“Participation” in Participatory Design Research

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Abstract

This thesis is about defining participation in the context of fostering research cohesion in the field of Participatory Design. The systematic and incremental building of new knowledge is the process by which science and research is advanced. This process requires a certain type of cohesion in the way research is undertaken for new knowledge to be built from the knowledge provided by previous projects and research. To support this process and to foster research cohesion three conditions are necessary. These conditions are: common ground between practitioners, problem-space positioning, and adherence to clear research criteria. The challenge of fostering research cohesion in Participatory Design is apparent in at least four themes raised in the literature: the role of politics within Participatory Design epistemology, the role of participation, design with users, and the ability to translate theory into practice. These four thematic challenges frame the context which the research gap is situated. These themes are also further investigated and the research gap – a general lack of research cohesion – along with one avenue for addressing this gap – a clear and operationalizable definition for participation – are identified. The intended contribution of this thesis is to develop a framework and visual tool to address this research gap. In particular, an initial approximation for a clear and operationalizable definition for participation will be proposed such that it can be used within the field of Participatory Design to run projects and foster research cohesion. In pursuit of this contribution, a critical lens is developed and used to analyse some of the principles and practices of Participatory Design that are
regarded as foundational. This lens addresses how to define participation in a way that adheres to basic principles of scientific rigour – namely, ensuring that the elements of a theory are operationalizable, falsifiable, generalizable, and useful, and it also treats participation as a construct rather than treating the notion of participation as a variable. A systematic analysis is performed using this lens on the principles and practices that are considered foundational within the field. From this analysis, three components of the participation construct – impact, influence, and agency – are identified. These components are then broken down into two constituent variables each (six in all) and represented visually. Impact is described as the relationship between the quality and use of information. Influence is described as the relationship between the amount and scope of decision making. Agency is described as the relationship between the motivation of the participant and the solidarity of the group. Thus, as a construct, participation is described as the relationship between a participant’s impact, influence, and agency. In the concluding section, the value of this participation construct is explored for its utility in enhancing project work and fostering research cohesion. Three items of potential value that emerge are: the creation of a visual tool through the representation of these six constituent variables in one image; the elaboration of a common language for researchers based on the six constituent variables identified; and the ability to systematically identify and remedy participation gaps throughout the life of the project. While future research exploring the applicability of the participation construct in real world projects is necessary, it is intended that this initial approximation of a participation construct in the form of the visual tool will serve as the basis for a cohesive and rigorous discussion about participation in Participatory Design.
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Statement of original authorship

The work contained in this thesis has not been previously submitted to meet requirements for an award at this or any other higher education institution. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made.

___________________________
Miri Segalowitz

___________________________
Date
Dedication

To my parents for their steadfast belief in me. Without them I would not have dared. To my partner for his continuous support. Without him I could not have persevered.

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Chapter 1
The Challenge of Defining Participatory Design

1.1 Introduction

What is the role of participation within a Participatory Design project? Answers to this question can have many implications for the success of a project, for the way the project might be run, and especially for how research might be conducted. As a result, participation is an important element of every Participatory Design project. However, as will be discussed in this thesis, the fact that a project includes some form of participation does not always lead to a project's success or to the outcome expected (Carpentier, 2009; Shapiro, 2005). Furthermore, integrating a participatory process into a project is not a simple, straightforward endeavour that can be prescribed in the form of a recipe (Schuler & Namioka, 1993a). As a result, participation is an element of project and research management that still poses many challenges to Participatory Design practitioners.

How one approaches the question about the role of participation within Participatory Design will depend on the underlying goals the questioner has in mind. Such goals can range from solving an immediate practical problem encountered in some participatory design context to wanting to answer some wide-ranging philosophical questions about the nature of human activity in general. The ideas in this thesis focus primarily on the latter, however it is hoped that by further understanding the underlying goals and mechanisms of participation, this thesis will contribute to the advancement of research within the field of Participatory Design. So, while researchers are the prime audience, the outcomes of this line of
researching is intended to benefit managers and reflective designers interested in collaborative work.

With this in mind, the goal of this thesis is to define participation in the context of fostering research cohesion in the field of Participatory Design. Here, research cohesion refers to the incremental creation of new knowledge through research that builds systematically on the results of previous research, the process by which science and research in all fields generally advances. Underlying this way of stating the goal, there are three implicit and related ideas that can serve as the starting point for this thesis. The first idea is that there is an apparent absence of a useful, agreed upon definition for the notion of participation in the field of Participatory Design. This will be argued in sections 1.3.1-1.3.4 of the literature review of this chapter (Chapter 1). The second idea is that there is an apparent gap in the field’s ability to foster a context of research cohesion. The idea that there is a struggle to foster research cohesion stems from the recent debate over how the focus of the field has become diffused (Beck, 2002; Bødker, 2003; Christiansen, 2003; Dittrich, 2003; Kanstrup, 2003); how the field needs to ‘move forward’ (Bødker & Iversen, 2002; Carpentier, 2009; Carroll & Rosson, 2007; Shapiro, 2005); and from discussion about the diverse approaches and methodologies that are being embraced by practitioners (Howcroft & Wilson, 2003; Sanoff, 2007; Törpel, 2005; Wagner & Piccoli, 2007). Finally, the third idea underlying the goal statement is that the notion of participation is inherently important and can serve as a starting point for redressing the apparent gap in research cohesion. The need to address the notion of participation as it is used in research and to come up with a new one that will better serve to foster research cohesion amongst practitioners, is discussed in this chapter (Chapter 1).
In order to outline a new concept of participation, it is necessary to investigate existing principles, practices, and beliefs about the current understanding of participation. However, for such an investigation to successfully lead to a definition of participation that will help foster research cohesion, a critical lens that specifies important requirements that must be met by this new definition needs to, first, be outlined. For example, if the ultimate goal is to enhance the field’s ability to foster research cohesion, the definitional framework for participation needs to specify certain principles of scientific thinking to which the definition should adhere, such as ensuring that concepts are operationalizable and making the distinction between constructs and variables (it is argued in Chapter 2 that participation should be viewed as a construct). These scientific principles are described in Chapter 2. The content in that chapter also serves as the lens by which current principles, practice, and beliefs about participation are analysed. Furthermore, before applying this lens to the main body of research, the lens is briefly applied to a case study to verify its potential utility and appropriateness. In this section (Section 2.6), the lens is applied to a systematic analysis case study, and possible courses for future research based on that analysis are discussed. The lens discussed in Chapter 2 establishes the perspective that underlies the discussion in Chapter 3.

The framework for the main contribution of this thesis is described in Chapter 3. In this chapter the lens from Chapter 2 is applied to a seminal text that explains founding principles and practices in the field of Participatory Design. In this analysis, the intentions of researchers and their applications of participation are analysed for what they can contribute to a definition of participation. In the end, three components are identified as integral to the concept of participation.
Furthermore, each of these three components is broken down into two variables that can in principle be operationalized for future research.

The collection of these three components and six associated variables constitute a definitional framework for participation that is the main contribution of this thesis and the main take home message of Chapter 4. In Chapter 4, it is shown how this new definition transforms the original notion of participation into a concrete, visual tool that can potentially foster research cohesion in three ways that previous approaches to participation could not. The potential benefits to research, through this fostering of research cohesion, are discussed along with the limitations of the research. Future research is proposed, exploring how this visual tool can be used to enhance research and the practice of participation within the field of Participatory Design.

In sum, many propose that finding a definition of participation will move the field one step closer to addressing the gap in research cohesion. Chapter 2 explores how framing participation as a construct can help address research cohesion. Chapter 3 proposes a definition of participation. Chapter 4 presents a concrete visualization of the definition in the form of a visual tool, and explores the merits of considering participation as framed and proposed in Chapters 2 and 3. Overall, it will be argued that in order to address the problem of promoting research cohesion (the research gap), a particular kind of definition for the concept of participation needs to be provided. This thesis frames, proposes, and explores the merits of this definition of participation within the context of promoting research cohesion.
1.2 Defining Participation

What is participatory design? “Participatory Design” is a field of research and a style of project management that focuses on key interactions between people, technology, work organizations, and people’s work experience. While the individual practices enable practitioners to embrace design, the inclusion of others immediately has management of the design consequences. So, while the field called “Participatory Design” (PD) has been around for over 40 years, there are still many interpretations – and little consensus – over what constitutes a proper participatory design project or what forms a proper Participatory Design program of research. This has created a problem for the field in which many elements – including defining what participatory design might be – are not clear.

For example, some practitioners feel that Participatory Design should include a political activist component, such as the social improvement of an entire community (Cahill, 2007; Carroll & Rosson, 2007; Hanzl, 2007; Luck, 2007; Reich, Konda, Monarch, Levy Eswaran, & N., 1996; Toker, 2007). In such cases, practitioners might endeavour to provide members of a community with a way of influencing important decisions usually reserved for community leaders. On the other hand, some researchers feel that Participatory Design is about improving the quality of work-life experience within a given organization (Blomberg, Giacomi, Mosher, & Swenton-Wall, 1993; Clement & Van den Besselar, 1993; Ehn & Kyng, 1987; Kensing, 1983). In these latter cases, this improvement might be sought by providing workers with a sense of control over areas of their work life. Practitioners might introduce or support policies that give workers the power to negotiate the acquisition of better equipment (Ehn & Kyng, 1987). Yet again, another interpretation of Participatory Design might be about finding ways to include the
stakeholder so that the output of the project – such as a software program – is based on the requirements provided by that stakeholder (Bjerknes, 1993). In these projects, the “Participatory Design” component helps develop a commercially viable information system that best suits the needs of its potential users (Bødker, Grønbæk, & Kyng, 1993; Dourish, 2003; Shapiro, 2005). Such a product is then more likely to be adopted and used, thus generating user satisfaction as well as potential financial gains for the company (Wagner & Piccoli, 2007). For example, Dourish (2003) uses a participatory design process to research how people use computers to engage in collaborative work. The resulting product, a software program called *Placeless Documents*, was then designed to support those observed behaviours.

Clearly, there are many interpretations of what constitutes a “Participatory Design” process or program of research. Unfortunately for the field, this plethora of interpretations has contributed to what can be identified as a gap in the way the research is conducted. Specifically, Participatory Design projects often focus on the specific challenges presented in real world projects, such as the specific role of participation, proposing specific project techniques and styles of project management, or dealing with particular individuals and situations that arise within a given case study (Blomberg et al., 1993; Blomquist & Arvola, 2002; Carmel, Whitaker, & George, 1993; Muller, 1993; Muller, Wildman, & White, 1993; Reich et al., 1996; Thoresen, 1993; Wakkary, 2007; Whyte, Greenwood, & Lazes, 1989). In fact, the importance of specific situations – such as location – is an important principle in the field (Blomberg et al., 1993; Holtzblatt & Jones, 1993; Suchman, 2002) and causes many practitioners to focus on the specific challenges of running a participation-based project (discussed more in Section 1.3.2). Perhaps this focus on the running of the projects stems from the observation that projects developed in a
‘greenhouse’ environment protected by the title of ‘research’ fare better than their ‘real world’ counter parts or once the ‘protection’ has been removed (Kensing & Blomberg, 1998). If this is the case, it is logical that running a project becomes the squeaky wheel that demands attention, and so focusing attention on this area is necessary. All this results in a research gap, namely an absence of cohesion among research results whereby new studies are systematically built on the results of previous studies.

However, there are a few questions that need to be asked: has the field advanced so far as to be confident that this squeaky wheel is solely due to a challenge in translating theory into practice (discussed in Section 1.3.4), or are there yet some theoretical underpinnings that require further clarification (discussed in Section 1.3.3)? Has the emergence of multiple epistemologies guiding different types of projects (discussed in Section 1.1.1) caused the field to lose its direction and coherence as some might argue (Beck, 2002; Bødker, 2003; Bødker & Iversen, 2002; Carpentier, 2009; Carroll & Rosson, 2007; Christiansen, 2003; Dittrich, 2003; Kanstrup, 2003; Shapiro, 2005)? These questions are explored more fully through four major themes in the literature, collected and summarized in the literature review in this chapter (Section 1.3).

What emerges from exploring these questions are two consistent ideas. The first idea is that the direction of the field appears to be moving in a way where different ‘approaches’ of Participatory Design are emerging. Furthermore, with clear lines drawn between the approaches, the knowledge generated from one approach does not provided a basis of inquiry for a different approach. This is an absence of research cohesion between approaches, and thus within the field. If there was very little overlap between the approaches, this lack of cohesion would be appropriate.
However, there is considerable overlap between the approaches, as identified by the second idea that emerges from exploring these questions. The second idea is that participation is an important element found consistently in all approaches of Participatory Design research and project management. As such, the lack of cohesion between approaches is not appropriate, and thus has been identified as the research gap this thesis will address. To address this research gap, the thesis investigates how exploring an approach-neutral definition of participation can address the absence of research cohesion demonstrated in the field.

Research cohesion, as one might find in other social sciences, is where research is systematically generated based on previously existing research and where the collective knowledge of a field is the result of many studies produced by many different practitioners. Unfortunately, most participatory design studies are stand-alone projects, and thus cannot meaningfully be compared to one another. So, while many Participatory Design studies are individually interesting, the plethora of interpretations over what constitutes a Participatory Design project or program of research reveals a gap in the research on participation. It is this gap that will be addressed in this thesis. In particular, this thesis will investigate why this research gap exists and – as the central contribution of this thesis – explore one potentially practical way in which this gap might be bridged.

Context for the research gap: an absence of research cohesion

The research gap identified in this thesis is the apparent absence of clear definition of participation that fosters full research cohesion within the field of Participatory Design. This context refers to the idea that participatory design projects, like any academic work, should be able to meaningfully build on the knowledge generated by other projects; there is a struggle within the field to find
ways to make projects cohere to one another. This research gap is due to the absence of three necessary conditions for research cohesion which are illustrated in Figure 1.1.

The first necessary condition is that there must be enough *common ground* among researchers upon which to build an understanding. For example, in Participatory Design there needs to be a shared epistemology. However, in this field there are many project epistemologies, and this problem of multiple epistemologies is discussed in the literature as relating to the political agenda of a project. This problem is examined more fully in Section 1.3.1 by illustrating how the theme of politics within the field reveals a situation where there is not enough *common ground* to allow projects inspired by different epistemologies to meaningfully build on one another. This section (Section 1.3.1) lays the foundation for the case that research cohesion within Participatory Design is absent to an important degree and needs to be addressed.

A second necessary condition for research cohesion can be described as the existence of *problem-space positioning*. This has to do with placing (positioning) whatever is the focus of research into a larger context (the problem-space) defined by other significant factors that contribute in important ways to the larger picture. To engage in *problem-space positioning*, practitioners create a conceptual landscape in which the focus of the research is described relationally to other factors within the research. This condition relates directly to issues in Participatory Design, because in every project there exists a variety of factors that interact with each other. The problem being researched – i.e., the focus of the project – relates to these other factors in a dynamic, complex, and often in seemingly unpredictable ways. This reality can cause what might appear to be insurmountable problems within a project
(Howcroft & Wilson, 2003), let alone between projects. Thus, in a very direct way this complex relationship network can inhibit research cohesion. However, cohesion in research could possibly be achieved by appropriately delineating the factors that interact within this complex system (Byrne, 1998). Thus, if researchers were to delineate the focus of their research in relation to recognizable landmarks within this research landscape, a shared Participatory Design problem-space can be created into which all Participatory Design projects can relate. The creation of this landscape enables research cohesion to exist. The aspect of the research literature that speaks to this issue is the discussion about power, participation, and patterns of dominance, and how they relate to Participatory Design. This is examined more fully in Section 1.3.2 of the literature review. This section draws attention to the need to define participation in order to begin addressing the research gap – that is, the absence of research cohesion within the field (explored in Section 1.3.1).

The third necessary condition for achieving research cohesion is that in order for projects to be used meaningfully in Participatory Design research they must also truly meet some set of Participatory Design criteria. Without such criteria it is not always possible to know if a project that is said to embody a participatory design really does so, or whether two such projects do so in the same way. Without knowing this type of information the results of one project cannot reliably inform other projects. This problem is examined more fully in Sections 1.3.3 and 1.3.4 of the literature review by addressing two themes found in the literature – the challenges of identifying what participation means (Section 1.3.3), and the challenges of translating Participatory Design intention into practice (Section 1.3.4).
**Figure 1.1 Necessary context for research cohesion**

In this figure the goal of research cohesion is supported by the existence of at least three conditions. These conditions include:

- **a common ground** on which ideas can be discussed,
- **explicit problem-space positioning** such that researchers can understand the relationship between their work and the work of others within the field, and
- **adherence to clear criteria** such that researchers can ensure that their projects were run by the criteria they originally specified.
This last condition is particularly important to the *raison d’être* of this thesis and is thus discussed from two angles – the importance of having a good theory of participation (Section 1.3.3) and the challenge of adhering to those theories in practice (Section 1.3.4). Together, these sections constitute the foundation of why and what type of definitional framework is needed for the concept of *participation*.

As just mentioned, the review in this chapter will raise four common themes found in literature. These themes might initially seem rather disparate with relatively little in common. However, they relate to each other through their potential contribution toward addressing the research gap problem, that is, the absence of research cohesion in the field. It is proposed here that by adequately addressing these themes it could potentially become possible to establish the necessary conditions identified earlier for research cohesion to exist. This would address the research gap problem. Of course, doing this in a comprehensive way would be a massive undertaking and one that clearly lies outside the scope of this thesis. The prime focus of this thesis, therefore, will be to examine how a potential framework (Chapter 3) developed from a critical lens (Chapter 2) can begin the necessary discussion for enabling Participatory Design to satisfy just *one* of the three conditions necessary for research cohesion. However, it is important to understand how all three conditions interact and, furthermore, how themes in the research literature relate to these conditions necessary for research cohesion. Figure 1.2 illustrates the relationships between the four selected themes in the research literature and the three conditions necessary for the research cohesion required to resolve the research gap problem. Looked at together, these elements and their relationships to one another as shown in Figure 1.2 provide the larger theoretical context in which the main focus of this thesis is situated.
1.3 Literature review

Before commencing the literature review, I feel it is necessary to highlight a limitation of this thesis; the bulk of the literature on which the framework is developed is drawn from engineering-related fields (e.g., Information Systems, product design, industrial relations, and areas in Management). This selection is not intended to exclude the contributions of other fields (e.g., community planning). On the contrary, the work proposed in this thesis is intended to be a starting point on which discussion on what a cohesive framework describing – and enabling certain processes such as operationalizability (see Chapter 2) – might begin. As such, while it is intended that future research explore how this framework can be made more sophisticated such that it can include all walks of participation based research, a specific starting point needed to be chosen – and thus resulting in a limitation of this literature review. So, while at first glance this may seem counter-productive to the idea of creating a cohesive and cross-disciplinary framework for participation, tackling every field that has claimed the use of participation techniques would a monumental – and most likely impossible – task. That said, once the initial seed of a framework has been established, future work exploring how this framework applies, or does not apply to these other fields, would be the next step. As well, future research replicating the research conducted in this thesis, but using a different starting point, say for example in Community Design, would also be a welcome contribution to this overall endeavour. Such future research would provide the basis for a cross disciplinary discussion comparing methods and outcomes that will result in the intended goal of this work: to generate discussion moving towards a cohesive framework describing participation.
The sub-sections that follow address four different themes in the literature, all of which are relevant to the research gap question through their relationship to the three necessary conditions for research cohesiveness. To summarize, these four themes are:

(1) the changing role of politics in participatory design, which is related to the need for common ground;

(2) power, participation, and patterns of dominance in participatory design, which are related to the need for problem-space positioning;

(3) the issue of designing with users, which is related to the need to adhere to clearly defined criteria; and

(4) the challenges of translating theory into practice, which is also related to the need to adhere to clearly defined criteria.

1.3.1 The changing role of politics in Participatory Design

In this section the first necessary condition for research cohesion – common ground between projects – is explored. In the history of the field, there has been a tendency for the underlying epistemology of the research to change to suit the nature of the context in which the projects are being run. One consequence of this trend is that projects run within the field are no longer guaranteed to have enough common ground to allow comparison across projects. This lack of common ground presents a challenge in fostering research cohesion and it is related to issue of political motivation in participatory design.
Figure 1.2 The relationship of themes in literature to the problem of research cohesion

In this figure, the four common themes highlighted in the literature relate to each other through their potential contribution to research cohesion. This thesis will focus on developing a practical way of addressing the themes outlined in Section 1.3.3 and 1.3.4 such that the field can begin enabling the third condition – the ability for projects to adhere to clear criteria – necessary for research cohesion.
Political motivations

Participatory Design emerged from a real need to address a social consequence of technology. After the Second World War, when technology was gaining presence within the workplace, a negative phenomenon was being observed. In this observation, the technology which had been designed to increase organizational needs (e.g., productivity, work output, and general efficiency) did not have the positive effect that was expected. Instead, it was observed that this technology was having a negative effect on the workplace by creating an environment that was dehumanizing and made workers feel marginalized. From this observation the Socio-Technical Approach was developed (Mumford, 1987).

In Britain, researchers posited that this negative consequence arose because the technology in question had been designed without considering the actual interaction needs of the workers. As such, a foundational epistemology of the emerging Socio-Technical Approach was that technology and its users needed to be considered as one organism within the corporate organisation. A practical implication of this perspective was that if one healed the organism, one would also be healing the organization (Mumford, 1987). Thus, an important aspect of the research was to heal the relationship between technology and its users (Hansen, 2006). In order to achieve this, it was logically posited that if workers' needs were incorporated into the design (along with the organization’s needs), the resultant technology would simultaneously address the technical requirements (organizational needs) as well as sociological requirements of those who interacted with that technology (worker’s needs). And, who better knows what workers actually need than the workers themselves? Stemming from logic of this nature, the Socio-
Technical Approach became participatory by finding ways to include workers within the design process.

At a similar time but in a different context another approach emerged. This approach also aimed to address the phenomena of dehumanization and feelings of marginalization amongst workers. In that sense, these two approaches shared a common underlying tenet – to improve the quality of life of the worker. However, because the context was different the details of the approach took on a different shape. In this different context, Scandinavia, the political climate was more supportive to the worker than in Britain or other parts of Europe. Thus, in Scandinavia the new approach developed harnessed the opportunities of this political sympathy and the techniques developed were proactive in expanding worker’s rights and providing them with support. This new approach was called the Collective Resources Approach (Ehn & Kyng, 1987).

In this approach researchers sought to address the negative effects that technology had on the workers by empowering them with the control needed to improve the quality of their own work life. In order to empower workers researchers sought to provide support for the development of skills, the right to relevant information, and the right to have independent thought (Clement & Van den Besselar, 1993; Kensing, 1983; Kensing & Blomberg, 1998). While these endeavours supported a common motivation with the Socio-Technical Approach (i.e., improved quality of work-life), the underlying epistemology of the Collective Resources was not about healing the technology-worker interaction. It became about enabling the voices of workers to be prominently heard and seriously considered when decisions were made at the managerial level. The techniques in the Collective Resources were thus about improving the influence of those workers. One method
was through the use of representatives. Union representatives were thought to speak on behalf of the worker during negotiations. Another method for empowering workers was to providing learning opportunities that gave workers the necessary skills to be competent and effective when representing themselves around a negotiation table. In this way, the Collective Resources Approach also became participatory as this approach gave workers stronger decisional control over conditions of their working lives. Again, workers became included in the process by being included in the making of important decisions.

These two approaches – the Socio-Technical and the Collective Resources approaches – both sought to address the effects of dehumanization and marginalization that resulted from inadequately designed technology. While each approach sought to address the issues of dehumanization and marginalization in vastly different ways, there are two points of common ground between these two approaches. First, methods of data collection highlighted the importance of situated and localized contexts as the place where the reality of work-life could be observed, studied, and reflected upon. This method was drawn from the idea that the workers know what they need best, because they are the ones who actually experience the problems as they arise and in the specific contexts of the work. Second, both of these approaches included a participation element. That is, they both relied on methods that included the input of the workers.

In these two approaches the motivation of improved quality of life and the element of user inclusion are what provide enough common ground to consider these two approaches as part of the tradition of the Participatory Design movement. However, despite this common ground, research in the Socio-Technical Approach was more centred on issues regarding the technology (Hansen, 2006; Pilemalm,
and research in the Collective Resources Approach was more focused on empowerment of the worker through political means such as negotiation skills (Asaro, 2000). These differences in focus are perhaps what have challenged true research cohesion between the two branches of the field.

**Corporate motivations**

During the late 1960s, in North America the field of Information Systems was experiencing a software usability crisis (Shapiro, 2005). Unlike in Europe where the Collective Resources and Socio-Technical approaches were developed, this crisis was not interpreted as the dehumanizing or marginalization of the workforce. The North American crisis emerged because companies were making software that potential users found too difficult to use. A consequence of this was that a lot of money was being spent on developing products that never made it to market, ended up grossly over budget, or simply failed to sell (see Shapiro, 2005). From a corporate perspective, none of these situations are good (Reich et al., 1996). Something needed to be done to address this crisis.

According to Shapiro, this usability crisis stemmed from two problems. First, the software was not easy to use and thus, even when available on the market relatively few people adopted it. Second, the design process was extremely inefficient and projects thus tended to go over budget or reject necessary changes introduced later in the project’s life cycle. Part of this inefficiency was due to the nature of the design life cycle culture where user testing was only started once the product had been substantially developed. Any changes that needed to be made late in the process became very costly or too difficult and were thus ignored.

To address these problems, design life cycle approaches such as Joint Application Design (Asaro, 2000; Carmel et al., 1993) were developed. These design
life cycle approaches incorporated two important principles similarly developed in the early Participatory Design approaches. First, a solution was to solicit design requirements from the people who were to use the product. Similar to the Socio-Technical Approach, this solution was based on the idea that the users (or potential users) of the technology knew best what they needed. Second, a solution was to verify, in a continuous manner, the relevance of the project through multiple iterations of designer-user discussions. Through these two solutions, and similarly to the European approaches, users participated in the design process.

From this history, it is clear that the common ground on which Participatory Design approaches are derived stem from the inclusion of users within the design process in some way. However, this seems to be the only point of common ground between the approaches. For example, the European goal of improved quality of life was an important epistemological basis for employing Participatory Design research. This foundation was not always present in North American projects. Although, some might try and reason that given a choice between products, if users choose the ones that would benefit them the most then they are ipso facto improving the quality of their experience in regard to the technology they have chosen. In some ways it might therefore be argued issues of quality of life were still being considered, albeit peripherally. Not all practitioners agree with this argument. As a result of disagreement over the presence of quality of life issues, the North American version of Participatory Design is seen as different from the European version. For example, in addition to be called the North American version of Participatory Design, it has also been called Corporate Participatory Design (Törpel, 2005) or Pragmatic Participatory Design (Bergvall-Kåreborn & Ståhlbrost, 2008). Likewise, the European version has been labelled Traditional Participatory Design (Törpel, 2005).
bringing with it an implication of authenticity. However, regardless of the validity of the versions or the names chosen to represent the different approaches, what is important when addressing the research gap is to understand that projects run under the Participatory Design banner now must contend with several epistemologies. In other words, the amount of common ground between types of Participatory Design may no longer be enough to sustain research cohesion.

