

Interdisciplinary Connections between Health Care and Design – a Case Study in a Psychogeriatric Ward in Norway

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Abstract: *Interdisciplinary communication can contribute to the development of a sustainable environment. The promotion of interdisciplinary collaboration among specialists and with people in general is an objective in design education described in the second cycle of higher education in the Bologna process. This article introduces a case study of a creative process initiated to explore how the use of material and visual aesthetics contribute to create a health promoting environment. Health professionals were invited into a process of materializing suitable art objects for a geriatric ward in mental health care. A participatory design process illuminated different intentions from the participants and these influenced the creative process in the making of communicative forms with various shapes and surfaces. An analysis of the case was performed to disclose structures in the process and furthermore to synthesize the key findings into an expanded knowledge on intentionality in design. The key findings make relevant concepts for learning outcomes in product design education and are defined as the; pragmatic flexibility of an open conceptual form, the potentials of a skilled and emancipated view on materiality in interdisciplinary collaboration and the promotion of interdisciplinary collaboration through visual and tactile communication.*

Keywords: *interdisciplinary collaboration, sustainability, material communication, design education, microsociology*

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Introduction – interdisciplinary dialogue

Research and development in design activities can contribute to the manifestation of productive interdisciplinary collaboration in which conflicting values emerge (Buur and Larsen 2010). Emphasis on the goal to reach pragmatic and satisfactory solutions is of great importance in such a complex situation. This can partly be attained through the activities illustrated by the notion of bounded rationality (Simon 1969).

Attaining skills to promote interdisciplinary collaboration by material communication is an aim (Corbett, 2005) in design education (Froukje Sleeswijk Visser 2007). Such communication skills and working contexts can reveal different views upon values and intentionality (Wahl and Baxter 2008) which are significant in the process of creating pragmatic solutions as well as salient experiences (Simon 1969). Wahl and Baxter (2008) have connected intentionality to how ideas are materialized and applied into the environment on to a social perspective. In such a view the specific intentionality will have excessive impact on design processes and the experiences of the outcomes. A conscious perspective on the existence of intentionality as an influencing factor in design processes and what it comprises is therefore essential to become aware of own orientation as part of a team and furthermore to alter established design processes and approaches within areas that require novel thinking such as sustainable design or processes with the aim to create new innovative products and experiences:

Materially, the intentionality behind design, is expressed through the interactions and relationships formed by consumer products, transport systems, economies, systems of governance, settlement patterns, and resource and energy use, with the complexity of social and ecological processes (Wahl and Baxter 2008, p. 73).

This is a complex issue which motivates a further study of the concept of intentionality in light of different design perspectives. The materially dimension is described by Wahl and Baxter (2008) as systems and realization opportunities in societal macro perspectives. Smelser however promotes micro perspectives as equally important as macro and global perspectives (Smelser 1997, p.5). We recognize that materiality in this view can be represented through micro perspectives. This understanding of materiality underlines the potential impact of design processes and products and furthermore the importance of research within this specific area. Similarly Wahl and Baxter use a macro perspective when the immaterial design qualities are described:

"Immaterially, our organizing ideas, worldviews, and value systems express how we make sense of our experience of reality through meta-design" (Wahl and Baxter 2008, p. 74). They propose in that immaterially applied into design is a way to understand how values and systems represent different ontoepistemological assumptions that can change our experience of reality, and following the intentionality behind design. Wahl and Baxter states "This change in *why* we design things and processes in turn affects *what* and *how* we design" (2008, p. 72). Interdisciplinary dialogue and collaboration can in other words encourage researchers and practitioners towards solutions that reflect inter-subjectivity. The concept of inter-subjectivity can expand the knowledge about - and contribute to the creation of - new design approaches that are necessary in order to design new sustainable solutions. Inter-subjectivity as a facet of a design process can therefore be seen as an extension of the ideas of the design researcher Papanek who aimed for a more ethically, socially responsible and sustainable role of the designer-

values that could be further conveyed into industry by the designers practice (Papanek 1971). Many product design educations aim to link commercial aspects and experience value to sustainable and social concerns in their curriculum. This is done through a macro as well as micro perspective represented through the study of systemic and analytic approaches in one end and the emotional bond between a person and a product in relation to product replacement rate in the other.

