



## Approaching Near Zero Energy In Historic Buildings

**Deliverable No:** D.T2.2.1 Report on Co-Design Process [ Part 1 ]

**Deliverable Title:** Participatory Architecture and Co-Design Preliminaries

**Version Number:** v03

**Due Date for Deliverable:** 30th September 2022

**Actual Submission date:** 30th July 2022

**Deliverable Coordinator:** CCAE  
(UCC)

**Lead Author:** Jack R. Lehane

**Deliverable Type:** R

R = Document, report

DEM = Demonstrator, pilot, prototype, plan designs

DEC = Websites, patent filing, press & media actions, videos, etc.

**Dissemination Level:** PU

PU = Public

CO = Confidential, only for members of the consortium, including the Commission Services

Disclaimer: This document reflects only the authors' views and not those of the European Community. The information in this document provided "as is" and no guarantee or warranty is given that the information is fit for any particular purpose. The user therefore uses the information at its sole risk and neither the European Commission nor any member of the Energy Pathfinder consortium is liable for use that may be made of the information.



This project has received funding from the European Union's Northern Periphery and Arctic Programme (2016-2020) under Grant Offer Letter 304\_1175\_20194.

# Participatory Architecture and Co-Design Preliminaries



**Author :** Jack R. Lehane

The views expressed in this document are those of the author and do not necessarily reflect those of the Northern Periphery and Arctic Programme, European Union, or any other organisations by which the author is affiliated. The EU Energy Pathfinders Project is making this research document available online in order to provide access to its contents for those interested in the subject. This web only document is the third of three resources, and is accompanied by: (2) *'Towards Co-Design in Post-Occupancy Evaluation (POE)'* ; and (3) *'User Guide for all Participants in Co-Operative Design Methodology'*. This document is intended to support community involvement in the energy retrofit of buildings and can be freely used for this purpose as long as the following acknowledgement (or with full citation) is included: authored by Jack R. Lehane (2022), University College Cork.

# Participatory Architecture and Co-Design Preliminaries

---

## 0. Foreword

This document traces a thematic and genealogical inquiry into the evolving and intersecting fields of co-design and participatory design (PD), both of which offer a tangible lens for understanding the landscapes within which extant and emerging opportunities for co-creation are nested. It does not explicitly aim to present any absolute or ‘stand-alone’ genealogy of co-design, but use a genealogy as a serving structure for investigating key dimensions of co-design to allow the intersections of architecture with the (otherwise voluminous) subject matter of ‘participation’ to be revealed. As the first deliverable, this document informs subsequent methodological review for user-centred post-occupancy evaluation (POE) in the second deliverable, *‘Towards Co-Design in Post-Occupancy Evaluation (POE)’*. Section 1 foregrounds what is at stake for understanding co-design as a subject matter and its intersecting fields; the structural and conceptual point of departure for the inquiry. Section 2 shows the inherent complexity within co-design definition through divergence in its consensus and interwoven social, political and civil rights origins. Section 3 outlines underpinnings to the status quo of Section 2, identifying counterpoint positions to these origins. Section 4 delineates examples of classifications of participation and associated conditions of its qualification. Section 5 illuminates changing roles of such principles in practice, and their underlying relevances within emerging spaces for co-creation. Lastly, this document concludes with Section 6: Final Notes.

### Keywords:

co-design, participatory design (PD); architecture (PA), co-creation, communities of practice

---

# CONTENTS

<b>1</b>	INTRODUCTION: Breaking Ground	03
<b>2</b>	INTERSECTIONS: A Contextual Matter	04
2.1	Towards a (Non)Definition of Participation	
2.2	Contestations and Points of Origin	
<b>3</b>	UNDERPINNINGS: (Inter)Disciplinary Counterpoints	07
3.1	Connecting to Wider Fields	
<b>4</b>	CLASSIFICATIONS: Situating Knowledge	09
4.1	Typologies, Motivations and Qualifications	
4.2	Mapping Methodology	
<b>5</b>	SPATIAL AGENCIES: Emerging Landscapes	12
5.1	Changing Roles of Principles in Practice	
5.2	Emerging Conditions and Opportunities	
<b>6</b>	CONCLUSIONS: Final Notes	21

# 1 INTRODUCTION : BREAKING GROUND

Post-modern shifts and increases in connectivity have, in turn, given rise to new opportunities for understanding how people interact (Bauman, 2000; Sennett, 1998).<sup>1</sup> What was previously small-scale cooperation has grown to become sequences of open production and collaborative, innovative, practices (Schneider, 2006; 2007).<sup>2</sup> Amidst such shifts in understanding, there is a (re)emergence of participatory practice and collaborative stakeholder engagement — especially within the field of architecture. The concept of agency is being restructured, conventions are being challenged, and values are being questioned — necessitating previous understandings of what project engagement could or should look like to be revisited. However, this shift tends to be in friction with previously established top-down practices, around which real-world pragmatics, socio-economic climates and value sets are echoed. One need not look very far to see relevance of ‘participation’ to architecture as “a force for change in the creation and management of environments for people” (Sanoff, 2008).<sup>3</sup> This research therefore opens up a dialogue with the formalised fields of co-design and participatory design (henceforth ‘PD’) which offer crystallisations of an otherwise abstract territory; through which emerging opportunities for co-creation may be consolidated and understood. It is therefore necessary to explore the wider fields of co-design and PD to reveal its intersections, to decodify the separative paradigm that we have created for ourselves in a world of “undemocratic” specialisation (Bannon, *et al.*, 2012: p.38; De Carlo, 1980: p.77).<sup>4</sup> As such, its respective intersections with social theory, political backdrops, philosophical underpinnings and emergence of key concepts and principles are traced. This aims to challenge assumptions regarding what co-design in future built environments might look like. By tracing such a genealogy, this literature review composes the literary space within which the later deliverables are positioned. Indeed, by illuminating the intersections of architecture and PD what it means for architecture to participate, or enable participation, can be harnessed; a prerequisite for subsequent operationalising within real-world environments — whilst simultaneously opening up a new field of inquiry into these new spatial conditions.

## 2 INTERSECTIONS : A CONTEXTUAL MATTER

### 2.1 Towards a (Non)Definition of Participation

PD is a term used to describe design process and practice that actively involves all stakeholder groups, particularly collective end-users in the design and decision-making process (Jenkins 2010; Curl, 2006)<sup>5</sup>. Whilst sometimes referred to as a singular entity such as above, both participatory and co-design are composed of many open-ended approaches and perspectives. As Sarah White acknowledged (1996), without a definitive and shared definition of participation, many people can discuss *participation* but mean very different things.<sup>6</sup>

This is substantiated by Elizabeth Sanders *et al.* (2008) in *Co-Creation and the New Landscapes of Design* who, as part of an investigation in design research divergence, acknowledge a paradox that for all literature existing on PD in general very little outlines what defines participation in the first place.<sup>7</sup> Sanders *et al.* (2008) investigate a growing divergence within associated design research; from a user-centred approach to a co-designing approach. Within this, the landscape of human-centred design (HCD) research includes PD research (user as partner), user-centred research (user as subject), and the smaller area of critical design. PD research is illustrated as including the subsets of both primarily Scandinavian contributions, as well as the emerging field of generative design and its generative toolkits (Section 5). In partial response to this, Lars Bo Andersen *et al.* (2015) develop an analytical understanding of what constitutes PD from *Actor-Network Theory (ANT)* — adapting from Latour (2008).<sup>8</sup> Consequently, participation becomes, fundamentally, a relational and heterogeneous network progressing through particular projects and processes. Intending not to develop another participation method, it aims to serve as a resource for framing participation method as a continuously unsettled matter of concern whereby “*participation, as a matter of concern, goes against universal standards for participation and the ability to claim, as a matter of fact, what is and what is not participation*” (Andersen *et al.*, 2015)<sup>9</sup>. From this, it is understood that participants are not stand-alone subjects but network configurations,

participation is not tied to designated events but always partially at play, and that there is no gold standard for participation (Sanders *et al.*, 2008).<sup>10</sup>

The field of PD is understood as becoming dispersed and, by extension, what it means to participate (Beck, 2002; Bødker, 2003; Christiansen, 2003; Dittrich, 2003; Kanstrup, 2003; Bødker & Iversen, 2002).<sup>11</sup> PD was, and is, often acknowledged as a systems design approach for work settings — and, as discussed in *Contestations and Points of Origin* (Section 2.2), this is certainly where it has some of its roots. However, any perceived exclusivity by this application has been challenged by its application within other settings and manners of user participation — also in alternative non-work settings (Ivari, 2007; Ivari *et al.*, 2010).<sup>12</sup> This lack of consensus is reflected by further examples that can be traced. For example, it is felt by some practitioners that PD should include a political activist component — i.e. community improvement in its entirety (Cahill, 2007; Carroll & Rosson, 2007; Hanzl, 2007; Luck, 2007; Reich *et al.*, 1996; Toker, 2007).<sup>13</sup> Meanwhile, others identify PD as an explicit practice to improve work-life experience within an organisation (Blomberg *et al.*, 1993; Clement & Van den Besselar, 1993; Mumford, 1987; Kensing, 1983).<sup>14</sup> Despite an absence of universally accepted definitions, basic frameworks have also been formalised in an attempt to define participation for application in various contexts (e.g. see Section 4.1: *Typologies, Motivations and Qualifications* for more detail). This diffusion is amplified further by the significant diversity in discussion regarding the employment of specific methodology within participatory practice (Howcroft & Wilson, 2003; Sanoff, 2007; Wagner & Piccoli, 2007; Törpel, 2005).<sup>15</sup>

However, as posited by Clay Spinuzzi (2005) in ‘The Methodology of Participatory Design’ that, “*Theoretically, [PD] is founded on constructivism, a theory that explicitly resists the notion that knowledge can be completely formalised and classified*”.<sup>16</sup> The inferred paradox is that the constructivist foundation of PD, on which a definition would conceivably exist, is *classified* according to its *unclassifiable* nature; singularly defined by its potential for multiple definitions. Nonetheless, as a philosophical underpinning of the such diverse and contextual nature of participation, this constructivist paradigm, whilst not ‘proving’ the validity of a contextual

definition of participation, also does not insubstantiate such a definition. Therefore, with respect to the preceding literature investigated, it may be deduced that a definition for any such formalised participation within architecture can be potentially consolidated through a constructivist approach — substantiates architecture's point of intersection with participation as an interdisciplinary field of inquiry for increasingly contextual conditions.

## 2.2 Contestations and Points of Origin

The exact origin of such formalised PD and co-design is a contested subject. Contrary to the formalised systems approach of PD stemming from Scandinavia in the 1960's, for example, citizen participation in community decision-making can be traced back as early as Plato's *Republic* (Plato *et al.*, 1992).<sup>17</sup> Additionally, the right for citizen participation is acknowledged by some historians as a shaping force on the early American frontier; an already active desire for citizens to have influence on their own lives (Billington, 1967).<sup>18</sup> With increasing populations and techno-sociological developments, and to occupy the growing space in the decision-making process, citizens delegated their decision-making to elected representatives — growing into a system of public election and volunteer organisations (De Tocqueville, 1959).<sup>19</sup>

In *Challenges and Opportunities in Contemporary Participatory Design*, Robertson and Simonsen (2012) credit contemporary PD and its literature as originating from the 1960's; as a result of society members' wishes to have more influence on the decisions in their lives.<sup>20</sup> Associated social and political reform marked turning points in societies across the world — from Australia to Paris — punctuated by strikes, occupations of factories and universities, and even halts in the economy (Nichols, 2009; Bourq, 2007)<sup>21</sup>. This came at the peak of a golden age of economic prosperity and represented the strength of a new and emerging youth culture. Amidst high post-war employment, a welfare 'safety net' was experienced, with higher numbers of students attending universities than ever before. This resulted in reduced anxieties for getting a job, passing exams, and pressures for climbing bureaucratic ladders (Hobsbawm, 1994).<sup>22</sup> As a consequence, aged and outworn social conventions and hierarchies were



greatly questioned and undermined — allowing space for the emergence of a new generation gap<sup>23</sup>; setting a space for principles to be practiced and frameworks to be tested.

As a product of a range of social, political and civil rights movements (Robertson & Simonsen, 2012; Bourg, 2007)<sup>24</sup>, participatory design has redefined architecture and design processes (Blundell-Jones, 2005).<sup>25</sup> However, this diversity is manifest in systems development across multiple contexts. For clarity within such heterogeneity, there is utility in classifying respective PD origins according to geographical region, before later exploring of their emerging territories. In the context of Britain, the idea that the public should ‘participate’ in planning is credited as being first reported in 1965 (Taylor, 1998) by the report of the Planning Advisory Group (the ‘PAG’ report).<sup>26</sup> However, this ‘participatory’ position was also held by the primary users, who experienced an autocratic view of the planning system.<sup>27</sup> This was owed to a lack of consultation with them as the primary users — as well as proper consideration of how the built environment influenced them. The emerged PD field created a platform through which users can actively participate in the design process, and established the context with which not only the presence or absence, but the *level* of participation can be measured and compared. However, key questions arise regarding the conflict between the measurable and comparative aspects of participation, or lack thereof. Scandinavia set the scene for a democratic approach, not for the providing of these answers, but for the framing of such questions.

In the case of Scandinavia, PD is identified primarily as a manner of systems design with active *user* participation. Credited as where cooperative/co-design practice originated from (Bødker, 1993)<sup>28</sup>, the participatory (cooperative) approach in Scandinavia arose in the 1970’s with many of the democratic and social values of modern design, as well as Nordic (Kensing, et al., 2012)<sup>29</sup>. Politically driven by Marxist ideals, democracy was aimed to be fostered in the workplace (Winograd, 1996; Spinuzzi, 2005)<sup>30</sup> — in response to a lack of technology experience by labour unions, imposed systems developments that contrasted sharply with workers’ traditional ways of working, and increased control and automation displacing job

opportunities (Ehn & Kyng, 1987; Zuboff, 1988).<sup>31</sup> As a result, systems-based participation served as a means of emancipating the users within such systems (Spinuzzi, 2005).<sup>32</sup>

This emergence was rooted in the combination of two research programs for such worker empowerment. This was enabled firstly through the ‘collective resources’ research program that formed research programs with labour unions, focusing on union empowerment through technological education (Bjerknes, et al., 1987).<sup>33</sup> The second program ‘socio-technical systems design’, as illustrated in ‘*Designing Human Systems* (1983)’ and ‘*Sociotechnical Systems Design – Evolving Theory and Practice* (1987)’, focused on empowerment through the *designing and changing* of these technologies for autonomous workgroups — advanced primarily by British researchers at the Tavistock Institute in the UK (Mumford, 1983; 1987; Mumford & Beekman, 1994; Leitch & Warren, 2010).<sup>34</sup> Both of these research programs arose from the Norwegian Industrial Democracy Project in the 1960’s. However, as Emery and Thorsrud (1976) posit, the British contribution to PD is often overlooked.<sup>35</sup> An example of the latter research approach is manifest in the Norwegian Iron and Metal Workers Union (NJMF), headed by computer scientist Kristen Nygaard (Nygaard & Bergo, 1975).<sup>36</sup> Nygaard’s view on design, objects, and systems had considerable influence on PD practice, even to this day. Aided by action research<sup>37</sup>, Scandinavian researchers set out to collaboratively develop and refine new technologies — in turn giving workers back control over their own work (Clement & Van den Besselar, 1993; Bertelsen, 2000). Allowing greater human flexibility in the use of systems, a clear route to the digital age was established through a systems thinking approach.