**Continuing the trend**

This history of Participatory Design highlights that since its conception more than one significant model, including methods and epistemology, of what this field should be about has existed. Unfortunately, this problem does not seem to be dissipating as time goes on. In fact, as technology, contexts, and political climates continue to change other versions of Participatory Design continue to emerge. For example, some research projects have been labelled *Participatory Design by Occasion* or *Curiosity Participatory Design* (see Törpel, 2005 for examples). In such projects researchers claim the use of Participatory Design techniques. However, these techniques are used in contexts that do not support either epistemology of Traditional or even Corporate Participatory Design. In other words, some of the new forms of Participatory Design that are emerging do not subscribe to the contexts or motivations of previous projects. The only common ground that seems to be emerging is the consistency of user inclusion, or some form of user/worker participation. However, as Beck points out participation is not the only way to achieve whatever motivation is guiding the project. In the case of democracy oriented projects (e.g., Traditional Participatory Design) participation may not even be the best way to achieve the project’s goals (Bjerknes & Bratteteig, 1995; Kanstrup, 2003). Furthermore, the principles and practices that have so far emerged.
in the field are only considered to be guidelines rather than recipes of successful techniques (Schuler & Namioka, 1993a). In other words, the two points of common ground – the concept of participation and the techniques that support participation – may no longer be consistent elements within the research.

For example, in Beck’s seminal paper titled “P for Political” (Beck, 2002), it is claimed that the political activist role of Participatory Design has become diluted in current times. Bergvall-Kåreborn and Ståhlbrost support this observation through their empirical evaluation of papers accepted at the 2004 Participatory Design Conference (Bergvall-Kåreborn & Ståhlbrost, 2008). Beck ponders why this dilution seems to be occurring, and concludes her paper with suggestions on what would be needed to reverse this trend. Her two main observations on the causes of the dwindling role of activism are instructive for addressing the research gap, and thus will be discussed at this juncture.

Beck's first observation has to do with one of the fundamental aspects of Participatory Design – the role of situated action in research (Suchman, 2002). Situated action was a term developed to describe the importance of observing the users or workers in the actual space where the activities take place. This ethnographic research principle is based on the idea that what people say is not always congruent with what they actually do. As such, ethnography is used to observe people in their natural settings and to report descriptively on their actions without judgement or interpretation (Blomberg et al., 1993). In Participatory Design techniques that support the ethnographic model of gathering information include methods such as Contextual Inquiry (Holtzblatt & Jones, 1993) and open ended interviews (Blomberg et al., 1993). The importance of context and location is fundamental in Participatory Design research. However, this fundamental element
may be a major contributing factor to the apparent dilution of the Participatory Design epistemology, and thus a contributor to the research gap. For example, Beck observes that as technology changes and becomes more ubiquitous the experience of technology is no longer relegated to the one location – i.e., the workplace. This change in technology has caused *a change in location* of the action, and consequently a change in location of the research (Beck, 2002). But this change in location has wider implications.

For example, the identity of a target participant is often related to the location of the research (Bergvall-Kåreborn & Ståhlbrot, 2008). In the European approaches the target location was the workplace and the target participant was the worker. Changing from workplace to community implies that the target participant changes from worker to community member. Other contemporary target participants that have emerged due to the changes in technology and location included *users, potential users, lead users, user-representatives, and early adopters* (Bergvall-Kåreborn & Ståhlbrot, 2008, p. 105). Some researchers even claim that any community oriented technological design must also include the *non-user* in their design considerations (Satchell & Dourish, 2009). These target participants imply different requirements on the techniques and processes that are employed in project management as well as in the research. Thus, changing the location of focus is not an isolated factor causing problems for research cohesion. Location is integrally related to other aspects and is, itself, affected by the natural advances that occur in technology. As such, changes have wide implications on the nature of the research. One of these implications is an unfortunate lack of research cohesion within the field.
In summary, the history of competing epistemologies for participatory design research and projects contributes to a lack of common ground. This common ground is needed for discussion that will encourage new research to build on past research results, that is, for research that can generalize from one research/project context to another because of the shared common ground on which the research is built. Before moving on to the next section, however, it is important to make clear that the validity of the different approaches of Participatory Design research or epistemologies presented in this review is not being questioned. This question is left for others to resolve. As well, it is important to emphasize that the ideas presented here are offered as support of the idea that Participatory Design holds great promise for researchers and project managers (Shapiro, 2005). So, while this particular theme – the changing role of politics and the lack of common ground within the field – is not the main problem explored in this thesis, the theme highlights an important research focus in general. That is, it is important to focus on the problem of research generalizability and how it relates to creating conditions for research cohesion. The idea of generalizability is an important element of the critical lens presented in Chapter 2. The framework developed in Chapter 3 will also help create a foundation for research that promotes research cohesion within the field by promoting the use of research tools that are generalizable and applicable to a wide range of locations, contexts, and projects.

1.3.2 Power, participation, and patterns of dominance

In this section, the second necessary condition for research cohesion – problem-space positioning – is explored. In order to have research cohesion, practitioners must be able to understand and outline how the focus of their research
project relates to (is positioned within) other important factors that can impact the project outcome (i.e., the larger problem space within which the particular focus is located). Problem-space positioning is often lacking in Participatory Design work. This negatively impacts the ability to foster research cohesion. For example, problem-space positioning for the issue of participation – an element that plays an obviously important part in any consideration of participatory design – would foster research cohesion because it would clarify the way that participation relates to other factors in the project. This relationship is complex, and it can evolve as time goes on with each change affecting the progress of the research differently. This dynamic relationship poses many challenges for the practitioner, including successfully running a project, or benefiting from research cohesion. This sub-section has pulled together reviews of how problems regarding participation relate to topics of power and patterns of dominance. These relationships enable the asking of important questions regarding problem-space positioning.

**Participation and Stake**

One consistent element in discussion about participation is that it is inclusive of people. People have different reasons for partaking in a project. In Participatory Design the conventional way of thinking is that users have a right to partake in the design process because they are the ones who will be affected by the outcome of the project. However, as projects move into the design of community informatics, non-users are also considered to be affected by the outcome of the project, and therefore must be considered (Satchell & Dourish, 2009). From these two examples alone, the question of considering who has a legitimate reason for being included in a project becomes complicated. This type of complexity is studied in Stakeholder literature (Mitchell, Agle, & Wood, 1997). As will be illustrated in some of the following
examples, perceptions around the legitimacy of a user also impact the progress of the project. It is thus important to clearly position the motivation for participation in relation to the project’s stakeholders and beneficiaries.

**Participation and Power**

One important aspect of Participatory Design is addressing the power imbalance that exists in organizations, between members, and within groups (Wagner & Piccoli, 2007). This problem, often called *patterns of dominance*, is ubiquitous because there are at least three ways in which power imbalance can impact research (Beck, 2002). First, displays of power are observable phenomena that can be studied in and of themselves. Thus, the issues related to patterns of dominance can become the primary focus of research. In such research, one might study how something like defensive mechanisms (Argyris & Schön, 1989) might impact an individual, the group, and the success of the endeavour. Second, these behaviours have other negative consequences on project teams such as disempowerment and marginalization. In such research, one might focus on addressing the consequences of these behaviours, rather than studying the behaviours themselves. So, while the focus of the project might not be on understanding these negative behaviours, the motivation for undertaking the project is what relates to these issues of dominance (Luck, 2007). Finally, patterns of dominance might be a reality that crops up within a project regardless of whether or not it was the original focus or the motivator for the project. In such cases, when these patterns emerge, researchers must turn their attentions to putting out the fires that these behaviours have created, before they can return their focus to the original problem. If not adequately attended to, patterns of dominance can have a detrimental effect on a project – even causing it to fail (Gasson, 1999; Rönkkö, Hellman, 26
Issues with patterns of dominance are found in many Participatory Design projects.

Consider the typical situation in a Participatory Design project where an outsider to the regular design team, say a user or a worker, is brought in to partake in the design decisions. Often, the relationship between the outsider and the rest of the team is coloured by technical, social, or psychological baggage. For example, a common argument for disregarding the suggestions of the outsiders revolves around questioning the legitimacy of contribution (Blomberg & Henderson, 1990; Gasson, 1999; Kellogg, Orlikowski, & Yates, 2006; Rönkkö et al., 2004). Such questioning might take the form of ‘why should non technical people have decisional power over technical matters?’ However, when participation is required – such as in Participatory Design or User-Centred Design projects – questions concerning the legitimacy of one’s contribution can cause negative behaviours to manifest. These negative behaviours (patterns of dominance) are not always easy to identify. For example, defensive mechanisms (Argyris & Schön, 1989) describe a set of dominance behaviours where the motivation for the put down is reflexive and just below conscious thought. Unaware of their negative visceral reaction, the participant will use a logical reason for disregarding the contribution of the user – such as by questioning the legitimacy of their contribution. The trouble is, because these arguments appear genuine and are often backed up with some sort of logic, it is difficult to distinguish between an argument used as an excuse to ignore a complication and a well thought out argument dismissing a properly considered complication. While this is an interesting area worthy of future research, it relates to how projects function in a larger way as well. Often, in a project in which such behaviours are exhibited, other negative consequences will also occur. Such
behaviours cloud the precision of the research effort because it is difficult to find a way to identify the motivations for those behaviours. This reduced precision negatively impacts research cohesion.

**Participation and Project Planning**

Failure to agree on a project plan is another common challenge found in Participatory Design projects (Gasson, 1999; Rönkkö et al., 2004; Shapiro, 2005). This type of situation might arise from doubt over the legitimacy of the outsider’s contribution (as discussed above), or it might originate simply because the members of the team all have different passionate reasons for preferring a different particular course of action. In such a situation, what was the role of the outsider in creating this negative situation?

The inclusion of relevant outsiders is thought to benefit a project precisely because those users have a different perspective and a different knowledge set to the rest of the development team (Kensing & Blomberg, 1998). So, right from the start, the creation of a multi-disciplinary team has the benefit of including a wide scope of ideas, but it also has the challenge of getting everyone to agree on a way forward. This challenge might have many causes, other than questions over the legitimacy of contribution of the users. For example, such misunderstandings can occur due to a difference in knowledge, perspective, skill, or tacit knowledge (Tsoukas, 2009). In fact, some Participatory Design principles have been aimed at finding ways to minimize these differences (e.g., the contributors in Schuler & Namioka, 1993b). However, while these principles may be beneficial by addressing a potential cause for why participants might not agree on a project plan, they only address one potential cause at a time. These issues are far more complex (Howcroft & Wilson, 2003; Orlikowski & Gash, 1994; Reich et al., 1996) and even have branches of
research specifically dedicated to resolving gaps between different types of knowledge, perspectives, and skills. For example, some of these issues regarding facilitating the communication and output of an interdisciplinary or multi-disciplinary team are studied in the Boundary Spanning literature (Carvalho, Dong, & Maton, 2009; Heracleous, 2004), and Knowledge Transfer literature (Carlile, 2004; Kellogg et al., 2006; Tsoukas, 2009).

**Participation and Choice**

An important element of participation is the ability to make informed decisions (Clement & Van den Besselaar, 1993; Kensing & Blomberg, 1998). However, this ability can be restricted when patterns of dominance have not been adequately addressed in a project. Consider, for example, a critical incident that caused a project to fail (Gasson, 1999). In this project, the development-group attempted to marginalize the influence of the user-group because they did not recognize the legitimacy of contribution of the users. In the meetings that followed, the whole team was effectively just going through the motions because the development group knew they needed the approval of the users. These behaviours were a consequence of the participation requirement in the design process. So, in order to satisfy the requirements of user inclusion, the developers created several under-developed options and only one developed option. The users naturally ‘choose’ the developed options. This project quickly became a pseudo participatory design project (Carmel et al., 1993; Toker, 2007) before experiencing complete project failure.

While the above example illustrates just one reason for why choices might be restricted, there are actually many other reasons encountered in the literature. These include social reasons (such as marginalization), characteristics of the participants
(such as the inability to communicate adequately), or because of structural reasons (such as an asymmetry in responsibility and power). Due to the interconnectedness of the factors of participation, dealing with one reason often just fosters an environment susceptible to the other reasons. For example, marginalization due to the asymmetry in responsibility might be addressed by a structural change within the organization as studied by the Organizational Psychology Literature (Amoako-Gyampah & White, 1993; West & Farr, 1990). However, forcing a structural change might cause the design team – who already have a higher responsibility than an outsider – to resent the input of the outsider even more, thereby exacerbating a situation already prone to patterns of dominance. These relationships are, of course, interesting and would greatly benefit from future research. However, for purposes of the focus of this thesis, it is enough to say that just addressing the expression of dominance behaviour aimed at marginalizing participants is itself complex and requires considering how participation relates to these other factors. As has been observed, participation, alone, is not enough (Carpentier, 2009).

**Participation and the Problem of Positioning within the Problem-Space**

What is important to note from these observations is that participation – which is often an important factor in projects – relates to the project as a whole and does so in a complex manner. In relation to problem-space positioning, the entire project can be seen as a problem-space defined by the features that must be taken into account, even when focusing more narrowly on one particular element. That is, the particular element under focus – in this case inclusion (or participation) of the user – has to be situated properly within that problem-space – in this case, the relationship of communication, legitimacy of contribution, organizational structure, decision making issues, issues of cost, and psychological issues of the participant.
and the design team. So, while a project might originally focus on creating processes that supported the inclusion of the user, the other factors dynamically affect the ability for the project to achieve this focus. Without outlining what influences might derail the project, the energy of the project manager (or researcher) changes from successfully achieving their product goal to putting out the fires. Interestingly, in many cases, had users not been involved at all the project goal – such as the creation of a software program – might have been more achievable. User inclusion, then, had some part to play in creating the negative conditions that the ‘participation’ was supposed to alleviate (Asaro, 2000; Beck, 2002).

From this summary we can see that inclusion of the user is a very complicated matter. One must simultaneously address at least six issues including: (a) issues of communication across boundaries (through Boundary spanning / knowledge transfer research), (b) legitimacy of contribution (through stakeholder literature), (c) the structure of responsibility (through organizational psychology and management literature), (d) decision making issues (through governance literature), (e) issues of stake (through resource management), as well as (f) psychological factors to address the feelings of marginalization, resentment, and defensive mechanisms. Without positioning the problem within this problem-space, the observed behaviours and outcomes can be clouded and cast doubt on the process, theory, and intentions of the project. This doubt inhibits meaningful research cohesion.

Clearly, in conducting a participatory design project, it is a monumental task to address the six issues identified above and simultaneously to try to alleviate marginalisation. Perhaps this explains why project success rates within Participatory Design are not higher (Shapiro, 2005). These issues have arisen, perhaps, because of
our current understanding (or lack thereof) of what participation really means, and how participation relates to the whole project. It is therefore necessary, when finding a way to define participation, to consider a definition amenable to enabling the focus of the research to be positioned within a well-defined problem-space. There must be a set of shared concepts that researchers can use in talking about a problem-space. With such a common language it becomes possible to compare projects and to identify the critical features of similarity and difference that would enable research results to build on one another. The framework in Chapter 3 addresses this necessary condition for promoting research cohesion.

1.3.3 Design with users

In this section, the third necessary condition for research cohesion is explored. This condition – the need for projects to adhere to clear criteria – has two important and distinct parts that are relevant to the field. Each will be explored separately in the remainder of this chapter. The first part, explored in this section, is that in order to foster research cohesion, there must be a clear set of criteria defining the elements in the project that theoretically support the project goal. Without such clarity it is impossible to be sure if different researchers using similar terms are really discussing the same concept. The second part, explored in the next section (1.3.4), is that in order to foster research cohesion, a project must faithfully translate theory into practice by adhering to these criteria. I turn now to the first item – criteria for defining the element or elements under study, in this case participation.

This section will explore a common theme within the literature. This theme stipulates that in order for a project to adhere to Participatory Design standards, the component of participation must achieve a certain quality for it to be meaningful. In
Ehn’s (1992) seminal text, participation means design *with* the users. This concept – design *with* users – is differentiated from design *for* users and from design *by* users. Design *with* users represents a distinct type of user inclusion and is one of the cornerstones of Participatory Design practice. However, what exactly does design *with users* mean? As will be seen in this section, there are many possible answers, and therefore the concept needs to be clarified so that when a researcher indicates a project was done *with* users, others will not misinterpret what was meant.

**The range of with**

The case in favour of user inclusion, or participation, has many supporting arguments. For example, inclusion enables users to exert control over elements of their work life (e.g., Collective Resources Approach) and, depending on the type of inclusion, elements of their personal life (Butterfoss, 2006; Eadie et al., 2006). As well, user inclusion at the right phase of the work process (Grudin, 1993) enables users to share their needs and influence the direction of the designed product (Bødker et al., 1993; Greenbaum & Madsen, 1993; Muller, 1993). From a different perspective, user inclusion in certain processes generates good will towards the activity and resulting product. As such, it is a useful tool for facilitating the adoption of new technologies within an organization (Kappelman & McLean, 1992). There are thus many ways in which users can be included in a process.

In a design process, the importance of paying attention to users has also been recognized. For example, the use of * personas* (Pruitt & Grudin, 2003; Rönkkö et al., 2004) makes possible some degree of ‘user validation’ when making design decisions. Thus, when deciding what features to put into a product, designers can imagine what a fictitious person (a *persona*) named “Alan” would like (Pruitt & Grudin, 2003,, p. 6). However, in the case of * personas*, no actual users are included.
in the process. So, while some might argue that the technique of using personas enables designers to keep *actual users* at a distance (Star, 1991), the technique itself is predicated on an idea similar to the Participatory Design concept that if the features of the design are chosen based on what users want, then the resulting product will be better. However, despite having similar goals, techniques using *personas* are considered to violate the epistemological foundation of designing *with* users because no actual user is involved.

This raises an interesting point. There is clearly *recognition* that user input is important and that it can take many forms, one of which is *personas* and one of which is actual user inclusion. Somewhere in between there must exist other forms. One example that is *not* considered to qualify as participation is obtaining user input through surveys, even though surveys are still considered valid forms of *information gathering*. Thus, one sees here a scale emerging of *increasing* forms of inclusion. The technique of personas creates *fictional* users from survey data of real users, but the reality of the user is diluted to allow the *persona* to represent a so-called "prototypical" user. Surveys, on the other hand, pose questions to real users. It is possible, therefore, to argue that user inclusion through survey represents a higher form of participation than does user inclusion through personas. Of course, in both cases it is easy to argue that any product resulting from these types of user input has still been created *for* the user, and not *with* the user. What is important, however, is that there exists a scale of inclusion acceptability with different user input techniques lying on different parts of the scale (Ives & Olson, 1984; Toker, 2007; Wagner & Piccoli, 2007).

The use of personas and surveys may be considered to be on the low end of the user inclusion scale. At the other end, there are forms of inclusion where the *user*
is the initiator of the project, such as in Arnstein’s Ladder of community participation (Toker, 2007). Here, the user is the client and the one footing the bill as well as making all the decisions. When particular expertise is required, an expert from outside the decision making circle is hired. In this case, users are not merely included, they *are* the project. Shiffman’s scale (described in Toker, 2007) provides the most involved form of participation possible. However, given the user's total control and the expert's rather peripheral role, it would be easy to argue that in this case any resulting product is created *by* the user, and not *with* the user. We can see now that there can be debate over where the line between *with* and *by* should be drawn.

To take another example, Muller’s (1993) first iteration of PICTIVE was run *without the inclusion of the developers*. In this example, users got together and engaged in design meetings and brainstorming. The information was recorded on video and voice to capture the richness of the information, the nuances in requirements, thoughts, design iterations, and even examples of intent provided by the users. User involvement was extremely high. The resulting design, created by the users, was then given to the prototypers to build for the first iteration of the design-prototype-analyse cycle. In this example, users were in full control of all decisions over the elements of the design. While PICTIVE is described as part of the Participatory Design principles and practices (Muller, 1993), this first iteration which was run *without the experts* was clearly an example of design *by* the users.

Between the inclusion patterns of *for-the-user* and *by-the-user* just described there lies *design-with-users*. It is here that important disagreements arise about what should count as acceptable inclusion. For example, Contextual Inquiry (Holtzblatt & Jones, 1993) is considered to provide acceptable Participatory Design practices
(Blomberg et al., 1993; Holtzblatt & Jones, 1993), but one could argue it is just another form of information gathering. One could ask, therefore, does this form of participatory inclusion really meet the requirements of design with-the-user? As should be clear, user inclusion is an important part of participatory design. However, there are problems because of the many ways inclusion can occur. The nature of the inclusion may not be epistemologically consistent across all practitioners (see Section 1.3.1). The effect of user inclusion is not always clear or positive (see Section 1.3.2). In other words, there is debate as to whether or not user involvement leads to project success (Beck, 2002; Bødker & Iversen, 2002).

From this discussion it is clear that there is as yet no consistent definition of what constitutes design with users. To close this gap, many questions need to be addressed: Should user inclusion involve users as evaluators of ideas and prototypes? If so, then User-Centred-Design would qualify as falling under the Participatory Design banner because the design evolves with their active and iterative input (Kitzinger, 1995). On the other hand, User-Centred Design is often not considered an adequate form of user inclusion because users are not providers of design information. So, are users primarily providers of information? If so, then adequately designed surveys would suffice. Are users another source of expertise, and therefore need to be treated as full members of a multidisciplinary design team? If so, then the field would benefit from crossover from the knowledge transfer and boundary spanning literatures in which such issues are discussed (Carlile, 2004; Carvalho et al., 2009; Kellogg et al., 2006). What the field seems to indicate is that at this time the problem of adequate user inclusion is a grey area that still needs to be addressed. How can the field move forward?
Moving forward

Despite this lack of agreement about the correct role of users in the Participatory Design literature, there are those who propose that the field of participatory design has matured enough to begin to looking for ways to move forward (Bødker & Iversen, 2002; Shapiro, 2005). To Bødker and Iversen, moving forward would include four improvements. The first step would be to address the issue of the asymmetry in design responsibility between user and project team. Doing this would require structural changes at the organizational level which would impact the project in complex ways (as described in Section 1.3.2). The second step would be to address Vicente’s (1979) claim about the iterative process. In this claim, Vicente questions where or not the cyclical process of design-prototype-evaluate that is popularly used in Participatory Design creates a self-fulfilling prophecy arrangement (Bødker & Iversen, 2002). In this arrangement users become accustomed to the prototype because of its slow evaluation, and thus prefer it to other options on the grounds of familiarity. If there is validity to this claim, then the iterative process described as a founding Participatory Design principle (Willis, 2007) might need revisiting. The third step would be to address the evaluation process and insist on a flexible design schedule so that the project can avoid being influenced by ad-hoc user wishes and approvals. In other words, criteria for successful completion of each stage is necessary to avoid issues such as scope creep (Bødker & Iversen, 2002). Finally, in order to move forward, the authors suggest that the field needs to develop a strategic analysis for asking shared ‘where-to’ and shared ‘why’ questions. Their idea of using an artefact to elaborate on these shared where-to and why questions is that an object or image creates clarity that is often difficult to capture in other forms of communication. This point is important for
what follows in Chapter 3; the framework that is developed in Chapter 3 aims to create a visual way of representing participation that supports this logic.

In a similar vein, one part of Shapiro’s eight stage strategy for moving the field forward seeks clarity in research so that Participatory Design methods can become competitive with other project management methods. This idea of clarity also implies that concepts become consistent and dependable. Put another way, criteria need to be clearly stated and adhered to; this would satisfy the first part of the necessary third condition for fostering research cohesion (adherence to criteria).

To summarize, there is recognition in the research literature of the need for the field to engage in strategic analysis of projects and to achieve clarity in how research design is to be conceived, specifically around the concept of participation. Clarity, in this context, means stating clearly what the criteria are for achieving participation (e.g., design with the user) so that it becomes possible to recognize when a design does and does not adhere to those criteria.

As mentioned above, there is a second important part of the research literature that relates to this third necessary condition for achieving research cohesion. This is the topic of translating theory into practice, and it is discussed in the next section.

1.3.4 Translating theory into practice: Application of the principles

This section continues to explore the third necessary condition for research cohesion. This condition, it will be recalled, is the need for projects to adhere to clear criteria; in this section the literature pertaining to the translation of theory into practice is explored because of how it relates to the need to adhere to clear criteria.
This section deals with the practical problem of successfully translating the theory of Participatory Design into the application of Participatory Design (Bjerknes, 1993; Blomberg & Henderson, 1990; Hecht & Maass, 2008; Van de Ven, 2007; Wagner & Piccoli, 2007; Wakkary, 2007). It addresses the question: How can one be sure that the project being run has been executed according to true Participatory Design standards? In order to answer this important question, we need to consider two important issues. The first issue speaks to the idea that intention and outcome (successful execution) are two separate matters. Claiming a design to be participatory is not the same as ensuring that the design is in fact participatory. For example, as authors such as Bergvall-Kåreborn and Ståhlbrost (2008) and Kuhn and Winograd (1996) point out, without explicit supporting arguments, how can one know if a project has successfully achieved ‘designing with users’ as opposed to designing for or by users (Ehn, 1992)? Furthermore, as Bergvall-Kåreborn and Ståhlbrost report, sometimes one has to just take the author's word that certain participatory benchmarks were achieved, even if not reported in detail. This lack of certainty over whether or not a project was successfully able to put into effect the intentions of the researcher requires objective measures to be in place. With objective measures, researchers can determine for themselves whether or not the actions in the project are consistent with the intentions. Furthermore, with objective measures, researchers can determine if the actions of another project sufficiently match the actions of their project in such a way to enable the research projects to build on each other.

The need for objective measures within the field of Participatory Design is highlighted in a paper by Blomberg and Henderson (1990) in which they ran what was intended to be a Participatory Design project. However, upon reflection, the
authors realized that they did not achieve what they had intended. What is interesting to note is that, had they not clearly specified the criteria of success for the three participatory design strategies used, one could potentially argue that activities of the task did successfully meet all the recommended requirements for true participation in a Participatory Design setting. In fact, in this case the project did include users at the appropriate stages of the design process, it did encourage participation and collaboration, and it did also use an iterative process to lead to the resulting product. Yet, despite these activities, the authors still concluded – due to their clear description of objective measures – that the project was not successfully participatory in its design.

The Blomberg and Henderson (1990) paper illustrated how deceptively similar Participatory Design projects and non-Participatory Design projects can be, and that an important condition distinguishing Participatory Design from non-Participatory Design can be the quality of the participation. One of the benefits of their paper is that they clarified three important objectives that they felt must be accomplished for a project to be considered properly run according to Participatory Design standards. These objectives are the following: (1) there must be an observable improvement in quality of life issues; (2) there must be a genuinely collaborative process; and (3) there must be a genuinely iterative process. These objectives are congruent with the original European vision of Participatory Design (Asaro, 2000; Clement & Van den Besselaar, 1993; Ehn & Kyng, 1987; Mumford, 1987) even though this project was undertaken in a North American (and even a commercial) context. As well, they describe in objective terms how their project failed in each of these three tasks. For example, they argued that there was no objective measure of improved quality of life and therefore the project failed to
demonstrably achieve the task of improving the quality of working life. In other words, although intention – and even action – supported three explicitly defined features of the project, the project still failed to create an observable improvement in the quality of life for the user, to lead to a genuinely collaborative process, and to engage meaningful advancement despite the seemingly iterative process.

