials and contexts. The participating makers and the author all shared in a reflective conversation through experimental making, focused on answering the table and chairs design brief (page 55). This reflective conversation included reflection-in-making and reflection-on-making practical experiments. The outcomes and record of this reflective conversation via practical experiments includes: drawings, photographs, audio and video recordings and the artefacts. The participating makers and knowledgeable peers will find this record accessible, but outsiders to the field may find it less so. In a discussion on this subject with the author, Chris Rust said,

> I believe the inclusion of visual material allows knowledgeable people to access the quality and validity of activities or materials used in research.[124]

Outsiders to the field, it may be argued, will find the tacit and contextual knowledge present in the Iceland project of little relevance or transferable value. What outsiders may find of transferable value to their field is the reflective, democratic and interdisciplinary nature of the methods developed out of creative designer/maker practice. Regarding the transferability of methodology developed out of the subjective nature of creative practice, Gray and Malins write: 'complete transferability is not achievable, nor perhaps desirable.'[125]

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[122] Marshall, Newton.

[123] Schon, p.79.

[124] Chris Rust, from conversation with the author on 5 October 2005.

[125] Gray, Malins, p. 18.

Inter-subjective views[126] of the participant makers have been developed and considered throughout the designing and making of the table and chairs, providing the collectively reflected outcomes of the project with some objectivity.

9.2.3. Making Decisions

This section reflects on decisions made with regard to the design and methods of construction during the making of the project table and chairs by the participating makers and the author. Some of the decisions made may be described as 'critical decision points'[127] and further reflection of these reveal the 'learning through making' achieved in the process of making the table and chairs. The table and chairs were made in three different workshops in Iceland, between March and May 2004 (page 102).

9.2.3.1. Critical Decision Point Example 1

The first participating maker to be visited by the author to begin making the table and chairs in Iceland was Gretar Thorvaldsson. On arrival at his workshop the author explained the proposed designs for the aluminium components to be made with him. The author explained that the design for the table legs at that time had been criticised by Fjolnir Hlysson for being to heavy.[128] Gretar Thorvaldsson had the same opinion that the amount of aluminium in the casting was too much.[129] To resolve this situation, which may be described as a 'critical decision point', the author drew a new design for the underframe of the table in his sketchbook and he presented it to

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[126] Gray, Malins, p. 23.

[127] Jerard.

[128] Hawson, 'Making the Table and Chairs', 1 minutes and 45 seconds (DVD).

[129] Hawson, 'Making the Table and Chairs', 3 minutes and 51 seconds (DVD).

Gretar Thorvaldsson for his thoughts and approval.[130] This new table underframe design was also shown to Geir Oddgeirsson and Thorhildur Thorgeirsdottir, for them to share their thoughts[131]. In explaining the new underframe design the author showed Gretar Thorvaldsson the visual reference that had influenced the form of the aluminium bracket. The visual reference was a sketch from the author's sketchbook[132], made while apprentice to Birger Anderson, of a beam, an internal component from the hull of the Viking ship; Skuldelev 6, at the Viking Ship Museum. Hearing and seeing the author's explanation, Gretar Thorvaldsson made the following comment 'do you think someone is going to see that'.[133]

While making the design changes the author learnt about and reflected on Gretar Thorvaldsson's practice and workshop capabilities. Making the design changes while in Gretar Thorvaldsson's workshop illuminated the author's reflections and learning. The author's use of visual references was a surprise to Gretar Thorvaldsson and this provided an opportunity for him to recognize the potential for this unfamiliar method in his own work. Through working and solving problems together Gretar Thorvaldsson and the author have shared their reflections and learning, through making. They have both reflected upon the tacit and visual knowledge, within their own and each other's practice, to collaboratively reshape and inform the making of the table and chairs.

9.2.3.2. Critical Decision Point Example 2

As a goldsmith the surface finish of metal is an important aspect of Thorhildur Thorgeirsdottir's work and her sensitive knowledge in this area was specifically requested in the design comments form (page 234) and during the making of the aluminium components for the table and chairs. Thorhildur

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[130] Hawson, 'Making the Table and Chairs', 1 minutes and 54 seconds (DVD).