North America bears considerable systems relevance to extended participatory development within Europe. As the US systems theorist C. West Churchman (1968, p.231) writes in *The Systems Approach*, systems thinking “*begins when first you view the world through the eyes of another*”.<sup>38</sup> Churchman (1971), in *The Design of Inquiring Systems*,<sup>39</sup> incentivised what became known as a *soft systems approach* — that was co-developed with his colleagues at Lancaster University, UK (Checkland, 1981).<sup>40</sup> As an earlier systems influence, this is credited as one of the first more collaborative PD methodologies applied in PD projects during this

time, and facilitated the use of different prototyping tools and methods (Andersen *et al.*, 1990).<sup>41</sup> *The Design of Inquiring Systems* (1971) articulates a variety of perspectives for viewing 'systems', according to different philosophical approaches. Examples include Leibniz' philosophical approaches to system components existing in harmony, compared and contrasted with the "*dialectical philosophy of Hegel*" linking to the synthesis of conflicting ideas (Bannon and Ehn, 2012).<sup>42</sup> Churchman shows how our world views (paradigms) govern the direction of the systems we create, and also importantly illustrates the conflicting philosophies in systems approach. Whilst Churchman's work is not as especially visible in PD today, it still bears heavy influence on contemporary design research (Nelson and Stolterman, 2003).<sup>43</sup>

Notwithstanding such emergent overlaps in systems influences within the PD field, a subset of formal design participation in North America was commercially motivated; addressing usability difficulties in the industrial design field that caused inefficiencies in bringing products to market (Shapiro, 2005).<sup>44</sup> However, extending beyond this industrial counterpart, citizen participation in built planning was still employed — increasing social responsibility with many practitioners rejecting traditional ways of practicing design. In *Origins of Community Design*, Sanoff (2005) acknowledges the influence of Paul Davidoff's (1965) advocacy model of intervention in both North America and the UK.<sup>45</sup> Translating participatory practice across boundaries is not without its frictions, owing to (at least in part) the diversity of "*languages of design and of ethnography evolved in quite different contexts and in relation to different concerns*" (Schuler and Namioka, 2017).<sup>46</sup> Contrary to this, Joan Greenbaum (1991) writes that the growth of multicultural pluralism in non-Scandinavian contexts such as North America still offered themselves as a bedrock for potential PD practices through vehicles such as cooperative design (i.e. 'co-design').<sup>47</sup> By means of grants and technical assistance, citizens were given the right to participate in planning and implementation — through which "*volunteer citizen participation continues to be one of the key concepts in American society*" (Sanoff, 2008).<sup>48</sup>

Despite PD's increasing importance in developing contexts (Braa, 1996), PD literature is traditionally located within westernised business contexts, with minimal application in

developing countries — particularly for social development (Byrne and Sahay, 2007).<sup>49</sup> As a result, the literature related to developing regions is largely located in more recent decades than the original systems-based PD origins outlined above. This literature, whilst still region-specific, simultaneously tend to be indicative of broader significances with respect to developing context approaches. However, as contended by Sofia Hussain et al. (2012), most of PD literature in developing countries is credited as stemming from such information system (IS) design.<sup>50</sup> Puri et al. (2004) illustrate this through offering insight into three case studies on health information systems in South Africa, India and Mozambique — communicating that in each of the respective case studies, different participatory approaches had to be adopted.<sup>51</sup> In the case of South Africa, an already existing culture of community participation enabled researchers to gather a diversity of participants to establish a common project vision. However, in India's case, Puri et al. (2004) state that the bottom-up approach did not work, owing this to the hierarchical government structure that was prominently established within community decision-making. As a result, the Chief Minister of the state was required to instigate any participatory processes. In the third case of Mozambique, a participating university served as a crucial mediating bridge between bureaucracy and community.<sup>52</sup> Additional literary outputs signify a gap in PD in developing contexts — in that often PD methods are listed and described, but detail as to how participation was organised and its degrees of success is often overlooked (Sharma, et al. 2008; Lalji and Good, 2008).<sup>53</sup>

Further to this, Elovaara, Igira, and Mörtberg (2006) investigate similarities and differences between two health care projects in Tanzania and Sweden.<sup>54</sup> As a result of this study, it was identified that participation by stakeholders could not be taken for granted, owing to cultural, technological and organisational restrictions (e.g. lack of human resources). Elovaara *et al.* (2006, p.113) concluded that, “... *participation and how to participate has to be negotiated and adapted to the local setting*” . Byrne and Sahay (2007) attest to this in one form, stating that participation by stakeholders is often assumed in a given project, but that there is a common need to develop this capacity — particularly those beyond the development of IS systems (Byrne and Sahav, 2007; Hussain *et al.*, 2012).<sup>55</sup>

## 3 UNDERPINNINGS : (INTER)DISCIPLINARY COUNTERPOINTS

### 3.1 Connecting to Wider Fields

Whilst not negating the PD origins referred to above, distinct counterpoints to formalised participation — in terms of origin and significance — can also be brought to light. Simonsen and Robertson's (eds.) *Routledge International Handbook of Participatory Design* (2012)' offers the first set of counterpoints to the above social underpinnings of PD — shedding further light on such formalised antecedent to PD systems as we understand them today (Bannon and Ehn, 2012; Cross, 1982).<sup>56</sup> Liam Bannon and Pelle Ehn (2012: p.38) submit that the PD foundations were laid even prior to the referred origins outlined in Section 2.2: *Contestations and Points of Origin* above — specifically through the intersections of the reflective, craft tradition, and the rationalist, modern tradition encompassing and the transdisciplinary ideas of systems thinking from computers to product design — such as in the case of the Bauhaus.<sup>57</sup>

Inaugurated in 1919, the Bauhaus is credited as introducing the design movement with its inter-sectionalist goal of uniting art and technology (Bannon and Ehn, 2012).<sup>58</sup> By designing progressive social and cultural values in designed objects as vehicles for social change, it differentiated itself from conventional fine arts schools' practices (Droste, 1998).<sup>59</sup> The 'funkis' functionalist approach to design encompassed traditional craftwork and its production, becoming synonymous with the growing working class and welfare and 'folkhemmet' social democratic ideologies. Whilst this political radicalisation was controversial (falling on the 'wrong' side of Germany's political divide in Nazism's Third Reich) key Bauhaus individuals (including Moholy-Nagy, Van der Rohe and Walter Gropius) as exiles were well received in the international scene and US; forming the avant-garde for the modern international style (Wolfe, 1982).<sup>60</sup> However, as acknowledged by Marshal Berman, this became a pedestal for only specialised architects to assert change in the world (Berman, 1982)<sup>61</sup> — transforming itself into an "undemocratic social elitism" (Bannon and Ehn, 2012, p.38).<sup>62</sup> Nonetheless, people

became aware that “*social problems could be solved with scientific rationality*”.<sup>63</sup> Through this, social underpinnings of alternative approaches to design were set.

Whilst initially focused on the labour movement and its values in the 1970's, PD progressed considerably following the 1980's and the UTOPIA project. This led to a number of projects such as the *EureCoop/EuroCode* projects (Grønbaek et al., 1993)<sup>64</sup> and AT project (Bødker et al., 1993)<sup>65</sup>. What were previously implicit ideals of modern design became explicit. Bauhaus concepts re-emerged through the PD transition (Ehn, 1988; Winograd, 1996)<sup>66</sup> and even ‘institutionalised’ through attempts to re-establish it as a ‘Digital Bauhaus’ (Ehn, 1998; Binder et al., 2009).<sup>67</sup> This generated subsequent points of origin for new systems-based prospects.

Extendedly, whilst PD has progressed community development and urban planning areas, one of the main areas of its *design* development is still said to be rooted in its systems approach to *technological* development. Following the progression of modernity, Enid Mumford, as shown in *Designing Human Systems* (1983) and *Sociotechnical Systems Design – Evolving Theory and Practice* (1987), was notably concerned with the progression of participatory practice in information systems design in the UK.<sup>68</sup> This was also the case with the (albeit more explicitly politically-posed<sup>69</sup>) Scandinavian systems designs, illustrated by Kristen Nygaard.<sup>70</sup> Both of these were influenced by the UK Tavistock Institute's coined ‘socio-technical systems’, and their associated *action research* method of it.<sup>71</sup> *Action research* is credited to Kurt Lewin of the US during the war years. Lewin describes action research as “*a comparative research on the conditions and effects of various forms of social action and research leading to social action*”.<sup>72</sup> The defining component of action research is said to be its “*spiral of steps, each of which is composed of a circle of planning, action, and fact-finding about the result of the action*”.<sup>73</sup> This action research opened up new avenues for participatory engagement — and is sometimes referred to as *participatory action research (PAR)*. “*Design was seen as the design of knowledge systems*”.<sup>74</sup> PAR helped to change these systems.

At the outset of formalised participatory design evolution, aforementioned alternative approaches to design are further reflected in a systems-based capacity — as shown by Tavistock researchers. This underlying significance is also rooted in what one may consider a ‘system’. The term ‘system’ as used by the Tavistock researchers is credited as extending from the already emerging work on ‘open systems theory’ — made known by cyberneticist/biologist Ludwig von Bertalanffy’s (1950) paper on ‘*The Theory of Open Systems in Physics and Biology*’<sup>75</sup> — highlighting the idea of social systems, technical systems, and environmental systems all requiring an individual and interconnected balance for optimal overall system output. Fred Emery, Australian researcher at Tavistock, significantly furthered this systems approach. The core element of this work’s success was the realisation that the concept of a ‘system’ was not already defined in the natural world, but generated from a perspective and approach. The focus was not on technology itself, but *how* it was introduced and used. The pioneered socio-technical thinking sparked a series of significant PD progression through its constructivist methodology. This is significant as its emerged field of ‘interaction design’ from Human-Computer Interaction (HCI) and computer systems provided a key link between the design movement and systems design thinking. Whilst scientific approaches were still maintained and showed significant merit, the exclusively engineering perspective shifted towards a consolidating of a design community-engagement perspective as part of this. It is this that provided the link to the fields of product design and architecture.<sup>76</sup>

## 4 CLASSIFICATIONS : SITUATING KNOWLEDGE

### 4.1 Typologies, Motivations and Qualifications

Processes concerned with social transformation posit an important epistemic and systematic challenge; that is the classification of levels and qualifications of participation needed for co-design. Participation as a subject matter remains a messy, complex, multifaceted and often intangible thing. For this reason, there is a challenge in its qualification and measurement. Indeed, many frameworks have been developed for structuring and assessing participatory processes. However, there are still disparities in consensus of such measurement. As Jacobson (2007)<sup>77</sup> acknowledges, *“agreed-on measures of participation are not available”*. Nonetheless, through understanding the different classifying forms that participation and co-design come in, we may still allow increased understanding of their relationships to — and opportunities for — the stakeholders involved. Incentivised by a lack of common ground for a unified understanding of common definition in participatory approach, Helena Almeida and Pedro Vaz Serra (2017) call for *“the construction of a type of ‘architecture’ of participation (Almeida & Serra, 2016; emphasis by author) ... a conceptual network that sets the parameters for its evaluation”*.<sup>78</sup>

Building from *Towards a (Non)Definition of Participation* (Section 2.1), select typologies may evidence structural insights for further understanding of what constitutes participation (Table 4.1.A). As Eva Brandt (2006) writes, *“organising collaboration between... various competencies and interests is challenging and therefore designers need frameworks [typologies], which can accommodate this work”*.<sup>79</sup> Whilst extensive investigation of each typology rests beyond the scope of this deliverable, a sample is used as a vehicle for understanding larger typological evolutions of participation’s classifications in advance of further literary review. Briefly discussed, in chronological order, are: the *Ladder of Citizen Participation* (Arnstein, 1969)<sup>80</sup>; *Types of Farmer Participation* (Biggs, 1989)<sup>81</sup>; *Prototypical Approaches to Innovation Development* (Probst et al., 2000)<sup>82</sup>; *Continuum of Participation* (Chambers, 1997)<sup>83</sup>; and *The Engagement Triangle* (Capire Consulting Group, 2015)<sup>84</sup>.



**TABLE 4.1.A : A NON-EXHAUSTIVE LIST OF PARTICIPATION TYPOLOGIES (1969–2020)**

No.	Typology	Source
1	Balanced E-Participation Index	Pirannejad, Ali; Janssen, Marijn; and Rezaei, Jafar. (2019). 'Towards a Balanced E-Participation Index: Integrating Government and Society Perspectives.' In: <i>Government Information Quarterly</i> , Vol. 36(4).
2	The Community Engagement Components Practical Model	Ahmed S.M., Neu Young S., DeFino M.C., Franco Z., Nelson D.A. (2017). 'Towards a Practical Model for Community Engagement'. In: <i>Journal of Clinical and Translational Science</i> : Vol.1(5): pp. 310–315. October.
3	The Engagement Triangle	Capire Consulting Group. (2015). 'The Engagement Triangle' In: <i>Publications</i> . [online].
4	Digital Participation Pathway	The Scottish Government. (2014). <i>Digital Participation: A National Framework for Local Action</i> . April.
5	Archetypes of Community Participation	Kaizen Partnership. (2012). <i>Some Thoughts on Community Participation</i> . July 19. [online].
6	Six Principles of Online Participation	Davies, Timothy G.; Bhullar, Sangeet; and Dowty, Terri. (2011). 'Rethinking Responses to Children and Young People's Online Lives.' In: <i>EU Kids Online 2 – Final Conference, LSE</i> : London, UK.
7	Ladder of Online Participation	Bernoff, J. and Li, C. (2010). <i>Social Technographics Revisited – Mapping Online Participation</i> . Cambridge, UK: Forrester Research.
8	Five Key Dimensions of Participation	Kudva, N. & Driskell, D. (2009). 'Creating Space for Participation: The Role of Organizational Practice in Structuring Youth Participation.' In: <i>Community Development</i> , 40(4), pp.367–380.
9	Six-Step Model	Goździk-Ormel, Ž. (2008). <i>Have Your Say!</i> , Strasbourg, France: Council of Europe.
10	RMSOS Framework	Goździk-Ormel, Ž. (2008). <i>Have Your Say!</i> , Strasbourg, France: Council of Europe.
11	Matrix of Participation	Badham, B. and Davies, T. (2007). 'The Involvement of Young People.' In: R. Harrison, C. Benjamin, S. Curran and R. Hunter (eds.) <i>Leading Work with Young People</i> , London, UK: Sage.
12	Triangle of Participation	De Backer, K. and Jans, M. (2002). <i>Youth(-work) and Social Participation: Elements for a Practical Theory</i> , Brussels, Belgium: Flemish Youth Council.
13	Seven Realms of Children's Participation in City Plan. & Design	Francis, M. and Lorenzo, R. (2002). 'Seven Realms of Children's Participation.' In: <i>Journal of Environmental Psychology</i> . Vol. 22(1–2): pp.157 – 169.
14	Typology of Participation	Agarwal, B. (2001). 'Participatory Exclusions: Community Forestry and Gender: An Analysis for South Asia and a Conceptual Framework.' In: <i>World Development</i> , Vol. 29(10): pp.1623–1648.
15	A Ladder of Participation	Kanji N. and Greenwood L. (2001). <i>Participatory Approaches to Research and Development in IIED: Learning from Experience</i> , London, UK: IIED.
16	Pathways to Participation	Shier, H. (2001). 'Pathways to Participation: Openings, Opportunities and Obligations'. In: <i>Children &amp; Society</i> , Volume 15, pp.107–117.
17	Prototypical Approaches to Innovation Development	Probst, K., Hagmann, J., Becker, T. and Fernandez, M. (2000). <i>Developing A Framework For Participatory Research Approaches in Risk Prone Diverse Environments</i> . Deutscher Tropentag 2000 in Hohenheim.
18	Continuum of Participation	Chambers (1997). <i>Whose Reality Counts? Putting the First Last</i> , London, UK: Intermediate Technology Publications.
19	Degrees of Participation	Treseder, P. (1997). <i>Empowering Children and Young People: Training Manual</i> . London, UK: Children's Rights Office and Save the Children.
20	A Typology of Interests	White, Sarah C. (1996). 'Depoliticising Development: The Uses and Abuses of Participation.' In: <i>Development in Practice</i> , 6(1): pp.6–15.
21	Typology of Participation	Pretty, J. (1995) Participatory learning for sustainable agriculture, <i>World Development</i> , 23 (8), 1247– 1263
22	Ladder of Participation	Hart, R.A. (1992). <i>Children's Participation; From Tokenism to Citizenship</i> . Florence, Italy: United Nations Children's Fund (UNICEF) Int'l Child Development Centre.
23	Types of Farmer Participation	Biggs, S.D. (1989). <i>Resource-Poor Farmer Participation in Research: A Synthesis of Experiences From Nine National Agricultural Research Systems</i> . OFCOR Comparative Study Paper. ISNAR, The Hague: pp. 3-37
24	Describing and Analyzing Rural Development Participation	Cohen, J.M., & Uphoff, N.T. (1980). 'Participation's Place in Rural Development: Seeking Clarity Through Specificity'. In: <i>World Development</i> 8(3), pp. 213-235.
25	Ladder of Citizen Participation	Arnstein, S.R. (1969). A Ladder of Citizen Participation. <i>Journal of the American Institute of Planners</i> , Vol. 35, No. 4, (June), pp. 216.