The study just reported raises two important challenges for researchers – how to move from theory to application when implementing participatory design, and how to obtain objective measures to support claims that the design is genuinely participatory. These two challenges are discussed now.

**Challenges of translating theory to application**

As mentioned above, one criterion that has been proposed for a design to qualify as participatory is that it must impact on quality of life issues. Quality of life can be interpreted in many ways. For example, it can be interpreted as improving the technology component of the human-computer relationship (Socio-Technical approach), improving one’s ability to be the author of one’s own destiny (Collective Resources Approach), or as simply as “rearranging the furniture, reallocating work tasks, or creating flexible hours” (Blomberg & Henderson, 1990,, p. 354). The quality of life criterion is one of the main differences between European and North American versions of Participatory Design; nevertheless, as discussed in the first two sections of this chapter, it remains a very important part of Participatory Design epistemology. Yet, despite intentions and the defined requirement for satisfying the epistemology, in practical terms this project still somehow failed to meet the measure for quality of life. In other words, the authors knew what they needed to achieve a successful participatory design project. They stated, in clear and objective terms, how this success was to be measured, and they even followed the procedural
tasks that are recommended by the principles and practices widely accepted within the field. However, despite the rigorous preparation, the application of the tasks failed to be “participatory design” in nature. Here is why.

Quality of life was measured in terms of an observable improvement in the quality of work life experience around the software being developed. The procedure for achieving this measure was to bring in the software users to discuss their needs with the developers. In other words, intended users of the future product were consulted during the process of defining the product’s requirements. This methodology is consistent with recommended Participatory Design techniques and principles.

The second task was to engage the users in a genuinely participative process. This was to be achieved by encouraging them to sit in on development meetings and vice versa. There was complete freedom of information access between the two groups, and frequent interactivity was encouraged. Again, this methodology is consistent with recommended Participatory Design principles and practices.

The final task was to engage the users in meaningful iterations of the design process. One way to achieve an increase in user evaluation is to reduce the length of the design-prototype-evaluation cycle and increase the number of cycles within the project. This iterative process thus increases the amount of interaction the user evaluators have within the project. It was also important that results of these evaluations were used to inform the design requirements of the next phase. Again, the idea of an iterative design process is important to Participatory Design epistemology.

It is surprising, then, that even though all of these activities were undertaken, the project still somehow failed to produce a product that the users felt improved the
quality of their work-life experience, and an experience of genuine collaboration and meaningful iteration. Why would this be?

Blomberg and Henderson consider that main cause of this failure was because of where the actual focus of the work occurred¹. Their vision of the project was to develop a superior interface tool and thereby improve the work situation for those who had to interact with the tool. This reasoning sits well within the socio-technical approaches. However, when applying the principles to the project, the focus of the project ended up being on the technology itself as opposed to the situated context of the technology in action. In other words, the principles were there, but the principles did not translate fully through application of the method. So what went wrong?

It is logical to assume that by improving the technology any resulting interaction with the technology would cause an improvement in the quality of life experienced by the user. So, even with work experience in mind, the majority of the collaborative discussions were focused on how to improve the technology. The type of problem that occurred could be considered a problem of communication limitations. While the users were inclined to discuss how the problems (of the software) impacted their experience of task completion, the developers needed to hear it from the perspective of what they could do to fix the technical problem underlying the experience. As a result, the discussions became focused on finding technical solutions. Although this shift is subtle, from a participatory design perspective, fixing the technology and making technology fit a context are not the

¹ Interestingly, from a problem-space positioning perspective (e.g., Section 1.3.2), the issue of ‘location’ is similar to the issues of location that relate to the changing role of politics, as discussed in Section 1.3.1. Future research might benefit from investigating whether or not there is a significant relationship between these two observations.
same things. In fact, there is a mismatch between these two intentions. While technical solutions are still needed to address the problems of experience reported by the users, without a specific understanding of which problem is the priority (i.e., to lean towards the fix, or to lean towards the experience) this subtle mismatch can develop into an insurmountable problem – and so it did. Eventually, the users gave up their expectations of discussing experiential problems, and instead chose to discuss what they believed were the technical issues underlying their experiential concerns. However, by yielding in this way, the underlying focus of these discussions moved away from being about quality of life to being more about technical solutions. Thus, the project failed at the task of focusing on creating an improved experience in the quality of the users’ work life.

From a procedural perspective, users and developers were engaged in discussion, and discussion flowed well. Free flowing discussion is, for some, a sign of genuine interaction (Holtzblatt & Jones, 1993). Furthermore, it seemed that the underlying concerns were shared by users and developers, as the latter listened and addressed the concerns of the former. Again, so far the activities supporting the underlying principles of Participatory Design techniques – in this case the principle of user inclusion in the design team – were being followed smoothly. However, because of this subtle shift in focus, this particular application of the technique changed the nature of the effect, and thereby hindered the ability of this project to successfully achieve the Participatory Design goal of achieving an observable improved quality of life.

What we can learn from this is that it is not sufficient to intend to address participatory design tasks. One has to successfully implement those tasks in order for a project to be acceptable as a truly participatory design project. However, in order
to successfully meet the requirements of a task, these requirements have to be clearly defined. Furthermore, the definition has to be such that objective measurement can be used to verify whether or not those tasks were, indeed, achieved (see Chapter 2 for a more in-depth discussion of this topic).

Based on this observation, the application of participatory design principles clearly needs to go beyond recommending activities. And so, as the authors recognized, the failure to achieve a participatory design project happened somewhere between the theory and the application. This highlights the need within the field to specifically focus research on the translation of theory into practice. So far, there is a general consensus that because of the wicked nature (Hammersley, 1992) of participatory design problems, such translation of theory into practice is not possible. The principles and practices that underpin the methodology of participatory design are considered to be guidelines rather than recipes for conducting research (Schuler & Namioka, 1993a). Unfortunately, this means that even when methods are claimed to be successful (Muller, 1993), they cannot be translated from one project to the next (Kensing & Blomberg, 1998). This is clearly a detriment to fostering research cohesion.

**Challenge of finding objective measures**

There are few papers within the Participatory Design literature that describe failed projects. However, the reports of failed projects that do exist introduce a certain level of investigation, clarity, and rigour into the analysis. As such, when adequately described, failed projects fill an important gap in the literature. In the examples illustrated in this thesis, these projects enable us to objectively propose and analyse the elements, attributes, and variables (described more fully in Chapter 2)
that constitute a successful Participatory Design task. This is because without knowing and agreeing on what a Participatory Design project is and is not, it is very difficult to engage in theory testing. To achieve such agreement requires a certain kind of rigour.

Blomberg and Hendersen’s example of describing how meaningful iterations were not achieved can be used to illustrate a level of rigour that is, unfortunately, currently used in only a minority of Participatory Design research examples. This example illustrates a grain size that few Participatory Design papers seem to be able to achieve in their analyses. Also, a quick description and exploration of how the collaboration failed to be genuine will illustrate how analysis at even this grain size may not be sufficient for real progress to be made in moving the field forward. These considerations are essential to understanding the problems that can arise when trying to translate theory into practice.

Consider first, the issue of grain size. When it comes to exploring why their task of meaningful iterations was not successful, Blomberg and Hendersen describe four factors. First, there is the question of what it means to engage in iterative testing. The focus of the work was on technical competence of the software and not on the interaction of the product in use within the work environment. Thus there was little testing in the field. One can infer, then, that the iterative process (if there was one) would have been done in the lab by the technical developers2.

2 As an aside, iteration is a very popular technique in PD, expanding into its own branch of methods. Iteration is predicated on the idea that all improvements are made incrementally and user tested immediately. The result of the testing yields feedback that, in turn, guides the direction of the next iteration. However, the process of iteration is subject to Vicente’s criticism in (Bødker & Iversen, 2002). Iteration, is not without its problems. Also, the founding principle of these techniques – that increased repetition of the design-prototype-evaluate cycle will result in an improvement of the product – is not strong enough to guarantee successful application of the technique.
Second, competencies are required to make testing worthwhile. For example, repeated testing in a lab and not by those who were supposed to use the product meant the product was not tested by those who knew what the actual (as opposed to the stated) work-life demands of the system were. The guiding principles of situated knowledge (Suchman, 2002) was not respected in the use of the iterative principle.

Third, as more effort was invested into the project, the likelihood of change decreased. While this last observation is my own personal interpretation, it would appear to be based on what the authors reported. In particular, Blomberg and Henderson observed that while working together, the evaluators (i.e., intended users of the future product) didn’t bother to express what changes they desired to see but rather they prioritized their requests according to what they believed the developers would adopt (1990, p. 358). This breakdown is further supported in the author’s observation that feedback was no longer flowing between the groups.

Finally, according to the authors, meaningful iteration was not possible because of the chosen medium of collaborative techniques employed. More specifically, talk and text were relied upon to the exclusion of envisioning, mocking up, simulating, and even prototyping (Blomberg & Henderson, 1990, p. 359). This is important to note because the chosen medium also influences the researchers’ ability to translate theory into practice. Agreements, discussions, and methods of communication during collaboration have been discussed within the knowledge transfer and boundary spanning literatures (Carlile, 2004; Carvalho et al., 2009; Kellogg et al., 2006). This is an example of where cross collaboration between Participatory Design projects and Boundary Spanning projects would greatly benefit the field.
To summarize so far, iteration can be easily described as the frequent repetition of the design-prototype-evaluate cycle. Much research has gone into proposing and testing applications of the iterative process (Bødker et al., 1993; Grudin, 1993; Holtzblatt & Jones, 1993; Thoresen, 1993). However, as Blomberg and Hendersen observe, while iteration is easily achievable, by itself it does not create a participatory design process. Missing is the quality of meaningfulness of the iteration. Thus, research calls for even a smaller grain size to be studied — a grain size where meaningfulness can be observed and examined. It is this new grain size that is important and currently missing within the field. Critical to the point being made here, however, is that it is crucial to find ways to objectively measure at this grain size. Chapter 2 will explore some of the scientific requirements for conducting research at this level. The next example in this section will illustrate the value of engaging in this level of inquiry.

The task of creating genuine collaboration is not simple. Part of the reason for failure is the lack of a clear definition of what task success means. Related to this is the question of what genuine collaboration means. Using their own project failure as a starting point, Blomberg and Henderson further explore these questions.

The failure to achieve genuine collaboration was attributed to four reasons. First, the group failed to come to a consensus on what success meant within the project. Second, this lack of consensus led to a splintering of work, where smaller groups worked independently from the other groups in order to focus on issues they felt were front and centre. Third, there was scepticism over who had legitimate qualifications to have control over decision making. In this case the developers felt that only people with technical expertise should have the power to make decisions on technical matters. Likewise, the non-technical people felt that technical expertise
got in the way of making decisions in matters that were not technical, and thus their decision making power should be restricted to only decisions that were technical in nature. Finally, the failure to recognize participants as legitimate decision makers resulted in what Blomberg and Henderson call ‘protective behaviour’ (1990, p. 257). These protective behaviours effectively shut down opportunities for change.

Thus, one can conclude that in this project genuine collaboration really meant (a) that a group must agree on the important goals of the project, (b) that the group must engage in face-to-face time, focused on exploring the important goals of the project, (c) that there must be trust between members of the team, and (d) that ‘protective behaviours’ should not be exhibited. By defining genuine collaboration in this way, it now becomes possible to propose objective measures that for gauging the presence, absence, and perhaps even level of the genuine collaboration.

1.4 Conclusion

This chapter explored four common themes within the field of Participatory Design that relate to the identified research gap of the absence of research cohesion within the field. These four themes were mapped onto three conditions that are necessary to foster research cohesion. These three conditions include:

(a) the need for common ground such that researchers share a common epistemology on which to build their research;

(b) the need for problem-space positioning so as to make explicit the relationship between shared principles and concepts within the research; and

(c) the need for the project to adhere to clear criteria such that independent researchers can have confidence that the implementation (putting into
(a) the changing role of politics (Section 1.3.1);

(b) the relationship of participation to issues such as patterns of dominance (Section 1.3.2);

(c) what design with users means (Section 1.3.3); and
(d) the challenges of translating theory into practice (Section 1.3.4).

In order to move the field forward towards fostering a research environment that promotes research cohesion, a critical lens will be proposed. This lens is explored in Chapter 2. The proposed lens will be used to draw attention to questions concerning how participation is defined. This lens will then be used to analyse the principles and practices within the field to yield a framework (Chapter 3) to enable practitioners to *apply* the understanding of participation to their projects in a practical and consistent manner. In a tangible way, this thesis attempts to address the theoretical and practical challenges explored in Sections 1.3.3 and 1.3.4, and to support a critical perspective for future research on the issues in Sections 1.3.1 and 1.3.2. Chapter 4 will further develop these ideas with the presentation of a visual tool – a concrete, visual representation of the definition of participation developed in this thesis – and it will explore the pros and cons of the framework proposed in Chapter 3.
Chapter 2
Towards a New Participatory Design Lens

Chapter 1 highlighted some of the challenges experienced by Participatory Design practitioners that have been reported in the literature. In particular, the chapter identified an important problem facing the field – a research gap – that reflects the absence of cohesion needed for research results in Participatory Design work to be able to build cumulatively as is typically done in social science. In analysing this problem, it was argued that there are at least three needs that must be fulfilled for research cohesion to exist – the need for a common ground (e.g., epistemology) for discussion, the need for problem-space positioning, and the need for adherence to definitional criteria. The literature on participatory design was then reviewed with respect to these needs and to the research gap. In particular, four themes from the research literature were discussed. These themes and their relation to the research gap problem were presented as part of the general backdrop for the main focus of this thesis – a specific, concrete, practical proposal that aims to promote greater research cohesion in the field of Participatory Design. The central concept in this proposal is that participation, which is common to all themes in the literature, has not been defined in such a way as to promote cross collaboration – or research cohesion – between the different approaches in the field. Thus, the development of a definitional framework for concretizing the concept of participation would be the first step in addressing the research gap. In other words, a definition for the central concept of participation that is based on specific scientific qualities can help foster the conditions needed to overcome the absence of research cohesion in the field. The goal of the present chapter is to discuss the scientific principles to which a definitional framework of participation must adhere.
To accomplish this, the chapter will present a new critical lens for thinking about participation, that is, a way to think about participation that ultimately leads to the specific proposal contained in Chapter 3. This lens provides the following three specific perspectives for thinking about proposed meanings for participation:

(a) Does the proposed meaning address how participation is fit for purpose? (Section 2.2);

(b) Does the proposed meaning address the problem of balancing rigour versus relevance? (Section 2.3); and

(c) Does the proposed meaning frame participation as a construct or a variable? (While this is discussed in Section 2.5, a backdrop of the critical basics that support an understanding of construct or variable is discussed in Section 2.4).

The goal of this chapter is to present these new perspectives on participation in order to set the stage for the framework that will be developed in Chapter 3. The potential added value of this framework will be discussed in Chapter 4 where a specific, concrete visualization of participation, presented as a visual tool, will be examined.

2.1 The Lens: A Critical Perspective

As with any theoretical lens, there are background assumptions and perspectives that must be laid out as groundwork (Brannen, 1992). In presenting this lens it is necessary to discuss key basic principles of science as they relate specifically to the construction of the lens. With this particular lens, there are three perspectives that are important to identify; these will be briefly introduced and then each will be discussed in more detail in turn.
The first perspective explores questions about how *fit for purpose* is the current Participatory Design epistemology. The current epistemology, as reviewed in Chapter 1, is derived from a political activist perspective. However, as we have seen, in current times this motivation has given way to a more pragmatic perspective on the role of participation within projects. This change in perspective is due in large part to change in technology (see Section 1.3.1). Thus, by asking how fit for purpose the epistemology is, one is also asking how robust the theories and ideas are that underlie this epistemology. Why do these theories not seem able to be generalizable from one context to another? One possible reason for a theory’s lack of generalizability may be a discrepancy in the degree of clarity about crucial elements required to *run a project* versus to *conduct research*. For example, the generic concept of *participation* as meaning some form of ‘user inclusion’ is sufficient as a concept to run a project with participation. Running projects that include this type of participation can be achieved simply by finding ways for the users to be counted as passive members of some designated group. This type of inclusion does not specify any required activity on the part of these members. In contrast to this, the type of user inclusion required for participatory design research involves greater specificity. For example, the chief criterion for user inclusion in Participatory Design research must be that users are active within the design process in such a way that the design is developed *with* the users as opposed to *for* or *by* the users (see Section 1.3.3). These two different ways of understanding *user inclusion* illustrate two levels of specificity for the concept of ‘participation’. The first type of participation is relatively open and non-specific whereas the second is much narrower and more specific. The first level of specificity is also sufficient for the smooth functionality of processes to progress from one stage in a *project's* life cycle to the next. However,
this level of precision is not sufficient to enable the types of examinations needed to conduct research. As such, the working definition of ‘participation’ to simply mean ‘user inclusion’ may be fit for the purposes of running a design project but not necessarily a research project. The second more specific sense of inclusion as design with the user is, however, fit for the purpose of research because, in principle, it is narrow enough to operationalize and distinguish this form from other possible forms of participation (such as design for or by the user).

Clearly the concept of fitness for purpose is important for creating an appropriate framework for defining the concept of participation that will address the research gap. Running a project requires a different level of specificity than conducting research. As such, it is this second level of specificity that is required in order to address the research gap.

The second perspective provided by this lens addresses the problem of rigour versus relevance within the confines of qualitative research. This perspective aims at looking at where in Participatory Design rigour can be applied without compromising the project’s relevance or ability to fulfil the project goals. As with the idea of fitness for purpose, one cannot apply the notion of rigour without considering the contexts in which it is being applied. For example, it would not be fit for purpose to engage in a level of rigour that turned description into statistics, because this would undermine the qualitative richness of the data. Thus, this second perspective concerns where within the elements of theory building and testing (and within the confines of a qualitative study) rigour can be appropriately introduced without undermining the relevance of the project or research. As such, some of the elements important to basic notions of scientific principles will be explored for their added value to theory building within Participatory Design. The particular elements
of basic scientific principles that are important to this lens include the concepts of constructs, variables, and their relationships to theory, as well as concepts such as falsifiability, generalizability, and utility. It is in these areas that increased rigour can be introduced into Participatory Design work, usually in the form of clarity and specificity. However, it is also important to remember that rigour means adhering to the scientific principles described and not simply turning inquiry into a quantitative activity or creating highly controlled situations just for the sake of it.

Finally, the third perspective offered by this lens refers to the importance and rationale for treating participation as a construct rather than as a variable. This form of specificity is particularly important for framing the discussion in Chapter 3 where three key elements of participation are identified and further explored with the intent of addressing the research gap. It is important to note that, in this perspective, participation is treated as a construct that, itself, comprises a collection of factors whose variables are tightly inter-related. As such, it is difficult to refer to one dimension of participation without taking into account its implications for the other dimensions. The interconnectedness of the elements of participation within a Participatory Design project was more fully discussed in Section 1.3.2.

The remainder of this chapter (Section 2.6) will explore the possible potential benefits or added value to be gained from adopting this particular three-perspective lens. To discover this added value, the fitness for purpose perspective is combined with the adherence to the rigour perspective in an analysis of a recent review paper by Bergvall-Kåreborn and Ståhlbrost (2008). This paper itself is an analysis reviewing 15 published conference papers from the 2006 Participatory Design Conference. Furthermore, the concept of user inclusion, as described by Ives and Olson (1984) and discussed in the Bergvall-Kåreborn and Ståhlbrost paper, is
This paper was chosen because it investigated whether or not political content is in fact being discussed less and less in case studies claiming to be conducted under the Participatory Design banner, a salient topic within the field (see Section 1.3.1). The authors conducted this investigation by performing a systematic review of 15 case studies published from a peer review Participatory Design Conference. By analysing their systematic review using the lens proposed in this chapter, new questions for future research that help refine the epistemology and phenomenology of participation can be proposed, considered, and discussed. Thus, from the perspective of added value, the value of the proposed lens is that through it the results of one study can build upon previous studies as well as provide the basis for future studies. In this small way, the lens proposed in this chapter is a first step in attempting to bridge the research gap identified. As was mentioned in Chapter 1, this gap relates to the challenge confronting Participatory Design research – each project is often so unique that the methods or techniques developed for it must be reinvented each time a project is run. This problem has hindered researchers from meaningfully building on the work of others – and thus fostering an environment that promotes research cohesion. Thus, it is important to use a lens that can benefit research in the form of collaboration between projects. The exploration of such a case study provides a way of seeing if the lens developed in this chapter (Chapter 2) is suitable to serve as the lens for developing the framework in Chapter 3 and to address the research gap identified in Chapter 1.

Figure 2.1 provides a summary of the 3-perspective approach to participation developed here.
2.2 Fit for purpose

The need to include the perspective of fit for purpose emerges from the *project/research duality* that is present in Participatory Design work. This duality is extremely important to keep in mind as it contributes to the conditions that hinder full research cohesion within the field. Because of this duality, there is a need for an increased level of specificity due to the element of research within Participatory Design work. As well, because Participatory Design work is socially and descriptively based, factors such as the level of specificity of the concepts and the style of research must be carefully considered.

In Participatory Design, researchers saw the need to incorporate ethnography and other types of situated inquiry. This need arose in reaction to the previously strict Information Systems (IS) design life cycle type research that led to the creation of technology that could not address the social needs of the human-computer interaction (Ehn & Kyng, 1987; Mumford, 1987). The need for qualitative research is tightly related to the concepts of location, situated knowledge and action, and contextual factors (Willis, 2007). These concepts revolve around the idea that context is an important and relevant factor that influences human activity (Suchman, 1993). For this reason research into technology should not be done without considering the context in which those technologies are used. The original IS design life cycle concepts that focused on the functionality of the system did not pay attention to the impact these systems had on the users or environment. For this reason, it was realized that the strict systems of research found in Information Systems design life cycle were inappropriate for work heavily based on researching the relationship between technological and sociological factors. As many authors have pointed out, location and context are important elements in Participatory
This Figure describes how the lens described in Chapter 2 leads from the research gap to the framework proposed in Chapter 3. In particular, the question of research cohesion is examined through the lens of fitness for purpose (Section 2.2), rigour versus relevance (Section 2.3), and other key basics (Section 2.4). Together these principles support the perspective of treating participation as a construct (Section 2.5). This perspective is the basis for the framework proposed in Chapter 3.
Design (Sanoff, 2007; Schuler & Namioka, 1993a; Suchman, 1993) and therefore increasing the strictness of research methods alone would not be up to the challenge of redressing the elements that inhibit research cohesion.

In socially based research such as Participatory Design, the importance of describing events, activities, actors, and contexts cannot be understated. Such descriptive methodologies can be found in case studies supporting the principles and practices of Participatory Design (Schuler & Namioka, 1993a), Actor Network Theory\(^3\) (ANT) (Latour, 1997; Law, 2006), Participatory Action Research (AR) (Whyte et al., 1989), and Action Science (Argyris & Schön, 1989). Descriptive methodologies are *qualitative*. Research in Participatory Design has thus moved from the quantitative style of IS systems to the qualitative style of the social sciences. As such, one can say that the *fitness* of the previous IS style of technology development was no longer appropriate for the *purpose* of studying technology in a social context.

However, deciding what is *fit for purpose* is not straightforward. For example, in general, practitioners of Participatory Design support the use of *qualitative* methods. Furthermore, these methods champion descriptive techniques that must not prescribe interpretation (Blomberg et al., 1993; Shapiro, 2005). This point is important because it means that basic assumptions held by the researcher are thus supposed to be separated from the description of the phenomena observed (Blomberg et al., 1993). In other words, pure description is meant to be an objective tool whereas interpretation is a subjective tool. However, in a Participatory Design context one cannot just assert that objective and descriptive tools are *better* than

\(^3\) Although there is some disagreement over the effectiveness of ANT, such a discussion is outside the scope of this thesis. For more information, see (Latour, 1997; Law, 2006)
subjective or interpretive tools. This is because the element of design is itself an important aspect of the research and the project. Also, design is often the platform through which users can become involved. The complication, here, is that design is based on interpreting what has been observed in order to discover tangible solutions. Interpretation, as just mentioned, is viewed as a subjective tool (Blomberg et al., 1993) and thus must be treated differently from the objective tools, such as ethnography and observation. As such, design and ethnography serve two different purposes and resolving this duality is not straightforward (Blomberg et al., 1993; Thoresen, 1993).

The research-project endeavour now has two different types of goals that dictate the fitness of different methods; one goal is to observe (using objective tools) and the other goal is to design (using subjective tools). This situation creates the problem of competing goals, which is a complex problem that the Participatory Design practitioner must address (see Section 1.3.2). From a project perspective this is a serious problem that must be resolved between the participants in order for the project to be completed. However, this challenge also exists from a research perspective. In the context of research the types of competing goals that a researcher must navigate include favouring priorities for the project side of the endeavour versus favouring priorities for the research side of the endeavour. The answer to the question of which technique is more 'fit for purpose' depends on the purpose of the endeavour and the priorities of the researcher.

Thus, recognizing the fitness of a theory, a principle, or a method is one of the basic perspectives of this lens and this recognition needs to be a high priority of the researcher or project manager. However, as authors have pointed out (Hammersley, 1992), deciding on the fitness of a methodology based on the
distinction between qualitative and quantitative research is not as simple as saying appropriateness is ‘descriptive’ or ‘calculative’. As mentioned earlier, ‘descriptive’ in a Participatory Design setting is an objective ethnographic technique. However, when discussing the qualitative-quantitative divide, description usually refers to the softer side of research (Hammersley, 1992). In this particular example, descriptive methodologies are said to be objective. Furthermore, calculative research – which is often described as ‘hard’ – must be interpreted, which according to some is a subjective practice. Clearly, describing which side a technique might belong to (either qualitative or quantitative) it is not as simple as saying one is ‘softer science’ and the other is ‘harder science’.

Other examples that demonstrate what are commonly thought of as opposing concepts within the qualitative-quantitative divide include distinctions between settings (e.g., natural versus artificial settings), approaches regarding behaviours (e.g., descriptive or interpretative), in the utility of the research (e.g., as seen in the diversity between the utility of social science versus the utility of natural science), and the techniques in research (e.g., inductive versus deductive approaches). These differences even manifest themselves in different reasons for engaging in research (e.g., identification of patterns versus pursuit of Scientific Laws), and the different assumptions about the research (e.g., the role of idealism versus realism).

Interestingly, in all of these areas where distinctions can be made, Hammersley demonstrates that even within one perspective different levels of rigour exist. For example, different levels of research rigour can be found within research that promotes only statistical data. Likewise, a variety of levels of rigour can also be found in research that falls under the descriptive banner of research. As such, it is not the research method that should define the level of rigour being employed.
Rather it is the purpose of the research that should define the level of rigour achieved in the research method.

When applying this concept of fit for purpose in pursuit of finding a practical way to foster research cohesion in Participatory Design, the main methodological question that must be asked is: how can such and such a method serve the purpose of fostering research cohesion? Answering this question is not simple, especially when the differences between levels of rigour are subtle, and often carry nuances that imply positivity or negativity. For example, qualitative or quantitative rigour is sometimes referred to as less scientific or more scientific respectively. Such baggage casts judgement of worth, despite the purpose of the method. However, there is a more subtle example of a distinction that can be made, one that promotes a positive view when deciding to lean towards either the traditional qualitative or quantitative levels of rigour. This would be to describe the purpose of the research as needing to be more accurate or more precise. Both precision and accuracy have their place in research, and as aptly observed, often one must come at the expense of the other. Some describe this difference as rigour versus relevance (Argyris & Schön, 1989). Either way, the technique chosen should be related to the purpose of the research, rather than because of some stigma associated with the terms.

