

Unfolding Openness: Critical reflection on the open design projects in Turkey

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Abstract: In recent years, Open Source Sharing and Maker Movement have become popular and have triggered a community of people who are enthusiasts of learning, making, creating projects, and sharing these projects and knowledge with others. These movements' development and maturation can be affected by local circumstances as well as the availability of resources and infrastructures, and people's approach to openness for such processes. The question is, then, who are the individuals and communities that identify themselves with these practices, and how able are they in their endeavor of open design? Are the open processes really open to anyone and applicable everywhere? Through a critical reflection on six open design projects produced in a graduate course, the makers' characteristics and local conditions' effect on open design processes are examined as a case. Therefore, the first aim is to analyze different perspectives and degrees of openness using (Balka, Raasch & Herstatt, 2010) terms of transparency, accessibility, and replicability. Although projects fulfilled most of the aspects, they failed to achieve accessibility due to the economic and social conditions in the local setting. The secondary aim was to analyze the open processes by considering the changing roles of the researchers as project makers since the processes are highly affected by the makers' backgrounds and knowledge. The making process is experienced as if it was an amateur pastime (Von Busch, 2012) or productive leisure (Atkinson, 2011) since making flawless products was not the only and direct aim of the class.

Open Design and Criteria of Openness

When it comes to openness, there are a variety of definitions and discussions on what openness is, its elements, and what makes a project to be an *open design project*. Pomerantz and Peek (2016) state that the term openness might imply that a resource is available to anyone for no charge, it can be adapted to any use, anyone can participate in the process, and the artifacts of the process are also accessible in any way possible.

This definition also correlates to the earliest example of open-sharing concepts, known as *Open Source*, which refers to sharing software and codes openly without any means of profit (Harhoff et al., 2003). This practice has been around since the 1970s and became widespread in the 1980s. Also, the term *Open Design* used for hardware and physical products (Vallance et al., 2001) has been spread. The first open hardware practices may be considered to coincide with the DIY (Do it yourself) movement in the heights of the 1950s

and 1960s, extending its existence to this day. The transition from industrialism to post-industrial and globalized settings can be stated as one of the triggers for amateur makers and DIYers to embrace the possibilities of mass customization and open design (Von Busch, 2012).

The ultimate shared goal behind all these approaches to openness and the Maker Movement or DIY movement is that they embrace and spread Open Design and openness as a whole for the democratization of production and creativity in connection to innovation (Dougherty, 2012). Nonetheless, to do so in the Maker Movement Manifesto, Mark Hatch (2013) states nine principles of the movement *Make, Share, Give, Learn, Tool Up, Play, Participate, Support, and Change*; all in the outcome to allow people to make and create while sharing and learning in a playful and fulfilling cyclic process by creating a community and a sense of wholeness to trigger further positive change. The manifesto outlines the movement's goal to provide affordable, user-

friendly tools that empower people to access knowledge, capital, and markets while emphasizing community and resources to produce authentic and high-quality things (Hatch, 2013).

Similarly, Balka, Raasch, and Herstatt (2010) discuss the aspects of openness under the terms of *transparency*, *accessibility*, and *replicability*. They explain that *transparency* denotes the level of information freely available to the community; *accessibility* refers to being able to participate actively in product development; and *replicability* indicates that it should be possible for components to be available individually so that the products can be assembled by the community. If we were to connect the nine principles of the movement (Hatch, 2013), and the terms of Balka et al. (2010), **transparency** would include *Make*, *Share*, and *Learn*; **accessibility** would include *Tool up*, *Participate*, and *Support*; **replicability** would include the combination of both with a push for *Change*. Thus, in parallel to these, Aitamurto, Holland, and Hussain (2015) stress that open design covers not only the openness of products but the openness of the process, including all the stages.

The Maker Movement in connection to Open Design has become popular worldwide, but the state of it in Turkey is still in its early stages due to sociocultural and economic factors. The reason for this case in Turkey is that the rapid prototyping and manufacturing tools and processes have been introduced as state policies with a changing political agenda with a new government that shifted its focus to privatization of production and encouraged it to the point of forcing global competition (Hatunoğlu et al., 2011). While the community in Turkey values the *Make* and *Share* principles (see Figure 1), their focus on *Participate* and *Support* requires financial support from internal and external groups (Hatunoğlu et al., 2011). Yet access to tools, resources, knowledge, and technology literacy still poses challenges. Hence, despite the project's aim to be open and transparent, these challenging circumstances inevitably hinder their accessibility and replicability. In light of this, the projects were analyzed regarding their level of openness in terms of *transparency*, *accessibility*, and *replicability* (Balka et al., 2010), and concerning the principles in the Maker Movement

Manifesto (Hatch, 2013) in the following sections.