The first typology is Sherry Arnstein’s (1969) *Ladder of Citizen Participation* (Table 4.1.B) which posits a clear reflection of the heterogenous nature of what may constitute ‘participation’. Of eight different categorisations (‘rungs’) of incrementally increasing citizen influence, Arnstein states that only the final three rungs constituted true citizen power — and therefore true citizen participation.<sup>85</sup> However, the first of many limitations to such classifications can be seen. Firstly, existing arguments against community control are acknowledged, such as that “[community control] is incompatible with merit systems and professionalism”.<sup>86</sup> Moreover, Arnstein’s categorisations do not acknowledge the infinite possible combinations of less defined attributes of any participant or their interactions, notwithstanding what constitutes a decision-maker for respective agency as well as the abstracted nature of ‘power’ itself. Nonetheless, Arnstein’s ladder structure reflects the increasing levels of decision-making agency that is inherent within many typologies that followed it. From *Describing and Analyzing Rural Development Participation* (Cohen, et al., 1980) to the *Balanced E-Participation Index* (Pirannejad, et al., 2019), the later evolved typologies are shown to echo Arnstein’s structuring of variations of power-sharing between the public and an agency (Buchy, Ross et al., 2000).<sup>87</sup>

**TABLE 4.1.B : LADDER OF CITIZEN PARTICIPATION** (Arnstein, S., 1969)

Participation Level	Qualification	Characteristic Features
<b>Citizen Control</b>	(Citizen Power)	Guaranteeing of shared power (control) for participants to govern program or institution in full charge of policy and managerial aspects, and be able to negotiate conditions under which “outsiders” may change them
<b>Delegated Power</b>	(Citizen Power)	Citizens have dominant decision-making authority over plan, mutual trust of accountability, and power-holders begin the bargaining for change
<b>Partnership</b>	(Citizen Power)	Joint committees for power redistribution, with mutually understood ground rules established
<b>Placation</b>	(Tokenism)	Degree (minority) of citizen power, although “token” representation is still apparent
<b>Consultation</b>	(Tokenism)	Citizens allowed opportunity to hear and be heard, although not necessarily allowed influence.
<b>Informing</b>	(Tokenism)	Primarily one-way channel from officials to citizens, with little opportunity for feedback, citizen project influence or timely negotiation.
<b>Therapy</b>	(Non-Participation)	A “masqueraded” participation, whereby officials focus on “curing” citizens’ pathology.
<b>Manipulation</b>	(Non-Participation)	“Rubberstamping” citizen participation to “educate” them and/or engineer their support.

A second example is Biggs' (1989)<sup>88</sup> *Types of Farmer Participation* (Table 4.1.C). This model further resonates the linear structuration of agency; also extending from Arnstein's ladder (1969). However, within this typology we can see that the relational aspect of participation becomes more explicit, as seen through the structuration of internal and external actor power 'relationships' (networks). This is specifically with four modes of incremental variants across: contractual; consultative; collaborative; and collegiate (participation). With an increased emphasis of contextual engagement, stages within a project timeline and (relational) 'mutual learning', each increment demonstrates an emergent trend towards contextual and relational thinking. Biggs' typology was then generalised by Probst *et al.* (2000) in order to enable it to encompass more general participatory engagements (Table 4.1.D), thereby increasing its utility for applications within wider disciplines and fields of inquiry.<sup>89</sup>

**TABLE 4.1.C : TYPES OF FARMER PARTICIPATION** (Biggs, S.D., 1989)

Mode	Objective
<b>Collegial</b>	Mutual learning whereby informal research is enabled as part of local control over project
<b>Collaborative</b>	Local people and researchers collaborate as partners in process of designed projects
<b>Consultative</b>	People's opinions are taken into consideration before interventions made
<b>Contractual</b>	People are contracted into scientist's project participation for enquiries or experiments

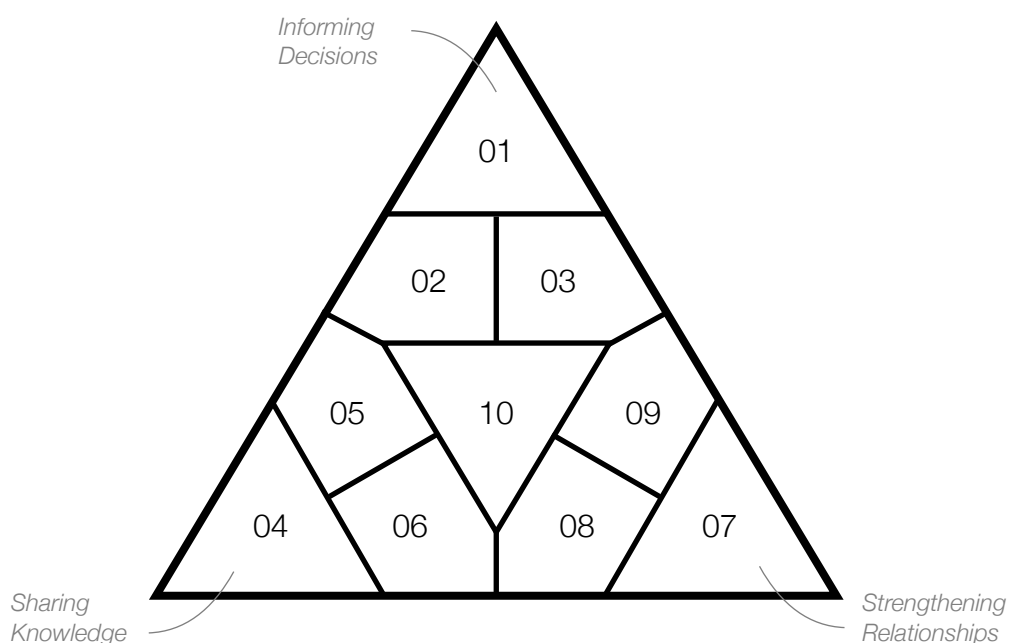
**TABLE 4.1.D : PROTOTYPICAL APPROACHES TO INNOVATION DEVELOPMENT** (Probst *et al.*, 2000)

Approach	Characteristic Feature
<b>Farmer-Controlled Research</b>	Farmer-initiated: Contractual – Consultative. Local organisations who have control over resources initiate contracts with research service providers to overcome specific constraints.
<b>Participatory Learning and Action Research</b>	Researcher or Community-initiated: Collaborative – Collegiate. Knowledge developed through critical learning and experiential learning, in an ongoing process of action in a real-life context.
<b>Farmer First</b>	Researcher initiated: Consultative – Collaborative. A summarisation of a family of approaches, whose commonality is the emphasis on participation by farmers in the generation, testing and evaluation of farming technology for sustainable agricultural production.
<b>Transfer of Technology</b>	Researcher initiated: Contractual – Consultative. Based on a positivist science paradigm, this linear model transfer innovation proposals to farmers, who adopt or reject the external innovations.



situate community engagement activities in relation to institutional priorities, capabilities, and ongoing programs across five primary elements, and *The Engagement Triangle* (Capire Consulting Group, 2015)<sup>94</sup> — speaking more to relational and contextual engagements. Through relational conceptualisations of engagement such as *The Engagement Triangle* in particular (Fig. 01), objectives and techniques can be navigated according to desired outcomes; informing decisions (decision-making agency), building capacity (enhancing knowledge, behaviour or awareness), and strengthening relationships (facilitating and sustaining community connections).

**FIG. 01 : THE ENGAGEMENT TRIANGLE** (Capire Consulting Group, 2015)



Notwithstanding the small sample size of the typologies discussed, preliminary structural significances are seen to emerge. Moreover, all sample typologies represent a consideration of a particular type of stakeholder, suggesting certain importance in its relevance to any participatory configuration. Secondly, more contemporary typologies tend to also take into account more relational factors than their earlier counterparts — speaking to an increased awareness of situating participation within increasingly multi-faceted contexts. Indeed, typologies that have more than one dimension of classification appear to simultaneously maintain a stronger consideration of relational aspects of participation. Conducive to this

deduction is Biggs and Sharp's (2004) recent positioning; maintaining that a multiplicity of perspectives present valuable utility within any adaptive process and, by extension, typology.<sup>95</sup> Although some typologies may be more applicable than others in a given context, basic qualifications still allow comparisons to be made. Bucky *et al.* (2000) substantiates this important distinction, in that a given typology's higher 'rungs' on the participation (or power) continuum are not necessarily better than those on the lower rungs. Of distinct relevance to the employment of any formalised participation within a project is the awareness of the fact that a project includes some participatory elements does not necessarily lead to a project's success, or expected outcome (Carpentier, 2009; Shapiro, 2005).<sup>96</sup> Indeed, even how processes such as information flow are maintained, as well as who initiates participation (regardless of exact classifications) remain pressing questions. In light of these latent considerations within which each structuration is nested — and as also deduced in *Towards a (Non)Definition of Participation* (Section 2.1) — both a given typology's use and its qualification can be considered as remaining premised on a case by case basis. Whilst there is not yet an identified "gold standard"<sup>97</sup> for participation, it can be inferred that participation on this spectrum may begin to be characterised according to the positioning of the questioner within the respective context(s) — therefore characterising any definition or qualification as a *contextual* matter. The epistemic challenge of any typological framing of participatory practice is therefore further underpinned by the contextual nature of the knowledge employed.

Reiterating Clay Spinuzzi's (2005) echoing of multiplicity in *The Methodology of Participatory Design* enables a revision of the theoretical underpinnings of such typological significances. Imparting that "theoretically, [PD] is founded on constructivism, a theory that explicitly resists the notion that knowledge can be completely formalised and classified"<sup>98</sup> — knowledge is viewed in PD as occurring through networks and relationships; the interaction between participants, practices and design artefacts. In this sense, it is maintained that knowledge does not merely reside in the head, but is a condition of a certain context.<sup>99</sup> In acknowledging knowledge as an inseparable condition of its context, it logically follows that such knowledge

of participation can be considered as a *situated knowledge*. In the case of typologies, increasing end-community input embodies an increased input of *tacit* situated knowledge of the vernacular.<sup>100</sup> “This kind of [tacit] knowledge can only be revealed through practice in a particular context and transmitted through social networks”,<sup>101</sup> and “to some extent it is “captured” when the knowledge holder joins a network or a community of practice”.<sup>102</sup> Acknowledging that all knowledge within the realm of PD systems can be understood as a *situated knowledge*, as Spinuzzi (2005) maintains, it logically follows that orders of typology for the application of such knowledge (PD and co-design) bears considerable efficacy in incorporating such tacit situated knowledge’s input within emerging participatory engagement.

## 4.2 Mapping Methodology

The emerging (typological) landscapes (e.g. Sections 4 and 5 respectively) are rooted in the integrated topographies of *methodology*. Two diverging methodological approaches of PD, whilst both still falling under the umbrella of the constructivist paradigm, are credited by Bannon and Ehn (2012) as being the *problem-solving model*, and the *reflective practice* paradigm.<sup>103</sup> Herbert Simon’s *The Sciences of the Artificial* (1969) represents the former and, having merit in his approach, carried great influence in the design research community. However, whilst close to the computer science field, it was still considerably far removed from the alternative practice-based approach of the Bauhaus. Continued investigation into what constituted design research, and design issues’ formalisation, is reflected across a number of publications as part of the developing design research movement (e.g. Gregory, 1966; Cross, Naughton and Walker, 1981; Cross, 1982; 1984; 1989; 1990; 1994; 1995; 2001; 2002).<sup>104</sup>

The scientific approach eventually culminated in the famed futurist and inventor Buckminster Fuller developing of the concept of ‘*comprehensive anticipatory design science (CADS)*’ — shortened to ‘*design science*’. “Society operates on the theory that specialization is the key to success, not realizing that specialization precludes comprehensive thinking” (Fuller, 1968, p.24).<sup>105</sup> This key concept by Fuller was furthered reinterpreted and developed by Sydney A. Gregory’s ‘Design Science’ (1966).<sup>106</sup> The latter (reflective practice paradigm) is represented by



Donald Schön's (1983) famed publication *'The Reflective Practitioner'*, and stands in a form of opposition to the traditionally rationalist problem-solving scientific approach.<sup>107</sup> Whilst Schön never officially endorsed PD, great value was placed on 'conversational design', encouraging open dialogue with users. This became a more favourable mainstay in PD approach; through the perspective of the designer being a *reflective practitioner*.

Nonetheless, Simon and Schön acknowledge design situations' natural complexity. Whilst Simon attempted to transform this messiness into a stable state of mathematics, Schön submits that a stable state does not exist and that we should pay attention to the ways that professionals manage this 'messiness'.<sup>108</sup> Referring back, it is Churchman's already identified philosophical paradigms such as Leibniz and Hegel that influenced further PD thinking regarding the development of a more explicitly Marxist approach. This extended not from the synthesis of design ideas but from a variety of interrelated social and material controversies (Ehn, 1988).<sup>109</sup> The concept of design as a 'designerly' practice played a significant role in this as strongly influenced by Dewey (1934; 1938) who posited a general epistemology of creative and investigative processes originating from real-life situations in *Art as Experience* and *Logic: The Theory of Inquiry* — argued as fundamental to understanding this complexity.<sup>110</sup>

Further to this, Claudio Ciborra and Giovanni Francesco Lanzara (1983) are considered pioneers of applying the pragmatic-reflective and practice approach to PD and co-design settings — through their emphasis on collaboration and design-thinking.<sup>111</sup> This systems approach was continued by multiple professional systems designers (Andersen et al., 1990)<sup>112</sup> and the design theorist Erik Stolterman (1991), whose work shed light on the hidden rationality of design work (Nelson and Stolterman, 2003; Löwgren and Stolterman, 2004).<sup>113</sup> These solidified the learning-by-doing perspective for PD enquiry (e.g. methods of prototyping such as Greenbaum and Kyng's (1991) referred *design-by-playing* and *design-by-doing*).<sup>114</sup> The investigating of work conditions and practices (such as through these tools for PD enquiry) opened up an avenue for the including of ethnographic practices (including sociological and anthropological investigations). This resulted in the emerged field of 'design-anthropology'.



Rather than carrying out typical ethnographic practices, they design-anthropology intends to “do design directly” in everyday settings (Halse, 2008).<sup>115</sup> As an emerging and evolving field, many intersections with PD and co-design are still uncharted.