Background – skills in material communication

Sustainable value creation in product design means to find sustainable solutions that take the fullest account of economic, social and ecological concerns in their development, implementation and realization (Melles, de Vere, and Mistic 2011). Research in sustainable value creation can for example contribute to extended lifetime for products by exploration of people's feelings of attachment to products and related pattern of consumption (Gulden, Moestue, and Berg 2010). To ensure the social relevance in design practice such thinking should permeate all teaching and development projects in design. Interdisciplinary research approaches as described above can change and develop new creative processes specifically connected to materiality and linked methodology, in order to contribute with the development of new competence in product design with the aim of a future sustainable environment.

Skills of material communication also plays an important role in value creation (Marres, 2012). Findings and effects of this research can systematically be integrated into the teaching and learning in product design. Through teaching that is focused on product innovation, innovative processes and best practice, students can continually develop knowledge and skills in establishing a suitable balance between social factors, ecological concerns and economic value creation in their work.

The outset of the present study is based on the knowledge gap of intentionality as a facet in design (Wahl and Baxter 2008) in relation to product design education and the second cycle of learning outcomes in higher education as described in the Bologna process (Corbett, 2005). In these guidelines it is stated that there is a need for students to enhance their understanding of ethical concerns as well as to acquire skills to apply such dimensions in cross disciplinary processes in order to contribute to approaches of corporate social responsibility (Melles, de Vere, and Mistic 2011; Curaj 2012). Although several case studies of cross disciplinary sort has been performed in health care settings (Topo and Iltanen-Tähkävuori 2010; Daykin et al. 2008; Lipe et al. 2012) there has been little focus on people that are admitted in mental health care with their experience of the near environment - their micro perspective. Based on this context we formulated the research question: How can one establish interdisciplinary connections between people in a mental health care ward through a participatory design process of making material based art objects in a perspective of intentionality (Wahl and Baxter 2008) on a micro level (Smelser 1997)? A relevant context for such a research approach was with employees at a mental health institution. A qualitative case study was found apt as a methodological approach for this research based on the nature of the research question (Yin 2009.) Methods for the case study were observation, participatory observation, focus group interviews, participatory design (Asaro 2000) and artistic research (Varto 2009). Variations of intentionality was studied through participatory design processes (Melles, de Vere, and Mistic 2011) where the creation of art objects enabled a space for both exploration and analysis, an emerging research field in art and design (Mäkelä et al. 2011). The health professionals contributed with co-creation and

use of art objects for their institution. Aesthetical objects or components can influence a communication process significantly. We therefore chose to use aesthetic objects engendered by a material based art process as part of the research. Objects with intention to increase communication at the ward were made in collaboration with nurse researchers because of their experience with patients. The implications that the intervention of art objects had at the ward were explored. As basis of this exploration new objects were created assumed to have different or stronger influence on communication. The outcome of such a study can have relevance for future creation of physical artefacts for mental health care and for product design educations that aim for interdisciplinary skills.

Three of the art works from the hospital ward project were selected for an extended analysis for this study. They were selected because they represent a micro perspective of constraints and challenges, potentials and values as described by Wahl and Baxter (2008). The analysis of the case was performed by concept mapping (Maxwell 1996, p. 47) to disclose structures of significance in the process and furthermore to synthesize these key findings (Jørgensen 1992) into three concepts of intentionality in the making of a social sustainable environment. Some significant qualities of the connections between health care and material based art elicited by the interdisciplinary processes are described in the findings. These are further analysed and discussed in the final chapter in relation to the role and relevance of visual and material aesthetic knowledge in an interdisciplinary design process.



Figure 1: Hospital environment



Figure 2: "Arctic Border, 2010" (Berg 2011): open form for communication at ward in mental health care.



Figure 3: "Lucid Moments": open form for tactile communication at ward in mental health care.

Findings: a participatory process in materializing communicative objects

The interdisciplinary group that was set out to create art for the environment in the hospital ward consisted of psychologists, nurses, psychiatrists, aides, an occupational therapist and a physiotherapist. About 60 people were involved in the process, and the fifteen patients at the ward were offered to use the art in art dialogues (Ingeberg, Wikstrøm, and Berg 2012). The average age of the patients at the ward was 65 years.

