



Ally-Opponent Understanding: Co-existence of Conflicting Values through Participatory Design

아군-적군 이해하기: 참여적 디자인을 통한 상충된 가치의 공존

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Ally-Opponent Understanding: Co-existence of Conflicting Values through Participatory Design

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Abstract

Participatory design (PD) is a powerful tool for understanding the values of stakeholders. Stakeholder values are often in conflict with one another, requiring value negotiation. To negotiate conflicting values, it is important that the plurality of values be accounted for and not neglecting particular values. However, existing research does not offer a step-by-step description on how to work with PD and reach an 'agonistic space' wherein conflicting values can co-exist. As such, the research proposes a new PD method, ally-opponent understanding (AOU). The method is for opposing stakeholders to: 1) express their different viewpoints, 2) engage in collective activities, and 3) develop ideas incorporating a multiplicity of values. To validate the method, a case was built with the use of AOU in the context of tobacco cessation. The strengths and limitations of the method were identified, and methodological directions and implications for agonistic participatory design are suggested.

Keywords Design Method, Participatory Design, Negotiation of Values, Co-existence of Values

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1. Introduction

In HCI research and practice, attending to human-centric values when designing interactive systems has garnered increasing interest. For example, scholars have focused on determining user interfaces that contradict with human values (Gray, Kou, Battles, Hoggatt, & Toombs, 2018), identifying user-technology relationships that secure human values (Cila, Smit, Giaccardi, & Krose, 2017), and understanding ethical concerns related to technology by envisioning alternative future scenarios (Ballard, Chappell, & Kennedy, 2019). Such research cases show that understanding stakeholder values is imperative to creating interactive systems that empower humans.

To identifying the values of stakeholders, participatory design (PD) is mentioned to be a powerful approach. This is because PD is to directly engage stakeholders in the design process for them to actively express their opinions, desires, and concerns through collective creativity (Sanders & Stappers, 2014). The many stakeholder values that emerge through the use of PD are different and often conflicting. In this situation, it is a necessity to re-conceptualize and negotiate values (Iversen, Halskov, & Leong, 2012).

For successful value negotiation, Mouffe (2000) suggested “agonistic pluralism,” which is to support the plurality of values by continuously confronting the situation wherein different values are in conflict.

Scholars such as Björgvinsson, Ehn, and Hillgren (2012) and Grönvall, Malmborg, and Messeter (2016) have used this approach to establish theoretical groundwork on the relationship between negotiating values and PD, and have reported PD cases that incorporate the agonistic approach. However, there has not

been any attempts to develop PD methods that offer specific guidance to envisioning ideas that embody the plurality of values (i.e., ideas that give room for conflicting values to co-exist).

To address this challenge, we introduce a new PD method, ally-opponent understanding (AOU). This method enables stakeholders to collectively envision future possibilities and apply their values to the ideas of their opposing side. We call this action idea swapping. Through AOU, stakeholders can create an agonistic space, wherein conflicting values can be reshaped, and a constructive concurrence among the values can be achieved.

In this paper, we first provide a literature review that presents the theoretical framing for our work. Second, we illustrate the operation of the AOU method. Third, we report on how AOU can reinforce a productive co-existence among conflicting values by sharing our findings from a case we built. The problem situation for the case is tobacco cessation. We share the rationale to this selection. Finally, we provide a discussion on the strengths of AOU and implications on how to overcome the method’s limitations.

2. Literature Review

2.1. Understanding Emergent Values

Values are people’s “enduring beliefs that concern desirable modes of conduct or end-states of existence in different situations, societies, and cultural context” (Iversen et al., 2012). In other words, values guide people to set goals, make decisions, and take action within their everyday lives. By understanding the values of users, we can understand what users find important or undesirable and identify requirements to creating value-led solutions (Ibid).