Despite this, qualitative conditions are becoming increasingly important in understanding participatory systems and their processes. These qualitative elements are echoed further in Szebeko and Tan’s (2010) ‘*Co-designing for Society*’, which outlines co-design differentiations from PD: “Co-design differs from some of these areas as it includes all stakeholders of an issue not just the users, throughout the entire process from research to implementation”.<sup>116</sup> In some contrast, Sanders and Stappers (2008) write that “the terminology used until the recent obsession with what is now called co-creation/co-design was participatory design”.<sup>117</sup> Nonetheless, co-design, with its collaborative and participatory elements, is also credited as being able to reformulate new collective sets of values within an organisational system.<sup>118</sup> However, adaptation is deemed necessary for successful implementation of these principles in practice, according to the context. This is further distinguished by Part III in the publication — explicitly focusing on qualitative *ethnographic field methods*; *cooperative design techniques and experiences*; and *contextual inquiry as a participatory technique*. This shift then gave rise to increasing participatory practice’s accessibility, demonstrated by Patricia Leavy’s provision of a user-friendly PD handbook, *Research Design: Quantitative, Qualitative, Mixed Methods, Arts-Based, and Community-Based Participatory Research Approaches* (2017).<sup>119</sup> Structured according to five main approaches to social and behavioural science research, five main areas (as per title) are suggested for participatory inquiry — attesting to the constructivist foundations and multidimensional trends of the typologies (Section 4.1). Leavy also illustrates paradigms (or world views) as key research frameworks through which research is approached and filtered<sup>120</sup> — described as the “*philosophical substructure of the research*”.<sup>121</sup> The handbook provides a clear breakdown of research elements: philosophical (including paradigms as the world-views through which knowledge is filtered), praxis, and ethics (such as Jansen and Pieter’s previously mentioned paradigm shift). This includes the representation of ‘*community-based participatory action research (CBPAR)*’ as a detailed component, alongside the participatory and community-based research elements that are guided throughout.

## 5 SPATIAL AGENCIES : EMERGING LANDSCAPES

### 5.1 Changing Roles of Principles in Practice

Built on such methodological approaches (Section 4.2) are the principles employed within different structures and systems for participation — which vary from being implicit (such as paradigms) to explicit (such as distinct pillars for approach). However, consensus on principles in participatory and co-design is still lacking, as denoted by the variety of PD frameworks that exist (including those for even the describing of ‘methodological principles’).<sup>122</sup> Ingredients of methodological approach can also be used to generate principles in participatory and co-design. Simonsen and Robertson, in ‘*Methods: Organising Principles and General Guidelines for Participatory Design Projects*’, describe a method as a “*recipe*” for employing these principles.<sup>123</sup> Consistent with the inherently contextual nature of PD and co-design already established (Sections 2, 3 and 4 respectively), as Checkland (1981: p.33) wrote in *Systems Thinking, Systems Practice* that any methodology, as a set of principles of method, must be unique to the contexts that it’s applied.<sup>124</sup> However, Simonsen and Robertson have since acknowledged that while there is an extremely high quantity of PD tools and techniques available, there is a distinct lack of methods.<sup>125</sup> The *MUST Method* was conceived in response to this. Based on the study of 13 projects with American, Danish and multinational companies spanning a decade, the MUST Method combined the use of ethnographic techniques and intervention — and presents six general principles on which the method is based: (1) *participation*, (2) *close links to project management*, (3) *design as a communication process*, (4) *combining ethnography and intervention*, (5) *Co-development of IT (artefact), work organization (designer), and users' (user) qualifications*, and (6) *sustainability*.<sup>126</sup>

However, a core methodological principle is argued as remaining the same; in that whilst related approaches such as user-centred design carries out research *on behalf* of the users, “*PD research must be done with the users*”.<sup>127</sup> Schuler and Namioka’s *Participatory Design: Principles and Practices* (2017) establish a stepping stone to understanding the possibilities of

effective systems design whilst navigating a diversity of perspectives. Whilst focused on HCI, the papers compiled are founded on the key concern of *who does what to whom* — bearing significant relevance to wider participatory approach for this reason. The papers also confront the key issue of the applicability of PD method outside of environments of origin such as Scandinavia. Schuler and Namioka clarify that, while an alternative to traditional design specialisation, “*PD... is not against expertise*”, but that “*special expertise becomes yet another resource to draw on — not a source of unchallenged power and authority*”.<sup>128</sup>

Spinuzzi (2005) emphasises a risk in defining PD as an *orientation* or general approach, rather than a distinctive *methodology*. The risk is that (despite having an open-ended approach), “*we are tempted to articulate a few general principles and retrofit our existing techniques to accommodate them*”.<sup>129</sup> Nonetheless, Liz Sanders acknowledges in *From User-Centered to Participatory Design Approaches* (2002) that design has shifted from designing *for* users to designing *with* users.<sup>130</sup> Sanders writes that *experience design* is an emerging field within this shift, and builds on the understanding that multi-stakeholder input can be improved when given the appropriate tools. The importance of *experience* in design progression is credited to the emerging intersection of the social sciences and design systems, contributed to at the time by examples such as Jensen (1999).<sup>131</sup> A key emphasis is the idea of *interdependence* between stakeholders involved in the progression of participatory and co-design systems.

Of the PD and co-design tool concepts generated as part of these practices, one of the most influential was that of the ‘language game’ — which bridged researcher-designers and users through the generation of a common language; an important address of the aforementioned barrier of language diversity in Section 2.1 (Ehn, 1998; Schuler and Namioka, 2017).<sup>132</sup> The tools of prototyping were used to avoid making and using a technical language. In the case of tools, Brandt discusses *exploratory design games* (EDG) as a framework for the organising of participation in PD projects. A variety of EDG are assessed — in the end providing basic elements to be considered by future PD designers’ use. The purpose of EDG’s is not

competition-based, as is typical of traditionally competitive game settings, but to use props (as seen previously in the Nordic UTOPIA Project) to take advantage of a variety of expertise, interests and preferences. In 'Concept Design Games' — Habraken *et al.*'s (1988) development of nine EDG's for improved participatory urban environments are assessed.<sup>133</sup> Brandt concludes that there is no fixed type or number of EDG's, but that some are more appropriate for contexts than others. Brandt also concludes that the games (and their respective rules) create a common ground for everybody to equally relate to; becoming "*things-to-think with*".<sup>134</sup> In keeping with a reflective approach to design that has become a standard for appropriate participatory practice<sup>135</sup>, reflections from different participants become key ingredients in "*re-seeing the task, which gives new meaning*".<sup>136</sup>

Spinuzzi builds on existing literature in 'The Methodology of Participatory Design' for criteria of assessment of PD as part of this methodological topography. These criteria are: (1) *improved quality of life*, (2) *collaborative development*, and (3) *an iterative process*. Criterion 1 is argued as being achieved through: (1a) *reflexivity and agreement*, through mutual reassessment and synchronised interpretations and (1b) *codetermination* for shared ownership and decision-making. Criterion 2 is founded on: (2a) *involvement*, ensuring researchers allow definitive routines for continuous and methodically addressed users' concerns, and (2b) *mechanisms for consensus and representation*, allowing valid representation of users where they may be unable to participate to full capacity (e.g. a workplace of 2000 workers). Criterion 3 is viewed as a core element in PD to respond effectively<sup>137</sup>, where "*tacit knowledge and invisible practices are by their nature difficult to tease out*".<sup>138</sup> Departing from previously more anthropocentric engagements (e.g. Ferreira, 2018)<sup>139</sup>, emerging fields such as 'architectural regeneration' open up pathways that further attest to this; requiring models that draw upon contextually-situated knowledge for a wider stakeholder base (Orbaşlı *et al.*, 2020: p.335).<sup>140</sup>

Models for accessing such experience are overviewed briefly. *Make Tools* are credited by Sanders at the time of writing as being the next major development in design. Sanders also

found that a considerably wide range of ‘toolkits’ are available for accessing the increasingly important experiential aspects of design, and that “*Make Tools are becoming a new language for co-design*”.<sup>141</sup> Similar to EDG’s, Make Tools offer a common platform for connecting different ideas and perspectives from different disciplines, especially when “*users should be involved in the design process from an early stage, before any prototyping or basic design decisions are made*”.<sup>142</sup> These are especially beneficial at the ‘fuzzy front end’ of the design process — fruitfully responded to through a *generative design* approach to toolkits and design, allowing new unanticipated results. These incorporate ‘emotional toolkits’ and ‘cognitive toolkits’ making artefacts including “*maps, mappings, 3-D models of functionality, diagrams of relationships, flowcharts of processes and cognitive models*”.<sup>143</sup> In short, Sanders advocates for designers to be trained and become involved in the construction of new tools, especially amidst increasing roles of cultural sensitivity in relation to communities as they “constitute an important resource” (e.g. Oliver, 2003; cited in Orbaşlı *et al.*, 2020).<sup>144</sup>

Extended approaches to frameworks and methodologies such as *Participatory Action Research* (PAR) include Bonilla and Farris’ *A Short Guide to Community Based Participatory Action Research* (2011). Community Based Participatory Action Research (CBPAR) fundamentally challenges who plays the role of who is the researcher and who is being researched as a means of addressing practical concerns of a community. A sequence of steps is provided for putting this into practice: (1) Project Design and Implementation, (2) Partner Engagement (note: in some cases this may occur before Step 1), (3) Data Collection, (4) Data Analysis, and (5) Reporting (Dissemination for Action).<sup>145</sup> Stakeholders are involved throughout the entirety of the process — from deciding the research question, to developing data collection tools, to analysing and disseminating findings. By defining the research question at the front end of the design process, the ‘end-user’ community influences the ‘influencer’ (structure). This structure allows the redefining of policy-making that they would also be influenced by — cyclically redefining democratic approaches to design.

## 5.2 Emerging Conditions and Opportunities

Critically locating such changing roles and principles are emerging conceptualisations such as agile frameworks and open innovation, reconfiguring the notion that all objectives or deliverables with a project engagement must be preconceived, or even exist within a project timeframe. Indeed, prospective lenses invite a sustaining of participation after project timeframes, or even allowing new forms to emerge post-project (e.g. Saad-Sulonen, *et al.*, 2018).<sup>146</sup> As supported by Simonsen and Herzum (2008, 2012), a “sustained PD approach” inclusive of large-scale experiments allows organisations to experiment and learn beyond initial project and design phases.<sup>147</sup> This is credited in response to Shapiro’s (2005) earlier call for large-scale systems in PD.<sup>148</sup> *“The community design movement now faces a new challenge, to create a wider civic vision that crosses social and physical divides and promotes a broad vision of social and environmental justice”* (Sanoff, 2005).<sup>149</sup> Both participatory and co-design’s demonstration as proficient and viable approaches to social development is further validated in the United Nations’ *‘Participatory Dialogue: Towards a Stable, Safe and Just Society for All* (2007)’ to explore *“the role and principles of participatory dialogue in creating more socially cohesive societies”* as well as examining *“what elements are essential to creating societies that are resilient”*.<sup>150</sup> As systems that can encompass shared perspectives for innovative outcomes, participatory and co-design are increasingly recognised as key components in (open) innovation’s development, implementation and sustainability.<sup>151</sup>

Nonetheless, despite being identified as a key component, there is still divergence with respect to the appropriateness of community participation theory’s applications. Despite community participation long-established as having been *“the hallmark of many successful development projects around the world”* (Chamala, 1995)<sup>152</sup>, it has also been reminded that there are still opposing positions when it comes to implementation realities, rather than academic documents reference (e.g. Michener, 1998)<sup>153</sup>. This over-emphasis of ‘front-end’ participation in development projects is attested to by Cleaver (1999: p.597) substantiates this

perspective whereby *“despite significant claims to the contrary, there is little evidence of the long-term effectiveness of participation in materially improving the conditions of the most vulnerable people, or as a strategy for social change”*.<sup>154</sup> It is clear that merely making resources available for use is not enough with participatory practice, but that further — and sustained — research is a requisite (Lisius, 2012).<sup>155</sup>

These deficiencies may be partially explained by the issue of scalability of participatory systems’ application. *“In recent years, it has been a major challenge to participatory design to embrace the fact that much technology development no longer happens as design of isolated systems in well-defined communities of work”*.<sup>156</sup> Whereas formalised participatory systems were first confined to small focused test-beds and processes, the opportunities for the creation of *mass-PD* are now available (e.g. internationally-accessible participatory-based platforms) and, by extension, emerging international community-based practices — opening up a new avenue for PD scalability and growth independent of institutional restrictions. This avenue includes the realms of entrepreneurship, enterprise and the emerging field of ‘open innovation’.<sup>157</sup>

Future action is researched around new artefacts and systems through emerging approaches and techniques for post-participation — including community scripting (Huybrechts et al., 2018), and design and living labs (Binder, Brandt, et al., 2011).<sup>158</sup> When consolidated with existing organisations, networks and systems (Bjögvinsson, et al., 2012), these techniques and approaches permit the projecting of participation into a post-project future. However, many of these prospective frameworks have run the risk of becoming a tick-box exercise (Moore, 2020)<sup>159</sup> — especially when submersed into governmental and other organisational policies, further compounding existing disparities of consensus. Whilst warranting a dedicated inquiry to overcome such disparities in their integration, a clear path is apparent for the viability of participation within both existing and emerging contexts — beyond the scope of traditionally closed systems.

## 6 CONCLUSIONS : FINAL NOTES

This document has delineated eight select spatial dimensions of the co-design and participatory design (PD) literature in order to understand what formalised participatory engagement entails. It has highlighted implications for participation that stem from a diversity of contextual matter, and traced how the concept of participation within different forms of organisation unfolds according to a variety of trans-border, political and paradigmatic motivations, uses and applications. In particular, eight primary lines of inquiry within extant literature were investigated (Table 6.1):

---

**TABLE 6.1 : CONCLUDING LINES OF INQUIRY**

Section	Line of Inquiry
<b>Section 1.0</b>	What's at stake for understanding participation within emerging spacial conditions
<b>Section 2.1</b>	Divergence of consensus of participation definition, and increasing contextual relevances
<b>Section 2.2</b>	Locating influences of participation within interwoven social, political and civil rights origins
<b>Section 3.1</b>	Counterpoint positions and underpinnings to such status quo origins of participation (Section 2.2)
<b>Section 4.1</b>	Classifications and qualifications of configurations of participation, and situating this knowledge
<b>Section 4.2</b>	Integrated topographies of methodology, and increasingly emerging qualitative conditions
<b>Section 5.1</b>	The changing role of principles in practice, agile frameworks and open innovation
<b>Section 5.2</b>	Underlying relevances of spatial agencies within emerging conditions of participation

---

What has started as an alternative answer to social organisation has shifted to a continuous reassessment of how we define the question. Notwithstanding such iterative evolution, participatory processes, and participation's qualification within them, remain iterative, contextually-bound and never unidirectional but relational; entirely a shared process. In order to move the explored post-modern complexities of participation and co-design across the boundary of emergent forms of cooperation today, it is necessary to consolidate these conditions within both a rationale and methodological framework to expand disciplinary knowledge and application. The next deliverable thereby proceeds with investigation of a user-centred post-occupancy evaluation (POE) rationale and methodology in building retrofit — in advance of identifying co-design praxis pathways towards informing future retrofit projects.