Other ways of describing different levels of rigour include changing how one describes the setting. Instead of using the terms ‘natural versus artificial settings’ one can think about the setting in terms of the degree of influence of the researcher. This has also been described as the observer-participant dichotomy (Blomberg et al., 1993) where researchers have to decide how much they will participate and how much they will let the community direct the actions. Action Research and Participatory Action Research (Whyte et al., 1989) also pay close attention to the
role of the researcher within the setting. In these contexts the purpose of the research is to learn what the *reaction* of the participants is to some stimuli introduced by the researchers. In other words, one might describe such settings as more artificial because the researchers interfere in the natural flow of behaviours. Though not identical, this is similar to research in a deliberately constructed setting, such as in a lab during a product evaluation session (Gasson, 1999) or in a naturally *existing* setting, such as in a community (Toker, 2007). In both of these settings – constructed and existing – the outcomes of the research are impacted by the involvement of the researchers.

As Hammersley goes through the other commonly held misconceptions about what method or type of data belongs to *qualitative* versus *quantitative* research, he illuminates the crux of why the qualitative quantitative divide exists; namely so that research can be tailored to a given situation *for a given purpose*.\(^4\)

In sum, this section emphasizes that the perspective which forms the basis of this research lens does not discriminate against any particular methodology, fields of study, or techniques because they fall into camps *not* usually associated with Participatory Design or social scientific research methods. The only criterion that determines the relevance of a study, technique, method, or concept used for this lens is the concept *fitness for purpose* to the research. In the case of the framework discussed in Chapter 3, this means that if a research study adds value to the concept of *inclusion*, especially user inclusion, participation, collaboration, group-work, decision making, or behaviours such as creating solidarity or studying willingness

\(^4\) While this paper is recommended reading for its great insight, a full review of the details in their paper is not the purpose of this section. The included descriptions are to illustrate that rigor can exist in qualitative research equally to existing in quantitative research. As several examples adequately illustrate this point, this chapter will continue discussing how rigour might apply to Participatory Design.
and motivation, then the research was considered as relevant and analysed for its value.

### 2.3 Rigour versus Relevance

In the previous section (Section 2.2), the concept of *scientific rigour* emerged several times. Rigour is an important element of the lens presented in this chapter. Even though there is debate about how rigour can be applied to primarily *quantitative* work, Hammersley (1992) describes a perspective in which the principles of scientific rigour can apply equally to research techniques that are descriptive or statistical in nature. Since important aspects of Participatory Design are about the *social nature of technology*, the lens described in this chapter will focus on how rigour can be applied to what has been considered *primarily qualitative* research methods.

The question of rigour has been a topic of Participatory Design oriented papers. The discomfort of researchers over the implied level of rigour in papers is manifested through the search for, or development of, new methodologies. For example, the paper by Argyris and Schön (1989) compared and contrasted the methodologies of action research (AR) and participatory action research (PAR) as performed by Whyte, et al., (1989). In this paper, Argyris and Schön review claims about causality and about the relationships between behaviour and consequences as discussed in the original case study. By pointing out confounding factors that cast doubt on the validity of the original inferences drawn, Argyris and Schön demonstrate the need for a level of rigour in reporting results that would enable independent reviewers (such as themselves) to arrive at the same conclusions as the original authors (in this case, Whyte, et al.). In the end, Argyris and Schön propose
a new methodology which they call action science (AS). The main difference between AS and AR stems from questioning the appropriateness of the level of rigour engaged in the original research. Argyris and Schön discuss how through AS, a research method can provide an appropriate amount of rigour in pursuit of the research goals (e.g., discussions of *causality*) without sacrificing the relevance of the research (e.g., research applied to the social interactions of actors within an organization). To support the proposal of AS, the authors describe three areas within the original project where improved rigour was necessary. These three elements refer to the methodology of investigating causality, the reporting of causal inferences, and the utility of discussing causal inferences. They then go on to demonstrate how the original paper failed to meet appropriate levels of rigour. From their concluding discussion (Argyris & Schön, 1989) these three elements can be interpreted in more general language as follows:

First, the element that needs to be defined when deciding on a level of rigour is the part the researcher plays vis-à-vis the participant-observer scale. In other words, if the role of the researcher is to observe without any interference then the conditions of the research methodologies must enable the researcher to effectively remain invisible. This is not an easy task, for the mere *presence* of an observing body can alter how participants behave. Likewise, there are ethical questions involved in recording or observing people’s behaviours without their knowledge or consent. As such, rigour in outlining *acceptable levels of interference* will enable researchers to address any confounding issues that might emerge.

Second, the element that needs to be defined when deciding on an appropriate level of rigour is *how the results of the research are intended to be interpreted*. In other words, because *interpretation* is a subjective endeavour
(Blomberg et al., 1993), it is important that the results accurately reflect the precision of the data. In statistical terms an *inappropriate* reflection of precision would be if the results reflected numerical precision of three decimal places, when the actual figures gathered were rounded up to the nearest units of 10. In descriptive terms, a similarly *inappropriate* reflection of precision would be if the results attributed *causality* as a factor that underlies the relationship between two concepts, but the data gathered did not take into account the possible presence of *confounding factors*.

Finally, the intended *use* of these results also impacts on how rigorous the interpretation of the data must be. In other words, there is no use in applying a concept of causality to an intervention if the theory of causality was itself based on vague and imprecise methods. In fact, this is the central point that Argyris and Schön raise. Without a clearly defined description of the theories that guide the intervention observed in the research, the effectiveness of how causality is to be construed cannot be meaningfully measured (Argyris & Schön, 1989, p. 618). In other words, when results are presented in such a way that there is not enough information to refute them, the results are effectively meaningless. Thus a high level of rigour does not contribute anything. Personal opinion can be compelling but it is not a substitute for scientific research. The importance of being able to refute the conclusions of a paper will be discussed in more detail in the part on falsifiability within this Chapter, specifically Section 2.4. In particular, Argyris and Schön underline the value of *clarity* when describing how causality will be measured and what processes will be used to achieve a successful demonstration of this causality. Their views are summarized in the statement: “Our point here is that the authors do not try, on the basis of their special knowledge of the case, to construct and test plausible alternatives to their 'organizational learning' hypothesis. Indeed, they do not treat it
as a hypothesis at all, but as an obvious interpretation of the data of the case” (Argyris & Schön, 1989, p. 617-618).

As demonstrated in their paper, it is important to adhere to scientific principles, especially when undertaking social research. For example, without being able to test a theory against alternatives, the value of the theory is lost. In fact, the theory ceases to be a theory and becomes an assertion. So while utterances of this nature can be interesting and even helpful in guiding people through pragmatic problems within a project, they are inappropriate for research aimed at helping move a field forward. This type of research does not add to the general knowledge of the field, and thus does not create the conditions necessary to foster research cohesion.

These authors describe the importance of rigour within three of the elements of conducting research (i.e., gathering data, interpreting data, and applying theories). It is also important to reiterate the first perspective outlined in this chapter – namely that any level of rigour adopted must first be fit for purpose. As such, it is not always the case that more rigour equals better research.

2.4 Back to basics

What are the elements of theory that form the underlying foundation of the lens presented here? To answer this question the basic principles of falsifiability, utility, and generalizability will be discussed. Following this in Section 2.5, there will be a discussion defining the difference between constructs and variables. In particular, the question of whether or not participation should be treated as a construct or as a variable will be posed. Section 2.6 will then explore the consequences and potential benefits of treating participation as a construct. The goal
of this discussion is to provide the backdrop for the discussion that will be presented in Chapter 3.

The object of Bacharach’s (1989) paper is to provide a set of ground rules to support scientific discussion in the field of Organizational Science. Given the historical relationship of Participatory Design and issues within management (e.g., Collective Resources Approach) it seems appropriate to use Bacharach’s paper to outline the necessary components of theory building and theory testing. This is because Bacharach’s paper discusses the elements of theory from the perspective of management. However, the elements discussed in the paper exist in all sciences, natural and social. Thus, these ideas serve as a good basis for the lens.

Of the explorations detailing the important elements of theory, two criteria stand out as important and relevant to Participatory Design research at this stage in discussion about the lens. The first element is that a theory must be testable. In other words, a theory must be structured such it could be (theoretically) proved false. This theoretical condition is called falsifiability. The second condition for creating a good theory is that it must be useful. This condition is called utility (Bacharach, 1989).

**Falsifiability**

Falsifiability (Popper, 1959) refers to whether a theory is open, in principle, to being demonstrated to not being supported by testing. In other words, a theory is falsifiable if one can state, in advance of conducting the research aimed at testing it, what phenomena and conditions would, if obtained, demonstrate the absence of the predicted relationship between the variables as described in the theory. Put another way, when a theory states "If X, then Y", it is falsifiable when there is agreement on

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5 This was one of the criticisms by Argyris and Schön (1989) relating to their third important element that determines appropriate levels of rigor.
how to recognize that this association between X and Y was not obtained in research. Thus, if a theory can hypothetically be ‘proved’ wrong, then the theory meets the criterion of falsifiability. The value of falsifiability is that the boundaries of the theory can then be outlined.

Actually, in theory testing, it is not possible to prove a theory right. When the phenomenon observed is consistent with the proposed theory, one can say there is support for the theory. However, support does not equal ‘proof’. Alternatively, when a theory is tested and the outcome observed is not consistent with the theory, then one can say that the theory has been demonstrated to be wrong or disproved, provided that appropriate levels of rigour were employed in the research. The theory may then be amended to take this negative outcome into account, and further testing is required (Willis, 2007).

For example, Beck (2002) proposes the hypothesis that the political content in Participatory Design is diminishing. This hypothesis is testable because there are conditions under which it could be demonstrated to be false. Suppose research were conducted that examined the political content within contemporary Participatory Design projects and compared to a similar examination of projects from the origins of the Participatory Design movement. If the percentage of case studies that engaged political ideals were demonstrated to be equal or increased, then the hypothesis put forth by Beck would have been demonstrated to be false. As such, this type of theory is falsifiable. Of course, further research needed to perhaps clarify the boundary conditions of what is considered political would need to be undertaken. As it happens, Bergvall-Kåreborn and Ståhlbrost (2008) did a similar type of analysis and found support for Beck’s hypothesis. So, while support is always viewed as a positive thing, it does not impose the need for future research, such as defining what
was meant by political content. As such, despite what the authors found, the outcome of their paper did not present immediately obvious ways of addressing this problem – that is, the ailing role of traditional Participatory Design epistemology. In this way support for a hypothesis, while useful, does not necessarily push the boundaries of the field as does exploring the contributing factors of a falsified hypothesis.

When conducting this type of research, it is important that the conditions of the research be scrutinized and re-evaluable. This is because if the research is conducted and the phenomenon is not present this does not automatically indicate a falsified theory. It is possible that one of the conditions thought to be present is missing, incorrect, or improperly described. The ability to determine the difference between missing, incorrect, misinterpreted, or genuinely falsified is the difference between strengthening a theory versus being led astray. Falsifying a theory is a desired practice in research, as it draws out and tests boundary conditions and assumptions within the project. It is through iterative refinement of these boundary conditions that theories can be made useful and robust.

Utility

There are at least three ways in which a theory can be useful. First, a theory can be useful if it can explain an observed phenomenon. Ethnography is one technique that was specifically developed to describe the key variables of an observed phenomenon in social science. Being able to articulate a phenomenon requires a practical understanding of the phenomenon. As Participatory Design projects have dual purposes – research and real world applications – the importance of generating a practical understanding of a phenomenon is well established within the field.
For example, when Participatory Design first emerged, researchers at the Tavistock Institute were observing the phenomena of marginalized social experience, unhappiness at work, and general negativity towards workers interactions with technology. In an attempt to explain the observations, theories – which later became the foundations of Participatory Design – emerged. One theory might have sounded as follows: Workers are unhappy with the technology they must use because the technology does not consider the social elements of the workers’ needs. By adopting a theory such as this, researchers and managers could endeavour to address the observed phenomena (e.g., marginalization, unhappiness, and negativity) by redesigning the technology. As such, the utility of such a theory would be that it explained the phenomena observed.

The second way in which a theory can be useful is if it can allow researchers to predict the occurrence of a phenomenon. For example, in Participatory Design it is often believed that technology designed specifically to address worker needs would alleviate the negative behaviours observed, such as those identified by the Tavistock Institute (e.g., marginalization, negativity, dehumanization). This theory has a predictive nature to it. In particular, this theory effectively supports the idea that if you can design technology to address the needs of the users, they will not behave negatively. As such, researchers following the Socio-Technical Approach endeavoured to find ways to adequately bring worker needs into the design specifications of new technology. If the theory was right, then the utility of the theory was that projects could improve the behaviours of their workers by improving the quality of the technology used at work.

Finally, the third way in which a theory can be useful is if it can demonstrate connectivity. Connectivity is where a bridge of knowledge between two more
existing sets of accepted knowledge is created. This means a theory can still be useful even if it is false. The proviso to this utility is that through the process of falsifying the theory new information comes to light. Such new information could be in the form of a new boundary condition included within the theory, an amendment to the original theory, or a new relationship between two previously existing theories. The concept of connectivity highly supports values of clarity and rigour within the research process, as it is through this clarity that a false outcome can still provide added value.

For example, the value of connectivity can be seen in the report by Blomberg and Hendersen that demonstrated how intention does not always translate into application (discussed in Section 1.3.4). In particular, this refers to a process of inclusion that did not yield its expected outcome. In this project, the authors tested the theory that active inclusion of the users (termed participation) within the design process would lead to a product that was meaningful to those users. If true, the theory would demonstrate value by providing a means for the researchers to predict a certain outcome. In this case it would be the creation of a salient product. However, as demonstrated in this case study, the theory turned out not to be supported. Yet, the assumed boundary conditions of participation were believed to be present within the project. That is, there was active inclusion of the users within the design process according to specific principles. However, despite satisfying the known conditional requirements, the theory still failed to predict the correct outcome. What the authors discovered by this is that the understanding of the required condition – active inclusion of the users within the design process – needed to be amended. In this case, the authors transformed the theory from active inclusion of the users within the design process to genuine active inclusion of the users within
the design process. Now, future research examining the boundary conditions of what *genuine* means in this case can be undertaken to strengthen the value of the theory.

**Generalizability**

There is one caveat to keep in mind when thinking about the utility of a theory. This caveat is based on the idea of *how widely the theory can be applied*. If a theory can describe or predict an outcome, but only in a very narrow set of circumstances, while the theory may have predictive value, the real world *usefulness* of the theory is limited. In research this applicability aspect of utility is called *generalizability*.

Generalizability refers to the degree to which the underlying assumptions and the explanatory and predictive ability of a theory are found to be valid when applied to different conditions from those for which the theory was originally conceived and tested. For example, in Participatory Design, one of the underlying assumptions is that *participation leads to improved quality of life experience*. Stated in this general way, the statement can be seen to be appropriate for any number of conditions and settings, including organizations focusing on manual labour, communities, or corporate environments that concentrate specifically on developing software products. If one conducted a variety of Participatory Design case studies in widely differing contexts and with different populations, and the outcomes all supported the claim that participation led to an improved quality of life experience, then one could say that the theory is generalizable to many contextual conditions. If, hypothetically, case studies demonstrated that participation led to positive outcomes only in organizations that focused on workers involved in manual labour type technology, then the Participatory Design theory might have to be refined to state that *participation leads to an enhanced quality of life experience only for workers using*...
manual-labour type technologies. The original theory, which can be seen to be supported by certain case study results, would not be false, but the theory would no longer be applicable to community settings or corporate settings. The theory, then, is no longer generalizable beyond certain specific settings (in this hypothetical case, those focusing workers who interact with manual-labour type technologies).

In other words, if the phenomenon observed is so tightly linked to one exact set of conditions in which it was first observed then the resulting theory would have little utility in a different set of conditions. The challenge then, is to create a generalizable theory or understanding of Participatory Design. For this, the elements in the theory need to be broad so that they can encompass a wide range of conditions. A very broad statement about participation might be something like: any form of participation will lead to happier users by any definition of happiness. If this theory were true, it would apply to a wide range of conditions. Unfortunately, as has been observed, this is not always the case (Clement & Van den Besselar, 1993; Kensing & Blomberg, 1998). As such, conditions and constraints need to be placed on the theory until the theory is true. In contrast, a highly constrained theory might be something like this: giving decision making authority to the workers of a steel factory over deciding what elements are important to have as the necessary specifications of a pneumatic die cutter, leads to worker satisfaction. Such a theory, even if supported by case studies, is so constrained that the lessons and benefits yielded from the research would not apply to any other type of context. This last theory, while probably more accurate than the first theory, is not generalizable because it has no utility in contexts other than the one specified.

Interestingly, in Participatory Design one of the issues identified in the literature is that Participatory Design run projects struggle with issues of
sustainability once the context of the research environment has been removed, or the original researchers have left the project (Kensing & Blomberg, 1998; Shapiro, 2005). This problem might indicate that there is something special within the conditions of a research group that is a key factor in the success of the project. This successful condition might be related to the personality of the researchers, or something equally unique to the project. Alternatively, it could be related to the protected environment, also known as greenhouse environment (Shapiro, 2005), of a research project. Either way, any theories that were successful within the confines of the research and no longer successful outside those confines can be said to be not generalizable outside of research conditions. As one can imagine, the ability for a theory to be generalizable outside the conditions of a research project would be one of great utility to the field of Participatory Design.

So far, the lens developed in this chapter is supported by following three basic principles in science. First, the methodology chosen for a project must be fit for purpose (Section 2.2). Second, research projects must include appropriate levels of rigour (Section 2.3). Third, the research must be useful (Section 2.4). These three basic principles have implications for the framework presented in Chapter 3, particularly with regard to questions concerning the nature of participation. However, it is now important to ask another fundamental question: Is participation a variable or a construct? This question is discussed next (Section 2.5).

2.5 Construct versus Variable

The distinction between construct and variable is also a basic issue in science. This distinction is being discussed separately here from the other basic issues of theory building such as falsifiability, utility, or generalizability because the
development of the participation framework in Chapter 3 is derived from the perspective that participation is a construct. For this reason it is important to first explain, in a separate section, why participation should be seen as a construct and not a variable, and how this perspective is useful.

Bacharach (1989) beautifully defines the difference between construct and variable as follows:

“A construct may be viewed as a broad mental configuration of a given phenomenon, while a variable may be viewed as an operational configuration derived from a construct” (p. 500).

Simply put, a variable is a small measurable or observable unit (this is what Bacharach is calling an "operational configuration") that is related conceptually ("derived from") the construct. Usually there are several such variables derived from a construct. Thus, it is possible to think of the construct in terms of the set of variables derived from it. These variables relate to each other in some meaningful way, and ultimately they serve as a set of units that make up the construct. Thus, one can think of the construct – the conceptual idea of what is being studied– as being made up of many elements – the variables. In this sense constructs are seldom unitary; they usually have many underlying components. The variables on the other hand are not composed of other units – they are themselves units that are observable and measurable in some specific way, and as measurable units they can take on values along some dimension. This distinction between a construct and variables is important for research, including Participatory Design research. This is because of the way theory guides research. In general, a theory will need to specify the relationship between the constructs and variables that are used to think about and
investigate the issue of interest. For this reason that it is important to clearly understand what the variables and constructs are within the theory. In the case of Participatory Design theory and research, this means it is important to understand whether participation should be treated as a construct or a variable.

**Participation as a variable**

If participation is a variable, then it should be possible to define and measure it along a single scale as “an observable entity which is capable of assuming two or more values (Schwab, 1980)” (Bacharach, 1989, p. 500). Such a scale might hold values such as none or 100%, or even ordinal values such as pseudo or full. Take for example the seminal text by Ehn and Kyng (1987) in which they describe an important aspect of the Collective Resources Approach. “Design should be done with users, neither for nor by them” (emphasis in original) (Ehn & Kyng, 1987, p. 54). In this statement the nature of the role of the participants is important. The importance of this theme in the literature was described in Section 1.3.3.

In this definition of ‘variable’ there are two important elements that must be clarified. The first element is the observable nature of the entity being measured. There must be some external way of measuring the entity. For example, some observable actions that have been used to gauge participation include behaviour (Eadie et al., 2006; Hammel et al., 2008), membership (Carroll & Rosson, 2007), action (Blomberg & Henderson, 1990; Kellogg et al., 2006), or by types of answers during a survey or interview (Kappelman & McLean, 1992).

The second element is the scale by which this measurement is being made. Given that the variable can contain a single value from a specific scale, clarifying what that scale is important. For example, if participation is being measured by behaviour, it is important to describe how the key behaviours relate to each other
such that a scale can have a numerical, nominal, or ordinal set of values. So, if participation is viewed as behaviour, then the scale along which it could be measured might be by amount of particular behaviour displayed (discrete number), size of behaviour (ordinal), or type of behaviour displayed (nominal). Each different form of measurement would constitute a different variable. Thus, using all three examples (particular behaviour, size of behaviour, or type of behaviour) would imply that participation would need to be measured in terms of three separate values. However, if it is necessary to measure participation using three separate scales (specific behaviour, size of behaviour, and type of behaviour), then participation is no longer being treated as a single variable and moves instead into the realm of being a construct from which three variables can be derived.

Of course, there are no right or wrong answers as to how participation should be measured for a given project. For example, measuring behaviour by size instead of by type is only advantageous in situations where size is more fit for purpose (see Section 2.2). Thus, it is up to researchers to decide how they will describe and measure participation as a variable. However, it is important to clearly report the choices made, why they were made, and how those choices are most fit for purpose. For without such clarity, the condition of falsifiability (described in Section 2.4) cannot be met, and the utility (described in Section 2.4) of measuring participation wanes.

For example, the paper by Blomberg and Henderson reported three ways in which participation was measured. The first way was by the degree of improvement in the work-experience of the participants. In other words, the observable component of measurement is a comparison judgement made by the participants. In this case the authors measured the quality of improvement by surveying opinions on actual
improvement and comparing them with the participants’ expected improvement. The values this measurement can hold could be negative, null, or positive. In their case study, the authors reported a change in the work-experience of the participants as ‘null’⁶. As a result, the authors were able to claim that there was no improvement in the quality of work experience as predicted by the activity of including the users.

It should be noted that in the above example the authors clearly describe how they gathered their results. However, they did not describe how the data were to be interpreted. As such, it is not possible for an external examiner to independently validate the conclusions, and this raises issues of scientific reliability. For example, by measuring the change in experience by relying on the expectations of the participants, the authors have introduced a new and perhaps confounding element to their research. In particular, a priming effect might have occurred when the users were included. For example, if the participants believed that participation leads to improved results, then including the participants may have automatically raised their expectations. Then, if the resulting product did not exceed their expectations, the participants may consequently have reported a null or negative experience. On the other hand, had the authors more clearly described the methodology by which they gathered and analysed their results, it might have been possible to know if such confounding elements were addressed in other manners.⁷

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⁶ This is demonstrated in the phrase “Thus, the major qualities of work life that designers hoped Trillium might change were ones of authority, influence, and control. However, these issues were, for the most part, outside the realm of concern for the joint designer-supporter interactions” (Blomberg & Henderson, 1990, p. 356).

⁷ The focus of this discussion is about the value of clarifying how variables are treated and thus this example may appear to be taken out of context. The purpose of their report was to demonstrate that user inclusion does not always equate to participation. From this perspective, it would seem that their methods were fit for purpose.
Continuing with the same case study (Blomberg & Henderson, 1990), the second way in which participation was measured was by the degree of collaboration in the process. In concrete terms, this particular measurement was gauged by the **authenticity of the location** where many of the meetings took place. In the authors’ own words “Most of the interactions between designers and supporters took place away from the designer’s work environment” (Blomberg & Henderson, 1990, p. 365). The observable component of *location* was thus measured along a descriptive scale with nominal values such as “designers’ work environment”, “Trillium clinics”, or “smaller project team meetings”. Using the authenticity of the location of meetings as a scale for measuring the variable, one might conclude that an important aspect of participation relates to the *context of use*. Indeed, this concept is well supported in the field of Participatory Design (Star, 1991; Suchman, 2002).

Finally, in this same project (Blomberg & Henderson, 1990), the third way in which participation was measured was by the *degree of iteration* within the design process. One proposed value for describing a unit of iteration was “the opportunity to sit down together and ‘try out’ the different implementations” (quotes in original) (Blomberg & Henderson, 1990, p. 358). Even within this description of measurement, however, there is still room for greater clarity. For example, how does *opportunity to sit down together* relate to iteration, and how is it measured? On the one hand ‘sitting down together’ is observable, and thus can be objectively measured as the amount of physical proximity during the engagement of a particular activity. On the other hand, does this mean that having developers close by and in the room as users becomes *the* important element of iteration? Does the quality of the iteration change depending on the physical distance between the developers and the users, or is there a better way to describe the key value of ‘sitting down together’?
Participation as a construct

If participation is a construct, then the term participation would refer to a conceptual idea that is not, in itself, directly observable or measurable as a unit (in contrast to a variable). As a concept, the construct could require that multiple variables be defined in order to fully capture and describe what is meant by the construct. In other words, instead of assigning participation one type of value (for example high or low on some scale), researchers would describe participation in terms of a set of variables. For example, one variable of participation can be based on the activity of inclusion and a second variable can describe a certain psychological importance of the inclusion. The activity variable can then be measured by observable behaviours such as time spent in meetings, number of committee memberships, or number of decisions made (note that in this case three variables were described, any single one of which might be used to describe the ‘activity’ portion of participation). Then, the psychological importance variable could be measured on a single scale by using surveys, opinion polls, or structured discussions. Participation would now require two ways of being measured; through some measure of activity and through some measure of psychological importance. It is the relationship between the two variables that describes the construct. In this case, the variables of the construct would be activity and psychological importance.

Interestingly, researchers in fields outside of Participatory Design have identified at least two variables associated with the concept usually termed participation. As mentioned above, these variables are the activity of participation and the psychological importance of the participation (Kappelman & McLean, 1992). As such, it not only seems logical that the concept of participation might be
too complicated to be considered a variable, but there is also research supporting the idea that participation should be considered a construct.

Thus, the concept of participation seems to better fit the description of a construct than that of a variable. However, it may even turn out that participation is best described as a theory (rather than a construct)! Future research determining the appropriateness of how the field should adopt the concept of participation is necessary. For the purposes of this thesis, the lens proposed in this chapter adopts the perspective that participation is a construct. As such, the framework proposed in Chapter 3 outlines six potential variables that could be measured independently. It is the relationship between these variables that the elusive construct of participation will attempt to capture. Chapter 4 will examine the value of adopting these particular six variables as a way of describing participation within the field of Participatory Design, and in doing so, will describe a way of visualizing the variables and their interactions.