One of the most recognized approaches to

understanding and making use of values is the value sensitive design (VSD) methodology, which is to “account for human values in a principled and comprehensive manner throughout the design process” (Friedman, Kahn, & Borning, 2002). However, VSD has been critiqued for its premises of utilizing universal values (Grönvall et al., 2016; Iversen et al., 2012; Le Dantec, Poole, & Wyche, 2009; Leong & Iversen, 2015). In the case of Le Dantec et al. (2009), the researchers have maintained that it is important not to treat values as universal or pre-defined, but to discover the stakeholders’ “local expressions of values,” i.e., values that are emergent and particular to the problem situation. To ensure the emergence of values, the researchers employed the photo-elicitation interview method that assigns interviewees to pre-take photos and drives the interview to further deliberation on a given issue. The researchers reported that, by using materials that were created by stakeholders, the stakeholders were able to express their values that are more specific and local to them. As such, researchers working with stakeholders and allowing them to make sense of their problem situation augmented the emergence of local values and made it possible to achieve a value centric agenda.

2.2. Values and Participatory Design

Aligning with the critiques of VSD, PD is a potent approach to fostering the emergence of values (Iversen et al., 2012). To make value emergence possible, researchers have used PD in ways such as creating an environment for stakeholders to “play” with design artefacts (Leong & Iversen, 2015), requiring stakeholders to use storyboards for generating and sharing ideas (Iversen & Leong, 2012), grouping stakeholders into teams of different backgrounds to develop prototypes (van Waart, Mulder, & de Bont, 2016), and assigning stakeholders to enact scenarios of a design situation (Iversen et al.,

2012). The values that emerge through the use of PD are often conflicting, and therefore design researchers need to orchestrate a “dialogical development process” that helps the negotiation of conflicting values (Iversen et al., 2012). While the above research approaches show how PD can support the emergence of values, they do not offer specific descriptions on how to use PD for achieving productive value negotiation of which stakeholders can create ideas that embody a plurality of conflicting values.

2.3. Negotiating Values through Agonistic Participatory Design for Value Co-existence

The notion of conflicting values to accompany one another may be seen as counter-intuitive. This is because the act of negotiating values is often associated with aiming for rational deliberation and consensus (DiSalvo, 2010), which is to prioritize certain values and trade off others. However, this approach to negotiation can have consequences of neglecting particular values (Ibid). To counter for this problem, Mouffe (2000) proposed the concept of “agonistic pluralism,” which is to accept that conflict and division are inherent to negotiation, and to keep open the space for confrontation.

To enable the space for negotiating values, Björgvinsson et al. (2012) claim that a plurality of conflicting values can be achieved by taking an agonistic approach through PD, “agonistic participatory design.” The researchers uphold their claim by employing a design lab approach that promotes a collaborative future-making space for stakeholders. Grönvall et al. (2016) built upon the propositions of Björgvinsson et al. (2012) and reported their cases on design interventions through PD, which helped transform the antagonistic conflict among stakeholders into the value negotiation in an agonistic space. They suggested that this

transformation can be the driving force for PD.

The research cases cited in this section informs us that, through the use of PD, we can explore how conflicting values can co-exist. However, the cases do not offer explicit and detailed guidance on how to achieve agonistic participatory design. As such, we found a gap in design research wherein there is a need to develop a PD method that can guide researchers step-by-step, to creating an agonistic space for conflicting values to co-exist.

3. New Method for Participatory Design

We propose a new PD method Ally-Opponent Understanding (AOU), which engages stakeholders who have conflicting values and different perspectives to create ideas for a problem situation. As the name of the method suggests, a group of stakeholders that share the same views are positioned as allies, and the group with contrasting views as opponents. The allies and opponents exchange their ideas and negotiate conflicting values by building upon the opponent's ideas. Figure 1 shows the overall process of AOU.

3.1. Recruiting the Stakeholders

Kuniavsky (2003) has stressed that in

order to obtain detailed thoughts and opinions from stakeholders, at least four participants are needed in group interviews or workshops. As such, we suggest that at least four stakeholders should be recruited for the AOU method to boost in-depth discussion and negotiation of values. Also, as the stakeholders are divided into two or more groups, at least two stakeholders need to be recruited for each group.