The data in this study relate to the creative process with the health professionals and art objects in general. Several conceptual possibilities were presented to the health professionals in a participatory workshop and based on these discussions, further developed into 24 ceramic images and 24 ceramic art objects that were installed in the ward environment (Figure 1). Three of these forms were analysed in this study (Figure 2, 3 and 4).

Interdisciplinary collaboration through visual and tactile communication

Intentionality related to the creation of the work “Arctic Border” had several sides (Figure 2). The ceramic form was intended to stimulate communication in a psychogeriatric ward. One example that took place in the ceramic work shop that can serve as an illustration of the interdisciplinary process that we went through is; while discussing a function of one of the physical forms the nurses said: “because the object is meant to enable communication in a ward for mental health care there should be a physical edge, or a border in the rounded shape that could work as a limit to something or as a break of thoughts”. The nurses explained that, for patients with a depression this may break a fixed state of mind or thinking pattern, a break that can be a door opener for dialogue. Furthermore the nurses pointed out the advantages with a “non-perfect” form, because it could possibly speak to those feeling down. The intention they said was that this could cause a form of identification.

Materially, the intentionality behind the design, was exemplified through the interactions and relationships formed by the creators of the objects. Two nurses took part in the in the creation process of the art pieces along with an artist. The physical environment at the ward made a part of the project intentions, as the art objects were to become communicative elements integrated in the hospital environment. Thus the physical environment was actively used in a professional mental health perspective. The nurses said that “The objects should stimulate emerging thoughts and ideas in order to stimulate the patients’ phantasy”. The nurse researchers explained that the practice of the staff could be changed by the materialized art objects because “The active use of environment in patient dialogues enhanced the nurses’ communication skills”.

Elderly patients with dementia were a part of the target group. These patients who have different mental conditions such as depression, anxiety and paranoia make a minority group within health care that gets little attention due to low status. Consequently the ward interior has to a little degree been designed to please or activate the patients. An intention to increase communication between the patients therefore emerged, which we did by placing of the art objects in the corridors where

the patients lived. The project turned in other words towards the emphasis on the needs of the individuals' desire to touch and to be stimulated by touching the surfaces of the art objects.

A patient said after being presented with a non-figurative art object "I like non-figurative art because it reminds me of when I was a child looking at the changing formations of clouds". Thus based on this situation "Arctic Border" was made to stimulate the imagination and to contribute to an immaterial perspective of intentionality through providing an opportunity to play out personal values. The staff said: "The patients with reduced communicative skills touched and examined the forms in very different ways and based on this we could to some extent interpret their mood through their body language".

An emancipated view on materiality

Stages of intentions concerning the creation of «Lucid Moments» (Figure 3) were different from "Arctic Border" which was more planned. The shape of "Lucid Moments" was revealed through interdisciplinary communication in a ceramic studio. A slump of clay was cut off with a string and put away for later processing. This lump was discovered by one of the partaking nurses who thought of shape as apt for the purpose of this research. She said: "This is a good form for communication, it looks like a horse's head". Although it was explained that it was not one of the forms intended for the project, the nurse said that it comprised both figurative and sculptural qualities, as well to hold the potential of being covered with motifs on the surfaces. We therefore further develop the clay form with different intentions to communicate through unlike surfaces and colours. The intention for the presentation of the object was initially to mount it on a wall, maybe several in a row, and that it should be mounted with movable bracket on the wall, so that patients could move and change the position of it. A new solution emerged which was to present the objects by lowering them, and partly hiding them in marble sand. Then the objects would be even more flexible in use, possible to mix and match with each other, offer the potential to discover new, hidden and forgotten sides of the objects, an approach comparable to the reminiscence work done in the ward: To search the old memories and mix and match old thoughts, develop new conversations and new ideas.

The art objects lowered in sand was placed in the light therapy room to ease the availability for the patients to choose how to interact with the art in the ward environment. A certain amount of voluntariness or motivation was thus integrated in the presentation of the art works. Materially, the intentionality behind this installation was expressed through the users' possibility to interact with sand, hand and mind. The marble sand was used as an asset to evoke memories. The sand facilitated the flexibility of use as there were endless ways of composing the objects in the sand, as well as to what degree they should be hidden or visible in the sand. The tactile experience of letting sand flow between fingers was also a quality of intention in order to create dialogues. The complexity of therapeutic and diagnostic processes in mental health care was thus combined with the simplicity of direct, material presence, with the aim to create alternative door openers for communication. The therapist said: "Sometimes the patients started to talk about the art work in such way that it allowed us to develop the dialogue into more therapeutic conversations within the patients' private room". Immaterially, "Lucid Moments" this way contributed to peoples' ability to partake in

interpersonal communication which could serve as a door opener. By creating the art object along with the values disclosed in the ward, existing practice and within the staff culture, the objects was in a way inscribed with these meanings into the existing system.