## REFERENCES

- <sup>1</sup> Bauman, Z. (2000). *Liquid Modernity*. Cambridge, UK: Polity Press Ltd., pp. 8–9; Sennett, R. (1998). *The Corrosion of Character: The Personal Consequences of Work in the New Capitalism*. New York, NY, USA: W. W. Norton & Co., p. 23.
- <sup>2</sup> Schneider, F. (2006). 'Collaboration: The Dark Side of The Multitude.' In: *Sarai Reader 06: Turbulence*. (eds.) M. Narula, S. Sengupta, R. Sundaram, J. Bagchi. Delhi, India: Centre for the Study of Developing Societies, pp. 572–576. [online]. Available at: <[http://fls.kein.org/sites/fls.kein.org/files/01\\_florian.pdf](http://fls.kein.org/sites/fls.kein.org/files/01_florian.pdf)>. ; Schneider, F. (2007). 'Collaboration: Some Thoughts Concerning New Ways of Learning and Working Together' In: *Academy*. (eds.) Angelika Nollert, Irit Rogoff. Frankfurt, Germany: Revolver Verlag., pp. 249–254. [online]. Available at: <[http://fls.kein.org/sites/fls.kein.org/files/collaboration\\_PDF](http://fls.kein.org/sites/fls.kein.org/files/collaboration_PDF)>.
- <sup>3</sup> Sanoff, H. (2008). 'Multiple Views of Participatory Design'. In: *Archnet-IJAR, International Journal of Architectural Research*. 2(1): pp. 57–69. March. Available at: <<http://www.archnet-ijar.net/index.php/IJAR/article/viewFile/177/241>>. [Accessed 12 Mar. 2019].
- <sup>4</sup> This refers to the “undemocratic social elitism”, as outlined in Bannon, L. and Ehn, P. (2012). 'Chapter 3: Design; Design Matters in Participatory Design' in Simonsen, Jesper and Robertson, Toni (ed.) (2012). *Routledge International Handbook of Participatory Design*. 1st ed. Abingdon, UK: Routledge. p. 38. Available at: <<https://www.routledgehandbooks.com/doi/10.4324/9780203108543.ch3>>. [Accessed on: 21 May. 2018]; The term *undemocratic* also refers to the “authoritarian” aspect of specialisation, as outlined in: De Carlo, G. (1980). An Architecture of Participation. *Perspecta*, 17: p.77. Available at: <[www.jstor.org/stable/1567006](http://www.jstor.org/stable/1567006)>. [Accessed on: 27 Feb 2018].
- <sup>5</sup> Jenkins, P. (2010). 'Concepts of Social Participation in Architecture'. In: P. Jenkins and L. Forsyth (eds.) *Architecture, Participation and Society*. pp.9–22. London and New York: Routledge; Curl, J.S. (2006). “Participatory Design” In: *A Dictionary of Architecture and Landscape Architecture*. OUP Oxford Press, Ltd., Oxford, UK: 1st ed.
- <sup>6</sup> White, S.C. (1996). 'Depoliticising Development: The Uses and Abuses of Participation'. In: *Development in Practice*. Vol. 6(1). February. pp. 6–15.
- <sup>7</sup> Sanders, E.B.-N. & Stappers, P.J. (2008). 'Co-Creation and the New Landscapes of Design' In: *CoDesign*, 4(1): pp. 5–18. Available at: <<https://www.tandfonline.com/doi/full/10.1080/15710882.2015.1081246?src=recsys>>. [Accessed on 11 May. 2018]; Halskov, K., and Hansen, N.B. (2015). “The Diversity of Participatory Design Research Practice at PDC 2002–2012” In: *International Journal of Human-Computer Studies* 74: pp.81–92.
- <sup>8</sup> Binder, T., and Nickelsen, N.C. Christian. (2008). “Design and Heterogeneous Engineering: Toward an Actor Network Perspective on Design” In: *Artifact* 2(3–4): pp.164–175. Available at: <<https://www.tandfonline.com/doi/abs/10.1080/17493460802276703>>. [Accessed on 05 Jul. 2018]. For further reading on actor-network theory linkage, refer to: Ehn, P. 2008. “Participation in Design Things” In: *Proceedings of the Tenth Anniversary Conference on Participatory Design 2008*, edited by David Hakken, Jesper Simonsen and Toni Robertson, 92–101. Indianapolis: Indiana University ; Latour, B. 2008. “A Cautious Prometheus? A Few Steps Toward a Philosophy of Design (with Special Attention to Peter Sloterdijk)” In: *Proceedings of the 2008 Annual International Conference of the Design History Society – Falmouth*, edited by Fiona Hackne, Jonathan Glynn, and Viv Minto, 2–10. Boca Raton, FL: Universal Publishers, September 3–6. Available at: <<http://www.bruno-latour.fr/node/69>>. [Accessed on 05 Jul. 2018]. ; Storni, C. (2012). “Unpacking Design Practices: The Notion of Thing in the Making of Artifacts” In: *Science, Technology & Human Values*. 37 (1): pp.88–123. Available at: <<http://journals.sagepub.com/doi/10.1177/0162243910392795>>. [Accessed on 05 Jul. 2018].
- <sup>9</sup> Andersen, L.B., Danholt, P., Halskov, K., Hansen, N.B. & Lauritsen, P. (2015). 'Participation as a Matter of Concern in Participatory Design'. In: *CoDesign: International Journal of Co-Creation in Design and the Arts*. 11(3–4): pp. 250–261. October. Available at: <<https://www.tandfonline.com/doi/abs/10.1080/15710882.2015.1081246>>. [Accessed 25 Feb. 2018].
- <sup>10</sup> Sanders, Elizabeth B.-N. & Stappers, Pieter Jan. (2008). 'Co-Creation and the New Landscapes of Design' In: *CoDesign: International Journal of Co-Creation in Design and the Arts*. 4(1): pp.5–18. Available at: <<https://www.tandfonline.com/doi/full/10.1080/15710882.2015.1081246?src=recsys>>. [Accessed on 11 May. 2018].
- <sup>11</sup> Beck, E. (2002). 'P. for Political: Participation is not Enough'. In: *Scandinavian Journal of Information Systems*, 14, pp. 77-92. ; Bødker, S. (2003). 'A for Alternatives'. In: *Scandinavian Journal of Information Systems*, 15, pp. 87-89. ; Christiansen, E. (2003). 'P for Pragmatic'. In: *Scandinavian Journal of Information Systems*, 15, pp. 79-80. ; Dittrich, Y. (2003). 'We Are Not Yet There!' In: *Scandinavian Journal of Information Systems*, 15, pp. 91-94. ; Kanstrup, A. M. (2003). 'D for Democracy'. In: *Scandinavian Journal of Information Systems*, 15, pp. 81-85. ; Bødker, S., & Iversen, O.S. (2002, Oct 19-23). 'Staging a Professional Participatory Design Practice: Moving PD Beyond the Initial Fascination of User Involvement'. Paper presented at the Proceedings of the second NordiCHI: Nordic Conference on Human-Computer Interaction. Available at: <http://kiosk.nada.kth.se/kurser/kth/2D1624/PDF/Litteratur/p11-bodker.pdf>. [Accessed 11 Mar. 2019].

- <sup>12</sup> livari, J. (2007). 'A Paradigmatic Analysis of Information Systems as a Design Science'. In: *Scandinavian Journal of Information Systems*. 19(2): pp. 39-64. ; livari, J., Isomäki, H., and Pekkola, S., (2010). 'The User – The Great Unknown of Systems Development: Reasons, Forms, Challenges, Experiences and Intellectual Contributions of User Involvement'. In: *Information Systems Journal*. 20(2): pp. 109-117.
- <sup>13</sup> Cahill (2007). 'Including Excluded Perspectives in Participatory Action Research'. In: *Design Studies*, 28(3). pp. 325-340 ; Carroll, J.M., & Rosson, M.B. (2007). 'Participatory Design in Community Informatics'. In: *Design Studies*, 28(3). pp. 243-261 ; Hanzl, M. (2007). Information Technology as a Tool for Public Participation in Urban Planning: A Review of Experiments and Potentials. In: *Design Studies*, 28(3). pp. 289-307 ; Luck, R. (2007). 'Learning to Talk to Users In Participatory Design Situations'. In: *Design Studies*, 28(3). pp. 217-242 ; Reich, Y., Konda, S.L., Monarch, I.A., Levy, N. & Eswaran, S. (1996). Varieties and Issues of Participation and Design. In: *Design Studies*. 17(2). pp. 165-180 ; Toker, Z. (2007). 'Recent Trends in Community Design: The Eminence of Participation'. In: *Design Studies*. 28(3). pp. 309-323.
- <sup>14</sup> Blomberg, J., Giacomi, J., Mosher, A., & Swenton-Wall, P. (1993). Ethnographic Field Methods and Their Relation to Design. In: Schuler, D. and Namioka, A. (eds.) *Participatory Design: Principles and Practices*. Hillsdale, NJ, USA: Lawrence Erlbaum Associates, Publishers. pp. 123-156. Also available via: [ebook] CRC Press. Available at: <https://books.google.ie/books?id=TwZDDwAAQBAJ>. [Accessed 29 Jun. 2018] ; Clement, A., & Van den Besselar, P. (1993). 'A Retrospective Look at PD Projects'. In: Muller, M. & Kuhn, S. (eds.) *Participatory Design: Special Issue of the Communications of the ACM*. Vol. 36. pp. 29-39. ; Mumford, E. (1987). 'Sociotechnical Systems Design – Evolving Theory and Practice' In: G. Bjerknes, P. Ehn and M. Kyng (eds.) *Computers and Democracy: A Scandinavian Challenge*. Brookville, VT, UK: Avebury pp. 59-76. ; Kensing, F. (1983). 'The Trade Unions Influence on Technological Change'. In: Briefs, U., Ciborra, C., Schenider, L. (eds.) *System Design For, With and By the Users (Proceedings of the IFIP WG9.1 Working Conference)*. North Holland.
- <sup>15</sup> Howcroft, D., & Wilson, M. (2003). 'Paradoxes of Participatory Practices: The Janus Role of the Systems Developer'. In: *Information and Organization*, 13(1), pp.1-24; Sanoff, H. (2007). 'Special Issue on Participatory Design'. In: *Design Studies*, 28(3), pp.213- 215; Wagner, E. L., & Piccoli, G. (2007). 'Moving Beyond User Participation to Achieve Successful IS Design'. In: *Communications of the ACM*, 50, pp. 51-55; Törpel, B. (2005). 'Participatory Design: A Multi-Voiced Effort'. In: *Proceedings of the Fourth Decennial Conference on Critical Computing: Between Sense and Sensibility*. (eds.) Bertelson, O.W., Bouvin, N.O., Krow, P.G. and Kyng. M. New York, NY, USA: Association for Computing Machinery. pp. 177-181.
- <sup>16</sup> Spinuzzi, Clay. (2005). 'The Methodology of Participatory Design' in *Technical Communication*. 52:2. pp. 163-174. Available at: [https://www.researchgate.net/publication/233564945\\_The\\_Methodology\\_of\\_Participatory\\_Design](https://www.researchgate.net/publication/233564945_The_Methodology_of_Participatory_Design). [Accessed 02 Jul. 2018]. Note: For further investigation into the theoretical constructivist argument, refer to (1) Mirel, B. (1998). 'Applied Constructivism for User Documentation' In: *Journal of Business and Technical Communication* 12:7-49. and (2) Spinuzzi, Clay. (2003). *Tracing Genres Through Organizations: A Sociocultural Approach to Information Design*. Cambridge, MA: MIT Press.
- <sup>17</sup> Plato, Reeve, C.D.C (ed.) (1992). *Republic*. trans. Grube, G.M.A. Indianapolis, Indiana, USA: Hackett Publishing Co.
- <sup>18</sup> Billington, R.A. (1967). *America's Frontier Heritage*. Bibliovault OAI Repository, the University of Chicago Press. 54(1). Available at: <https://www.researchgate.net/publication/37715021>. [Accessed 05 Mar 2019].
- <sup>19</sup> De Tocqueville, A. (1959). *Democracy in America*. New York, NY, USA: Vintage Books.
- <sup>20</sup> Robertson, T., & Simonsen, J. (2012). *Challenges and Opportunities in Contemporary Participatory Design*. *Design Issues*, 28(3), 3-9. doi:10.1162/desi\_a\_00157
- <sup>21</sup> In Australia many people felt they were not being planned 'for' but 'at', as reflected in Dave Nichols' lecture: Nichols, Dave. (2009). *Planning Thought and History*. [Lecture]. The University of Melbourne. ; Bourg, J. (2007). *From Revolution to Ethics: May 1968 and Contemporary French Thought*. McGill-Queen's University Press. pp. 19 - 42. Available at: <http://www.jstor.org/stable/j.ctt7zx04>.; 1968 in particular was marked as a turning point in social and political protest and reform, represented by the Prague Spring, international student protest in Paris in May, and also punctuated by temporary periods of political liberalization such as in Czechoslovakia following World War II.
- <sup>22</sup> Hobsbawm, E. J. (1994). "Chapter 9: The Golden Years" in *Age of Extremes: The Short Twentieth Century 1914 - 1991*. London, UK: Michael Joseph. p. 257
- <sup>23</sup> Noteworthy examples during this era include (1) the satirical British stage review "Beyond the Fringe" (1960), written and performed by Peter Cook, Dudley Moore, Alan Bennett, and Jonathan Miller, (2) Lindsay Anderson's strident attack on the public school ethos through her satirical film "If..." (1968), (3) the musical "Oh, What a Lovely War!" (1965), and (4) British comedy television series "Monty Python's Flying Circus" (1969 - 74)
- <sup>24</sup> Robertson, T., & Simonsen, J. (2012). Challenges and Opportunities in Contemporary Participatory Design. *Design Issues*, 28(3), 3-9. doi:10.1162/desi\_a\_00157; Bourg, J. (2007). *From Revolution to Ethics: May 1968 and Contemporary French Thought*. McGill-Queen's University Press. pp. 19 - 42. Retrieved from <http://www.jstor.org/stable/j.ctt7zx04>.
- <sup>25</sup> Blundell-Jones, P. (2005). "Sixty-Eight and After" in *Architecture and Participation*. Blundell-Jones, P., Petrescu, D., and Till, J. (ed.) 1st ed. Oxon., Oxfordshire, UK: Spon Press, Ltd., pp. 127 - 128.