3.2. The Role of the Design Researcher

Within the PD process, design researchers need to lead, guide, provide scaffolds, and encourage stakeholders to share their opinions, desires, and concerns that encompass their different values (Sanders & Stappers, 2008). Therefore, we maintain that the design researchers of AOU take the role of a “facilitator.” In order to obtain a balance of perspectives, the design researchers should maintain an impartial stance towards the values that emerge throughout the AOU process. Also, the researchers should guide and encourage the stakeholders by helping the stakeholders to establish meanings to, and identify implicit values of their opponent's and own ideas.

3.3. Toolkit within AOU

To give “non-designers a means with which to participate as co-designers in the design process” (Sanders & Stappers, 2014), we created

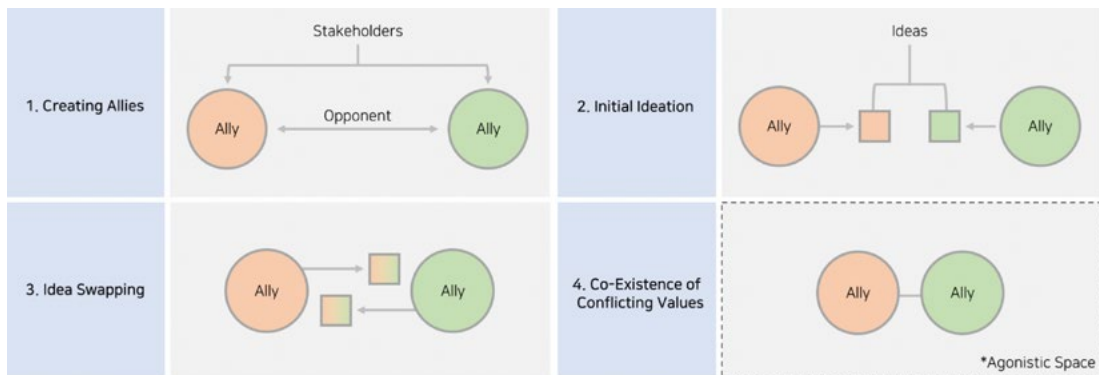


Figure 1 AOU process of creating and exchanging ideas

a toolkit for the AOU method that aids the stakeholders to communicate their thoughts and generate ideas. The toolkit includes: stance cards and stimuli cards. We designed the cards to be accommodated in various situations wherein conflicting values emerge. Therefore, the cards are a sort of a template of which the design researcher needs to fill in specific contents that are fitting to the problem situation he/she intends to tackle. In the following sub-sections, we describe purpose of each toolkit and its general features. The specific content we applied to the toolkits will be presented in the case study section of this paper.

3.3.1. Stance Cards

Stance cards are tools for the stakeholders to express their perspective and for values on a particular problem situation to emerge. The cards are double-sided, where on one side, the stakeholders can fill out their stance. On the other side, they can write down their demographic information (i.e., current status, relationship with other people), their emotional status, and their past experiences about the problem situation.

3.3.2. Stimuli Cards

Stimuli cards are tools that show current solutions for the design situation. The purpose of the stimuli cards is to prompt stakeholders to identify the strengths and weaknesses of the current solutions, express their values through the solutions, and as a result, envision ideas that embody values and objectives.

3.4. AOU Process

The AOU method consists of three stages: 1) creating allies, 2) initial ideation, and 3) idea swapping with opponents. Each stage is devised to support the emergence of values, aid stakeholders to understand their different and conflicting values, and come up with solutions

that are responsive to a multiplicity of values.

3.4.1. Creating Allies.

The purpose of this stage is for stakeholders to share their perspectives and experiences of the problem situation with people of same/similar stance, and therefore prevent the “group think” effect (Kuniavsky, 2003). This effect occurs when people converse in groups and try to rationalize consensus to avoid conflict.

For the stakeholders to create allies, they are each provided with the stance cards and are instructed to fill out the cards. Based on their stance, the stakeholders are requested to form ally groups. Within each group, the stakeholders are required to take turns in sharing what they have written down with their allies. During this process, the design researchers need to manage the turn-taking, so that each stakeholder can share their opinions and thoughts for a thorough discussion.