[131] Hawson, 'Making the Table and Chairs', 2 minutes and 59 seconds (DVD).

[132] Hawson, 'Image and Data Files, Sketchbook Pages', p. 4 (CD).

[133] Hawson, 'Making the Table and Chairs', 2 minutes and 35 seconds (DVD).

Thorgeirsdottir and the author had a discussion[134] with the half made aluminium components to decide on the finished surfaces. During that discussion tacit, material and visual knowledge was communicated through the aluminium components and words. The author shared knowledge with Thorhildur Thorgeirsdottir and answered questions concerning Gretar Thorvaldsson's workshop and practice and how different surface finishes could be achieved. Shortly after this meeting Thorhildur Thorgeirsdottir came to Gretar Thorvaldsson's workshop to discuss and confirm the surface finish treatment of the metal components with him and the author.[135] This group discussion around the aluminium components, the wooden patterns, and drawings, in the context of the workshop, was a moment of rapid decision-making. It was the only time in the making of the table and chairs that two of the participating makers were together in a workshop with the author, direct sharing of knowledge and confirming of ideas was made possible. The combined knowledge and openness within the group made solving problems and making decisions straightforward. It would have been of benefit to the project and the making of the table and chairs, if meetings with more than one participating maker could have happened more often.

9.2.3.3. Critical Decision Point Example 3

When making the wooden elements of the chair with Fjolnir Hlynsson in his workshop, the infill panel of the chair seat proved to be the hardest part of the design to resolve. Fjolnir Hlynsson and the author considered the original seat design as described in the proposed Dining Chair Specifications: a seat infill panel made of plywood was to be screwed into a rebate in the frame or a woven seat could have been threaded through holes in the seat frame (page 88). Fjolnir Hlynsson and the author discussed their ideas around the half made elements of the chair in the workshop[136]. The half made chair gave

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[134] Hawson, 'Making the Table and Chairs', 8 minutes and 49 seconds (DVD).

[135] Hawson, 'Making the Table and Chairs', 9 minutes and 8 seconds (DVD).

[136] Hawson, 'Making the Table and Chairs', 12 minutes and 26 seconds (DVD).

'access to tacit knowledge'[137] and stimulated Fjolnir Hlynsson and the author to 'employ their tacit knowledge to form new ideas'[138] and proposals for a chair seat. Fjolnir Hlynsson did not like the proposed ply wood or woven nylon string infill panel and instead proposed one made of thin oak boards. The author did not recognize Fjolnir Hlynsson's seat description as having any reference to wooden boat deck boards until he described it as such:

> I would say a thin wooden seat of oak, which might have the appearance of a ship deck…[139]

Without Fjolnir Hlynsson's help in developing this chair seat the author may not have thought of this obvious idea for some time, if at all.

9.2.3.4. Critical Decision Point Example 4

The problem of how to cut the aluminium disks to fit holes in the table top as decorative inlay, was solved and explained to the author by Geir Oddgeirsson's assistant Bjorn Hrafnsson.[140] Bjorn Hrafnsson's explanation is an example of how the tacit knowledge of makers was employed to make decisions about appropriate methods of making. This knowledge was much appreciated by the author, who did most of the making himself. Without the practical knowledge of the participating makers, the table and chairs could not have been made the way they were.

9.3. Summary of Chapter

This chapter has provided a literature review of reflective, action and practice-based research relevant to the Iceland project. Considering the

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[137] Rust, 2003, p.8.

[138] Rust, 2003, p.8.

[139] Hawson, 'Making the Table and Chairs', 12 minutes and 51 seconds (DVD).

[140] Hawson, 'Making the Table and Chairs', 15 minutes and 33 seconds (DVD).

literature review, this chapter has reflected upon the different phases of the project: apprenticeships, practical experiments and making decisions. This chapter has illuminated the knowledge gained by the participant makers and the author through designing and making the table and chairs and reflecting on one another's practice. It has provided the outsider to the project a view of the makers' journey and the knowledge and reflective learning contained within it.