**Note on terminology:**

Before moving on to the next chapter, it is important to point out that the actual terms used to describe the phenomenon of user inclusion – i.e., participation, involvement – are themselves often unclear. So far, two variables of ‘user inclusion’ have been identified within the organizational management literature. In particular, the variables in the organizational management definition of user inclusion refer to the activities of the participant and to the psychological significance or importance that the inclusion has for the participant. However, it is somewhat complicated and laborious to use the terms activity and psychological importance. As such, in Organizational Management the word participation is used to describe the activity of user inclusion, and involvement is used to describe the psychological importance that
the activity has to the user (Kappelman & McLean, 1992). Unfortunately, in Participatory Design the terms *participation* and *involvement* are often used interchangeably and refer to the generic concept of user inclusion rather than any specific variable. This has the potential to create great confusion in any conversation. Incidentally, to keep using separate words, the *construct* describing the relationship between participation and involvement is termed *engagement*. In other words, for the sake of clarity, researchers use the term *engagement* to describe the combination of action and psychological importance (Barki & Hartwick, 1989; Baroudi, Olson, & Ives, 1986; Ives & Olson, 1984; Kappelman & McLean, 1992). Engagement is thus, in this case, a construct containing two variables describing activity and psychological importance. The activity aspect of engagement is termed *participation* and the psychological importance aspect of engagement is termed *involvement*.

### 2.6 Potential benefits

Before moving forward and applying this lens to the Participatory Design literature it is important first to gauge if the use of such a lens will yield any benefit for addressing the question of how to move the forward by fostering research cohesion. As such, the following section will explore how this lens might garner insight from the systematic analysis performed by Bergvall-Kåreborn and Ståhlbrost (2008). The outcomes of this section are intended to be confidence in applying the lens and future courses of research for better understanding the construct of *participation*.

The methodology used by Bergvall-Kåreborn and Ståhlbrost is similar to that of a systematic review and to *meta-analyses* (Lipsey & Wilson, 2001). Because the principles of conducting meta-analysis are not commonly used in qualitative
research, the underlying principles of a systematic review and meta-analysis will first be discussed. The actual results of the paper and the authors' conclusion are less important for demonstrating the value of the critical lens than are the resulting questions that can be asked for future research, although the questions they generate for future research support the value of conducting this type of research.

**What is a meta-analysis?**

Meta-analysis refers to a statistical procedure for analysing data that is pooled across many studies. However, because Participatory Design research primarily employs a descriptive form of data gathering rather than a form amenable to formal statistical analysis, the mathematical and statistical side of meta-analysis will not be discussed here. What is important is that the underlying general principles of how one conducts a meta-analysis can be equally appropriate for any work, including descriptive work that seeks to engage in a systematic and solid discussion of research results. The value of using methods that are primarily quantitative in a qualitative field of research was discussed more thoroughly earlier in this chapter (Sections 2.2 and 2.3). As such, any of the principles of meta-analysis that are fit for the purpose of Participatory Design research will be explained.

Two dominant perspectives in meta-analysis and systematic reviews are considered here. One perspective comes from the statistical analysis side (Lipsey & Wilson, 2001) and is tempered by a perspective grounded in qualitative methods such as Delphi and meta-ethnography (Jones, 2004).

Lipsey and Wilson describe meta-analysis as a form of systematic research that surveys published reports to gather its data. This type of information gathering contrasts with case study forms of information gathering that are people based. In other words, instead of gathering data by asking people questions, the authors using
meta-analysis gather data by analysing already published reports according to specifically chosen questions and criteria. In this case, the analysis performed in this section is similar in several ways. First, the paper by Bergvall-Kåreborn and Ståhlbrost analyzes a set of case studies within the field for specific content. Second, the analysis in this section gathers data from an already published paper that, itself, analysed other papers. Third, the paper under review was selected according to specifically chosen questions and criteria. These questions and criteria will be included in the discussion.

This form of analysis can be used as a powerful tool to analyse and demonstrate what researchers are saying and thinking. In some ways, it is equivalent to performing an ethnographic study of researchers in their natural habitat. For example, researchers conduct studies and publish through a process of peer review. By analysing the published work, the ethnographer can gather data without interfering with the natural process of the ‘gather information and publish’ behaviour. As such, it is a form of research that favours the observation side of the observant-participant dynamic familiar to ethnographers.

This form of analysis can also be used to summarize, integrate, and interpret collective ideas based on scholarly works. As such, it is an excellent way to engage in scholarly discussion.

There are three basic principles for conducting such an analysis. The first basic principle is to achieve a high degree of clarity in choosing criteria for deciding what materials will be included or excluded from the analysis. In other words, it is important that the researcher specify what characteristics in a paper are important and relevant to the analysis. For example, if the analysis is to inquire about how practitioners deal with patterns of dominance, then, it is crucial that all the papers
accepted for review *address the issue of patterns of dominance*. It would make no logical sense to include papers that did not deal with the direct phenomenon to be included in the analysis. It is interesting to note that this principle is similar to the concept of fit for purpose.

Other inclusion / exclusion criteria might include certain perspectives, differences of opinions, different focuses on grain size, or even the availability of the material. These issues are common to descriptive based research as well as to statistically based research. The key concept here is to maintain a high degree of *clarity in the criteria for choosing which papers to include and exclude*.

Jones (2004) argues that classic *meta-analysis* is inappropriate for qualitative research, but nevertheless outlines some starting points for reflecting on how useful a particular study will be for any review. Some of these criteria include (a) transparency in motivation and research process, (b) rigour and thoroughness of the report, and (c) connective value of the paper. As discussed previously in this chapter (Sections 2.2 to 2.4), these issues are important both for description-based research and for statistics-based research.

The second basic principle in conducting a meta-analysis is to ensure a high degree of clarity about the *context* in which the phenomenon is being observed. Ethnographers and Participatory Design practitioners are, of course, already familiar with the importance of clarity in describing context. The important point here is that clarity is relevant to both *descriptive based research* and *statistically based research*.

For example, Beck (2002) hypothesizes that the political content of Participatory Design projects has diminished. Using this second principle for conducting a meta-analysis, i.e., clarity regarding context, one might decide to include case studies that describe *similar contexts* of research. Some key aspects of
the context might be the nature of the workers, the nature of the organizational structure, the support of existing policies, or even the context to which the research was reacting. By focusing on issues of context, one might discover that the political content of Participatory Design projects is tightly linked to certain types of organizations, certain types of technology, or certain types of workers. For example, democracy is a concept that might be most relevant to a context where workers have little choice in where they can go. In other words, the issue of democracy might apply to people who are stuck within a company. As such, it is possible that the diminished push towards democracy, as observed by Beck, might be a result of a diminished scope of opportunity by researchers to engage in projects that contain democratic content. Such a discovery would surely change the nature of suggestions regarding how to move the field forward. This is why it is important to have clarity in the concepts being discussed within the context of the research.

The third basic principle for conducting a meta-analysis is to ensure a high degree of clarity on the phenomenon being observed. For example, a researcher might need to know whether a given case study employed user-inclusion according to the specific quality of design-with-users, and not for or by the user (as discussed in Section 1.3.3). In their paper, Bergvall-Kåreborn and Ståhlbrost specify their conditions for judging a paper as having appropriately focused on the correct form of participation. 8

Thus, the three important areas in which a review must have clarity are to describe the phenomenon being studied, which contexts are suitable, and what

8 Unfortunately, it was not possible for the authors to externally verify the accuracy of the claims made within the case studies. However, due to the limited number of case studies available to them, the authors had to accept claims made by researchers, even though no evidence was given to support those claims (Bergvall-Kåreborn & Ståhlbrost, 2008, p. 107). This, of course, compromises the value of the insights garnered.
methodological and contextual issues can be deemed to not influence the nature of the results. Once these areas have been specified, the meta-analytist must decide on what concept the work will be standardized. These principles were incorporated into the methodology described in Chapter 3 (Section 3.1).

**Application of Meta-Analysis in Qualitative Work**

The paper by Bergvall-Kåreborn and Ståhlbrost demonstrates the benefits of adhering to the principles of conducting a meta-analysis. In particular, this paper clarifies certain conditions for inclusion and exclusion of case studies, and they clarify the criteria for describing the phenomenon being observed. In addition, most of their work is qualitative and based on narrative. As such, an analysis of this paper can serve as a good example of the types of benefits that a discussion employing the critical lens described in this chapter can yield.

**Inclusion rationale:** The study focuses on the papers that were accepted by peer review at the 2006 PDC conference. The authors chose these Conference proceedings because the PDC conference and resulting journal is considered the conference most explicitly focused on the participatory aspects of Information Systems design (p. 103). Any independent reviewer who would choose to argue with this rationale now has a basis on which to make an argument. As well, by clearly explaining this rationale, other researchers might wish to choose another set of conference proceedings and perform a similarly focused meta-analysis. The value in doing so would mean that the two analyses can be compared, and new insights garnered about the nature on the key phenomena in Participatory Design.

**Phenomena investigated:** Their meta-analysis focused on three phenomena. These phenomena are often discussed when questions about the epistemology and methodology of Participatory Design. For example, the first phenomenon
investigated was the political content within the *motivation* for undertaking a Participatory Design project. The second phenomenon studied was the *types of users* that are included within Participatory Design case studies. Finally, the third phenomenon investigated was the *degree of participation* employed by the case studies. Through this analysis the authors were able to create a vivid description of the types of studies that were currently being undertaken.

One limitation of the study, however, is that the context of the case studies was not well clarified. From the perspective of fit for purpose this is a limitation because one of the variables described in Beck’s (2002) original hypothesis is that the dilution of political activist content is a result of a change in the location of a project’s focus. Thus, in order to adequately address this hypothesis, it would have been necessary to clarify this criterion. So, while Bergvall-Kåreborn and Ståhlbrost results support Becks’ observation (e.g., that only 3 of the 15 papers at PDC contain political content), they do not discuss if details of the proposed theory (by Beck) are also supported by the data. For the field, this means two things. First, it means that the *observation* that there is a decline in the political content of Participatory Design projects is supported. In other words, it seems likely that it is true that the current epistemology of Participatory Design no longer adheres to its original epistemology. However, it also means that Beck’s hypothesis, linking the *cause* of political decline in Participatory Design projects, is neither confirmed nor falsified. In other words, that political content has diminished seems accurate, however understanding why political content has diminished is left unexamined.

The third phenomenon investigated was about the *degree* of participation engaged by a Participatory Design project. In other words, how much ‘participation’ truly occurred in these Participatory Design projects? For example, “[d]egree of
participation refers to the range of influence that users or their representatives have over the final product” (Bergvall-Kåreborn and Ståhlbrost, 2008, p. 105). In the end, to enable the results to be meaningfully compared, the authors use a published and thus peer-accepted scale of participation by Ives and Olsen (1984). The benefit of being clear in what measurement is being used is that an independent researcher can agree or disagree with the findings, and discuss them in a meaningful way that also brings added value to the field.

For example, the authors define the construct *degree of involvement* as some observable variable of *influence over the final product*. The Ives and Olsen scale has six ordinal degrees of user involvement. In other words, there are six unique types of involvement, where each type of involvement is considered to be *more involved* than the previous. This enables the six types to be arranged in the form of a *scale*.

The lowest end of the scale describes a value that is considered to be equal to ‘no involvement’. To qualify for this degree of user involvement, users must be observed to be “*unwilling to [sic] or not invited to participate*” (Bergvall-Kåreborn & Ståhlbrost, 2008, p. 105). In other words, the researchers must be able to demonstrate that ‘no activity that relates to the process of users interacting with the design plan’ can be observed. (Note: These definitions become very complicated, so to avoid cyclical or *tautological* reasoning (Bacharach, 1989, p. 505) it is important to craft the wording of the definition so that it does not refer back to itself through synonyms or vague concepts. For example, defining involvement by using the word participation (such as in the above quote by Bergvall-Kåreborn and Ståhlbrost) is not useful, unless each term has had a specific definition attached to it. As such, it is possible that this has caused a misinterpretation of the scale. A full discussion clarifying the nuances of these definitions would be very beneficial; however, this is
beyond the scope of this thesis. As such, only a cursory discussion will be presented at this time).

The second value on the scale is described as *symbolic involvement* where “user input is requested but ignored” (Bergvall-Kåreborn & Ståhlbrost, 2008, p. 105). In this definition, we can see that there are two observed actions. These actions are requesting and ignoring. In other words, to qualify for engaging in *symbolic involvement* (i.e., the second item on the participation scale) users must be asked to be involved and those users must decline involvement. Note that according to the critical lens, *symbolic involvement* is now no longer a variable, but rather a construct. This is because symbolic involvement is a concept defined by two or more variables. Furthermore, it is unclear in the definition proposed by Ives and Olsen (1984) whether the declination to be involved was on the part of the users, or on the part of the researchers. In other words, did the users say ‘no, we do not want to be involved’, or did the researchers extend a survey and then disregard the results of the survey? Chapter 3 will discuss a different approach to this form of involvement in which this construct is clarified.

As one goes up the scale describing increasing *degrees of involvement* several new variables emerge. In the end, degree of involvement is described as containing eight variables. These variables include (a) willingness to be involved (b) activity of inviting users to be involved, (c) soliciting information from users, (d) providing information (as a user), (e) signing off on ideas, (f) users having face time with the design team (described as being a liaison), (g) having financial responsibilities, and (h) or having stake in the success of the project. From the number of variables being used to describe the values that *degrees of involvement* can take on, several things are clear.
First, although the scale appears to be organized in an increasing continuum of values (from no involvement to high involvement), the actual degrees are themselves separate units (or discrete). For example, increasing the value of ‘willingness to be involved’ does not automatically lead from no involvement to involvement by strong control.

Second, the strongest degree of involvement is described as financial responsibility. Financial stake does not automatically mean that stakeholder has more control over the outcome of the project. For example, there are people who act as silent backers. They provide money to the project and have stake in the success of that project. However, they do not partake in any decision making. Furthermore, there are other issues such as legitimacy, structure of the organization, and financial agreement are all factors that can influence the relationship between a stakeholder and a project (e.g., See Section 1.3.2).

Third, there are interesting relationships being described within each degree. For example, as already mentioned, in symbolic involvement there are two important elements described: the requesting of user input and act of ignoring (said input). However, this definition is not clear as to whether the act of ignoring was by the project organizers or by the users. For this discussion, it would be reasonable to interpret symbolic involvement (pseudo-participation) to indicate that user input was solicited and provided, but that the input was then disregarded by the project designers. From this perspective, the definition does not describe the willingness of the users to participate, nor how much effort they may have put in the providing of that input. Thus, one might conclude that the degree of participation is not dependent on the psychological make-up, motivation, or ability of the participant. The validity of this inference is one that would benefit from future study because
there are practitioners who believe that willingness is an important element in creating a successful Participatory Design team (Ehn, 1993; Emspak, 1993; Greenbaum, 1993; Grønbæk, Grudin, Bødker, & Bannon, 1993; Thoresen, 1993).

In sum, there is added value to using the proposed critical lens to perform a meta-analysis-type inquiry within the field of Participatory Design. For example, through this analysis it has come to light that while the dilution of political content is being observed, the reasons underpinning this phenomenon are, as of yet, still relatively unexplored. In terms of addressing this issue (summarized in Chapter 1), more research is needed. Similarly, using this lens to critically examine a generally accepted scale of involvement has highlighted eight separate variables that need to be considered when measuring or employing user involvement. Finally this type of analysis has enabled further research to focus on understanding the relationship between scales of increasing involvement. In particular, the scale analysed in this chapter does not seem to address the importance of the psychological position of the participants involved, yet many of the principles and practices developed within Participatory Design endeavour to increase solidarity, trust, and willingness between participants. Clearly, as the role of a user’s psychological position is important to any generalizable definition of participation, this lens has demonstrated potential utility in serving as the criteria to which the definitional framework of participation should adhere.

2.7 Summary

The purpose of this chapter was to lay a foundation for practical ways to address the research gap – namely the challenge of fostering research cohesion within the field of Participatory Design. In laying this foundation, a critical lens,
described in terms of basic principles in scientific research, was explored. Particular elements of the critical lens that has informed the work that is presented in Chapter 3 include the following:

(a) employing methods that were *fit for purpose* (Section 2.2);

(b) borrowing principles from qualitative and quantitative branches of science (Section 2.3); and

(c) highlighting the requirement that any theories or principles developed and proposed be *falsifiable, generalizable, and useful* (discussed in Section 2.4).

Furthermore, this discussion led to a perspective suggesting that the concept of *participation* should be treated as a construct, rather than a variable. The lens was then examined against an analysis case study to determine if potential value could be derived from employing this version of the lens. As the examination highlighted areas for future research (for example, how the psychological position of a user fits in with the scale of involvement as described by Ives and Olsen (1984)) that are consistent with the type of criteria needed to address the research gap outlined in Chapter 1, this version of the lens seems appropriate for use in the analysis undertaken in Chapter 3. As such, the definitional framework discussed in Chapter 3 is built to adhere to the principles outlined in this chapter. The success of this endeavour is discussed in Chapter 4.
Chapter 3
An Emerging Framework: Impact, Influence and Agency

This chapter presents the results of a more comprehensive analysis of participation, guided by the issues raised in Chapter 1 and framed by the lens described in Chapter 2. The analysis undertaken was based on an examination of how participation is treated in the literature and in projects, using as source material for this analysis a collection of articles that appeared in a seminal text of the field. The analysis leads to the elaboration of a framework for thinking about participation in a way that addresses the problems and issues discussed in Chapter 1. Of particular focus is the question of how to find appropriate criteria for ensuring that the use of participation adheres to the theories of what makes participation valuable to a project (as discussed in Sections 1.3.3 and 1.3.4). Moreover, it will be argued that the results of this analysis open up the possibility for the creation of what is being called a "visual tool" for conducting future research on participation and participation related research. Chapter 4 will then explore how this analysis favours the creation of this visual tool, and how the entire proposal might contribute to addressing the research gap identified in Chapter 1. Specifically, Chapter 4 will discuss the question ‘how might the visual tool contribute to addressing the lack of research cohesion within the field of Participatory Design?’

For this analysis, the seminal text by Schuler and Namioka (1993b), titled Principles and Practices in Participatory Design was chosen. Although this book was published nearly two decades ago, there are three key reasons for choosing this as a source text.

First, the motivation behind the collection of works presented in the book is congruent with the motivation of this thesis. Specifically, one of the purposes for this
book was to put forth “one distinct spirit and direction” (Suchman, 1993, p. viii) for the field. This means that despite the differences in approaches, motivating factors, or context in which the project is being undertaken, all the authors are searching for a way to “counter the ‘specialist model’” (Suchman, 1993, p. xi) and find a way “where-by questions are no longer presented to Experts who are then expected to produce an Answer” (Schuler & Namioka, 1993a, p. xii). In other words, despite the variety of backgrounds, beliefs, and motivations for why Participatory Design brings value to a project, these authors are collectively trying to find one clear way to understand and apply user inclusion within projects in this field. This intention is congruent with the purpose of this thesis in that despite the differences in context, motivations, or types of projects that rely on participation, this thesis is trying to find one integrated approach for understanding participation that brings value to these efforts. This search for one integrated way forward can be viewed in contrast to more recent ‘collected works’ in the field, where the contemporary concerns appear to be about using participatory design techniques in non-traditionally Participatory Design areas (Cahill, 2007; Carroll & Rosson, 2007; Hanzl, 2007; Markus & Nurius, 1986), introducing new techniques or methods of analysis (Pilemalm et al., 2007), or discussing the history and diverging trends within the field and how this is may be a cause for joy (Sanoff, 2007) or concern (Toker, 2007) within the field. These latter concerns are not congruent with the purpose of this thesis, which is to first establish a visual tool that will enable the idea of participation to be applied and to adhere to the intentions and theoretical underpinnings of a variety of practitioners.

Second, of the phenomena studied in this seminal text, one emerges with particular consistency. That is, this particular book provides a collection of principles and case studies that focus on a single concept: the concept of user
inclusion. Specifically, the main phenomena studied in the source text are user inclusion and its role in Participatory Design projects. The role of user inclusion refers to how users are included, why users are included, and what effect user inclusion had on a project. As will be described in more detail in the body of this chapter, users were included in a variety of ways. For example, users were included in community seminars and evaluation sessions (Allen, 1993; Thoresen, 1993), design workshops (Muller, 1993), contextually relevant interview sessions (Holtzblatt & Jones, 1993), and even as authors (Bravo, 1993; Emspak, 1993). In two of the articles, the utility of user inclusion was discussed from the perspective of the user (Bravo, 1993; Emspak, 1993). This turned out to be especially useful because it provided an "insider's" insight into user inclusion as opposed to that of a researcher or project manager. In general, when user inclusion was discussed, user thoughts were surveyed or obtained through interviews and reported by a researcher. This unfiltered perspective is particularly valuable for work being undertaken in this thesis, as in order to understand participation it is important to understand the effect that user inclusion can have on the user as well as the project.

Finally, the works collected in this one text are by prominent authors who have been published to varying degrees. So, while edited books usually have the limitations that the contributed chapters do not usually undergo the same level of peer review process as is the case with journal articles, the chapters in this book do not all suffer this limitation.

The textual material in Schuler and Namioka (1993b) was subjected to an analysis that proceeded in stages. The analyses yielded a set of overarching categories that encompassed the various individual statements made by the contributing authors about the nature of participation. The process of deriving these
categories is described in the next section (3.1). These categories provided the basis for the development of the framework described in this chapter and for the development of the visual tool discussed in Chapter 4.

3.1 Methodology

The methodology for collecting and analysing the data in this thesis was as follows:

(a) Any expression that related to the target phenomenon of participation was included. An expression consists of a proposition, phrase, sentence, utterance, or expressed thought in written format. Thus, descriptions of who, why, what, where, when, and how participants were included the project or process were recorded. Furthermore, expressions that indicated assumptions, beliefs or theories about participation, contextual conditions, potential measures, activities, and requirements for supporting participation were also included. In total, over 800 unique expressions were extracted from the text.

Example of an expression: “Departments can be geographically as well as culturally far apart, which further hinders communication” (Grudin, 1993, p. 108). This indexical expression relates to participation because the context or shared background knowledge that supports this expression relates to finding road blocks encountered in fostering participation.

(b) Each expression was then analyzed and a set of propositions were created to best capture all the ideas within each expression. This way, one expression could relate to several categories. In other
words, each expression became explained by several propositions.

Each proposition then mapped directly to one key category.

Example: In the example using the expression by Grudin (above), the expression was reformulated into three propositions that lead to three important categories relevant to participation; (a) communication is an element of participation, (b) physical proximity is an element of communication (and thus participation), and (c) cultural proximity is an element of communication (and thus participation).

Once this had been completed for each expression, categories of relevant propositions were created. The results of these key categories are discussed in Section 3.2.

Example of a category of related propositions: The derived propositions in this example are: Users have the same aspirations (Emspak, 1993); Software professionals might have different agendas (Muller, 1993, p. 213); rational ways of thinking are necessary in design (Ehn, 1993, p. 61); “Harmony view” is erroneous (Ehn, 1993, p. 47); misunderstandings cannot be resolved by analysis (Ehn, 1993, p. 47); Engineers may lack empathy for inexperience (Grudin, 1993, p. 107); Effort required to correct a misunderstanding can be prohibitive (Muller, 1993, p. 88). System Developers use quantitative reasoning (Greenbaum, 1993, p. 61).

These propositions have in common a relationship to an important factor of participation. Specifically, these propositions relate to the psychological elements that can hinder or enhance the decision making qualities of participants. Thus, these propositions relate to the category of ‘Decision Making’, described in Section 3.2 item 4.
(d) Each category was then separately analyzed for its individual relationship to the target phenomenon participation. From this second analysis, six key elements were identified; quality of information shared by a participant, amount of information provided by the participant and used in the project, the number of decisions made by a participant, the scope of decisions made by the participant, the willingness of the participant, and the cohesion or solidarity of all members in the group.

Example of type of analysis: communication is a category of discussion for many of the authors in the text (Allen, 1993; Bødker et al., 1993; Ehn, 1993; Holtzblatt & Jones, 1993; Muller, 1993; Mumford, 1993). As such, facilitating smooth communication appears to be an important factor for facilitating participation. However, when communication is explored within the context of decision making, for example, important questions come up about the relationship between the category identified in the literature and the intention of the participation. In the case of communication, one can ask from the outset: is it communication that leads to participation? Or, does communication facilitate a key aspect of another interaction, where it is that other interaction that leads to participation? From the analysis conducted, it was concluded that communication facilitates the sharing of information as well as the ability to express decisions. As such, while communication is important to fostering a participative context, it is not sufficiently related to participation to act as a measure of participation. Thus, communication, itself, does not consist of just one of the variables or components describing participation (discussed in Section 3.3).
(e) Relationships between these six elements were then explored and grouped. Three components emerged; impact, influence and agency. It should be noted that this thesis is proposing that participation can be described by the relationship between these components and not by any individual component by itself. These components are discussed in Section 3.3.

(f) Finally, these 3 components were then turned into the visual tool that is the main contribution of this thesis. This visual tool and the potential added value it provides are discussed in Chapter 4.

### 3.2 Initial Results

Once each proposition was entered and linked to a category, a process akin to doing a "conceptual" factor analysis was undertaken (reducing the 800 data elements to a small number of groups of elements). Sorting the propositions from the text yielded eight categories of issues that were of concern to the practitioners.

1. Actions and activities,
2. Context,
3. Communication and skill,
4. Decision making,
5. Information and knowledge,
6. General measures for the project,
7. Roles and responsibilities, and
8. Stake for all participants.
These categories are now explained briefly in turn⁹.

**Actions and activities** (1) refer to the recommended practices that the practitioners engaged in. These included processes, behaviours, and requirements of their techniques.

**Context** (2) refers to the physical description of a context-participation relationship. An example of a context-participation relationship could be the observation that design in some context does not take place primarily at meetings (Thoresen, 1993), which says something about the relationship between participants and meetings, while at the same time somewhat contradicting some of the actions and activities proposed by other authors. Design seminars are particularly recommended by practitioners (Ehn, 1993; Muller et al., 1993; Mumford, 1993). These seminars relate to participation insofar that users are intended to be included in these seminars. In this case, the design process has now been transferred to the context of a seminar. On the other hand, meetings are not places in which design takes normally takes place. One can conclude, therefore, that including users within

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⁹ Practitioners are still currently endeavouring to develop techniques and methods that address these issues. For example, Hansen (2006), Hect and Maass (2008), and Wakkary (2007) discuss actions and activities of the Participatory Design practitioner (item 1). Beck (2002) and Bergvall-Kåreborn and Ståhlbrost (2008) discuss how the current context of Participatory Design is changing (item 2) (also see Section 1.3). Luck (2007) discusses challenges in communicating with users (item 3). These challenges exist because of multiple perspectives that inevitably come with inclusion (Chernobilsky, Nagarajan, & Hmelo-Silver, 2005; Howcroft & Wilson, 2003). Rönkkö, Hellman, Kilander, and Dittrich (2004) explore the use of Personas for the purpose of decision making (item 4). Works in boundary spanning and knowledge transfer (Carpentier, 2009; Dimitracopoulou, 2005; Kellogg et al., 2006) explore the role of information, knowledge, and skill within a participatory project (items 3 and 5, and 7). Stake for the participant is still a current argument for why Participatory Design has much to offer community projects (item 8) (Bødker & Iversen, 2002; Sanoff, 2007; Shapiro, 2005). Interestingly, general measures for a project (item 6), is category that is often only discussed in passing. One notable exception is Blomberg and Hendersen’s (1990) Reflections on Participatory Design, in which they specifically outline three measures for Participatory Design (see section 1.3.4).
meetings likely means that they are not included within the design process. This conclusion raises questions about the nature of participation. Being present at a meeting does not carry the same level of participation as being present at a design seminar. Why? This question and other similar questions will be further discussed in the proposed framework.