- <sup>26</sup> Taylor, Nigel. (1998). "Planning as a Political Process" in *Urban Planning Theory Since 1945*. London, UK: SAGE Publishers Ltd. p. 86.
- <sup>27</sup> For existing examples of frameworks that do not identify end-users beyond level of consultation, refer to the (RACI) Responsibility Assignment Matrix: "9.1.2.1 Organization Charts and Position Descriptions" in *A Guide to the Project Management Body of Knowledge (PMBOK Guide)*, 5th ed. Project Management Institute. (2013). p. 262 ; Jacka, Mike, and Keller, Paulette (2009). *Business Process Mapping: Improving Customer Satisfaction*. John Wiley and Sons. p. 257.
- <sup>28</sup> Bødker, S. (1993) "The AT-project: Practical Research in Cooperative Design" In: *DAIMI Report Series*, 22(454). DOI: 10.7146/dpb.v22i454.6772. Available at: <https://tidsskrift.dk/daimipb/article/view/6772/5888>. [Accessed 25 May. 2018].
- <sup>29</sup> Kensing, Finn and Greenbaum, Joan. (2012). 'Chapter 2; Heritage: Having a Say' in Simonsen, Jesper and Robertson, Toni (ed.) (2012). *Routledge International Handbook of Participatory Design*. 1st ed. Abingdon, UK: Routledge. p. 39. Available at: <https://www.routledgehandbooks.com/doi/10.4324/9780203108543.ch3>. [Accessed on 21 May. 2018].
- <sup>30</sup> Winograd, T. (1996). *Bringing Design to Software*. Boston, MA, USA: Addison-Wesley. ; Spinuzzi, Clay. (2005). 'The Methodology of Participatory Design' in *Technical Communication*. 52:2. pp. 163-174. Available at: [https://www.researchgate.net/publication/233564945\\_The\\_Methodology\\_of\\_Participatory\\_Design](https://www.researchgate.net/publication/233564945_The_Methodology_of_Participatory_Design). [Accessed 02 Jul. 2018].
- <sup>31</sup> Ehn, P., and Kyng, M. (1987). *The Collective Resource Approach to Systems Design*. In: Bjerknes, G., Ehn, P. and Kyng, M. (eds.) *Computers and Democracy - A Scandinavian Challenge*. Brookfield, VT, USA: Gower, pp. 17-58 ; Zuboff, S. (1988). *In The Age of the Smart Machine: The Future of Work and Power*. New York, NY, USA: Basic Books.
- <sup>32</sup> Spinuzzi, Clay. (2005). 'The Methodology of Participatory Design' in *Technical Communication*. 52:2. pp. 163-174. Available at: [https://www.researchgate.net/publication/233564945\\_The\\_Methodology\\_of\\_Participatory\\_Design](https://www.researchgate.net/publication/233564945_The_Methodology_of_Participatory_Design). [Accessed 02 Jul. 2018]; Winograd, T. (1996). *Bringing Design to Software*. Boston, MA, USA: Addison-Wesley.
- <sup>33</sup> Bjerknes, Gro, Ehn, P., and Kyng, M. (eds.) (1987). *Computers and Democracy: A Scandinavian Challenge*. Brookfield, VT: Avebury.
- <sup>34</sup> Mumford, E. (1983). *Designing Human Systems*. Manchester, UK: Manchester Business School ; Mumford, E. (1987). 'Sociotechnical Systems Design – Evolving Theory and Practice' In: G. Bjerknes, P. Ehn and M. Kyng (eds.) *Computers and Democracy: A Scandinavian Challenge*. Brookville, VT, UK: Avebury ; Mumford, E., Beekman, G. (1994). *Tools for Change & Progress*. The Netherlands: CSG Publications ; Leitch S., Warren M. J. (2010). 'ETHICS: The Past, Present and Future of Socio-Technical Systems Design' In: Tatnall A. (eds.) *History of Computing: Learning from the Past*. IFIP Advances in Information and Communication Technology, vol 325. Heidelberg, Germany: Springer.
- <sup>35</sup> Emery, F, and Thorsrud, E. (1976). *Democracy at Work: The Report of the Norwegian Industrial Democracy Program*. Leiden, Norway: Martinus Nijhoff.
- <sup>36</sup> Nygaard, K. and Bergo, O. T. (1975). 'The Trade Unions – New Users of Research' In: *Personal Review*, 4(2): 5–10
- <sup>37</sup> Clement, A. and P. Van den Besselaar, P. (1993). 'A Retrospective Look at PD Projects' In: Muller, M. and Kuhn, S. (eds.): *Participatory Design: Special Issue of the Communications of the ACM*, vol. 36, no. 4, pp. 29–39. ; Bertelsen, O. W. (2000). 'Design Artifacts: Toward a Design-Oriented Epistemology' In: *Scandinavian Journal of Information Systems*. 12: pp.15-27.
- <sup>38</sup> Churchman, C. W. (1968). *The Systems Approach*. New York: Delacorte Press. p231.
- <sup>39</sup> Churchman, C. West (1971). *The Design of Inquiring Systems: Basic Concepts of Systems and Organization*. New York, NY, USA: Basic Books.
- <sup>40</sup> Checkland, P. (1981). *Systems Thinking, Systems Practice*. Chichester, UK: John Wiley.
- <sup>41</sup> Andersen, N. E., Kensing, F., Lundin, J., Mathiassen, L., Munk-Madsen, A., Rasbech M. and Sørgaard, P. (1990). *Professional Systems Development: Experience, Ideas and Action*. Englewood Cliffs, NJ, USA: Prentice-Hall.
- <sup>42</sup> Bannon, Liam and Ehn, Pelle. (2012). 'Chapter 3: Design; Design Matters in Participatory Design' in Simonsen, Jesper and Robertson, Toni (ed.) (2012). *Routledge International Handbook of Participatory Design*. 1st ed. Abingdon, UK: Routledge. p. 39. Available at: <https://www.routledgehandbooks.com/doi/10.4324/9780203108543.ch3>. [Accessed on 21 May. 2018].
- <sup>43</sup> Nelson, H. and Stolterman, E. (2003). *The Design Way*. Englewood Cliffs, NJ, USA: Educational Technology Publications.
- <sup>44</sup> Shapiro, D. (2005). Participatory Design: The Will To Succeed. Paper presented at the CC '05 Proceedings of the 4th Decennial Conference on Critical Computing: Between Sense and Sensibility. DOI: 10.1145/1094562.1094567. Available at: [https://www.researchgate.net/publication/220888838\\_Participatory\\_design\\_The\\_will\\_to\\_succeed](https://www.researchgate.net/publication/220888838_Participatory_design_The_will_to_succeed). [Accessed 15 Mar. 2019].
- <sup>45</sup> Sanoff, H. (2005). 'Origins of Community Design'. In: *Progressive Planning*, Vol. 166, pp. 14-17. Available at: [https://www.researchgate.net/publication/312920263\\_Origins\\_of\\_community\\_design](https://www.researchgate.net/publication/312920263_Origins_of_community_design). [Accessed 14 Mar. 2019].; Davidoff, P. (1965). 'Advocacy and Pluralism in Planning'. In: *Journal of the American Institute of Planning*, Vol. 31, pp. 331-338.
- <sup>46</sup> Schuler, D. and Namioka, A. (2017). *Participatory Design: Principles and Practices*. [ebook] CRC Press. p.123. Available at: <https://books.google.ie/books?id=TwZDDwAAQBAJ>. [Accessed 29 Jun. 2018].



- <sup>47</sup> Greenbaum, Joan. (1991). 'A Design of One's Own, Towards Participatory Design in the United States' in Schuler, D. and Namioka, A. (2017). *Participatory Design: Principles and Practices*. [ebook] CRC Press. p.42. Available at: <https://books.google.ie/books?id=TwZDDwAAQBAJ>. [Accessed 29 Jun. 2018].
- <sup>48</sup> Sanoff, H. (2008, Mar.) 'Multiple Views of Participatory Design'. In: *Archnet-IJAR, International Journal of Architectural Research*. 2(1): p.58. Available at: <http://www.archnet-ijar.net/index.php/IJAR/article/viewFile/177/241>. [Accessed 12 Mar. 2019].
- <sup>49</sup> Byrne, E., & Sahay, S. (2007). 'Participatory Design for Social Development: A South African Case Study on Community-Based Health Information Systems'. In: *Information Technology for Development*, 13(1), pp.71-94. Available at: <https://pdfs.semanticscholar.org/6879/ba222badd769ae2beba313bb8a9f22fcdcf8.pdf>. [Accessed 05 Apr. 2019].
- <sup>50</sup> Hussain, S., Sanders, E. B-N., & Steinert, M. (2012). 'Participatory Design with Marginalized People in Developing Countries: Challenges and Opportunities Experienced in a Field Study in Cambodia'. In: *International Journal of Design* 6(2):pp. 91-109. Available at: [https://www.researchgate.net/publication/263162024\\_Participatory\\_Design\\_with\\_Marginalized\\_People\\_in\\_Developing\\_Countries\\_Challenges\\_and\\_Opportunities\\_Experienced\\_in\\_a\\_Field\\_Study\\_in\\_Cambodia](https://www.researchgate.net/publication/263162024_Participatory_Design_with_Marginalized_People_in_Developing_Countries_Challenges_and_Opportunities_Experienced_in_a_Field_Study_in_Cambodia). [Accessed 29 Mar. 2019].
- <sup>51</sup> Puri, S. K., Byrne, E., Nhampossa, J. L., & Quraishi, Z. B. (2004). 'Contextuality of Participation in IS Design: A Developing Country Perspective'. In: *Proceedings of the 8th Conference on Participatory Design*. New York, NY, USA: ACM Press. pp.42-52.
- <sup>52</sup> Puri, S. K., Byrne, E., Nhampossa, J. L., & Quraishi, Z. B. (2004). 'Contextuality of Participation in IS Design: A Developing Country Perspective'. In: *Proceedings of the 8th Conference on Participatory Design*. New York, NY, USA: ACM Press. pp.42-52.
- <sup>53</sup> Sharma, V., Simpson, R. C., LoPresti, E. F., Mostowy, C., Olson, J., Jeremy, P., ... Kerley, B. (2008). 'Participatory Design in the Development of the Wheelchair Convoy System'. In: *Journal of NeuroEngineering and Rehabilitation*, 5(1), pp.1-10.; Lalji, G., & Good, J. (2008). 'Designing New Technologies for Illiterate Populations: A Study in Mobile Phone Interface Design'. In: *Interacting with Computers*, 20(6), pp.574-586.
- <sup>54</sup> Elovaara, P., Igira, F. T., & Mörtberg, C. (2006). 'Whose Participation? Whose Knowledge? Exploring PD in Tanzania-Zanzibar and Sweden'. In: *Proceedings of the 9th Conference on Participatory Design*. New York, NY, USA: ACM Press. pp.105-114.
- <sup>55</sup> Byrne, E., & Sahay, S. (2007). 'Participatory Design for Social Development: A South African Case Study on Community-Based Health Information Systems'. In: *Information Technology for Development*, 13(1), pp.71-94. Available at: <https://pdfs.semanticscholar.org/6879/ba222badd769ae2beba313bb8a9f22fcdcf8.pdf>. [Accessed 05 Apr. 2019]; Hussain, S., Sanders, E. B-N., & Steinert, M. (2012). 'Participatory Design with Marginalized People in Developing Countries: Challenges and Opportunities Experienced in a Field Study in Cambodia'. In: *International Journal of Design* 6(2):pp. 91-109. Available at: [https://www.researchgate.net/publication/263162024\\_Participatory\\_Design\\_with\\_Marginalized\\_People\\_in\\_Developing\\_Countries\\_Challenges\\_and\\_Opportunities\\_Experienced\\_in\\_a\\_Field\\_Study\\_in\\_Cambodia](https://www.researchgate.net/publication/263162024_Participatory_Design_with_Marginalized_People_in_Developing_Countries_Challenges_and_Opportunities_Experienced_in_a_Field_Study_in_Cambodia). [Accessed 29 Mar. 2019].
- <sup>56</sup> Bannon, Liam and Ehn, Pelle. (2012). 'Chapter 3: Design; Design Matters in Participatory Design' in Simonsen, Jesper and Robertson, Toni (ed.) (2012). *Routledge International Handbook of Participatory Design*. 1st ed. Abingdon, UK: Routledge. p. 37. Available at: <https://www.routledgehandbooks.com/doi/10.4324/9780203108543.ch3>. [Accessed on 21 May. 2018]. ; Cross, Nigel. (1982). "Designerly Ways of Knowing" in *Design Studies*. 3(4): 221-7
- <sup>57</sup> Bannon, Liam and Ehn, Pelle. (2012). 'Chapter 3: Design; Design Matters in Participatory Design' in Simonsen, Jesper and Robertson, Toni (ed.) (2012). *Routledge International Handbook of Participatory Design*. 1st ed. Abingdon, UK: Routledge. p. 38. Available at: <https://www.routledgehandbooks.com/doi/10.4324/9780203108543.ch3>. [Accessed on 21 May. 2018].
- <sup>58</sup> Bannon, Liam and Ehn, Pelle. (2012). 'Chapter 3: Design; Design Matters in Participatory Design' in Simonsen, Jesper and Robertson, Toni (ed.) (2012). *Routledge International Handbook of Participatory Design*. 1st ed. Abingdon, UK: Routledge. p. 37. Available at: <https://www.routledgehandbooks.com/doi/10.4324/9780203108543.ch3>. [Accessed on 21 May. 2018].
- <sup>59</sup> Droste, M. (1998). *Bauhaus 1919–1933*. Köln, Germany: Benedikt Taschen Verlag.
- <sup>60</sup> Wolfe, T. (1982). *From Bauhaus to Our House*. London: Jonathan Cape. p. 63.
- <sup>61</sup> Berman, M. (1982). *All that is Solid Melts into Air: The Experience of Modernity*. New York, NY, USA: Simon and Schuster.
- <sup>62</sup> Bannon, Liam and Ehn, Pelle. (2012). 'Chapter 3: Design; Design Matters in Participatory Design' in Simonsen, Jesper and Robertson, Toni (ed.) (2012). *Routledge International Handbook of Participatory Design*. 1st ed. Abingdon, UK: Routledge. p. 38. Available at: <https://www.routledgehandbooks.com/doi/10.4324/9780203108543.ch3>. [Accessed on 21 May. 2018].

- <sup>63</sup> Bannon, Liam and Ehn, Pelle. (2012). 'Chapter 3: Design; Design Matters in Participatory Design' in Simonsen, Jesper and Robertson, Toni (ed.) (2012). *Routledge International Handbook of Participatory Design*. 1st ed. Abingdon, UK: Routledge. p. 39. Available at: <https://www.routledgehandbooks.com/doi/10.4324/9780203108543.ch3>. [Accessed on 21 May. 2018].
- <sup>64</sup> Grønbæk, K., Kyng, M. & Mogensen, P. (1993). 'CSCW challenges: Cooperative Design in Engineering Projects' In" *Communications of the ACM*. 36:6, pp. 67–77.
- <sup>65</sup> Bødker, S., Christiansen, E., Ehn, P., Markussen, R., Mogensen, P., & Trigg, R. (1993). *The AT Project: Practical Research in Cooperative Design*. DAIMI No. PB-454. Dept. of Computer Science, Aarhus University.
- <sup>66</sup> Ehn, Pelle. (1988). *Work-Oriented Design of Computer Artifacts*. Doctoral Dissertation, Almqvist & Wiksell International / Lawrence Erlbaum Associates., Hillsdale, N.J. ; Winograd, T. (1996) *Bringing Design to Software*, Reading, MA: Addison-Wesley.
- <sup>67</sup> Ehn, P. (1998). 'Manifesto for a Digital Bauhaus' In: *Digital Creativity*. 9(4): 2007–216. ; Binder, T., Löwgren, J. and Malmberg, L. (eds.) (2009). *(Re)searching the Digital Bauhaus*. London: Springer Verlag.
- <sup>68</sup> Mumford, E. (1983). *Designing Human Systems*. Manchester, UK: Manchester Business School ; Mumford, E. (1987). 'Sociotechnical Systems Design – Evolving Theory and Practice' In: G. Bjerknes, P. Ehn and M. Kyng (eds.) *Computers and Democracy: A Scandinavian Challenge*. Brookville, VT, UK: Avebury ; Mumford, E., Beekman, G. (1994). *Tools for Change & Progress*. The Netherlands: CSG Publications ; Leitch S., Warren M. J. (2010). 'ETHICS: The Past, Present and Future of Socio-Technical Systems Design' In: Tatnall A. (eds.) *History of Computing: Learning from the Past*. IFIP Advances in Information and Communication Technology, vol 325. Heidelberg, Germany: Springer.
- <sup>69</sup> Bjerknes, G. and Bratteteig, T. (1987). 'Florence in Wonderland – Systems Development with Nurses' In: Bjerknes, G., Ehn, P. and Kyng, M. (eds.) *Computers and Democracy: A Scandinavian Challenge*. Brookville, VT: Avebury.
- <sup>70</sup> Nygaard, K. and O. T. Bergo. (1975). 'The Trade Unions – New Users of Research' In: *Personal Review*, 4(2): pp. 5-10.
- <sup>71</sup> Trist, Eric and Bamforth, Ken. (1951). 'Some Social and Psychological Consequences of the Longwall Method of Coal Getting' In: *Human Relations*. 4: pp. 3–38 ; Trist, Eric. (1981). 'The Sociotechnical Perspective: The Evolution of Sociotechnical Systems as a Conceptual Framework and as an Action Research Program' In: van de Ven, Andrew H. and Joyce, William F. J (eds.) *Perspectives on Organization Design and Behavior*. New York, NY, USA: John Wiley.
- <sup>72</sup> Lewin, K. (1946). 'Action Research and Minority Problems' In: *Journal of Social Issues*, 2(4): p. 35.
- <sup>73</sup> Lewin, K. (1946). 'Action Research and Minority Problems' In: *Journal of Social Issues*, 2(4): p. 38.
- <sup>74</sup> Bannon, Liam and Ehn, Pelle. (2012). 'Chapter 3: Design; Design Matters in Participatory Design' in Simonsen, Jesper and Robertson, Toni (ed.) (2012). *Routledge International Handbook of Participatory Design*. 1st ed. Abingdon, UK: Routledge. p. 38. Available at: <https://www.routledgehandbooks.com/doi/10.4324/9780203108543.ch3>. [Accessed on 21 May. 2018].
- <sup>75</sup> von Bertalanffy, Ludwig. (1950) 'The Theory of Open Systems in Physics and Biology' In: *Science*, 3:22–9.
- <sup>76</sup> Bannon, Liam and Ehn, Pelle. (2012). 'Chapter 3: Design; Design Matters in Participatory Design' in Simonsen, Jesper and Robertson, Toni (ed.) (2012). *Routledge International Handbook of Participatory Design*. 1st ed. Abingdon, UK: Routledge. p. 39. Available at: <https://www.routledgehandbooks.com/doi/10.4324/9780203108543.ch3>. [Accessed on 21 May. 2018].
- <sup>77</sup> Jacobson, T. (2007). The Case for Quantitative Assessment of Participatory Communication Processes. In: *The Drum Beat* [online] Issue #381, published by The Communication Initiative. Available at: [http://www.comminit.com/drum\\_beat\\_381.html](http://www.comminit.com/drum_beat_381.html). [Accessed: 25 Jun 2020].
- <sup>78</sup> Almeida, Helena & Vaz Serra, Pedro. (Oct. 2017). 'Critical Reflections Concerning the Concept of Participation in Social Intervention and Research'. In: *European Journal of Social Sciences Education and Research*, 11(2): pp. 294–301. Available at: [https://www.researchgate.net/publication/320282761\\_Critical\\_Reflections\\_Concerning\\_the\\_Concept\\_of\\_Participation\\_in\\_Social\\_Intervention\\_and\\_Research](https://www.researchgate.net/publication/320282761_Critical_Reflections_Concerning_the_Concept_of_Participation_in_Social_Intervention_and_Research). [Accessed 26 Mar. 2019].; Almeida, Helena & Vaz Serra, Pedro (2016). *The Architecture of Participation In Transformative Social Intervention Processes*. The 4th International Virtual Conference on Advanced Scientific Results (SCIECONF-2016), June 6-10, 2016. pp. 119-122. Available at: <https://www.scieconf.com/archive/?vid=1&aid=2&kid=90401-381>. [Accessed 26 Mar. 2019].
- <sup>79</sup> Brandt, E. (2006). 'Designing Exploratory Design Games: A Framework for Participation in Participatory Design?' In: *Proceedings of the ninth conference on Participatory design: Expanding boundaries in design - Volume 1*. Participatory Design Conference (PDC). pp. 57-66. DOI: 10.1145/1147261.1147271. Available at: <https://dl.acm.org/citation.cfm?id=1147271>. [Accessed 02 Jul. 2018].
- <sup>80</sup> Arnstein, S.R. (1969). A Ladder of Citizen Participation. *Journal of the American Institute of Planners*, Vol. 35, No. 4, (June), pp. 216. Available at: <https://doi.org/10.1080/01944366908977225>. [Accessed 25 Feb. 2018]. DOI: 10.1080/01944366908977225
- <sup>81</sup> Biggs, S.D. (1989). *Resource-Poor Farmer Participation in Research: A Synthesis of Experiences From Nine National Agricultural Research Systems*. OFCOR Comparative Study Paper. ISNAR, The Hague: pp. 3-37. Available at: <http://ebrary.ifpri.org/cdm/ref/collection/p15738coll11/id/92>. [Accessed 23 Mar. 2019].