Figure 4: *Stones were used in the hospital based on the staffs' intentions.*

The pragmatic flexibility of an open conceptual form

Intentions of violence and injury could not be overlooked in a psychiatric ward. Some of the employees were worried that patients with acute psychiatric disorders could use art objects with the intent to threaten or hurt others. On the other hand, other nurses had different experiences and expressed that they had never experienced patients who had used art to exercise damage. They pointed out that if they really wanted to create harm they could use the available objects such as coffee cups, dishes and furniture. Moreover, they felt that available ceramic objects would not represent any risk since those who were in a critical state would usually be sheltered on separate rooms with special attention. In spite of these reflections, it was decided that the stones should not be used freely in the locked ward. They could however be placed in the lunch room for the personnel, to invite for any usage that the employees would want (Figure 4). Thus various intentions of the objects were transferred to the staff. This had consequences. A physiotherapist said; "One day the stones made me remember a situation from my physiotherapist education where a teacher asked us to use natural stones in the practice of physiotherapy". She was surprised by herself that this recollection of knowledge emerged so late in the research project and not immediately. Subsequently she brought the ceramic objects into a morning gym session with some patients because of the revitalised knowledge of practice. The elderly could choose a stone each during the gym session. Furthermore they were asked to describe why they chose the one they did. Even though few explanations were uttered in words, the physiotherapist together with a nurse emphasised on the interpretation of the mood of patients through their body language.

Materially, the intentionality behind the design was expressed by the recollection of forgotten professional knowledge retrieved through a new physical change of practice. The presence of available open art objects stimulated the inherent values in professional knowledge and memories. Furthermore the physical use of the stones in physiotherapy enabled the physiotherapist with a deeper understanding of the patients' state of mind through their body dialogue with art objects. The materiality of the art objects invited patients to an open, imaginative approach of the undefined objects. One could say that the openness as an embodied function in the objects alone invited to new use. The use of the ward as an environment for art was in this case a practical solution and an example of how to use physical resources in an existing environment. The situation demonstrated an intentionality that opened up for people's ability to think and act based on their own thoughts which included possible new use of the environment in spite of established, formalized and routinized hospital procedures.

Immaterially, the new use of the art objects stimulated towards the recollection of forgotten ideas – a process similar to the reminiscence work with patients. The art objects challenged established habits by being open and available for any use, and stimulated towards personal initiatives by the staff. Several of the staff members had no specific intentions of how to use the art objects in the very beginning of the research project; they got the ideas after some days or weeks while interacting with the stones. This is an example of how the openness of the art objects stimulated the staff towards different or new actions. The intentionality that emerged through the new use of the stones was not based solely on personal initiatives but also because of an interactive process among the staff and patients which engendered several initiatives. Each approach was valid both for the staff and the patients as it elicited different types of communication and awareness to the environment. The presence of the art objects led to changes in one of the least dominant professional practices namely physiotherapy. In this case the art objects that were made available for new use enabled forces and professionals that were among the least dominant in the hospital system, to change and create practice, thus it contributed to an emancipatory process. The art objects demonstrated how latent possibilities could be brought to surface and how these could lead to new thoughts by the staff and subsequently result in changes in intentionality and practice at the ward.

OVE - an analytical tool

How does the term of intentionality embrace the sustainability perspective for design education in this case? An analysis of the case was performed by pattern matching (Maxwell 1996; Yin 2009) between the three variations of intentionality with a perspective of the material and immaterial characteristics on a micro level reflected in the products. Structures were disclosed in this process which serves as key findings synthesized into the analytical tool, the OVE-model (figure 5). OVE is an acronym for Open conceptual form, Visual and tactile communication and Emancipatory materiality. Design methodology was used as part of the research project in order to explore and enhance the internal consistence of the engendered analytical tool (Topo and Ilanen-Tähkävuori 2010; Buur and Larsen 2010). The aim with the development of such a tool was to validate key factors that can influence communication by the use of visual and material aesthetics in an interdisciplinary design process. The tool can therefore contribute to knowledge transfer between design education and interdisciplinary practice.