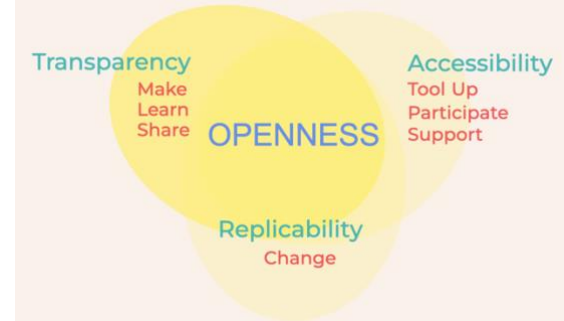


Figure 1. Adoption of Hatch's (2013) Maker Movement Manifesto and Balka et al.'s (2010) Aspects of Openness for the context of Turkey according to the Hatunoğlu et al. (2011) works.

Fluidity of roles: user, designer, maker

When looking at the literature on users and designers' changing roles and identities, the boundaries between amateur and professional seemed to be blurred and diffused into each other. While users are more active and take the initiative about their production and consumption choices (Toffler, 1980; Campbell, 2005; von Hippel, 2005; Leadbeater & Miller, 2004), designers seem to be in more organizational roles that help the maker create comfortably (Inns, 2007). The reason for including more people in the creation of objects lies in need to engage with the products on a different level (Dougherty, 2012) and go beyond just being passive consumers to active agents. Furthermore, emerging technologies in self-production methods enabled makers to make the objects they needed and/or desired (Atkinson et al., 2008).

The presumed roles of users and designers seem to be challenged. For this reason, evaluation of the involvement within the open design projects, maker or DIY projects have been an attractive area for researchers since these acts refer to an intersection point between users and designers where both parties are conducting creative work at some level. To differentiate between the levels of creativity involved in the practices, Sanders (2006) suggested a model with four groups: *Doers*, *Adapters*, *Makers*, and *Creators*. *Doers* spend a minimum amount of interest and skill to accomplish a project and mostly take action to



solve a domestic problem and save money. On the other hand, *Adapters* are motivated to express their identity through their works and change the objects in some ways to personalize them. When it comes to *Makers* who seek to create something that did not initially exist, with a strong interest in both the practice and the experience, they are the ones that usually follow some kind of guidance, such as a pattern, instructions, or notes that describe what materials to use and how to put them together. Lastly, *Creators* are the ones who enjoy expressing themselves and innovating; their creative efforts are fuelled by passion, and they have a high experience level. For them, making depends on using raw materials, and they can also operate without patterns and guides. With this categorization in mind, this paper questions which roles we have assumed and how those roles and our backgrounds as design students affected the projects.

Methodology

This study focuses on six open design projects (see Table 1) created in the *ID736 Open Design and Distributed Creativity* course at Middle East Technical University in Turkey as part of the graduate program in the Industrial Design Department. The course focused on open processes and the potential for alternative modes of production and consumption. All the projects followed similar stages to meet course requirements, and researchers experienced alternative forms of collaboration and designers' roles in decentralized, connected, and creative design processes.

After the theoretical background was settled, researchers were expected to 1) create design projects shared in open design platforms, 2) create projects inspired and adapted from other open design projects, and then share them again in open design platforms. Researchers created one project for each requirement, and in the end, six different projects were completed (see Table 1). This paper provides a critical reflection on the projects and examines their degrees of openness by using Balka et al. definition of openness. Also, the fluidity of project makers' roles between professionalism and amateurism was examined together with the circumstances of the local settings. Although the motivations and methods of the six open design projects fall into different areas, they share the aim of creating and experiencing

the open design process involving designing, digitizing, fabrication, and documentation. To analyze the projects, researchers used their notes from the process, reflection papers written at the end of the course, and the interactions received on the open design platforms where the projects were uploaded. This paper is positioned in a discussion area where projects are discussed in their level of openness within the local context and the designer's fluid role between professional and maker within the educational institution rather than being a research paper based on the primary data. Rather than for generalization purposes, this study presented as a small case to allow us to discuss the openness, level of involvement, and fluidity of roles in the context of design education in Turkey.