3.4.2. Initial Ideation.

This stage is intended for allies to explore potential solutions for the design situation that can satisfy their values and needs. The stakeholders are provided with stimuli cards and are instructed to start generating ideas through sketching and to create scenarios for their ideas. Within this process, the design researchers need to understand the intentions behind the stakeholder’s ideas to guide the stakeholders to develop and articulate their ideas through scenarios.

3.4.3. Idea Swapping with Opponents.

The purpose of this stage is for the stakeholders to understand the contrasting and conflicting values of their opponents, and attempt to negotiate the values and develop the opponent’s ideas (resulted in stage 2).

In this stage, the stakeholder groups share

their initial ideas and swap them with the opponent group. The key factor to this stage is for the stakeholders to implement their own values to the opponent's ideas, and at the same time not disregard the opponent's values. To make this possible, the design researchers need to guide the stakeholders to understand the core purpose and values that led to the creation of their opponent's ideas. Thereafter, the stakeholders need to interpret and reshape the opponent's values and develop the idea in a way that welcomes their own values.

4. Case Building: Workshop through use of AOU

In this section, we first provide an explanation to why we selected the design target as interactive products to assist tobacco cessation (henceforth, we will refer to the design target as "tobacco cessation products" for brevity's sake). Then, we present how we validated AOU through a PD workshop and post-workshop interview.

4.1. Selecting the Design Target

To validate the AOU method, first, we selected the design target as tobacco cessation products and the target user as people who desire to discontinue smoking. The reason for this selection is two-fold.

First, it is necessary to understand the implicated values of both smokers and non-smokers when designing tobacco cessation products. This is because tobacco is responsible for 1 in 10 deaths globally, to not only smokers, but also non-smokers through second-hand smoking (Brown-Johnson & Prochaska, 2015). Therefore, how we assist and encourage tobacco cessation can influence both smokers and non-smokers.

Second, smokers and non-smokers are

at extreme ends and have conflicting values in regard to the approaches of aiding tobacco cessation. On the one hand, smokers have the desire to attain autonomy and freedom while attempting to quit smoking (Dechesne, Di Tosto, Dignum, & Dignum, 2013), and wish for other people to be supportive during the process (Coyne & Downey, 1991). On the other hand, non-smokers view that shaming smokers is an effective way for smokers to quit cigarettes (Brown-Johnson & Prochaska, 2015). As both classes of stakeholders are affected by and have conflicting values about the ways of assisting tobacco cessation, we selected designing tobacco cessation products as a fitting, yet challenging, design situation to evaluate the AOU method.

4.2. Recruiting the Stakeholders

After we had selected the design situation, we organized a PD workshop and conducted a post-workshop interview. To conduct the PD workshop, we recruited two smokers and two non-smokers as the participants for the workshop. Table 1 shows the background of each participant.

Participant Number	Description
P1	Smoker of 7 years. Male
P2	Smoker of 6 years. Female
P3	Non-smoker. Male
P4	Non-smoker. Female

Table 1 Description of participants

4.3. The Role of the Design Researchers

A total of three design researchers were involved in the workshop to guide the participants throughout the AOU process. One researcher was in charge of hosting the workshop and explained the AOU process to the participants. The other two researchers were

each assigned to the smoker or non-smoker group and guided the participants to communicate their values and generate ideas for the design target.

4.4. Workshop Post-Interview

After the workshop was completed, we conducted a focus group interview with the participants to gain an in-depth understanding of AOU's strengths and limitations. We asked the participants on how the AOU setting (i.e., positioning of stakeholders as allies and opponents) and the toolkits affected their engagement of generating ideas and negotiating conflicting values.

5. AOU Findings and Reflections

In this section, we report our empirical findings on AOU. We share how the participants went through each process: what kind of values emerged and reconceptualized, and what ideas were generated and developed. Following each finding, we provide our reflections on the use of AOU. This includes the strengths of AOU and methodological implications on how AOU could be further developed for achieving the co-existence of conflicting values.