Throughout this study the concept of intentionality has been broken down and expressed through the creation of specific examples of material based art. The term of intentionality has been exemplified from the making of concepts to materialization and eventually the implementation of the art objects in a social setting, all contexts which enabled a new understanding of the concept of intentionality. Three concepts have been synthesized through pattern matching (Yin, 2009) from the empirical examples shown. These are related to the expression of form, to the knowledge of materials and to the visual qualities of surfaces.

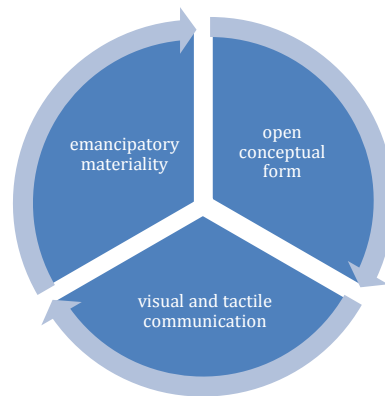


Figure 5: OVE –model: Three aspects of intentionality: open conceptual form, emancipatory materiality and visual and tactile communication.

The pragmatic validity was explored through the analysis of student projects to establish the degree of coherence between the process that emerged by the characteristics of the research design and practice (Kvale and Enerstvedt). The relevance of such knowledge for students in product design is related to knowledge about materiality. Some product examples created by the design students at a master level which were analysed show open ended product through the characteristics of changing by the accumulation of traces of use (Figure 6) and products with flexible features (Figure 7). These examples connect to the understanding intentionality by the pragmatic flexibility of an open conceptual form. A student who was working with tactile guiding tiles for visually impaired people wrote in the report (Figure 8):

Blind, visually impaired and sighted in the community have many similar needs. Tactile guiding tiles on walls represent an innovative mobility concept, which has both aesthetic and functional characteristics. The tiles create interactive communication, and are significant for all human sensations and urges towards engagement, activity, amazement, coping and stimulation of the human mind. Tactile products can also give great information, by making the curiosity help to inspire and motivate a greater understanding of visual impairment and touch, and encourage to learning and knowledge. Through this project there has been developed concepts based on my understanding and knowledge of fusing, based on dialogue with visually impaired people. I know how the composition of glass, metal, ceramic and organic materials have a consequence and lead to tiles that contributes to increased aesthetic value of the environment for everyone (Student report, Figure 8).



Figure 6: Student work: Open ended design: cup with knife and traces of use.

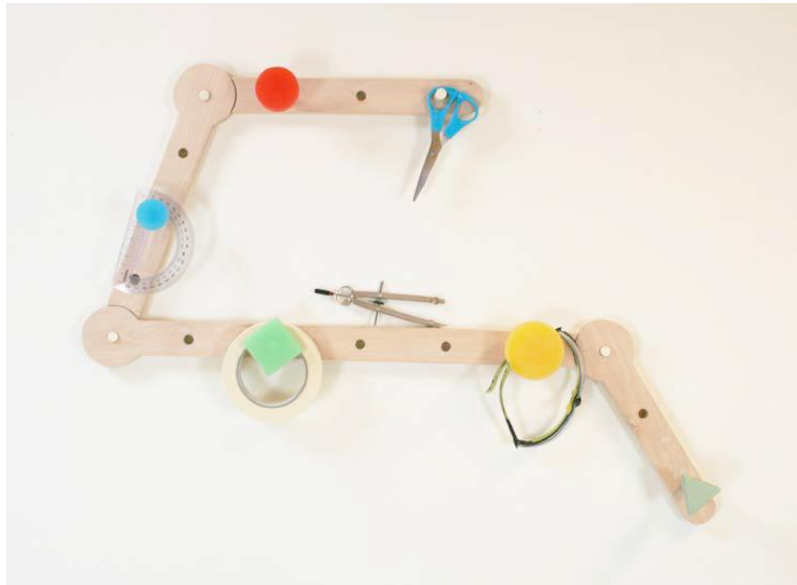


Figure 7: Student work: Open ended design: "Hook"