Reflection on open design projects

Throughout the six projects examined in this study (see Figure 2), the open design approach was utilized at various stages of the design process. The initial phase involved searching through open design platforms; documenting and sharing the projects' process and outcome on the open design platforms; engaging with the community through comments, and finally following a collaborative process in the class through discussions before, during, and after the project. However, these platforms have an issue of not having a united language and format they use. Therefore, in the class, a standard format including the project explanation, the mistakes, difficulties, and the steps of the project was established. According to this format, all the processes and learning experiences were transferred to the communities through open design platforms. The sources, materials, instructions, and project stages were openly shared in the Instructables and Thingiverse platforms, available to the community for no charge. People can also make revisions and interventions on the projects and use and change however it suits their needs. Therefore, considering the openness aspects suggested by Balka et al. (2010), projects met the *transparency* and *replicability* terms while failing to provide *accessibility in the sense that* the processes were not accessible for people to participate in the design and production stages outside of the class, and even though the tools and methods used for design and production of

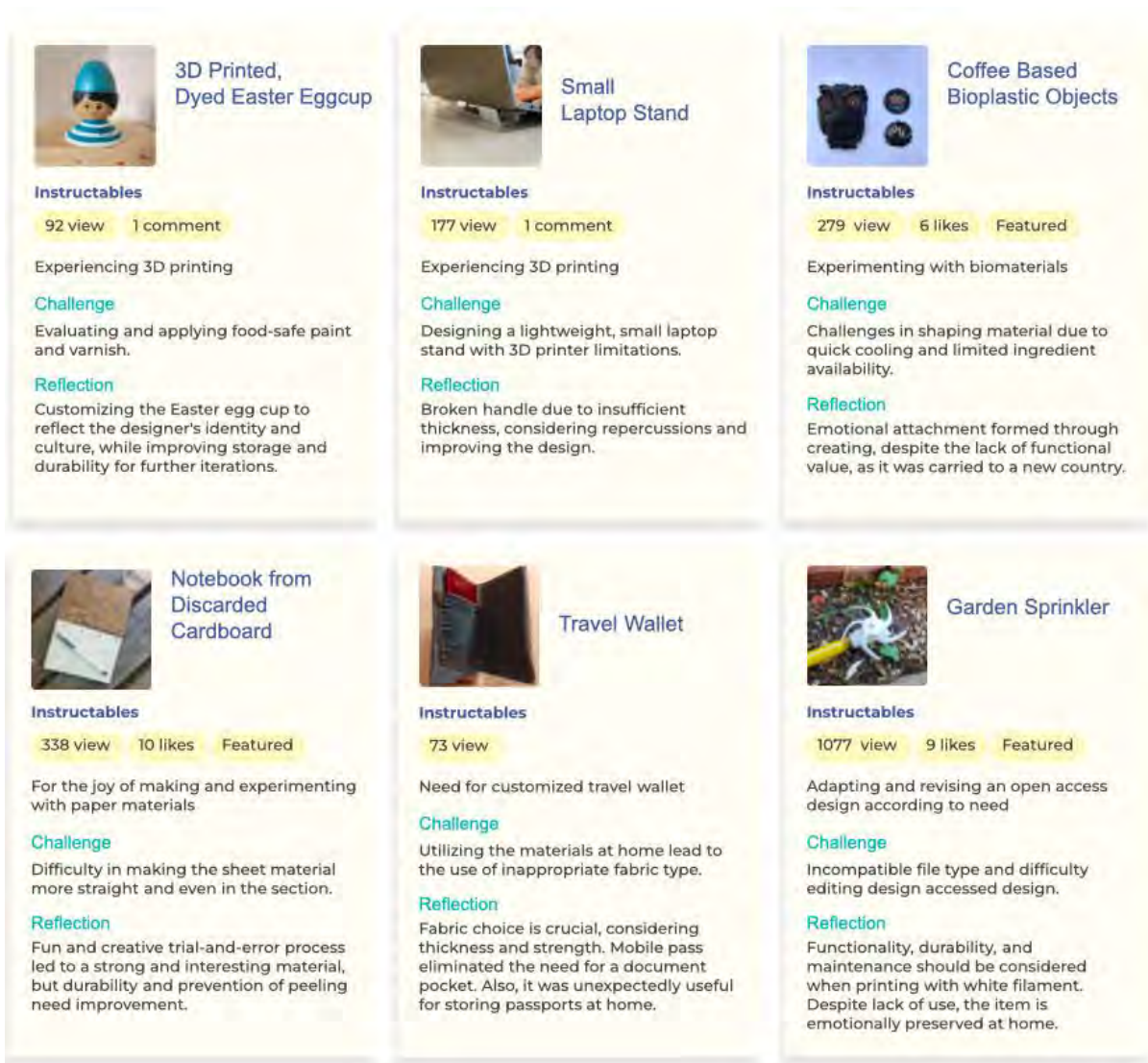


Figure 2. List of open design projects developed in the course.

the projects were explained, the reality of whether the users of the platform all are able to utilize them in the sense of knowledge and their access to the resources is unknown.