Table 2 shows how the stakeholders' values emerged and were reshaped through the case study of AOU.

	Stakeholders	
	Smokers	Non-Smokers
Initial Value	Reminder of motivational factors (e.g., regained health and beauty)	Reminding smokers of their harm to others
Initial Idea	Nicotine sensory agent that sends motivational feedback to users	Customized messenger that reminds smokers that smoking harms other people

Developed Idea through Idea Swapping	Customized messenger to remind smokers that tobacco cessation improves the health of themselves and others alike	Agent to offer not only information on what the smokers value, but also what non-smokers value
Manifestation of Value Co-existence	Reminding smokers of motivational factors and that smoking harms other people	

Table 2 Reshaping of values through case study of AOU

In this section, we report our empirical findings on AOU. We share how the participants went through each process: what kind of values emerged and reconceptualized, and what ideas were generated and developed. Following each finding, we provide our reflections on the use of AOU. This includes the strengths of AOU and methodological implications on how AOU could be further developed for achieving the co-existence of conflicting values.

5.1. Expressing More Freely by Creating Allies

In the first stage of AOU (creating allies), we discovered that when the stakeholders formed allies, they could share their opinions on smoking and tobacco cessation more freely. Values that were true to the stakeholders' stance had emerged as the stakeholders shared their thoughts with their allies.

In the case of the smoker group, the most prominent issue they discussed was the stigma of smoking and the negative feedback they received from society. They made remarks on how negative feedback (e.g., warning signs on cigarette cases) is discouraging and that it does not help them to quit smoking. For the non-smoker group, they reflected on how they felt towards smokers and discussed that smokers needed to be continuously reminded that smoking adversely affects other people. They shared their views on how harsh approaches such

as social shaming could be enforced as a way for cessation of cigarettes.

5.1.1 Reflections on Our Approach to Creating Allies

Overall, the stakeholders commented that if they were not separated into groups of smokers and non-smokers, they may have been inclined to avoid conflict and would have had difficulty in expressing their honest thoughts. By discussing the issues of tobacco cessation amongst allies, the group think effect, stated by Kuniavsky (2003), was prevented between the smoker and non-smoker groups. Therefore, the values of stakeholders were not overshadowed by the fear of disagreement, and a plurality of values emerged.

5.2. Discussion on Values Depend on Storytelling Past Experiences

When the stakeholders were instructed to use the stance cards, we identified that the stakeholders shared their thoughts and opinions more naturally when they shared stories about their past experiences. Through this finding, we gained insight that stakeholders could share their past experiences more effectively if the stance cards (Figure 2) incorporated storytelling guidelines.

Figure 2 Stance cards used for case study

We found that the demographic information and emotional status section within the stance cards were not put into much use. The stakeholders mostly communicated their values through what they had written down on the past experiences section. The stakeholders shared their experiences as stories, such as when family members kept nagging the smoker to quit cigarettes. The allies together could relate to these stories and discuss their values in more detail.

5.2.1 Reflections on Our Approach to Value Discussion

Our findings implied that the stance cards could be re-designed by expanding the past experiences section, and by including specific guidelines for stakeholders to illustrate how their relationships and emotions affected their experiences. The stance cards could be developed to take a form of a storyboard, which Iversen et al. (2012) employed within their PD workshops to generate and represent ideas. For the AOU method, storyboards could be utilized for not only producing new ideas but also for the stakeholders articulate their values through stories of their past experiences.

5.3. Generative Ideation Relies on Relatable Stimuli

In the initial ideation stage, we provided the stakeholders with stimuli cards (Figure 3), which depicted a total of 18 current solutions for tobacco cessation. The solutions included breath mints, fidget spinners, handkerchiefs, hygiene masks, and so forth.



Figure 3 Example of stimuli cards

From this stage, we found that the stimuli cards helped the smoker group understand the limitations of the current solutions and express idea-level values. On the contrary, the non-smoker group stakeholders were not familiar with the objects portrayed in the stimuli cards and found it challenging to use the cards for initial ideation.