**Communication and skill** (3) refer to the ability of the participants – both users and designers – to partake in a collaborative or constructive discussion. The ability for users to communicate their ideas to the developer (and vice versa) is necessary in order to foster productive participation. Communication and skill in communicating were also addressed from the perspective of activities to engage participation. For example, in Muller’s PICTIVE project (Muller, 1993), the nature of engagement was structured such that users with little design and communication skill could employ familiar tools such as paper, pencil, markers, and scissors to create layouts that were comprehensible to the developers. Likewise, it was also recognized in Muller's project that the users required a minimum level of technological skill. Muller thus also recommended that prior to design sessions, that users should engage in a learning seminar in which the developers would share key aspects of technological knowledge.

The ability to communicate was also recognized as something very contextual, ephemeral, and subtle. Misunderstandings can, therefore, easily arise when information is discussed out of context. For this reason, activities such as video recording the design sessions were recommended (Muller, 1993) so that the nuances of the shared information could be preserved.

**Decision making** (4) was a category often discussed in relation to power and structure within the organization. The ability to make decisions was often tied to
external and contextual factors. For example, by bringing users on to the design team one legitimates their role in the decision making process and provides them with more power than if they were not on the design team (Ehn, 1993; Muller, 1993). Likewise, giving users gate keeping control is another way of providing them with decision making clout. A more subtle, and interesting, version of decision making was also discussed in relation to informal settings. For example, one of the benefits of Contextual Inquiry (Holtzblatt & Jones, 1993) is that users have equal power in the direction of the conversation. Here, the ability to decide what information is important to the project is also placed in the hands of the user. This type of informal decision making moments can be extended to support suggestions for the need of physical proximity (Ehn, 1993). For example, if participants sit next to each other every day, moments will arise when thoughts, ideas, or realizations might affect the nature of a conversation. Those conversations contribute to the overall perspective of the participant, and may (or may not) influence their perspective and future decisions. Thus, inclusion in decision making can extends beyond inclusion in formal contexts, and can be extended through seminars, workshops, evaluations, and consultations.

Information and knowledge emerged as one of the main reasons underlying the pragmatic motivation for user inclusion (Bødker et al., 1993). It is also considered an important tool for providing equal opportunities to users (Blomberg et al., 1993). For example, it is posited that users know what they need, and therefore if the initial design requirements can reflect those needs the resulting product will be needed and thus adopted. On the other hand, having access to the same information as other members of the decision making team enables the contribution of the user to be more valuable. For example, in PICTIVE (Muller), the
users attended a learning seminar in which the information and knowledge possessed by the development team about the relevant technologies was shared.

**General measures** (6) for a project are often used as an indicator of success of the project. For example, if the goal was to create a design process yielding a product that was more efficient or quality cost effective (Emspak, 1993), then the effectiveness of the process was measured, evaluated, and described (all of these being general measures). What is interesting about the emergence of this category is how it relates to participation and theories about participation. On the one hand, it has been theorized by practitioners that user inclusion is the *mechanism* by which to achieve something particular within the project. For some this goal is democracy (Ehn & Kyng, 1987; Kensing, 1983), or *satisfaction* at work (Baroudi et al., 1986; Kappelman & McLean, 1992), or for yet others *efficiency* within the design process (Carmel et al., 1993; Emspak, 1993). As such, the project endeavours to include the users, and the success or failure of the project is then measured. The measures described in the success and failure of the project thus reflect the *intention* behind user inclusion. Interestingly, even projects run through the Scandinavian Approach reflecting the original epistemological goals of promoting quality of life and democracy, listed the creation of a stable production system as one of the measurements of success of the project. Pragmatic projects endeavouring to create a stable production system in which *users* are included in the team thus may still be following the epistemology of the original Participatory Design movement. More research focused on nuances and differences in how practitioners define ‘project success’ would bring added value to the epistemological problem raised in Section 1.3.1.
Roles and responsibilities (7) outlined some of the mechanisms by which users could be included in the design process. For example, by promoting the user’s role to include being a member of the design team, the structure of the design process legitimizes the user’s contributions. On the other hand, the responsibility of the user has not necessarily been increased. For example, when a user is invited on to the design team, his or her primary role is to provide the benefits of user-expertise. The role of the developer is to turn that user-expertise information into something tangible. So, while the ideas that guide the project in the right direction may be impacted by the presence of the users, the challenges in working out nuts and bolts of creating the actual information software sits squarely on the shoulders of the developers. Likewise, the details of where money will be found to fund the project are the responsibility of the managers and financial experts. In other words, having a role on the design team does not automatically provide the user with the responsibility or capability of making a working system (Dutton & Jackson, 1987, p. 87).

The analysis investigating the responsibilities of the actors in a Participatory Design team highlighted that the bulk of the responsibilities fell on the shoulders of the designer. For example, the designer is responsible for (a) translating information from users into a designed object (Holtzblatt & Jones, 1993), (b) suggesting future possibilities to the users (Ehn, 1993), (c) adjusting the process to the needs of the user and even be able to analyse any breakdown in communication (Bødker et al., 1993), (d) understanding the mindset and learning capacity of the users and to reflect that in the new system (Allen, 1993), and (e) fostering the right context such that relevant information is brought to the foreground of the design discussion (Muller, 1993). What it interesting is that the user does not reflect these same responsibilities,
however, by being promoted as an *equal on the design team* they are provided the same decision making affordances as the designer. Clearly, there is an asymmetry in design responsibility between the user and the designer that should be reflected in their roles (Bødker et al., 1993). It is no wonder that resentment and other negative manifestations of patterns of dominance (as discussed in Section 1.3.2) emerge when the power over the project, usually afforded to the developers, is threatened by the increased power of users to make suggestions but without sharing in responsibility for the success or failure of the project. This phenomenon will be discussed in more detail in the section describing a participant's sense of *agency* (Section 3.5).

*Stake* (8) was the final category analysed. In particular, researchers described how the concept of *stake* crept into many aspects of a project. For example, an advantage of using inexpensive prototypes such as mock-ups (Bødker et al., 1993) is that fewer resources are spent in pursuit of one idea. The more resources spent, the more difficult it was for the decision making process to favour *change*. The types of resources spent that made such decision making more difficult included money, time, effort, and even *ego*. For example, problems arose when researchers who considered themselves *spokespeople* for the users felt that the information they provided on behalf of the users was not used or respected (see Grønbæk et al., 1993).

### 3.3 Final Results

As mentioned, the eight categories initially distilled from an analysis of the source text ultimately yielded three higher order categories regarding the ways in which user inclusion is seen to contribute to a project in a meaningful way. First, users can *impact* the direction of the project through their contribution of data, information, ideas. The second manner a participant can *influence* the quality of a
project’s outcome is through the decisions they make and the decision-making opportunities they are given. Finally, the third manner that participants can contribute is through the creation of agency where the positive functionality of the team is affected by taking into account certain personal or psychological considerations about the participant. These three – impact, influence and agency – will now be discussed in turn.

3.3.1 Impact

Impact describes the change in project direction that comes from the contribution of a participant. In the literature, the most common form of impact discussed originates from techniques that encourage certain types of data to be gathered, encourage ideas to be communicated, and provide ways of exchanging, building, and modifying ideas. In other words, the single most discussed form of impact in a Participatory Design project relates to information that is brought in and to the use of that information.

For example, Contextual Inquiry and other ethnographic techniques encourage certain types of data to be gathered in Participatory Design projects. The information gathered is tied directly to the context of the respondent’s work environment. In ethnographic methods, the researcher observes the respondent in their place at work and does as little as possible to interfere with the work being done. The information gathered is primarily relevant to the respondent. From this body of information, the researcher can pick out key pieces of information that are also relevant to the project, which means that the information gathered will be relevant to both the respondent (participant) and the researcher. That is, the type of
information gathered through the use of these techniques is one that is \textit{relevant} to all parties.

Gathering information can be done through the \textit{encouragement of the communication of ideas}. For example, the well known case study UTOPIA (Ehn, 1993; Ehn & Kyng, 1987), promotes the encouragement of ideas through communication between members. In particular, it was believed that \textquote{[u]sers possessed the needed practical understanding but lack insight into new technical possibilities} (Ehn, 1993, p. 57). From this perspective, \textit{communication} becomes a tool through which ideas are voiced, shared, and thus become available to the project. The aspect of mutual learning developed from the techniques in this project enable the \textit{quality of ideas} to be more sophisticated, and more numerous. Thus, techniques that focus on encouraging the \textit{communication and joint building} of ideas provide a different \textit{quality} and \textit{quantity} of ideas than other methods of information gathering.

PICTIVE (Muller, 1993) demonstrates this through their description of the first and second iteration of their design sessions. In particular, the authors describe how the developers were \textit{not included} in the first design session. The resulting prototype proposals were thus unable to be created because they were not grounded in any technological realism. In other words, the users who contributed ideas to the design session provided ideas that were \textit{unsuitable for the project}. To remedy this, the developers conducted a learning session prior to the second iteration of design sessions. In this learning session developers shared their ideas of what was technically possible. These ideas were then later combined with the blue sky and unfettered thinking of the users. The resulting proposals were thus of \textit{more suitable for the project}.
Iteration is another technique that enables and promotes refinement of the information. For example, in the case handling project (Thoresen, 1993) there were three different major and formal evaluation stages. The information gathered from the first stage was used to inform the next iteration of the project. This second iteration which ran in a new context also had a formal evaluation for which the resulting information became the basis of the third prototype. These multiple iterations provided the designers with the “opportunity to see what was really going on” [emphasis in original] (Thoresen, 1993, p. 280). As such, the information gathered at each stage further refined the prototypes and enabled the designers to better understand the subtle relationships that were occurring between the users and the prototypes. From an information perspective, the iterative process is beneficial because it enables the quality and salience of the information to be identified and evaluated. Ideas that were originally thought of as relevant which turn out not to be are quickly cut from the project. In this way, the project is no longer ‘hampered’ by irrelevant ideas. As such, the use of information has become an important contribution to the design process.

Finally, PICTIVE focused on increasing the quality of the information captured by introducing video recordings of the design sessions. This was done to capture the nuances afforded by context. The principle behind this aspect of PICTIVE was to enable the information to be used to resolve disputes that later arose when the developers were creating the prototype and did not have access to the users. In other words, because ‘information’ can have contextual nuances and cultural meanings, by preserving as much data about how the information was derived (e.g., why the user said it), the information has a higher degree of accuracy than if gathered by other means (e.g., survey). Thus, by preserving the context in
which information comes to light, the information available to the project is also at a higher quality.

In sum, many of the techniques proposed by practitioners involve gathering and applying information to the projects. As such, there seems to be two important aspects to defining the impact that information from users can have on a project. The first aspect concerns the quality of the data collected. As mentioned above, Contextual Inquiry increases the quality of data gathered by interviewing the potential user in their place of work. UTOPIA enhanced the quality of the ideas provided to the project by enabling the user to build on the information of others, and PICTIVE increased the understanding of the information by recording the nuances of context that are often difficult to capture in other forms of data gathering techniques such as surveys and structured interviews. However, having access to good data does not, itself, enable a participant to have an impact on the direction of the project. This leads to the second aspect of a participant's impact on a project. This second concept is how the data is used.

In Muller’s example we saw that when information was not there, the resulting concepts were not mature enough to be grounded in reality, and thus prototyped. In contrast to their first example, when the developers provided a learning seminar that, according to the authors, created the basis from which future ideas could be generated, the resulting concepts were able to be turned into prototypes. What happened here was that the information was used in a particular way – it was taught to the users through a learning seminar.

The forms of data usage that appear in Participatory Design literature include (a) using data for system requirements, (b) providing information to encourage reciprocal learning, (c) engaging users in design seminars and workshops, (d) using
data as evaluative tools, (e) using data iteratively, and (f) focusing on the importance of timing and data use. Further analysis of the techniques used in Participatory Design case studies would help uncover yet other techniques for applying information in ways that affect the impact a participant has on the project. However, as a first approximation, the important point of focus is that good use of information seems to have a strong relationship on the impact a participant can have on the direction of a project.

**Quality and quantity of information**

The analysis of the source text suggests that the techniques and principles that relate to knowledge and participation seem to be able to be distilled into two categories, one describing the quality of the information and the other the quantity of use of the information. These two broad categories can be thought of as providing axes to describe different classic participatory experiences found in the literature. Figure 3.1 illustrates how forms of participation can be described by different relationships of information quality and quantity of use. The quality axis (y-axis) has poles that range from bad data to good data. The quantity access (x-axis) has poles that range from not used to used. These two axes define four quadrants that arise from pairing the four relationship extremes. Moving clockwise from the bottom-left of the figure, there are the quadrants corresponding to (a) little used, poor data; (b) little used, good data; (c) used, good data; and (d) used, poor data.

The lower left quadrant describes a situation most organizations try to avoid. Spending resources on collecting data (good or poor) that will not be used is a waste of resources, and is generally to be avoided. However, collecting data that appear relevant can sometimes be a political move to encourage or facilitate adoption of a project or idea (Baroudi et al., 1986; Kappelman & McLean, 1992), even if it is not
used. In the Participatory Design field this form of participation is generally considered to be *pseudo participation* (Toker, 2007) as the participant is actively engaged, but the information they provide was never intended to be used. It should be noted that there are benefits to engaging in this type of participation (Baroudi et al., 1986; Kappelman & McLean, 1992) – namely, that through action (even if it has no impact on the direction of a project) one can encourage a positive psychological outlook towards the project. In this way the processes undertaken by techniques that solicit information but do not use that information can still affect the *agency* of participants in the project (as described in Section 3.5), but this does not describe the level of *impact* a participant has on the project.

Projects that use techniques that fall in the lower right quadrant are also to be avoided but are nevertheless commonplace. The software usability crisis (Shapiro, 2005) illustrates this case. In these projects, information was solicited and used. Unfortunately, the data that they obtained was not representative of the future user, and so the product that was designed and built was not usable. Often projects that fall into this quadrant fail to achieve marketability.

Techniques that qualify as belonging in the upper right quadrant – good data that is used – are the ideal. For example, techniques such as *reciprocal learning* describe how information from one individual is *used* by another individual to generate and provide a *new* idea that then gets applied to the project. In this way reciprocal learning enables the quality of data to be improved through iterations where it is passed between individuals, used to create new knowledge, and then applied again. This iterative process is a popular concept in Participatory Design. Perhaps the reason for this is because it ensures that the idea discussed is *improved* through the iterations and is *used* in the end.
**Figure 3.1** Relationship between quality of information and use of information in participation.

<table>
<thead>
<tr>
<th>Quality of Information</th>
<th>Use of Information</th>
</tr>
</thead>
</table>
| Good                   | Misguided project outcomes  
  e.g., Shapiro (2005)(usability crisis) |
| Not used               | Wasted resources  
  Creates problems later down the line  
  Participants have no impact |

*Good Impact is characterized by the combining of knowledge, e.g., iterative prototyping  
  e.g., sources*

*Not used Impact is on resources, not project direction  
  e.g., pseudo participation*
Incidentally, the literature on knowledge transfer and boundary spanning provide a more in-depth analysis of the mechanics of how to facilitate the creation of new knowledge (Burt, 2003; Carlile, 2004), why this works, what types of knowledge exist (Carvalho et al., 2009), and what pitfalls one might need to pay attention to (Carlile, 2004) when engaging in knowledge transfer and boundary spanning. However, while this body of knowledge has greatly informed the perspective presented here, a detailed and in-depth analysis of that literature is not appropriate given the restricted scope of this thesis. This is because participation, as it appears in Participatory Design, is more than just how to communicate, share, and transfer information and ideas. It is also important to discuss the types of influence a participant can have as well as the how a sense of agency can change the nature of the impact and influence a participant has.

In sum, a participant's impact on a project can be roughly understood in terms of two dimensions – the quality of participant generated information and the quantity of participant generated information. Together, these two dimensions provide a useful way to describe the participatory situations typically encountered in the case studies. As will be seen later, these two dimensions are also very useful for the framework that is being developed here. Next, we look at the issues of influence.

### 3.3.2 Influence

Influence refers to the amount of power or sway a given participant has within a project. This power can emerge in many forms, including through informal conversations and evaluations, informal meetings, or from contextual pressures. For example, an individual can influence the direction of the project by having the power to allocate or withhold funds for prototypes. Likewise, agreements made outside of
the organizational setting can change the way an individual makes decisions within the organizational setting. Influence and power is usually associated with the ability to effectuate a decision. Such decisions can be minor, such as in the case of choosing where an icon might be placed within the interface, or major, such as cancelling the funding for a project. This power is usually associated with the participant’s role or responsibility within the project, and in Participatory Design this is addressed by providing the user with a platform through which they can effectuate decisions. For example, bringing users onto the design team enables them to make decisions over what features and functions will be included or excluded from the product specifications.

In this framework, the concept of influence does not describe the power endowed on a participant through their role, organizational structure, or policy. Rather, it is about the participant’s actual ability to wilfully direct the project. In other words, the power bestowed on a participant through their role does not necessarily relate to the level of their participation. So, by defining influence by the actions taken, this term can relate more directly to participatory activity than if potential actions are the basis of a ‘role’ or ‘status’ measurement. For example, suppose a participant is asked to evaluate and choose between several prototypes. The decisions that the participant makes can potentially exert an influence on the direction of the project. This type of power can be immense as it can invalidate great effort and sizable resources committed by other members of the project team. However, as has been experienced in some case studies (Gasson, 1999; Rönkkö et al., 2004), such power can be deemed to be inappropriately endowed on the participant (see Section 1.3.2). When power is endowed on a participant through official channels such as roles, organizational structure, or policies, the positive
aspects of participation can be negated or minimized through the behaviours of the actors involved. As such, describing a participant’s influence by the amount of freedom they have in making a decision does not seem to relate to what practitioners intend when inclusion of the users is discussed as a strategy.

In this framework, the concept of *influence* is chosen over *power* because of the two main differences it brings to the research. The first difference is how it is measured. By defining *influence* as something observable rather than as something innate, its measurement can be easily operationalized. For example, influence could be measured by the number of decisions that a participant made that had resources dedicated in pursuit of, or directed away from, that change.

The second difference in defining influence as a measure of the actual events in which changes were initiated is that it is fit for the purpose of *research* (as opposed to the project goals of the Participatory Design project). From the perspective of including users within the structure of an organization, the use of titles, roles, and policies can help encourage the desired behaviour. However, from the perspective of theory testing, the encouragement of participation does not equate to the actuality of participation. In other words, if researchers are pursuing the theory that *participation leads to a successful project outcome*, a form of participation must be measured that goes beyond potential participation and describes actual participation.

This is not to say that power is not a major concept of importance within the Participatory Design field. It is often described in terms of a participants’ freedom to make decisions over the project, especially over issues that affect them directly. As such, there is a role for investigating the policies, organizational structure, and ways that a user can be given the *freedom* or *power* to participate. However, the
framework presented in this chapter is about the actual power a participant has in changing the direction of the project.

From the source texts the techniques and principles that have been developed to address issues of power include ways of (a) increasing the number of opportunities a participant has through which they can make decisions that affect the progress of the project, (b) widen the range of topics over which a given participant has decision control, and (c) provide richer information, skill, and knowledge in order to support the quality of the decisions made by the participant.

For example, in Thoresen’s (1993) projects the process of design-prototype-evaluation was iterated three times. During each evaluation users were able to contribute information that could change the direction of the next design-prototype-evaluation cycle. As such, from the perspective of participation, the users were given an increased number of opportunities to make decisions. This is one reason why the technique of iterative design is often supported by Participatory Design practitioners. Similarly, when a user is invited to participate in the design process, their opportunities for making decisions has been increased. Instead of waiting for formal evaluations in which to exert influence on the project participants now have more opportunities in which to exert their ideas. As such, the number of decision making moments has been increased.

In addition to increasing the number of decisions a participant can make, including the user on the design team also increase the range of decisions they can make. For example, in a survey the knowledge passed from a respondent to the research team is limited to the topics decided by the researchers. In a design meeting, the discussion is more fluid and the areas discussed are more in depth. Ideally, in a design meeting, users would not only provide their insight over what needs they
have (as they might in a survey), but they can also decide which method of solving those needs seems most salient to them, and perhaps even provide ideas that the project team did not think of. This example is exemplified in the ETHICS project (Mumford, 1993) in which the laymen was invited to enter the design team. In these sessions the users could exert influence in determining the direction of the mission of the project, key tasks, and factors that were critical to effective operation of the technology. Furthermore, they were able to determine the framework for measuring job satisfaction, as well as identify problems in the workplace that hindered the effective execution of the technology. Future changes that the users would like to see were also discussed as well as what information they felt was relevant to pursue these changes. As one can see, by being included on the design team, the workers were able to exert their influence on a wider range of topics than had they not been included on the team (Mumford, 1993, p. 263-264).

In the PICTIVE (Muller, 1993) case study users were asked to develop the basic ideas for a system that the developers were to later prototype. In the first design session, the users were not well informed. In particular, they had no idea what technology was available for their blue sky thinking. As a result, the ideas they proposed were not feasible and the developers were not able to turn any of the ideas into prototypes. So, the second design session was preceded by a learning seminar in which the developers taught the users about the technological possibilities. The resulting ideas were grounded in technical realities and thus the developers were able to prototype them for evaluation. In this case, the uninformed ideas of the users were not suitable to be turned into prototypes. As such, the endeavour of the design session was effectively wasted (from a project perspective) as no tangible prototype could emerge. None of the users were able to influence the direction of the project,
as no prototype was developed. However, in the second design session the users were better informed. Their ideas were thus more suitable to aspects of the project such as yielding a prototype. It is through being better informed that the users were able to exert influence on the direction of the project.

What do these techniques have in common that inform us about the nature of influence in participation? What these techniques have in common is that they are all about decision making. For example, in Thoresen’s project users were brought in on multiple formal opportunities in which they could make a decision. In this way the number of decisions that the users could make was increased through the multiple iteration cycle. In Mumford’s project the users could make decisions over a larger range of topics because of their inclusion on the design team. Through their role on the design team, the range of decisions the users could exert influence over was increased. And in Muller’s project, decisions used to create the design ideas required basic information in order to make them viable decisions. The information improved the quality of the decisions made by the users.

This last example, whereby increased information improved the quality of the decisions made by the user that then enabled the users to have influence on the project demonstrates how impact, as discussed in the previous session, relates to influence. The relationship between these two concepts is certainly one that requires further research. However, the scope of this framework is to provide an initial approximation of what variables might be included in a concept and definition of participation within a Participatory Design project. Engaging the nature, e.g., causality, of these relationships would first require a general consensus over which variables are appropriate in this framework. As such, while this framework recognizes that there is a tight relationship between the elements of impact and
influence (and also agency), engaging theories on the nature of this relationship is outside the scope of this thesis and is the work of future research.

As demonstrated, influence revolves around the concept of decision making. Influence can be increased by increasing the number of decisions made as well as by increasing the scope over which these decisions preside. In terms of increasing the number of decisions made, there are two important types of decision making moments (which I will call decision-moments) that emerge in the techniques. These types are informal decision-moments and formal decision moments.

**Informal decision-moments:** A decision-moment is where the direction of the project sits at a crossroad, and a choice must be made as to which direction the project will follow. There are informal crossroads and formal crossroads. Informal crossroads are subtle forks in the road that usually take place in conversations, discussion, and when joint designing takes place. These types of decision-moments are subtle because decisions often happen subconsciously. However, they are decisions, none the less. For example, choosing what is relevant to discuss is the prerogative of the respondent in contextual inquiry, and generally open ended interviews. Likewise, in these cases it is the responsibility of the researcher to decide how far off topic the conversation can stray before the information gained in the conversation is of no use to the project (Blomberg et al., 1993). In this example, two decisions are being made informally. The first is about discussing what is important to the respondent. The second decision made is about what is relevant to the project (made by the researcher). These decisions are informal because they are not made explicitly, they do not follow a formula, and to action these decisions does not signal the start of a new phase within the project.
These types of informal decision moments are prevalent throughout the source text. For example, informal decision moments exist when (a) open interviews are conducted, (b) users and designers talk to each other as equals, (c) users are invited to be on the design team, and (d) encouraging proximity. As discussed, in open ended interviews users have the opportunity to decide what information is relevant to their needs and the technology. When users and designers talk as equals, they influence each other’s perspectives. When users are on the design team they have the opportunity to partake in a larger number of discussions through which informal decision moments arise. This is in contrast to if they were not on the design team. Finally, encouraging proximity of the users and design team members is about fostering an environment where informal conversations, and thus informal decision moments, take place. One challenge in using increased informal decision moments to increase a participant’s influence on the project is that these situations do not guarantee that the necessary conversations will take place, be about the project, yield anything useful, or even be a positive team building endeavour (see Section 3.5). However, lack of proximity has demonstrated that such conversations become impossible. So while informal decision moments do not guarantee increased influence, not providing the opportunity for informal decision moments does not decrease a users influence (as compared to providing them and them not being used). However, as the contexts in which informal decision moments occur affect the relationship between the members of the team, not providing these contexts can hinder the sense of agency necessary for participation. (In this way influence and agency are related. However, the nature of this relationship is not within the scope of this thesis for the same reason that a discussion on the nature of the relationship between impact and influence is not discussed in this thesis).
**Formal Decision-Moments:** Formal decisions moments are usually supported by a sanctioned structure, such as through document requests, meetings, or workshops, and any actions that result from these decisions often indicate the start of a new phase within the project cycle. For example, formal decision moments exist when a CEO signs off on a request document presented to them. And, formal decision moments can exist in meetings and workshops when participants are asked to vote or come to some consensus on an idea.

In Participatory Design, the most common form of increasing the number of formal decision moments is through using an iterative design process. In such processes, the time between idea, prototype, and evaluation is shortened. Because of this shortening of the cycle, the number of cycles experienced within the project can be increased.

**Scope of Decisions:** Participatory Design techniques also seem to support the idea of changing the scope of responsibility of the participant such that they preside over ‘larger’ decision consequences. For example, giving a respondent the freedom to decide what they believe is important to the project gives the respondent a certain level of decisional control that is larger than if they were answering questions on a survey. On the other hand, including the respondent in the design process increases the range of decisions they can make because the decisions made from the design team affect more people and more processes. In particular, they affect the work provided to the development team, as well as consume resources that could have gone elsewhere. This level of involvement has a higher level of abstraction than, say, rearranging elements of the interface. And it is this change in the level of abstraction to which the *scope of decisions* refers. In other words, decisions over what features to develop influences the project more profoundly than simply deciding where icons...
might go or what colour a particular image should be. As such, figure 3.2 describes a sample scale of this increasing level of abstraction. Decisions in these categories often relate to different levels of influence a participant might exert. For example, decisions over specific product issues like the colour of an image illustrate a very low level of influence on behalf of the participant. At the other end, being able to decide who will be on the design team (an organizational issue) can greatly affect the quality of the ideas produced by that team, and thus has a great influence on the nature of the project.