- <sup>82</sup> Probst, K., Hagmann, J., Becker, T. and Fernandez, M. (2000). Developing A Framework For Participatory Research Approaches in Risk Prone Diverse Environments. Deutscher Tropentag 2000 in Hohenheim.
- <sup>83</sup> Chambers (1997). *Whose Reality Counts? Putting the First Last*, London, UK: Intermediate Technology Publications.
- <sup>84</sup> Capire Consulting Group. (2015). 'The Engagement Triangle' In: *Publications*. Available at: <<https://capire.com.au/impact/publications/>>.
- <sup>85</sup> Arnstein, S.R. (1969). A Ladder of Citizen Participation. *Journal of the American Institute of Planners*, Vol. 35, No. 4, (June), pp. 216. Available at: <<https://doi.org/10.1080/01944366908977225>>. [Accessed 25 Feb. 2018]. DOI: 10.1080/01944366908977225
- <sup>86</sup> Arnstein, S.R. (1969). A Ladder of Citizen Participation. *Journal of the American Institute of Planners*, Vol. 35, No. 4, (June), pp. 224. Available at: <<https://doi.org/10.1080/01944366908977225>>. [Accessed 25 Feb. 2018]. DOI: 10.1080/01944366908977225
- <sup>87</sup> Buchy, Marlène, Ross, H., & Proctor, W. (2000). 'Enhancing the Information Base on Participatory Approaches'. In: *Australian Journal of Natural Resource Management*. Canberra, Australia: Land & Water Australia. Available at: <https://doi.org/10.1080/14486563.2002.10648561>. [Accessed 03 Mar. 2019].
- <sup>88</sup> Biggs, S.D. (1989). *Resource-Poor Farmer Participation in Research: A Synthesis of Experiences From Nine National Agricultural Research Systems*. OFCOR Comparative Study Paper. ISNAR, The Hague: pp. 3-37. Available at: <http://ebrary.ifpri.org/cdm/ref/collection/p15738coll11/id/92>. [Accessed 23 Mar. 2019].
- <sup>89</sup> Probst, K., Hagmann, J., Becker, T. and Fernandez, M. (2000). Developing A Framework For Participatory Research Approaches in Risk Prone Diverse Environments. Deutscher Tropentag 2000 in Hohenheim.
- <sup>90</sup> Claridge, Tristan. (Jun 2004). Designing Social Capital Sensitive Participation Methodologies. Report, Social Capital Research, Brisbane, Australia. Available at: <https://www.socialcapitalresearch.com/designing-social-capital-sensitive-participation-methodologies/>. [Accessed 31st Mar. 2019].
- <sup>91</sup> Pirannejad, Ali; Janssen, Marijn; and Rezaei, Jafar. (2019). 'Towards a Balanced E-Participation Index: Integrating Government and Society Perspectives.' In: *Government Information Quarterly*, Vol. 36(4). Available at: <<https://doi.org/10.1016/j.giq.2019.101404>>.
- <sup>92</sup> Bernoff, J. and Li, C. (2010). *Social Technographics Revisited – Mapping Online Participation*. Cambridge, UK: Forrester Research.
- <sup>93</sup> Ahmed S.M., Neu Young S., DeFino M.C., Franco Z., Nelson D.A. (2017). 'Towards a Practical Model for Community Engagement: Advancing the Art and Science in Academic Health Centers'. In: *Journal of Clinical and Translational Science*: Vol.1(5): pp. 310–315. October. Available at: <<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5915810/>>.
- <sup>94</sup> Capire Consulting Group. (2015). 'The Engagement Triangle' In: *Publications*. Available at: <<https://capire.com.au/impact/publications/>>.
- <sup>95</sup> Biggs, John., & Sharp, Joanne. (2004). 'Indigenous Knowledges and Development: A Postcolonial Caution'. In: *Third World Quarterly* 25(4): pp. 661–676. Available at: <https://dx.doi.org/10.1080/01436590410001678915>. [Accessed 20 Mar. 2019].
- <sup>96</sup> Carpentier, N. (2009). 'Participation Is Not Enough: The Conditions of Possibility of Mediated Participatory Practices'. In: *European Journal of Communication*, 24(4), pp.407-420. Available at: <https://doi.org/10.1177/0267323109345682>. [Accessed 18 Mar. 2019].; Shapiro, D. (2005). Participatory Design: The Will To Succeed. Paper presented at the CC '05 Proceedings of the 4th Decennial Conference on Critical Computing: Between Sense and Sensibility. DOI: 10.1145/1094562.1094567. Available at: [https://www.researchgate.net/publication/220888838\\_Participatory\\_design\\_The\\_will\\_to\\_succeed](https://www.researchgate.net/publication/220888838_Participatory_design_The_will_to_succeed). [Accessed 15 Mar. 2019].
- <sup>97</sup> Sanders, Elizabeth B.-N. & Stappers, Pieter Jan. (2008). 'Co-Creation and the New Landscapes of Design' In: *CoDesign*, 4:1, 5-18, DOI: 10.1080/15710880701875068. Available at: <https://www.tandfonline.com/doi/full/10.1080/15710882.2015.1081246?src=recsys>. [Accessed on 11 May. 2018].
- <sup>98</sup> Spinuzzi, Clay. (2005). 'The Methodology of Participatory Design' in *Technical Communication*. 52:2. pp. 163-174. Available at: [https://www.researchgate.net/publication/233564945\\_The\\_Methodology\\_of\\_Participatory\\_Design](https://www.researchgate.net/publication/233564945_The_Methodology_of_Participatory_Design). [Accessed 02 Jul. 2018]. **Note:** For further investigation into the theoretical constructivist argument, refer to (1) Mirel, B. (1998). 'Applied Constructivism for User Documentation' In: *Journal of Business and Technical Communication* 12:7-49. and (2) Spinuzzi, Clay. (2003). *Tracing Genres Through Organizations: A Sociocultural Approach to Information Design*. Cambridge, MA: MIT Press.
- <sup>99</sup> Spinuzzi, Clay. (2005). 'The Methodology of Participatory Design' in *Technical Communication*. 52:2. p. 166. Available at: [https://www.researchgate.net/publication/233564945\\_The\\_Methodology\\_of\\_Participatory\\_Design](https://www.researchgate.net/publication/233564945_The_Methodology_of_Participatory_Design). [Accessed 02 Jul. 2018].

- <sup>100</sup> Polanyi, M. (1966). "Tacit Knowing" in *The Tacit Dimension*. Reprint, Chicago, USA: University of Chicago Press, (2009). pp. 4 - 5. ; Chugh R. (2015). *Do Australian Universities Encourage Tacit Knowledge Transfer?*. In Proceedings of the 7th International Joint Conference on Knowledge Discovery, Knowledge Engineering and Knowledge Management, ISBN 978-989-758-158-8, pages 128-135. DOI: 10.5220/0005585901280135 ( [https://www.researchgate.net/publication/286920454\\_Do\\_Australian\\_Universities\\_Encourage\\_Tacit\\_Knowledge\\_Transfer](https://www.researchgate.net/publication/286920454_Do_Australian_Universities_Encourage_Tacit_Knowledge_Transfer). ; Goffin, K. and Koners, U. (2011), Tacit Knowledge, Lessons Learnt, and New Product Development. *Journal of Product Innovation Management*, 28: 300–318. doi:10.1111/j.1540-5885.2010.00798.x
- <sup>101</sup> Schmidt, F. L.; Hunter, J. E. (1993). "Tacit knowledge, practical intelligence, general mental ability, and job knowledge". *Current Directions in Psychological Science*. 2: 8–9. doi:10.1111/1467-8721.ep10770456.
- <sup>102</sup> Goffin, K. and Koners, U. (2011), Tacit Knowledge, Lessons Learnt, and New Product Development. *Journal of Product Innovation Management*, 28: 300–318. doi:10.1111/j.1540-5885.2010.00798.x
- <sup>103</sup> Bannon, Liam and Ehn, Pelle. (2012). 'Chapter 3: Design; Design Matters in Participatory Design' in Simonsen, Jesper and Robertson, Toni (ed.) (2012). *Routledge International Handbook of Participatory Design*. 1st ed. Abingdon, UK: Routledge. p. 39. Available at: <https://www.routledgehandbooks.com/doi/10.4324/9780203108543.ch3>. [Accessed on 21 May. 2018].
- <sup>104</sup> Gregory, S.A. (1966). *The Design Method*. London, UK: Butterworth. ; Cross, N. (1982). 'Designerly Ways of Knowing' In: *Design Studies*, 3(4): pp. 221–7. ; Cross, N. (ed.) (1984). *Developments in Design Methodology*. Chichester, UK: John Wiley. ; Cross, N. (1989, 1994). *Engineering Design Methods*. Chichester, UK: John Wiley. ; Cross, N. (1990) 'The Nature and Nurture of the Design Ability' In: *Design Studies*. 11(3): 127–40. ; Cross, N. (1995). 'Discovering Design Ability' In: Buchanan, R. and Margolin, V. (eds.) *Discovering Design: Explorations in Design Studies*. Chicago, IL: Chicago University Press. ; Cross, N. (2001). 'Designerly Ways of Knowing: Design Discipline Versus Design Science' In: *Design Issues*. 17(3): 49–55. ; Cross, N. (2002). 'Design as a Discipline'. In: *Presentation at the Interdisciplinary Design Quandary Conference*. De Montfort University, UK. Available at: <http://nelly.dmu.ac.uk/4dd/DDR3-Cross.html>. ; Cross, N., Naughton, J. and Walker, D. (1981). 'Design Method and Scientific Method' In: *Design Studies*. 2(4): pp. 195–201.
- <sup>105</sup> Fuller, B.R. (1968). 'Comprehensive Propensities' in *Operating Manual for Spaceship Earth*. New York, NY, USA: Simon and Schuster Publishers. 1st. ed., p.24.
- <sup>106</sup> Gregory, S.A. (1966). 'Design Science' In: Gregory, S.A. (ed.) *The Design Method*. London, UK: Butterworth. pp.323–330.
- <sup>107</sup> Schön, D.A. (1983) *The Reflective Practitioner: How Professionals Think in Action*. London, UK: Temple Smith.
- <sup>108</sup> Note: As a result of this, terms such as 'conversations with the material of the situation' and 'reflection in action' became regularly used in the PD domain as ways of understanding the designer's practice.
- <sup>109</sup> Ehn, P. (1988). *Work-Oriented Design of Computer Artifacts*. Doctoral Dissertation, Almqvist & Wiksell International / Lawrence Erlbaum Associates., Hillsdale, N.J.
- <sup>110</sup> Dewey, J. ([1934] 1980). *Art as Experience*. New York, NY, USA: Berkeley Publishing Group; Dewey, J. ([1938] 1969). *Logic: The Theory of Inquiry*. New York, NY, USA: Henry Holt.
- <sup>111</sup> Lanzara, G.F. (1983) 'The Design Process: Frames, Metaphors and Games'. In: U. Briefs, C. Ciborra and L. Sneider (eds) *Systems Design For, With and By the Users*. Amsterdam: North-Holland
- <sup>112</sup> Andersen, N.E., Kensing, F., Lundin, J., Mathiassen, L., Munk-Madsen, A., Rasbech M. and Sørgaard, P. (1990). *Professional Systems Development: Experience, Ideas and Action*. Englewood Cliffs, NJ, USA: Prentice-Hall.
- <sup>113</sup> Stolterman, E. (1991). 'Designarbetets Dolda Rationalitet' [The Hidden Rationality of Design Work]. PhD thesis, Umeå University; Nelson, H. and Stolterman, E. (2003). *The Design Way*. Englewood Cliffs, NJ, USA: Educational Technology Publications; Löwgren, J. and Stolterman, E. (2004). *Thoughtful Interaction: A Design Perspective on Information Technology*. Cambridge, MA, USA: MIT Press.
- <sup>114</sup> Greenbaum, J. and Kyng, M. (1991). *Design at Work: Cooperative Design of Computer Systems*. Hillsdale, NJ, USA: Taylor and Francis.
- <sup>115</sup> Halse, J. (2008). *Design Anthropology: Borderland Experiments with Participation, Performance and Situated Intervention*. [PhD thesis] Copenhagen, IT University; Note: For further reading refer to the manifesto including the Design Anthropological Innovation Model (DAIM), refer to Halse, J., Brandt, E., Clark, B. and Binder, T. (2010). *Rehearsing the Future*. Copenhagen: Danish Design School Press.
- <sup>116</sup> Szebeko, D., Tan, L. (2010). 'Co-designing for Society' In: *Australasian Medical Journal (AMJ)*. 3(9): pp.580–590. Available at: <http://www.amj.net.au/index.php/AMJ/article/viewFile/378/649>>. [Accessed 01 Jul. 2018].
- <sup>117</sup> Sanders, E.B.-N. & Stappers, P.J. (2008). 'Co-Creation and the New Landscapes of Design' In: *CoDesign*, 4(1): pp. 5–18. Available at: <https://www.tandfonline.com/doi/full/10.1080/15710882.2015.1081246?src=recsys>>. [Accessed on 11 May. 2018]
- <sup>118</sup> Prahalad, C.K., Ramaswamy, V. (2004). 'Co-Creating Unique Value with Customers' In: *Strategy & Leadership*. 32(3): pp.4–9. Available at: <https://doi.org/10.1108/10878570410699249>>. [Accessed 05 Jul. 2018].