The stakeholders of the smoker group all had a relatively good understanding of the current solutions' limitations. They concluded that the solutions were substitutes for cigarettes and lacked the value of motivating tobacco cessation. For instance, the stakeholders determined that breath mints are only distractions from smoking cigarettes. From there, they discussed internal and external factors that could motivate tobacco cessation, such as enhanced health, regained beauty, and not ruining prized possessions by cigarette smoke. Accordingly, the smoker group focused on an idea-level value, which was for smokers to be reminded of the benefits that could drive them to quit cigarettes. Based on this value, the smoker group generated an idea of a nicotine sensory agent, which offers advisory feedback (e.g., "tobacco cessation will let your prized flowers more flourish in growth") when it detects cigarette smoke and nicotine.

Concerning the non-smoker group, they were not able to discern the strengths or weaknesses of the current solutions. This was because they did not have any experience with the current solutions. Even when the design researchers

explained the usage of the solutions, it was observed that the non-smoker group did not actively make use of the stimuli cards. The non-smoker group resorted to generating ideas based on the values that emerged while they used the stance cards. The group created an idea of a smartphone messenger, of which non-smokers could send customized messages to smokers on the damages of second-hand smoking.

Based on how the non-smoker group did not employ the stimuli cards as they were intentionally designed, we found that the non-smokers needed to be offered stimuli cards that depict current solutions or situations that they can relate to.

5.3.1 Reflections on Our Approach to Generative Ideation

One way to account for this issue could be by employing photo-elicitation interviews, which Le Dantec et al. (2009) used to gain an understanding of the stakeholder's values. In the case of AOU, the design researcher could request for the stakeholders to take photos of objects or situations that are related to the stakeholder's values and needs. Further on from identifying stakeholder values, the photos could be utilized as stimuli for the stakeholders to generate ideas centered on their values. Another way to overcome this issue may be for the design researchers to have a priori commitment of investigating objects and situations that both direct stakeholders (e.g., smokers of tobacco cessation) and indirect stakeholders (e.g., non-smokers) empathize. Thereby, the design researchers could design stimuli cards that display situations that help indirect stakeholders to catalyze discussion on the problem situation and express their values on an idea-level.

5.4. Value Co-existence through Idea Swapping

After the two groups finished generating

their initial ideas, the stakeholders were instructed to exchange their ideas with their opponents (Figure 4). Through idea swapping, we found that the stakeholders reshaped their own and opponent's values, and created an agonistic space wherein ideas were developed to account for the co-existence of conflicting values.

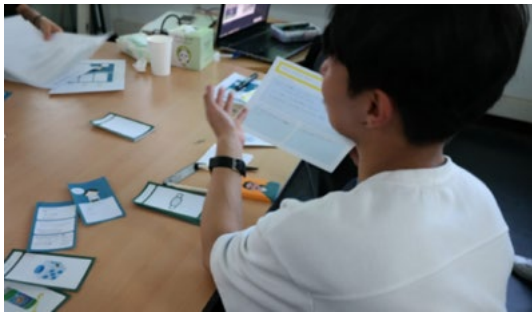


Figure 4 Idea swapping with opponents

Regarding the smoker group, first, they had to understand the underlying values the non-smoker group intended to convey through the customized messenger idea. Under the guidance of the design researchers, the stakeholders interpreted the underlying value as notifying smokers that smoking negatively affects not only themselves but also non-smokers. Thereafter, the smoker group developed the opponent's idea as the non-smokers being able to send customized messages that remind smokers that tobacco cessation enhances the health of themselves and others alike. For the non-smoker group, they interpreted the nicotine sensory agent idea to carry the value of reminding smokers to care for what they cherish. Therefore, they developed the opponent's idea as the agent offering information on both what the smokers and non-smokers value. Both developed ideas sustained the values of the smoker and non-smoker group. The ideas contained the non-smoker group's value of notifying smokers that their actions can harm others, and also the smoker group's values of providing positive feedback to smokers.