Specific product issues (1) often relates to issues such as those found in defining details on an interface. Interestingly, these types of issues are highly visible and when changed many people notice the change. As a result, this might imply a high degree of influence because many people will notice the change. However, while these types of changes are highly visible, they are also very difficult to enforce as the project life cycle progresses (Grudin, 1993). This is because details of the interface are usually dependent on other decisions, such as which functions will be available, and how the product documentation has been written up. In fact, specific product details are dependent on decisions made in all of the other categories. As a result, these types of decisions do not reflect a high degree of influence, even though change is highly visible.

General product issues (2) describe a higher level of abstraction than does the category of specific product issues. Decisions in this category would include deciding over issues such as key functionality and general product needs. General product issues are dependent on the decisions made at higher abstraction levels (e.g., process, research, and organizational issues) but are not dependent on specific product issues. Furthermore, general product issues inform the range of choices
Figure 3.2 Example of a scale of increasing level of abstraction in responsibility.

| (1) Specific product issues | (2) General product issues | (3) Process issues | (4) Research issues | (5) Organizational issues |
available at the specific product level. Thus, being able to make decisions at the general product level implies a higher degree of influence than does making decisions at the specific product level.

Process related issues (3) refer to decisions about how the project will run. These decisions can include the allocation of resources including money, time, and skills, as well as process issues such as the use of specific methodologies. In Participatory Design, the decision to use iteration is a decision made at the process level.

Research issues (4) have been included in this scale because Participatory Design projects are also very often research oriented projects. As discussed in Chapter 2, research projects require a different degree of specificity and clarity than do non-research oriented projects. Similar to the influence that process level decisions have, the enhanced degree of specificity within a research project can influence the nature and range of decisions made at lower levels of abstraction. For example, in studying methods of iteration, this will require a change in process, specifically the shortening of the design-prototype-evaluate cycle and an increase in the number of those cycles. Of course, being able to do this is dependent on general organizational issues (e.g., access to prototyping), and likewise affects process issues such as changes in general timelines.

General Organizational Issues (5) refer to issues at the organizational structure level. For example, some Participatory Design projects tackled the inclusion of users at the organizational level by introducing new policies (e.g., Sweedish Workers Act, Ehn, 1993) that give unions and workers the ability to be informed about issues at this level and by restructuring the hierarchy of decision
making to include the possibility of negotiations with workers or union representatives.

This scale is a first approximation of what types of levels would be included in a scale describing an increase in the scope of decisions that relate to influence. It becomes one of the two axes in Figure 3.3. The second axis describes the number of decisions that are afforded to a user. Together, these two axes relate influence by describing how many decisions a user has and how deeply embedded into the project the decisions are. Future research would be valuable in determining if there is a specific relationship between the numbers of decisions a user can make and the level of abstraction at which the user has influence.

The analysis of the source text, suggests that the techniques and principles that relate to knowledge and participation seem to be able to be distilled into two categories, one describing the quantity of decisions afforded to a user and the other describing different levels of scope over which the decisions afforded to the user have. These two broad categories can be thought of as providing axes to describe different classic participatory experiences found in the literature. Figure 3.3 illustrates how forms of influence can be described by different relationships of quantity of decisions and scope of decisions. The quantity axis (x-axis) has poles that range from low to high numbers of decisions afforded to the user. The scope axis (y-axis) has poles that range from low levels of abstraction to high levels of abstraction (see Figure 3.2). In particular, this pole ranges from describing decisions that preside over specific project issues up to general organizational issues. Together, these two axes define four quadrants that arise from pairing the four relationship extremes.
Figure 3.3 The relationship between increasing amount of decisions and scope of decisions to describe the influence of a participant.

<table>
<thead>
<tr>
<th>Scope of decisions</th>
<th>Number of decisions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td></td>
</tr>
<tr>
<td>Decisions largely affect the direction of the project but are not afforded often. Influence is limited to choices presented. e.g., (Thoresen, 1993)</td>
<td>Few decisions over limited range, influence is small Contextual Inquiry (Holtzblatt &amp; Jones, 1993)</td>
</tr>
<tr>
<td>High</td>
<td></td>
</tr>
<tr>
<td>Participants are afforded many decisions that affect large portions of the project. Influence is high.</td>
<td>many decisions over minor- to mid range issues, influence is limited e.g., PICTIVE (Muller, 1993), ETHICS (Mumford, 1993)</td>
</tr>
</tbody>
</table>

Low
Moving clockwise from the bottom-left of the figure, there are the quadrants corresponding to (a) few decisions, little scope; (b) few decisions, big scope; (c) many decisions, big scope; and (d) many decisions, little scope.

Projects that sit in the lower left hand corner would have users making few decisions over very specific aspects of a product. For example, this quadrant describes some marketing survey type projects where users are invited to sit on an evaluation panel and choose their favourite iteration of a product. In other words, users are asked if they like version ‘a’ over version ‘b’. Clearly the level of influence that the users have in this project is very low.

Projects that sit in the upper left quadrant can be illustrated by the influence a manager has over a project. While they have very few decisions to make (e.g., sign here, allocate funds, resolve personnel issues) the decisions that they do make can change the constraints that others have to deal with. For example, a manager that decides to cut part of the budget causes constraints on the design team members, who then have to deal with the budget cut. The resulting range of decisions that the designer can make is changed, usually lessened\textsuperscript{10}.

Projects that sit in the upper right quadrant describe projects where the participants have a lot of decisions to make, and these decisions exist throughout the entire scope of the project and the organization. For example, these users would preside over specific design problems, how to obtain and allocate resources, who to hire on the team, and how the timeline of the project will unfold. With this much

\textsuperscript{10} Incidentally, I think the level of influence that researchers have generally exists within this quadrant, where they decide how the process will unfold but let the users decide on the specific product decisions.
control and immersion in the project, this quadrant might actually describe the idealization of democracy.

Projects that sit in the lower right quadrant describe projects where participants have many decisions to make but only over specific product issues. I believe that this quadrant most describes the level of influence that Participatory Design techniques promote within a project. For example, PICTIVE (Muller) is a technique where users decide what functions the new software will have as well as how the interface will be laid out. On the other hand the specific details of the functionality the elements in the interface were the responsibility of the developers. As such, the users had more influence on the direction of the project than did the developers.

In sum, a participant's influence on a project can be roughly understood in terms of two dimensions – the quantity of decisions they make and the scope over which those decisions preside. Together, these two dimensions provide a useful way to describe the participatory situations typically encountered in the case studies. As will be seen later, these two dimensions are also very useful for the framework that is being developed here. Next, we look at the issues of agency.

### 3.3.3 Agency

So far in this chapter two elements of the proposed framework have been discussed. The first element is impact (Section 3.3.1) which refers to the intellectual and technical component that the participant has contributed. The second element is influence (Section 3.3.2) which refers to the power that the participant has to effectuate the decisions they make. Together, these two elements describe the elements of participation that involve having an idea, and getting that idea moved
forward. In this framework there is one last component that is required to describe another challenge that participants have in being able to contribute to the project. This last component is that of agency.

Agency (Section 3.3.3) refers to a person’s capacity to effectuate their decisions and get their ideas accepted. Furthermore, in this context, agency has a primarily personal or psychological component. For example, when a participant proposes an idea, the actual proposing of the idea does not guarantee that the idea will be valued or used. In order for an idea to be valued and used within the project, other people must accept it. This acceptance can come about for a variety of reasons, including because the idea is viewed as indisputably good, because the person proposing the idea is respected or liked, or because the idea is well presented. In other words, there is a social element to participation that must be considered. This social element reflects some form of acceptance of, or positivity, towards the individual proposing the idea. Examples of such positivity include group cohesion, ‘we-feelings’, or solidarity. Thus, in this framework, agency represents the social context that enables a participant to act. Agency is thus differentiated from impact or influence by its focus on the social capacity – rather than the skill or power of the individual – that enables him or her to have an impact or influence the project and their peers.

The sharing of ideas as a social endeavour is recognized in the field of Participatory Design. This is reflected when an author describes what factors inhibit a participant’s agency to contribute to the project. For example, the very nature of patterns of dominance (Section 1.3.2) is social. In these behaviours, participants react – usually negatively – to other participants such that they actively protect some sense of stake (e.g., defensive behaviours) or limit the other participant’s ability act
(e.g., marginalize the participant). When such behaviours are engaged, the agency of the participants is diminished.

The social component of agency is recognised in the source text in several ways. First, positivity within the design group is important. For example, when describing the principles and practices in the source text, the authors remind practitioners that the design exercises must be fun (Bødker et al., 1993; Greenbaum & Madsen, 1993). Second, the social context of the team must demonstrate trust (Ehn, 1993; Grudin, 1993). Promoting trust involves minimizing differences between the team members such as finding common cultural ground (Grudin, 1993) or by engaging in activities that encourage a team ‘we-feeling’ (Ehn, 1993). Finally, as described by Wittgenstein’s language games (Ehn, 1993) the concept of willingness to engage is important in supporting agency. After all, if a participant is not willing to play by the rules of the team, then the participant will struggle to have their ideas accepted.

In Ehn’s text, Wittgenstein’s 1953 language games are discussed. In particular is the concept of rule-following willingness (Ehn, 1993). In language games, willingness to follow the rules is described as more important to the enjoyment of the game than are the actual rules of the game. Ehn suggests that this type of willingness to follow the rules is equally important in a successful participatory project. The authors in the source text indirectly support this idea. For example, some authors claim that willingness to contribute is a key factor in successful participation (Grønbæk et al., 1993; Mumford, 1993). This might be because willingness turns ideas into action. Willingness can also be manifested through exploration (Thoresen, 1993), attempts to understand others (Grønbæk et al., 1993), be tolerant (Grudin, 1993), and endeavour to evolve the design through use
(Allen, 1993). However, being motivated to contribute does not necessarily equate to the activity of contribution. For example, participants must feel that the motivation to contribute is equally shared among all participants – including among the participants who represent the organization. If the organization is not willing to take the worker’s contribution seriously (Mumford, 1993) then organization should be at least willing to change the scope of decisions made for collective bargaining to work (Emspak, 1993). In other words, the organization must be as willing to commit to the project, be understanding, be tolerant, and encouraged to explore as the participants are. Without this mutuality trust cannot be developed. Without trust, empowerment cannot happen (Greenbaum, 1993).

Trust relates to the way participants feel when engaged participatory activities. This feeling is an important element in the success of the task set to the participants. In one case, describing the pros and cons of doing a Future Workshop was an activity in which the workers did not want to participate. This is because the workers were afraid of voicing issues that might encourage management retaliation (Bødker et al., 1993, p. 165). To solve this issue, management was asked not to attend this phase of the Future Workshop. This fear affected levels of participation because some members of the team were asked not to participate.

Trust is an important part of providing a context in which participants feel safe to contribute. In the last example, the workers did not trust that the design workshop provided a safe environment where they could discuss any topic without negative consequences. However, for successful group work there are more dimensions to trust than feeling safe or free from physical or psychological harm. For example, it is important that one participant trust the competence of another participant especially during evaluations. Thoresen describes this importance by
outlining an important process in the evaluation stage of iterative design. During the evaluation phase one of the tasks is to determine the priorities for the next iteration. However, “this task relies upon a considerable degree of mutual trust and shared knowledge” (Thoresen, 1993, p. 277). Without trust the cooperative process deteriorates. The presence of researchers can infuse trust into the process by bringing with it a degree of validity. For example, the researchers in the hospital case study (Thoresen, 1993) would record the issues raised by the nurses into logbooks. The recording of those concerns provided a feeling of being taken seriously that further encouraged the participants to stay motivated about the project. Trust, then, can be a positive ingredient in a project to encourage participants to act as well as provide participants with the security to act. Thus, trust between the members of the team is an important facilitator to agency.

Finally, “according to Lysgaard, the degree of strength in the workers’ collective comes from the “we-feeling” created by shared experiences” (Ehn, 1993, p. 46). Achieving togetherness is about creating solidarity in the group (Ehn, 1993) or cohesion within the union (Emspak, 1993). Two methods are suggested in the source text. The first method is to promote physical proximity. Physical proximity is suggested as a way of encouraging the “we-feeling” because it encourages the sharing of experiences.11 The second way of promoting togetherness is through methods such as design-by-doing. This method also promotes the shared experience of struggling with a common task and thereby encouraging the desired “we-feeling” (Emspak, 1993).

11 Note: In the section on influence the idea of promoting physical proximity is brought up for another reason. In terms of influence, the increase in the number of shared experiences also enables a potential increase in the number of informal decision moments afforded to the participants.
Described in these examples is the idea that the actions people engage can negatively or positively affect the group. For example, if the design activities are fun, participants might be more willing to accept a larger range of ideas. Likewise, if a participant is able to communicate well, the other members of the team will be more likely to listen to that member. Because of their ability to communicate in a way that others understand, their ideas will more likely impact the project. Similarly, if the participant is well liked, or identifies well with the team members, they will be more likely to have influence in the decisions being made.

Along with the activities in which people engage, the skills, personality, and mindset of a participant can also have a negative or positive affect on the group. For example, if a participant has expertise recognized by the other members of the team, their suggestions will more likely be taken on board than if they have no recognized expertise (e.g., Section 1.3.2). This has been referred to as the importance of a social relation to knowledge (Carvalho et al., 2009) as opposed to an epistemic relation to knowledge.

The mindset of a participant can also affect the way that participant behaves within the project team. For example, if a user begins to feel that they will no longer be a target user of the final product, they may become disengaged (Grudin, 1993). If the user feels the project is going in a direction that does not appeal to them, this may change their willingness to provide ideas, listen with an open mind, and be an effective member of the team. The importance of addressing the mindset of a participant is very similar to the project undertaken by Kappleman and McLean (1992), where the managers of the organization employed techniques in user inclusion to enhance the likelihood that the users would adopt the mandatory
software willingly. This study focused on the side of involvement. In organizational management (also described in Chapter 2), the concept of involvement is a complicated construct that describes the importance of the project, the relevance of the project, and elements of participant motivation (Barki & Hartwick, 1989; Kappelman & McLean, 1992). In this example, the actual impact and influence of the workers included in the research was minimal, even non-existent. The managers had already decided that the particular software they were promoting was going to be implemented within the organization regardless of how the users felt. However, the impression of satisfaction that those members had in relation to their work (and thus quality of life) was reported to be increased even if the users had no real decision making control. In this case study, the researchers promote the importance and power that comes along with a sense of agency. In this case, the agency was not based on the capability of having an impact or influence. In this case, the sense of agency was based on the sense of inclusion that the participants felt. This in turn enhanced their willingness to accept the software change, which resulted in a reportedly higher sense of satisfaction once the change was fully implemented.

This type of inclusion is not participative because the participants had no real influence or impact on the project. However, it does demonstrate the importance of fostering the mindset of inclusion or impressions of togetherness. Cultural differences and professional jurisdictions can create barriers to this feeling of togetherness. These barriers then affect agency by creating social environments in which trust or togetherness is lacking (Grudin, 1993). For example; culture can frame the ‘rules’ by which the project team operates. Culture can be defined to

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12 As defined by the field of organizational management (Kappelman & McLean, 1992). See also “note on terminology’ in Section 2.5
include the structures and behaviours that are accepted and supported within the organization, as well as behaviours commonly accepted based on language, country, general demographic categories, and background (Muller, 1993).

With all of these social, cultural, and individual aspects, the job of measuring agency can get complicated. However, all of these ideas seem relate to two elements that enable agency; acceptance by the group, and the motivation by the participant. In other words, if the group does not accept what a participant has to say, the participant has no agency. Likewise, if the participant is not motivated to participate ‘by the rules’ then their actions will run counter to the structures in place that enable agency.

In sum, many of the techniques proposed by practitioners highlight the value of agency by fostering cohesion between the members of the team and by recognizing the importance of willingness. As such, the analysis of the source text suggests that the techniques and principles that relate to a participant’s capacity to act on their own ideas, e.g., their agency, seem to be able to be distilled into two categories that can be measured. The first category is that of solidarity of the group. The second category is that of willingness of the participant. These two broad categories can be thought of as providing axes to describe different classic participatory experiences found in the literature.

Solidarity: To describe agency, solidarity refers to the cohesion of the group. From a work perspective, high solidarity reflects strong unity among all team members in terms of interests, objectives, process, and standards. From a social perspective high solidarity refers to unity within the group through trust, togetherness, and a sense of fairness or morality. In the literature, solidarity is promoted through the techniques by (a) design by doing, (b) fostering ‘we-feelings’,
(c) ensuring that participants are physically close to each other such that they can strike up informal conversations, and (d) taking advantage of the research status.

Willingness: In Participatory Design the concept of willingness is important. Willing participants are more likely to put the effort required to overcome differences between participants, commit to the project, technique, or process, accept jurisdictional changes or infringements, or to find the internal motivation to move the project forward. In Participatory Design techniques used to encourage willingness include (a) the addition of a facilitator whose primary job is to motivate the participants, (b) provide a sense of fair compensation for the efforts of the participants, and (c) make the process fun.

Figure 3.4 illustrates how forms of participation can hinder or help the sense of agency experienced by the participant can be described by different relationships of group solidarity and participant willingness. The willingness axis (x-axis) has poles that range from low to high. In other words, participants can be very reluctant to very willing to participate in the project as needed. The solidarity axis (y-axis) has poles that range from weak solidarity to strong solidarity. These two axes define four quadrants that arise from pairing the four relationship extremes. Moving clockwise from the bottom-left of the figure there are quadrants corresponding to (a) low willingness, weak solidarity; (b) low willingness, strong solidarity; (c) high willingness, high solidarity (d), high willingness, low solidarity.

It should be noted that unlike impact and influence, a participant’s agency can change throughout the life of the project. For example, a participant can start a project feeling empowered to act, and accepted by the group. In this case, one would describe the participant’s agency as high. However, if the participant should begin to feel that the project no longer holds any significance to them, their willingness to
Figure 3.4 Description of participation types based on relationship between willingness and solidarity.

<table>
<thead>
<tr>
<th>Low Solidarity</th>
<th>High Solidarity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Low Willingness</strong></td>
<td><strong>High Willingness</strong></td>
</tr>
<tr>
<td>Agency: non-existent</td>
<td>High energy in pursuit of common goals agency type: ideal</td>
</tr>
<tr>
<td></td>
<td>(Gasson, 1999; Kellogg et al., 2006; Rönkkö et al., 2004)</td>
</tr>
</tbody>
</table>

Agency can fade quickly over small disagreements and project will move to lower left quadrant before failing. e.g., UTOPIA (Ehn, 1993)
engage might begin to fade. As willingness fades, so does their commitment to the project or process. As their commitment and desire to act decreases, so does their agency. Likewise, if a participant is motivated, but does not get along with anyone on the group, the rest of the group will usually put road blocks through behaviours described by defensive mechanisms (Argyris & Schön, 1989) or patterns of dominance (Beck, 2002). The rest of the group will impose restrictions on that participant’s agency.

Projects that sit in the lower left hand quadrant represent participants who are unwilling, and feel no sense of belonging to the project. Such types of projects are rare, because without willing participants or a cause to pursue, there is no project. As such, as projects fall into this quadrant they generally tend to terminate in some form. Termination from lack of willingness would simply dissipate, whereas termination from lack of solidarity would probably be explosive. As agency is dynamic throughout the project, it should be noted that projects fail when the willingness and solidarity of the project team falls into this quadrant. Prior to this, as Participatory Design practitioners have demonstrated through their techniques, the solidarity or willingness of the participants can be improved.

Projects that sit in the upper left hand quadrant can be illustrated by a passive level of participation. In projects such as these Participatory Design practitioners suggest the involvement of a facilitator to make the tasks easier and trouble shoot the barriers. However, while this can temporarily motivate the participants, the motivation is artificial and will fade as soon as the facilitator role is no longer active. Perhaps this explains the observation that projects that seemed to be moving well when the researchers were directing the project still failed once the researchers had left. As well, projects that exist in this quadrant might be susceptible to small road
bumps in the cohesion of the group. For example, a small disagreement between members, such as personality differences, might be enough to de-motivate the participant completely as there is nothing keeping the participant there.

An example of a project that promoted the solidarity aspect of the group (because willingness was already there) would be the seminal UTOPIA project. In this project participants build the feeling of togetherness by engaging in design-by-doing (Ehn, 1993). Unfortunately, in the end, the organization was not willing to continue funding the project and thus the product was never commercialized (Ehn, 1993, p. 58). In this sense, the organization was a passive participant in the project and when they no longer agreed that the cost was justified, they ceased their participation. It is important to note that the organization funding the project was also a participant even though it was not a ‘user’.

Projects that sit in the upper right hand quadrant represent the ideal context to foster agency. In these projects participants are motivated and there is group cohesion. As such, agency is high. As participants are enabled to carry out their actions, projects can move forward with little hindrance. However, agency is dynamic and even though a project might find moments within this quadrant, it does not guarantee that the project will remain in this quadrant.

Projects that sit in the lower right hand corner cannot be maintained. The feature of high willingness will eventually fade thus bringing the project into the lower left quadrant. In order to maintain willingness, the participants must feel that they are being fairly compensated for their efforts, that they are respected, and that their contribution is meaningful. In other words, in order to maintain willingness, there must be a feeling of solidarity. If participants start off willing, but begin to feel that there is no solidarity between them and the group that sense of willingness will
fade and turn into resentment. Participants will become less willing, thus changing the description of agency within the project to one that resides in the lower left hand quadrant. Projects that sit in this quadrant tend to not reach completion, as often an influential member, such as a sponsor (e.g., Gasson), will pull out as they are no longer willing to engage in the project.

An example of a project that sits in the lower right hand quadrant would be the “Adweb Project” (Kellogg et al., 2006). In this project, all parties were willing to engage in participation. However, the participants did not feel that they were being fairly compensated for the responsibilities bestowed upon them. In the end, the participants were unwilling to take on the necessary roles due to reluctance to take on the corresponding responsibility.

In sum, a participant’s agency in a project can be roughly understood in terms of two dimensions – the solidarity of the group and the willingness of the participant to contribute to the project. Together, these two dimensions provide a useful way to describe the participatory situations typically encountered in the case studies.

3.4 Summary

In this chapter, an analysis of the construct participation was conducted using Schuler and Namioka’s seminal text as source material. The analysis showed that participation can be described in terms of the relationships among three components: impact, influence, and agency. Impact (Section 3.3) refers to how good information applied to a project can enhance level of participation of the supplier of that information. Influence (Section 3.4) refers to how a participant can have an effect on the project by making many decisions over a large scope of the project.
Agency (Section 3.5) refers to the importance of having a cohesive group and willing members. These three key components form the basis for measuring the level of participation experienced by a participant within a project. The value of using this three-component lens for understanding the participation will be discussed in Chapter 4, including how the analysis presented here leads to the development of a visual tool to guide research on participation.
Chapter 4
Potential Value of the Participation Construct

In Chapter 2, a new lens for looking at Participatory Design issues was developed. In Chapter 3, this lens was used to focus on participation as a construct, and this construct was unpacked into three components: impact, influence, and agency.

The first of the three components, impact, refers to the participant's contribution of ideas and knowledge essential to the development of a project (discussed in Section 3.3.1). Here the focus is on the content of the participant’s contribution. The second component, influence, refers to the participant’s ability to make decisions and effectuate ideas and desires within the project (discussed in Section 3.3.2). Here the focus is on the magnitude of the participant’s contribution. Finally, the third component, agency, refers to the participant’s capacity to act on the ideas and the decisions he or she makes (discussed in Section 3.3.3). Here, the focus is on personal qualities of the individual and how those interact with the social characteristics of the design group. Also in Chapter 3, each of these three components was further broken down into pairs of constituent variables that can be depicted by two-dimensional spaces (Sections 3.3.1-3.3.3). This chapter will briefly explore the potential added value for work in Participatory Design that may be expected from adopting this approach, as well as consider some of its limitations.

There are at least three initial potential benefits of using the framework (or a similar framework) proposed in Chapter 3. First, by treating participation as a construct that can be described in terms of components it becomes possible to create a visual way of representing participation, providing an at-a-glance view of the state of participation in a given situation. This potential added value of a visual tool is
discussed in section 4.1. Second, by integrating the components that make up participation, it becomes possible to elaborate a common language for discussing participation as a construct in a variety of contexts and in a more precise way than presently used in the literature. The potential added value of a common language is discussed in Section 4.2. Finally, by being able to easily represent participation in a visual and discussable way it becomes possible to evaluate participation in project development, and continuously throughout its evolution. This enables researchers to identify and remedy gaps in the way participation is put into effect before the end of the project, thereby enhancing the likelihood that the project will successfully implement appropriate Participatory Design standards. The potential value of being able to identify and remedy participation challenges whilst the project is in progress is discussed in Section 4.3. The collection of these three potential benefits is reflected in Figure 4.1.

4.1 Creating a Visual Tool (potential added value #1)

In Chapter 3, the three components of the participation construct were represented visually by 2-dimensional spaces. For example, impact was represented in Figure 3.1 as a 2-dimensional space defined by information quality (x-axis; ranging from poor to good) plotted against information use (y-axis; ranging from low to high). While the standard 2-dimensional graphical representation is relatively simple to use when exploring the constituents of a single dimension, (e.g., impact) understanding the relationship between the three dimensions by having to view three separate graphs is cumbersome and unintuitive. Thus, in order to create an intuitive and immediate visual tool, it is ideal to find a way to merge the three dimensions
into one image. In other words, can the six constituent variables be merged into one
three dimensional representation?

Yes, this is possible. However, to do so requires that each dimension be
converted from a 2-dimensional graph to an image that can be represented along a
line. This way, the three ‘lines’ can be put together to represent a three dimensional
space. To do this without losing critical information it is important to insert that
‘information’ in a different way. One solution is to use a line (the axis of a graph)
and a quality laden circle. Thus, it is possible to represent impact as a circle
located somewhere along a single dimensional line. Figure 4.2 illustrates how this
can be done. The quality capturing the second critical information can be represented
via the size of the circle. In the case of impact, the size of the circle reflects the
variable of information quality (the larger the sphere, the better the quality) and the
line reflects information usage (the farther to the right, the greater the usage). Thus,
in a similar manner, influence and agency were also represented along a single
dimension with a quality-laden circle located on it. In the case of influence, the two
constituent variables are number of decisions (few to many) and scope of the
influence (narrow to broad). Figure 4.3 illustrates how ‘number of decisions’ can be
shown as the line dimension and ‘scope of influence’ illustrated as the brightness of
the circle (pure white represents broad scope, black limited scope). Similarly, in
agency, the two constituent variables are motivation (low to high) and strength of
participant solidarity with the group (from weak to strong). Figure 4.4 illustrates
‘motivation’ as the line dimension and ‘solidarity’ by the reflectivity of the sphere
(high reflectivity for strong solidarity). (Note; because of the three-dimensional
nature of the quality of ‘reflectivity’, the circle has now been translated into a three-
dimensional circle; i.e., a sphere).
Figure 4.1 Potential added value of the lens

This figure shows that the lens leads to seeing participation as a construct. This construct is then seen as composed of 3 components (impact, influence, agency), each of which is composed of two constituent variables. The value of this lens is that it provides a concrete way of visualizing participation, a way of discussing participation, and a way of identifying participation gaps.
Figure 4.2 Two dimensions of impact along one axis

This figure reflects two different scores of a participant’s impact. The first score represents poor quality information being slightly used within the project. This is reflected in a smallish sphere on the left hand side of the scale. The second score represents a relatively good set of information provided by the participant that is more used within the project. This is reflected by a larger sphere closer to the right hand extremity of the scale.
Figure 4.3 Two dimensional representation of influence along one axis

This figure indicates two different scores of a participant’s influence. The first score shown (left side of the scale) reflects making only a few decisions. However, the level of abstraction of these decisions is very high (white circle). A concrete example might be a manager having a few decisions to make over where to allocate resources or whom to hire.