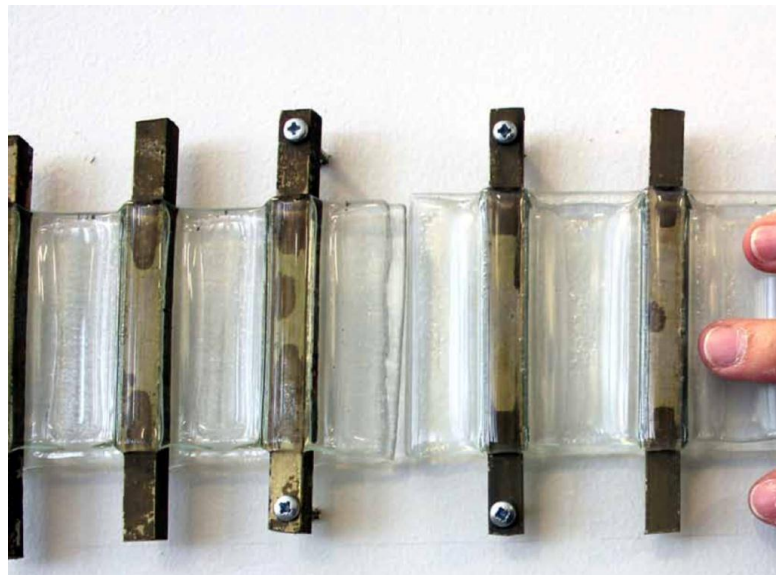


Figure 8: Student work: Emancipatory materiality: tactile leading tiles.

This student example contributed to the idea that it was relevant to define potentials with a skilled and emancipated view on materiality in interdisciplinary collaboration. Furthermore it served as an example of promotion of interdisciplinary collaboration in the making of visual and tactile communication. The interdisciplinary dialogues which were oriented about materiality and forms relate to similar collective creative processes in education (Seitamaa-Hakkarainen, and Hakkarainen 2004). The results of Seitamaa-Hakkarainen indicate that collaborative design processes exhibit three characteristic patterns with variable intensity: coordination, cooperation, and collaboration. These patterns were of essential importance to this study as well as to the student projects, in the participatory processes as well as in the involvement of people and material objects. In relation to the participatory dialogue, design competence can be a constructive and necessary part in collaborative research projects as described in the case of scripting patienthood through design of hospital clothing (Topo and Iltanen-Tähkävuori 2010) and in art dialogues in hospitals (Ingeberg, Wikstrøm, and Berg 2012). Likewise conflicting values in cross disciplinary dialogues can be stimulated to enable emancipatory processes towards innovative solutions (Buur and Larsen 2010) in which sustainable design processes rely on.

Conclusion - interdisciplinary connections

The study demonstrates intentionality in product design in relation to material knowledge and how established rules and habits in a material tradition are challenged by emancipatory processes and interdisciplinary collaboration. Three variations of intentionality based on material communication were disclosed and synthesized through this study (Jørgensen, 1992). These key concepts represents the pragmatic flexibility of an open conceptual form, the potentials of a skilled and emancipated view on materiality in interdisciplinary collaboration and the promotion of interdisciplinary collaboration through visual and tactile communication. These concepts can contribute to concretize abstract ideas and to facilitate a flow in collective creative processes by influencing the dialogue through a direct and specific response in the actual material during the process of making. In relation to the adjustment of product design education to the present society these above mentioned dimensions can make relevant learning outcomes in projects where the facilitation of interdisciplinary connections seem apt. Such learning outcomes are first of all linked to the attainment of knowledge concerning designing of pragmatic flexibility and open conceptual forms. Secondly they can serve to gain a general competence in how to define potentials with a skilled and emancipated view on materiality in interdisciplinary collaboration and thirdly to obtain skills to promote interdisciplinary collaboration through visual and tactile communication. By a focus on facets of material communication in design education the concepts of intentionality can become a part of learning outcome formulations in accordance with aims in the Bologna Process (Curaj 2012). This new pedagogical concept of intentionality in design education can lead to interdisciplinary connections and processes that acknowledge the need of more sustainable products and processes as well as the ability to create novel solutions in which sustainable design relies (Melles, de Vere, and Misic 2011; Wahl and Baxter 2008).