5.4.1 Reflections on Our Approach to Idea Swapping

Based on the findings of the case study, we have demonstrated that the idea swapping stage breaks away from the traditional negotiation process, which DiSalvo (2010) mentioned as dependent of compromise and attaining a general agreement. Through idea swapping, the stakeholder can understand how their values differ with their opponents, and how the design situation could be addressed with approaches that are contrasting with their ideas. In other words, through the opponent's idea as a means, the stakeholders can achieve what Mouffe (2000) has revealed to be "creating a space in which confrontation is kept open." Subsequently, the stakeholders can explore ways to implement their values in their opponent's ideas, which initially accounted for values that are conflicting with their own. As such, the idea swapping stage averts from reconciling differences and aligns with the cases of Björgvinsson et al. (2012), which take an agonistic approach of PD. The idea swapping stage acts as the channel for stakeholders to reshape and negotiate values. Thus, stakeholders can give shape to and can become mindful towards the co-existence of conflicting values. As the stakeholders realize possible solutions that fortify the plurality of values, they can feel a sense of accomplishment and self-efficacy for contributing to prolific change that addresses both parties of the problem situation. In this paper, we have not explicitly addressed how to advance the self-efficacy of stakeholders. Therefore, further research is needed on exploring approaches that can strengthen and assess the stakeholder's belief in their ability to contribute to prolific change.

6. Conclusion and Future Work

This paper offers three contributions. First, we provide a literature review that foregrounds the emergence of values and explicates the potential of employing PD to create an agonistic space. Second, we describe in detail on using AOU, a PD method that we have developed for stakeholders to negotiate conflicting values by creating and exchanging their envisioned solutions. Third, we share our findings from applying AOU to the problem situation of tobacco cessation. We have identified that the ally-opponent setting allowed stakeholders to be unrestrained when speaking of their thoughts and that the idea swapping process supported the stakeholders to reshape and negotiate values.

It is clear that there is a need for more research on AOU, as we have applied AOU only in the domain of tobacco cessation. However, we propose that the AOU method has value for other contexts. To validate this proposition, we plan to re-design the toolkits described in this paper and explore approaches, so that the AOU method can catalyze more in-depth discussion through storytelling, and stimulate collective ideation.

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아군-적군 이해하기: 참여적 디자인을 통한 상충된 가치의 공존

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초록

참여적 디자인은 이해관계자들의 가치를 파악하는 데 도움이 되는 연구적 도구이다. 이해관계자들은 다양한 가치를 갖고 있으며, 가치들이 상충되는 상황에 놓여질 경우에는 가치들에 대한 협의가 필요하다. 가치 협의를 할 때는 ‘논쟁 및 논의를 지속할 수 있는 공간’을 만드는 것이 필요한데, 이는 특정 가치에만 치우치지 않고 상충하는 가치의 차이점을 이해하고 조율하는 것에 도움이 되기 때문이다. 하지만 기존 연구에서는 참여적 디자인을 활용하여 건설적인 논쟁을 이끌 수 있는 방법의 단계적 절차를 제시하는 경우가 많지 않다. 따라서, 본 연구에서는 새로운 참여적 디자인 방법인 ‘아군-적군 이해하기(ally-opponent understanding, 이하 AOU)’를 제안한다. AOU는 다음 세 가지의 순기능을 갖는다. 첫째, 이해관계자들이 서로 다른 가치를 표현하게 한다. 둘째, 이해관계자 간 협력 환경 조성 및 창의적인 활동을 가능하게 한다. 셋째, 상충된 가치의 공존이 일어날 수 있는 아이디어를 이해관계자들이 개발할 수 있게 한다. 본 연구에서는 AOU를 검증하기 위해 금연이라는 문제 상황을 선정해서 금연문제에 대해 이해관계자들이 갖는 가치 파악 및 문제 해결을 위한 아이디어 도출을 위해 AOU를 활용하였다. 이를 통해 AOU의 강점과 한계점을 밝혔으며, 논쟁의 지속과 해결안 모색을 돕는 참여적 디자인의 방법적 방향성과 영향을 제안한다.

주제어 디자인 방법, 참여적 디자인, 가치 협의, 가치 공존

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