The second score (right side of the scale) reflects making many decisions over a relatively small scope of the project (darker circle). A concrete example of such a participant might be a prototyper who has many specific decisions to make over the form and manifestation of an already developed concept.

Brightness of ‘dot’ reflects scope of decisions. Pure black represents very limited scope (e.g., decisions over colours of the interface). Pure white represents broad scope (e.g., control over organizational issues).
Figure 4.4 Two dimensional representation of agency along one axis

This figure reflects two different scores of a participant’s agency. The first score represents a participant with poor motivation, as the sphere is in the far left corner of the scale. As well, the sphere is dull, representing a lack of cohesion between the participant and the group. This participant has little agency within this project. The second score represents a fairly motivated participant that has a strong solidarity with the rest of the group. This is seen by a sphere that is shiny. Its placement near the right end of the motivation axis indicates that this participatory situation reflects a fairly strong sense of agency.
The reason for reducing each 2-dimensional space to a single-axis scale with an object on it is that doing so makes it possible to put the three axes together to form a 3-dimensional space containing a single descriptive spherical point within that space. The qualities of the sphere – size, colour and reflectivity – represent the remaining three qualities of the participation construct. **This 3-dimensional space is the visual tool that arises from the analysis presented in this thesis.** The location of the sphere in the space reflects an interaction between three variables defining the space represented by the x, y and z axes, one from each of the components *impact* (information quality), *influence* (number of decisions), and *agency* (participant motivation) respectively. The qualities of the sphere—its size, colour, and reflectivity—indicate the remaining interactions between the variables of *impact* (information use), *influence* (scope of decision), and *agency* (participant solidarity with the group). Together, the feature-laden sphere located in a three-dimensional space provides a full at-a-glance view of the state of participation at a given moment. By way of example, Figure 4.5 illustrates a hypothetical project in which eager users (high motivation) are intended to be consulted for information and weigh in at crucial evaluation moments (high influence on both dimensions of number and scope). However, in this hypothetical case there is some form of strife within the group. This ‘strife’ is reflected as low participant *solidarity* with the group (low reflectivity of the sphere). In contrast, Figure 4.6 shows a similar hypothetical project in which the *solidarity* of the group is strong (high reflectivity). This figure represents a relatively ‘ideal’ participatory project. By being able to compare the two visual representations, a researcher or project manager can see – at a glance – the discrepancy between how the participation aspect of the project is faring compared to an ideal situation. The challenged area of participation is also highlighted enabling
the researcher or project manager to focus their energies on addressing that challenge.

The visual representation in Figure 4.5 concretely illustrates an initial reading of the levels of participation within this hypothetical example. As one can see, the value of agency is less than ideal. This can indicate to a researcher that more attention must be paid to discover the nature of the cause for the lower than desired value. This particular combination of values might reflect a project struggling according to the challenges outlined in Section 1.3.2, where patterns of dominance are causing problems for the flow of the project. At a practical level, the visual tool makes it possible to articulate subtle distinctions in participation requirements, and this means that researchers and project managers can now express what they expect from their participants. In other words, this visualization would draw attention to the need to find the ideal conditions, actions, behaviours, and contexts required for successful participation, as well as gauging how the participants of the team feel about these goals.

How could this visual representation have changed the way the project might have unfolded? While it is impossible to speculate with great confidence on a particular instance, it is probable that such a tool could have made the particularly troubling area stand out before it became undeniable. For example, suppose researchers specified that they expected users to contribute information and make decisions over interface issues of the project. Users would then understand that budgetary concerns are outside the scope of their influence. With this clear at the start of the project, there is the likelihood of an agreement of the understanding of each participant’s role and responsibility. If there is no agreement, there is at least a basis for discussion as to why there is no agreement. Ideally, this would enable the
In this figure the participation level is mid range. In terms of impact, the information provided by participants is of mid range quality and their information is used an average amount (indicated by the mid-level location on the y-axis, and the medium-sized sphere). The participants have been given a fairly good amount of decisions to make, but the scope of those decisions are relatively limited (high value on the x-axis and pale (relatively empty sphere). Finally, the participants are very motivated, but there is little cohesion between them and the group (high value on the z-axis, dull (low reflectivity) sphere).
Figure 4.6 Example of a mid range hypothetical project as compared to an ideal project

In an at-a-glance view it is possible to see that the hypothetical Participatory Design project, represented by the gray sphere, is relatively far from the ideal case (represented by the front-most sphere) in terms of how participation is realized. This should signal to the researchers that the levels of participation being experienced within the project need to be investigated, and perhaps even remedied.
participants to come to an agreement before the project starts. The point to be underscored here is that the visual representation serves the important function of drawing the researcher's attention to areas of participation within the project that are potentially fragile. Without the visual tool and the representation it generates, the need to have this discussion might never have surfaced.

4.2 Elaborating a common language (potential added value #2)

The clarity created by visualizing the constituent variables that compose the participation construct sets the stage for the second added value – it encourages and enables the elaboration of a common language for thinking and talking about participation as a construct. This is because each of the six variables represented in the visual tool now become a focus of attention – they have names and their interactions with one another can be explicitly noticed and therefore discussed. The visual tool enables researchers to create a specific vocabulary for essential concepts.

Why is a common language needed? A common language is needed to liaise some of the ideas within Participatory Design that are pushing the field in various directions. For example, as discussed in Section 1.3.1, there are many different kinds of Participatory Design approaches that have emerged over the history of the field. To name a few, these include the Socio-Technical Approach, Collective Resources Approach (a.k.a. the Scandinavian Approach), Corporate Participatory Design, Participatory Design by Occasion, Curiosity Participatory Design, and Pragmatic Participatory Design. These different titles are often used to describe how projects are not similar. For example, the Socio-Technical Approach is often described as being part of the more traditional form of Participatory Design where the purpose of the project is to bring about a sense of improved quality of work life to the workers.
On the other hand Corporate Participatory Design is often used to describe the use of Participatory Design in an organization whose priority is to produce a commercially viable product. Does this mean that the forms of user inclusion are so different in these different types of projects that the types of participation found in the Socio-Technical Approach do not share any of the same dimensions as the types of participation found in Corporate Participatory Design? Having an approach-neutral common language to talk about these various forms of participation research will facilitate understanding the similarities and differences among these approaches, thereby promoting the possibility of research cohesion.

A common language is also needed to enable research in Participatory Design to benefit from research in other fields that rely on concepts of participation. Such fields can include those that have splintered off from traditional Participatory Design (such as those discussed in Section 1.3.1), those that are related to Participatory Design – such as User-Centred Design – or even those that seem unrelated to Participatory Design – such as research in health and rehabilitation. How could research in rehabilitation, for example in Speech-Language Pathology, benefit research in Participatory Design, and vice versa?

In a Participatory Design project, the information provided by the participants is important to the project. This information determines technical things such as the requirement specifications of the project as well as provides insight to the design team into the nature of the problems needing to be addressed. Interestingly, this type of information is also important in Speech-Language Pathology. In this field the need for sophisticated self-report measures and client centred decision making is a key factor for determining how the disability has impacted on the quality of life of the patient (Eadie et al., 2006). While the field of Speech-Language
Pathology would seem, at first glance, to have very little in common with the field of Participatory Design, they both share the common element of needing to define and measure some form of participation. The creation of a common language that can be used by any field means that the insights garnered from one field now have the potential to bring added value to another field.

An added value of having a common language, thus, is that it allows one to see whether the construct of participation can be applied to areas normally not considered in discussions of Participatory Design, that is, how generalizable the construct is to other contexts. The importance of such generalizability was discussed in detail in Section 2.4 as part of basis of the critical lens proposed in this thesis. It was stressed that it is important that the participation construct provide enough definition to be valuable to a range of research, not just a few specific cases. To test whether or not the participation construct was in fact generalizable, a framework based on the participation construct was used to analyse a paper in the seemingly unrelated field (Eadie et al., 2006) of Speech-Language Pathology. While the full results of this analysis are outside the scope of this thesis there are nevertheless a few interesting results that relate to the generalizability of the participation construct.

First, it should be explained that the paper by Eadie et al. described the appropriateness of measures and methods within the Speech-Language Pathology field of research for capturing the impact that communication issues experienced by the patient had on the patient’s quality of life. To do this, a construct describing communicative participation was created and it was posited that “if communicative participation was adequately measured, we could study its relationship with other important variables such as QOL (Threats, 2006)” (Eadie et al., 2006, p. 309). This is strikingly similar to the participation construct defined in this thesis where it is
being argued that if the participation construct can be adequately measured and the
correct forms of participation supported in the project, then Participatory Design
practitioners could begin testing some of the basic theories in Participatory Design
(e.g., does Participatory Design have a causal relationship with democracy or
improved quality of life?).

Second, there are two major differences between Participatory Design and
Speech-Language Pathology that should be recognized. Participatory design is about
a process of design and is focused around technology. In Speech-Language
Pathology the process that is most important is about how to create a solution for the
individual participant such that their ‘limitation’ does not limit the quality of their
life. Interestingly, the field of engaged scholarship (Seifer, 1998; Van de Ven, 2007)
sees the process of creating a solution for a community of patients with researchers
as a design process for both the researchers and the community of patients, which
minimizes this first difference. This is because in many ways, creating a solution
between community and research is a process of design. Only, Participatory Design
is focused on aspects of technology with its ideal output being a commercially viable
product, whereas the ideas in Eadie et al.’s report are more focused on understanding
how to create better measures to collect data that reflect the issues regarding a
specific patient’s quality of life.

Another difference is that participants engaged in a Participatory Design
project can be defined as members within a finite group of people – the design team.
While there is no particular set size specified for a design team, it is a ‘community of
interaction’ that is comprised of specific individuals who all have some important
role to play. On the other hand, in Speech-Language Pathology there is no team as
such. The context of the patient’s participation is with regards to the community at
large. Each member of the community does not necessarily have a specific role to play in relation to the patient, but can still affect the quality of life of that patient, nonetheless. This difference in context changes the nature of the participant-community relationship and in many ways changes the parameters of participation. For example, in Participatory Design, one participant must persuade the team to adopt an idea. On the other hand, because there is no aspect of ‘team’ in the rehabilitation study, the nuances in influence that relate to persuasion of an intellectual nature might need to be revisited. This is work for future research.

However, when we look beyond the label of a component (impact, influence or agency) and focus on its constituent variables, we see that there are, in fact, similarities between the participation construct and the communicative participation construct. One important dimension that must be measured in Speech-Language Pathology is the frequency of the interactions as well as the depth of the interactions. For example, when gathering data researchers inquire about how many times the speech impairment has inhibited a participant from engaging in a social setting (e.g., frequency of interactions). Also, researchers want to know how much responsibility a patient has within the community. For example, does the patient run a household or have people who depend on him/her? Questions such as these inquire into the scope of the patient’s involvement with the community. Frequency of interaction here is similar in concept to frequency of decisions being made within a design team. Similarly, the scope of integration within the community can also be likened to the scope of decisions a participant has to make. While clearly there may still be a need to refine the terms used for the components and constituents of the participation construct, the overall concepts appear to have potential application to both fields.
Finally, while there are differences between PD and SLP, there are also some similarities that make the possibility of generalization exciting. For example, both fields are looking to understand how participation relates to quality of life. This implies that the meaning (the significance for the individual) of participation in both fields is similar. As well, the independence of a given participant (or patient) is an important element of the participant's engagement and interaction with the community. This community may be either the design team (for PD) or the local community in which the patient lives (for SLP). This element of independence may be similar enough in the two settings. How the concept of agency might then fit into this other context might warrant further research.

In sum, the participation construct developed in Chapter 3 enables theories about participation to be articulated and explained in a more focused way than has been possible in the past. In short, the participation construct provides researchers with a language that can identify and explain specific consistent elements of participation. Furthermore, by refining the understanding of participation such that key variables can be measured, the exact boundary conditions in which a theory about participation is supported can be identified. By further developing our general understanding about these boundary conditions, the participation construct may potentially acquire predictive utility.

Finally, the creation of a common language enables theories of participation to have connective value. In Section 2.4 connectivity was described as a type of utility where the proposed theory creates a bridge linking, amending, or transforming already existing theories. In other words, for a theory to have connective value, it must be possible to link it to another existing theory by demonstrating unexpected similarities. For example, if theories in Participatory Design that focus on new
technologies can be linked to research that focuses on community outreach, then those theories about participation have value in that they link two worlds of research. Also by finding new boundary conditions, the current understanding of participation can be amended and refined. Finally, if theories of participation can link theories on workplace psychology with theories on organizational management, then those theories on participation can be seen to have connective value. As briefly explored in the previous section, while future research is certainly needed to refine the components of the participation construct presented here, a general added value of the construct is its potential generalizability, and this potential arises from the creation of a common language, here stimulated and shaped by the proposed construct.

4.3 Identify and remedy participation Gaps (potential added value #3)

As in any research area, translating theory into practice can be a challenge. In Participatory Design, this challenge was exemplified in Section 1.3.4, which described the challenges, despite all intentions, of translating the theories guiding a Participatory Design project into tangible and practical project solutions. As this problem is explored, the lessons of the experience revealed that, even in what might seem like a simple process to follow (e.g., an iterative process), there must be certain qualities to the process if the project is to succeed. Their experience showed that an iterative process is not sufficient to ensure that the project is a Participatory Design project. The iterative process must also achieve the quality of meaningful iteration. While it is possible that using the participation construct might help researchers define what meaningful means when applied to an iterative process (as explained in
the previous two sections), the participation construct also enables another possibility. This is the possibility of charting the evolution of a project across its life through *repeated measures*.

A potential value of being able to chart change in the nature of participation throughout the life of a project is that frequent evaluations of participation enable the researcher to catch and rectify a potential participation gap *before* the end of the project. This potential added value has research benefits as well as *practical* benefits.

A clear research benefit afforded by being able to identify participation gaps before the end of a project means that researchers can ensure that the project achieves a Participatory Design standard. This is an important element to theory testing. Suppose a Corporate Participatory Design theory advocates something along the lines of ‘Participatory Design run projects are integrally linked to creating improved products’. In this case, there are two conditions that must be met for the theory to be supported. First, the Participatory Design in the project must relate in some way to the creation of an improved product. Second, the project must implement Participatory Design in some verifiable way. In other words, if the project successfully yields an improved product but fails to embody the essence, principles, or practices of Participatory Design, then the theory will not really have been tested. Instead, all one could conclude is that a ‘project’ was run and it yielded an improved product. Note, however, that on the other hand, successfully achieving a Participatory Design project and demonstrating that an improved product was *not* created does test the theory by providing counter evidence for it. As such, it is vitally important for practitioners to be able to successfully demonstrate that their project meets appropriate Participatory Design standards. Being able to identify and remedy
gaps throughout the life of the project can help ensure that the correct standards are met, and thus enable the researcher to engage in theory testing or theory exploration.

There is also a practical benefit to being able to test the levels of participation within a project at multiple stages throughout the project. Suppose the theory is correct in asserting that participation leads to an improved outcome. It then follows that being able to ensure that the project meets appropriate standards of participation would be necessary for achieving this improved outcome. The participation construct presented here (together with the visual tool and common language associated with it) makes a contribution to this goal.

Once the gaps have been identified, researchers then need to find solutions to address particular gaps. Supposing that a common language does emerge within the Participatory Design community, and ideally in areas outside of Participatory Design too, researchers will be able to search for solutions from a much wider range of projects and experiences than if limited to only those that very closely resemble their own specific project. The common language will enable the participation elements of research from one project to yield relevant lessons for other (seemingly unrelated) projects, and in this way the pool of solutions increases. Researchers will benefit because solutions taken from different areas can often be quite revealing about subtleties of the phenomenon under study (in this case ‘participation’). Project managers will benefit as solutions will be more readily available to help them keep their projects on track.

In sum, being able to run a project by Participatory Design standards is important for research as well as for general projects. The participation construct enables researchers to collect data and visually represent this data. These measurements can be acquired at regular intervals within the project life cycle.
Because the visual tool has the potential of alerting researchers to potential problem areas, the researchers now have an opportunity to take remedial action. Once these steps have been taken, it is again becomes possible to collect data to assess participation, to verify that the gap has been closed. Other potential problem areas may arise, but again, the visual representation will notify researchers of their existence. Researchers will then be able to address those new gaps. The cycle continues, and each iteration of measuring and addressing participation issues will indicate to the researchers the health of the Participatory Design element of the project.
Chapter 5
Conclusion

The main contribution of this thesis was to propose and explore a new theoretical framework for understanding the role of participation within Participatory Design. This framework was developed to address a research gap within the field of Participatory Design. This gap – the absence of research cohesion within the field – has potentially contributed to often contradicting proposals for how the field might ‘move forward’. Given the importance of a cohesive vision in the field, it was important to investigate why this research gap has emerged as well as how this gap has affected Participatory Design endeavours. As such, four emergent themes within the Participatory Design literature were explored. These themes are:

1. How the politics within research approaches has been changing (Section 1.3.1);
2. How power, participation, and patterns of dominance relate to project management and project success (Section 1.3.2);
3. How important criteria and theories within the field are articulated, for example what design with users means as opposed to design for or by users (Section 1.3.3);

And
4. How applying participatory design theory into consistent practice has posed important challenges (Section 1.3.4).

Although these four themes cover a wide variety of issues within the field, one important conclusion that emerged from the literature reviews and the analyses conducted is that there is a consistent element underlying all of them; participation is generally being used as a general, undefined notion rather than as a specific, well-
defined concept. The problems associated with using participation as an undefined notion became especially evident in themes 1.3.3 and 1.3.4, in which practitioners described how challenging it was to ensure that the practices within the project adhered to the theories in the field. The framework developed in this thesis was, therefore, a first attempt at defining participation in such a way that it can be used consistently in a wide variety of participation based research projects.

In order to create a framework for defining participation it was first necessary to develop a critical lens to guide future explorations and analyses. To this end, the critical lens described in Chapter 2 outlines the principles of the methodology employed in Chapter 3, as well as describing the standards to which any definition of participation ought to adhere. As such, Chapter 2 serves as the basis of the framework proposed later in this thesis. In developing this lens, it was concluded that there are three key standards to which any definition of participation ought to aim to adhere. These are:

1. The definition must be *fit for purpose* (Section 2.2)
2. The definition must find the right balance between *rigor* and *relevance* (Section 2.3)
3. The definition must adhere to the basic research principles of being *falsifiable*, *scientifically useful*, and *generalizable* (Section 2.4).

In using these principles to understand the intentions and applications of participation another important conclusion emerged; this is that participation – which is often treated as a variable in research discussions – should instead be treated a *construct*. Describing participation as an idea measurable along a single scale – that is as a variable – results in confounding the effects of the multiple factors that influence and affect participation. However, describing participation as an idea that
is composed of several interrelated concepts – that is, as a construct – allows and encourages the measurement of multiple factors. It is when these multiple factors are put together and described in terms of their relationship to one another that a more genuine understanding of participation can be created. Thus, an important conclusion that emerged from the analysis performed in Chapter 3 is that it is necessary and possible to uncover the multiple factors that underlie how and why participation is applied within a project.

The framework developed in Chapter 3 was built on textual data extracted from the seminal text by Schuler and Namioka (1993b) titled *Principles and Practices in Participatory Design*. From this source, three major components emerged that could be used to describe the (over 800) original points of data collected. Briefly, these components described the importance that impact, influence, and agency have on a project and on the participants within a participatory endeavour – that is, how they relate a participant's participation to the project.

1. *Impact* refers to how information used within the project relates the participation of a participant to the project. It is proposed that the component of *impact* be measured by the *quality* of information that is made available and the *use* that is made of that information (Section 3.3.1).

2. *Influence* refers to how decision-making relates participation to a project. It is proposed that the component of *influence* be measured by the *number* of decisions a participant makes as well as the *scope* over which these decisions have bearing (Section 3.3.2).

3. *Agency* refers to how able the participant is to act on his or her own ideas. It is proposed that the component of *agency* be measured by the
motivation of the participant as well as the solidarity of the group (Section 3.3.3).

Together, these three components describe the relationship of key factors within the participation process. However, adopting a new perspective only has utility if this perspective brings potential added value. Thus, Chapter 4 explored the potential added value that adopting such a framework might yield.

The discussion in Chapter 4 led to the conclusion that there are at least three initial potential benefits for using the framework proposed in this thesis.

1. First, the six-variable (or three component) nature of the construct lends itself to being turned into a visual tool through the use of a quality laden ‘point’ within a three dimensional axis. This visual tool enables the level of participation to be understood at a glance (Section 4.1).

2. Second, treating participation as a construct within the framework makes the components of participation concrete such that it is possible to elaborate a common language for discussing participation in a variety of contexts and with precision (Section 4.2).

3. Finally, by being able to represent participation in a concrete, discussable, and visual manner it becomes possible to measure the fluctuations and changes in participation throughout the life of a project. Aside from the possible future research opportunities that this provides (Section 5.2), this also enables project managers to identify and remedy potential participation gaps while the project is underway (Section 4.3).

Thus, this thesis has undertaken the exploration and development of a framework for defining the construct of participation in a way that is meaningful to
research endeavours in Participatory Design. The framework and visual tool were developed from an exploration of how and why participation has been used and treated in Participatory Design projects. The purpose of this framework was to create a theoretical scaffolding that could promote three basic and necessary conditions for cohesive research. The result of the analyses presented here has been to show how it is possible to elaborate such a framework and to create a concrete, visual tool for exploring the nature of participation within Participatory Design projects and research, aimed at leading to greater cumulative understanding of the issues.

5.1 Limitations

The ideas in this thesis comprise a first approximation exploration of the possibilities of creating a vision and an understanding of what participation means within a Participatory Design setting. As such, some assumptions needed to be made. To the extent that these assumptions need to be tested, and that they possibly may require revision, they can be said to represent some limitations of the ideas presented here. First, it is assumed that the components proposed (i.e., impact, influence, and agency) are appropriate and sufficient components for creating a clear picture of participation. Of course, future research will be needed to confirm the accuracy of this assumption. Naturally, as research and theory identifies other components and constituent variables that need to be added, the construct becomes enriched and should therefore provide even greater added value to the field.

Second, it was also assumed that the variables that underlie each component can be measured according to a continuous, ratio scale of measurement. Future research may reveal that some of these variables are better captured using an ordinal scale instead.
A third limitation of this thesis relates to the analysis performed on the seminal text by Schuler and Namioka (1993b). In this analysis there was no opportunity to test for reliability. In other words, there was no test performed to see if the conclusions would have been the same had someone else performed the analysis. Of course, testing for reliability is important when conducting research. To have addressed this issue it would have been useful to have several different researchers perform the same steps of analysis on the same text to see to what extent there are differences and similarities to the present results. One could compare the degree of agreement among the different raters in terms of a measure of inter-rater reliability. However, this examination of reliability was not performed for two reasons. First, the intention of conducting this analysis was primarily exploratory, and thus conducted similarly to standards of science as found in techniques such as Grounded Theory (Bryant & Charmaz, 2007; Glaser & Strauss, 1967 (1999 printing)). Second, the resources required for engaging in this type of rigour would have been prohibitive and thus not fit for the purposes of this thesis (the method of analysis would itself have had to become the main focus of the thesis). However, it would clearly be appropriate to conduct a study on the data reduction method itself. Such future research, provided by other authors, would be valuable to the field and greatly welcomed because it would allow the technique to be refined and then used with confidence to investigate other questions in this area.

Fourth, and already highlighted in Section 1.3, is that the variety of source material was limited to works primarily in the fields of Information Systems, product development, and Industrial Relations. While this may impose natural limitations on the strength of the outcomes presented in this thesis, it also provides a starting point
for other fields to have input and thereby refine the *common language* collectively.

A brief example of these types of discussions was started in Section 4.2.

## 5.2 Future Research

Thinking about participation as a well-defined construct, as presented here, opens up a number of interesting new research opportunities.

One interesting avenue of future research would be to explore how each variable would be operationalized such that data can be gathered in an efficient manner. While much research exists in gathering data on each specific variable in other contexts, how these measures apply specifically to Participatory Design still requires investigation.

A second avenue of future research would be to test the validity of the visual tool presented in Chapter 4. Does it, in fact, measure the elements that directly relate to participation? Future research of this type would be useful in determining whether or not the specific variables or components of this tool are appropriate in helping researchers *apply* participation to a project. As it is possible that this tool reflects *perceptions, assumptions,* or *moderating factors* about participation rather than *mediating* factors or direct factors that could be potential explanations of causality, it is important that such future research be on the agenda.

A third avenue of future research would be to see whether or not different Participatory Design projects have different ‘participation signatures’. For example, perhaps willingness and number of decisions are higher when scope of decisions is low; or perhaps Corporate Participatory Design projects have typically lower or higher usage of user provided data. Discovering *why* there might be differences
within these signatures would help round out a scientific understanding of how participation relates to a project, culture, or context.

A fourth avenue of future research would be that once it is possible to reliably and accurately ‘gauge’ participation within a project, concerns how participation relates to the life cycle of a project. For example, participation in gathering initial requirements specifications would demonstrate a high level of user interaction at the start of the project but less so towards the end of the project. Is there a trajectory that describes an optimal usage of participation? Such research would bring wide applicability to the visual tool developed here by helping guide project managers as well as researchers in projects where inclusion is important.

5.3 Conclusion

This thesis has outlined how the use of a new critical lens can yield potential added value to the field of Participatory Design. In particular, when this lens was focused on four issues that are commonly discussed in the Participatory Design literature, a proposal for the need to further investigate what a participation construct might look like emerged. Following this line of inquiry, a preliminary participation construct was proposed. This construct was composed of three components that together attempt to portray key aspects of participation. Each of these components was then defined by two constituent variables such that a visual representation could be constructed. The potential added value that this lens and construct can bring to the field of Participatory Design, and indeed any participation-based research, was finally explored. These potential benefits included the creation of a visual representation of the participation construct—the visual tool, the construction of a common language to be used between researchers of Participatory
Design and other participation-based research fields. The common language can also be extended for use by participants and project managers. Finally, the visual tool enables the frequent and rapid measurement of the levels of participation within a project. This iterative measurement process is focused on levels of participation and it can potentially bring benefits to research as well as project management. Being able to identify problem areas of participation enables researchers and project managers to rectify those issues before the end of the project. Follow-up measurements can be taken to ensure that those gaps have been closed and / or identify new gaps within the flow of the project. The common language enables researchers and project managers to find potential solutions from a large range of sources, thereby enhancing their ability to adequately address the participation gap.

Finally, as the body of Participatory Design literature grows, based on use of the visual tool and the common language for addressing what we mean by participation, it will become possible to overcome the research gap identified at the very beginning of this thesis, namely research in the field of Participatory Design will be in a better position to build in a more sustained and focussed way on the results of previous research. In turn, this will help the field move forward.
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