- <sup>119</sup> Leavy, P. (2017). *Research Design: Quantitative, Qualitative, Mixed Methods, Arts-Based, and Community-Based Participatory Research Approaches*. New York, NY, USA: The Guilford Press. 1st ed. pp.87–224.
- <sup>120</sup> Kuhn, T.S. (1962). *The Structure of Scientific Revolutions*. Chicago, USA: Chicago University Press; Lincoln, Y.S., Lynham, S.A., Guba, E.G. (2011). 'Paradigmatic Controversies: Contradictions, and Emerging Confluences Revisited' In: Denzin, N. K. and Lincoln, Y. S. (eds.) *The SAGE Handbook of Qualitative Research*. 4th ed. pp.97–128.
- <sup>121</sup> Leavy, P. (2017). 'Introduction to Social Research' In: *Research Design: Quantitative, Qualitative, Mixed Methods, Arts-Based, and Community-Based Participatory Research Approaches*. New York, NY, USA: The Guilford Press. 1st ed. p.11.
- <sup>122</sup> Spinuzzi, C. (2005). 'The Methodology of Participatory Design' in *Technical Communication*. 52(2): p.169. Available at: <[https://www.researchgate.net/publication/233564945\\_The\\_Methodology\\_of\\_Participatory\\_Design](https://www.researchgate.net/publication/233564945_The_Methodology_of_Participatory_Design)>. [Accessed 02 Jul. 2018].
- <sup>123</sup> Simonsen, J and Robertson, T. (ed.) (2012). 'Methods: Organising Principles and General Guidelines for Participatory Design Projects' In: *Routledge International Handbook of Participatory Design*. 1st ed. Abingdon, UK: Routledge. p.117.
- <sup>124</sup> Checkland, P.B. (1981). *Systems Thinking, Systems Practice*. Chichester, UK: John Wiley
- <sup>125</sup> Simonsen, J and Robertson, T. (ed.) (2012). 'Methods: Organising Principles and General Guidelines for Participatory Design Projects' In: *Routledge International Handbook of Participatory Design*. 1st ed. Abingdon, UK: Routledge. p.117.
- <sup>126</sup> Kensing, F., Simonsen, J. and Bødker, K. (1996). 'MUST - a Method for Participatory Design' In: Blomberg, J., Kensing, F. and Dykstra-Erickson, E. (eds.) (1996). *Proceedings of the Fourth Biennial Conference on Participatory Design*. Cambridge, Massachusetts, USA. Computer Professionals for Social Responsibility, Palo Alto, CA, pp. 129-140.
- <sup>127</sup> livari, N. (2004). 'Enculturation of User Involvement in Software Development Organizations: An Interpretive Case Study in the Product Development Context' In: *Proceedings of the Third Nordic Conference on Human-Computer Interaction*. New York, NY, USA: ACM Press. pp.287–296.
- <sup>128</sup> Schuler, D. and Namioka, A. (2017). 'Preface' in *Participatory Design: Principles and Practices*. [ebook] CRC Press. p. xii. Available at: <https://books.google.ie/books?id=TwZDDwAAQBAJ>. [Accessed 29 Jun. 2018].
- <sup>129</sup> Spinuzzi, C. (2005). 'The Methodology of Participatory Design' in *Technical Communication*. 52(2): p.171. Available at: <[https://www.researchgate.net/publication/233564945\\_The\\_Methodology\\_of\\_Participatory\\_Design](https://www.researchgate.net/publication/233564945_The_Methodology_of_Participatory_Design)>. [Accessed 02 Jul. 2018].
- <sup>130</sup> Sanders, E.B.-N. (2002). 'From User-Centered to Participatory Design Approaches' in *Design and the Social Sciences: Making Connections*. pp.1–7. Available at: <[https://www.researchgate.net/publication/235700594\\_From\\_user-centered\\_to\\_participatory\\_design\\_approaches](https://www.researchgate.net/publication/235700594_From_user-centered_to_participatory_design_approaches)>. [Accessed 02 Jul. 2018].
- <sup>131</sup> Jensen, R. (1999). *The Dream Society: How the Coming Shift from Information to Imagination Will Transform your Business*. New York, NY, USA: McGraw-Hill.
- <sup>132</sup> Ehn, P. (1988). *Work-Oriented Design of Computer Artifacts*. Doctoral Dissertation, Almqvist & Wiksell International / Lawrence Erlbaum Associates., Hillsdale, N.J. p.17; Schuler, D. and Namioka, A. (2017). *Participatory Design: Principles and Practices*. [ebook] CRC Press. p.123. Available at: <<https://books.google.ie/books?id=TwZDDwAAQBAJ>>. [Accessed 29 Jun. 2018].
- <sup>133</sup> Habraken, H.J, Gross, M.D. et al. (1988). 'Concept Design Games' In: *Design Studies*, Vol. 9(3): pp.150–158. Available at: <[https://doi.org/10.1016/0142-694X\(88\)90044-0](https://doi.org/10.1016/0142-694X(88)90044-0)>. [Accessed 19 Jun. 2018]; Also cited as: Habraken, H.J, Gross, M.D. et al. (1987). *Concept Design Games (Book 1 and 2)*. Design Methodology Program. Dept. of Architecture (MIT). Cambridge, Massachusetts 02139, MA, USA.
- <sup>134</sup> Papert, S. (1980). *Mindstorms – Children, Computers and Powerful Ideas*. New York, NY, USA: Basic Books Inc. Publishers.
- <sup>135</sup> Blokdyk, G. (2018). *Participatory Design: The Ultimate Step-By-Step Guide*. [ebook] CreateSpace Independent Publishing Platform. Available at: <<https://books.google.ie/books?id=1SPGtQEACAAJ>>. [Accessed 29 Jun. 2018]; Blokdyk, G. (2018). *Participatory Design: Standard Requirements; Practical Tools for Self-Assessment*.
- <sup>136</sup> Brandt, E. (2006). 'Designing Exploratory Design Games: A Framework for Participation in Participatory Design?' In: *Proceedings of the Ninth Conference on Participatory Design: Expanding Boundaries in Design - Volume 1*. Participatory Design Conference (PDC). p.63. Available at: <<https://dl.acm.org/citation.cfm?id=1147271>>. [Accessed 02 Jul. 2018].
- <sup>137</sup> Hackos, J.T., Hammar, M., and Elser, A. (1997). 'Customer Partnering: Data Gathering for Complex On-Line Documentation' In: *IEEE Transactions on Professional Communication*, 40: pp.102–110.
- <sup>138</sup> Spinuzzi, C. (2005). 'The Methodology of Participatory Design' In: *Technical Communication*. 52(2): p.170. Available at: <[https://www.researchgate.net/publication/233564945\\_The\\_Methodology\\_of\\_Participatory\\_Design](https://www.researchgate.net/publication/233564945_The_Methodology_of_Participatory_Design)>. [Accessed 02 Jul. 2018].
- <sup>139</sup> Ferreira, J. (2018). 'We Need to Talk About It – Placing Dialogue at the Centre of Design Education.' In: E. Bohemia, A. Kovacevic, L. Buck, et al. (eds.) *Proceedings of the 20th International Conference on Engineering and Product Design Education*, 6–7 September. Dyson School of Design Engineering, Imperial College London, UK: E&PDE. pp.369–374.



- <sup>140</sup> Orbaşlı, A., Vellinga, M., Wedel, J. and Randell, G. (2020). 'Chapter 14: Teaching Architectural Regeneration'. In: A. Orbaşlı and M. Vellinga (eds). *Architectural Regeneration*. Available at: <<https://doi.org/10.1002/9781119340379.ch14>>.
- <sup>141</sup> Sanders, E.B.-N. (2002). 'From User-Centered to Participatory Design Approaches' In: *Design and the Social Sciences: Making Connections*. pp.1–7. Available at: <[https://www.researchgate.net/publication/235700594\\_From\\_user-centered\\_to\\_participatory\\_design\\_approaches](https://www.researchgate.net/publication/235700594_From_user-centered_to_participatory_design_approaches)>. [Accessed 02 Jul. 2018].
- <sup>142</sup> Greenbaum, J. and Halskov, K. (1993). 'PD: A Personal Statement' In: *Communications of the ACM - Special Issue Participatory Design*. Vol. 36(6): p.47. Available at: <<https://dl.acm.org/citation.cfm?id=214816>>. [Accessed on 02 Jul. 2018].
- <sup>143</sup> Sanders, E.B.-N. (2002). 'From User-Centered to Participatory Design Approaches' in *Design and the Social Sciences: Making Connections*. pp.1–7. Available at: <[https://www.researchgate.net/publication/235700594\\_From\\_user-centered\\_to\\_participatory\\_design\\_approaches](https://www.researchgate.net/publication/235700594_From_user-centered_to_participatory_design_approaches)>. [Accessed 02 Jul. 2018].
- <sup>144</sup> Oliver, P. (2003). *Dwellings: The Vernacular House Worldwide*. London, UK: Phaidon; As cited in: Orbaşlı, A., Vellinga, M., Wedel, J. and Randell, G. (2020). 'Chapter 14: Teaching Architectural Regeneration'. In: A. Orbaşlı and M. Vellinga (eds). *Architectural Regeneration*. Available at: <<https://doi.org/10.1002/9781119340379.ch14>>; Note: One of many such tool resources are (1) the notable LEAPFROG Tools, investigated in a dedicated workshop by the author: Leapfrog.tools. (2018). *Leapfrog | Simple Tools For Bringing People Together, Exchanging Ideas and Making Stronger, More Active Communities*. [online]. Lancaster University. Available at: <<http://leapfrog.tools>>. [Accessed 29 Jun. 2018]; DRS2018Limerick.org. (2018). *PhD by Design Workshop: Improving Creative Engagement Tools | DRS*. [online] Available at: <<http://www.drs2018limerick.org/event/phd-design-workshop-improving-creative-engagement-tools>> [Accessed 29 Jun. 2018].
- <sup>145</sup> Bonilla, T. and Farris, T. (eds.) (2011). *A Short Guide to Community Based Participatory Action Research; A Community Research Lab Guide*. Advancement Project — Healthy City. Available at: <<https://hc-v6-static.s3.amazonaws.com/media/resources/tmp/cbpar.pdf>>. [Accessed on 14 May 2018].
- <sup>146</sup> Saad-Sulonen, J., Eriksson, E., Halskov, K., Karasti, H., & Vines, J. (2018). 'Unfolding Participation Over Time: Temporal Lenses in Participatory Design'. In: *CoDesign*, 14(1): pp.4–16. Available at: <<https://doi.org/10.1080/15710882.2018.1426773>>. [Accessed 11 Mar. 2019].
- <sup>147</sup> Simonsen, J., and Hertzum, M. (2008). 'Participative Design and the Challenges of Large-scale Systems: Extending the Iterative PD Approach'. In: *Proceedings of the Tenth Anniversary Conference on Participatory Design 2008*. Indianapolis, IN, USA: Indiana University. pp.1–10.; Simonsen, J., and Hertzum, M. (2012). 'Sustained Participatory Design: Extending the Iterative Approach'. In: *Design Issues*, 28(3): pp.10–21.
- <sup>148</sup> Shapiro, D. (2005). 'Participatory Design: The Will to Succeed'. In: Bertelsen, O.W., Bouvin, N.O., Krogh, P.G. and Kyng, M. (eds.) *Proceedings of the 4th Decennial Conference on Critical Computing: Between Sense and Sensibility (CC '05)*. New York, NY, USA: ACM. pp.29–38.
- <sup>149</sup> Sanoff, H. (2005). 'Origins of Community Design'. In: *Progressive Planning*, Vol. 166, pp.14–17. Available at: <[https://www.researchgate.net/publication/312920263\\_Origins\\_of\\_community\\_design](https://www.researchgate.net/publication/312920263_Origins_of_community_design)>. [Accessed 14 Mar. 2019].
- <sup>150</sup> United Nations (DESA) Department of Economic and Social Affairs (2007). *Participatory Dialogue: Towards a Stable, Safe and Just Society for All*. New York, NY, USA: United Nations. Available at: <[http://www.un.org/esa/socdev/publications/prtcprty\\_dlg\(full\\_version\).pdf](http://www.un.org/esa/socdev/publications/prtcprty_dlg(full_version).pdf)>. [Accessed 04 Jul. 2018].
- <sup>151</sup> DiSalvo, B., Yip, J., Bonsignore, E., & DiSalvo, C. (eds.) (2017). *Participatory Design for Learning: Perspectives from Practice and Research*. New York, NY, USA: Routledge. 1st ed.; Mitchell, Val; Ross, Tracy; Sims, Ruth; Parker, Christopher J. (2015). 'Empirical Investigation of the Impact of Using Co-Design Methods When Generating Proposals for Sustainable Travel Solutions' In: *CoDesign*. Vol.12(4): pp.205–220. Available at: <<https://doi.org/10.1080/15710882.2015.1091894>>. [Accessed 23 Jun. 2018]; Trischler, J., Pervan, S.J., Kelly, S.J. and Scott, D.R. (2018). 'The Value of Codesign: The Effect of Customer Involvement in Service Design Teams' In: *Journal of Service Research*. Vol. 21(1): pp. 75–100.
- <sup>152</sup> Chamala, S. (1995). 'Overview of Participative Action Approaches in Australian Land and Water Management'. In: Keith, K. (ed.) *Participative Approaches for Landcare*. Brisbane, Australia: Australian Academic Press. pp.5–42.
- <sup>153</sup> Michener, V.J. (1998). 'The Participatory Approach: Contradiction and Co-option in Burkina Faso'. In: *World Development*, Vol. 26(11): pp.2105–2118. Dec. Available at: <[https://doi.org/10.1016/S0305-750X\(98\)00112-0](https://doi.org/10.1016/S0305-750X(98)00112-0)>. [Accessed 24 Mar. 2019].
- <sup>154</sup> Cleaver, F. (1999). 'Paradoxes of Participation: Questioning Participatory Approaches to Development'. In: *Journal of International Development*, Vol.11: pp.597–612.
- <sup>155</sup> This is noted by the purpose of the review by Lisius, P.H. (2012). Review of 'Scholarly Practice, Participatory Design and the Extensible Catalog' In: Foster, N.F., Clark, K., Tancheva, K. and Kilzer, R. (eds.) *Technical Services Quarterly*. Vol.29(3): pp.259–261. Available at: <<https://www.tandfonline.com/doi/abs/10.1080/07317131.2012.682039>>. [Accessed 22 Jun. 2018].
- <sup>156</sup> Beck, E.E. (2002). 'P for Political: Participation is Not Enough' In: *Scandinavian Journal of Information Systems*: Vol. 14(1), Article 1. Available at: <<http://aisel.aisnet.org/sjis/vol14/iss1/1>>.

<sup>157</sup> Key writings on this topic include: Bates, S.M. (2011). *The Social Innovation Imperative: Create Winning Products, Services, and Programs that Solve Society's Most Pressing Challenges*; Martin, R. and Osberg, S. (2015). *Getting Beyond Better: How Social Entrepreneurship Works*; Kerlin, J.A. (2009). *Social Enterprise: A Global Comparison*; Seelos, C. and Mair, J. (2017). *Innovation and Scaling for Impact: How Effective Social Enterprises Do It*; Nicolopoulou, K., Karatas-Ozkan, M., Janssen, F., and Jermier, J.M. (2016). *Sustainable Entrepreneurship and Social Innovation*; Munck, R., Ó'Broin, D., Corrigan, J. (eds.) (2017). *Social Innovation in Ireland: Challenges and Prospects*.

<sup>158</sup> Huybrechts, L., Hendriks, N., Yndigeegn, S., and Malmborg, L. (2018). 'Scripting: An Exploration of Designing for Participation Over Time with Communities'. In: *CoDesign*. 14(1): pp.17–31; Binder, T., Brandt, E., Halse, J., Foverskov, M., Olander, S., and Yndigeegn, S. (2011). 'Living the (Codesign) Lab'. In: *Nordic Design Research Conference*, 4: pp.1–10.

<sup>159</sup> Moore, T. (2020). *Session 1: ASSEMBLING; Mapping Urban Liminal Space: Play & The Urban Room*. Panel discussion presented at Architectural Humanities Research Association (AHRA) 16th Annual PhD Student Symposium 2020: *Research Encounters via Architecture's Methods*. 22–23 April. School of Architecture, Planning and Landscape, Newcastle University, UK.