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References

- Asaro, Peter M. 2000. "Transforming society by transforming technology: the science and politics of participatory design Accounting", *Management and Information Technologies* 10 (4):33.
- Berg, Arild. 2011. Arctic border. In *Craft 2011* [Exhibit]. National Museum of Art, Architecture and Design, Museum of Decorative Arts, Oslo, Norway.
- Buur, J., and H. Larsen. 2010. "The quality of conversations in participatory innovation." *Codesign-International Journal of Cocreation in Design and the Arts* 6 (3):121-138.
- Corbett, A. 2005. *Universities and the Europe of knowledge : ideas, institutions and policy entrepreneurship in European Union higher education policy, 1955-2005*. Basingstoke: Palgrave Macmillan.
- Curaj, Adrian. 2012. *European higher education at the crossroads : between the Bologna process and national reforms*. Dordrecht: Springer.
- Daykin, N., E. Byrne, T. Soteriou, and S. O'Connor. 2008. "The impact of art, design and environment in mental healthcare: a systematic review of the literature." *Journal of the Royal Society for the Promotion of Health* 128 (2):85-94.
- Froukje Sleswijk Visser, Remko van der Lugt, Pieter Jan Stappers 2007. "Sharing User Experiences in the Product Innovation Process: Participatory Design Needs." *Participatory Communication Creativity and Innovation Management* 16 (1), 35-45.
- Gulden, Tore, Cathrine Moestue, and Arild Berg. 2010. "Psychology based design approach (PSYDA) - a pedagogical concept." In *When Design Education and Design Research meet. Proceedings of the 12th International Conference on Engineering and Product Design Education, 2-3 September 2010: The Design Society*.
- Ingeberg, Mette Holme, Britt-Maj Wikstrøm, and Arild Berg. 2012. "The Essential Dialogue: A Norwegian Study of Art Communication in Mental Health Care." *Journal of Psychosocial Nursing and Mental Health Services* 50 (8).
- Jørgensen, K. 1992. *Videnskabelige arbejdsparadigmer: Institut for Production, Aalborg Universitet, Denmark*.
- Kvale, Steinar, and Regi Th Enerstvedt. *Issues of validity in qualitative research, c1989, at Lund*.
- Lipe, A. W., K. C. Ward, A. T. Watson, K. Manley, R. Keen, J. Kelly, and J. Clemmer. 2012. "The effects of an arts intervention program in a community mental health setting: A collaborative approach." *Arts in Psychotherapy* 39 (1):25-30.

- Marres, N. (2012). *Material participation : technology, the environment and everyday publics*. Basingstoke: Palgrave Macmillan.
- Maxwell, Joseph A. 1996. *Qualitative research design: an interactive approach*. Thousand Oaks, Calif.: Sage Publications.
- Melles, G., I. de Vere, and V. Mistic. 2011. "Socially responsible design: thinking beyond the triple bottom line to socially responsive and sustainable product design." *Codesign-International Journal of Cocreation in Design and the Arts* 7 (3-4):143-154.
- Mäkelä, M., N. Nimkulrat, F. Nsenga, and D.P. Dash. 2011. Editorial: " *On Reflecting and Making in Artistic Research.*" *Journal of Research Practice* 7 (1).
- Papanek, Victor. 1971. *Design for the real world: human ecology and social change*. New York: Pantheon Books.
- Simon, Herbert A. 1969. *The sciences of the artificial*. Cambridge, Mass.: M.I.T.
- Smelser, Neil J. 1997. *Problematics of sociology : the Georg Simmel lectures, 1995*. Berkeley, Calif.: University of California Press.
- Topo, Päivi, and Sonja Iltanen-Tähkävuori. 2010. Scripting patienthood with patient clothing. *Social Science & Medicine* 70 (11):7.
- Varto, Juha. 2009. *Basics of Artistic Research. Ontological, epistemological and historical justifications*. Translated by E. Lehtinen and L. Mänki, B 94. Helsinki: University of Art and Design Helsinki.
- Wahl, D. C., and S. Baxter. 2008. The designer's role in facilitating sustainable solutions. *Design Issues* 24 (2):72-83.
- Yin, Robert K. 2009. *Case study research: design and methods*. Thousand Oaks, Calif.: Sage.