It was discovered that *accessibility* -as one of the principles of openness- was crucial since it strongly relates to the local context. As stated in the theoretical approach, the Turkish Maker Movement has a long way to go, and economic and social circumstances in the country make the democratization movement into a hobby that only those with the privileges and means to participate and sustain can be a part of. At least in digital processes like 3D printing and other rapid prototyping methods, not only the availability of such opportunities within one's

reach but also the economic aspect of it is an issue. Considering Turkey's economy and inflation rate in relation to Western currencies that dominate the price levels of many manufacturing methods, accessibility of technologies and materials needs to be considered as a limitation to the open design projects. Despite being in a university context where tools are relatively cheaper and more accessible along with the available resources and knowledge, the economic aspects still required consideration, especially when errors occurred. Even though these errors resulted in a broken product (Laptop Stand project) or size issues during modeling and printing (Garden Sprinkler project) (see Table 1), they were not reproduced but tried to be repaired.

The other discussion point of the open design projects was related to the researchers'



changing, blurring, and clashing roles as designers, students, and makers. In addressing the question of whether designers would continue to safeguard their designer identity or create freely as users when designing for openness and conducting open processes, it becomes apparent that the designers' identities are not fixed or limited to a specific role. Designers represent their knowledge, and their experiences, thus themselves as a whole, and their roles can be subject to fluidity and temporal shifts. Therefore, the designers' assumed role in creative endeavors is fluid and complex, with an encompassing wholeness that transcends through different definitions and labels. However, the question of how designers define themselves when designing for openness and conducting open processes is more complex. Their definition of themselves may change according to their goals and mood. Open design projects can be a challenge for designers to be more open to the possibilities without obsessing about the beauty of the end product (not only aesthetically pleasing but also functionally and semantically fulfilling) but to explore the process, getting familiar with the self-production phases to have a better understanding of the active users with whom they will collaborate much more in the future.

One of the researchers observed that they enjoyed the making process as if it was an amateur pastime (Von Busch, 2012) or productive leisure (Atkinson, 2011) since they weren't aiming to achieve meaningful, fully functioning products. Although they were aware of the exploratory side of the projects, they were still displeased with the end result since they couldn't fully lose their designer identity. They realized that it might not be quite possible to be detached from a designer identity while designing even a small thing while acting as a maker. They were aware of its weak points in various aspects and thought that they needed further iterations to be called as products. Maybe the stigmatized product beauty concepts of trained designers also affect the perception of self-made objects. Therefore it is hard to set aside these perceptions and see the project process as a making and sharing process only.

The effect of formal design education and conducting these open design projects in a graduate course being set in a design

department created another level for the discussions in this paper. As mentioned, conducting an open design project can require access to certain materials and technological equipment. In this case, the availability of a workshop area with 3D printers, relevant

materials, and equipment in the university setting provided easy access for the researchers. Also, guidance from the course instructor, peer feedback in class discussions, and technical support from the workshop instructor supported the open design process. Course requirements also had an effect on the open design projects in terms of planning the process and time limitations. Since researchers needed to finish and submit the projects in specific time frames for the course, the goal and the results were adjusted to this condition.

Conclusions

The study indicates two primary results see Figure 3). Firstly, we analyzed the projects regarding their level of openness in terms of *transparency, accessibility, and replicability* (Balka et al., 2010), and Maker Movement Manifesto principles (Hatch, 2013). Accordingly, it is discussed that the projects fulfilled the *Share, Support, and Participate* aspects in the process of *Make and Learn* with the help of the implementation of it in the process of the course, they failed to achieve *accessibility*, which lies in the foundation of *Tool up* principal due to the economic and social conditions in Turkey. To resolve some of the challenges that these conditions put on the open design processes in Turkey, the fundamental principle of *Change* should be emphasized in the community and academic scene in Turkey. On the larger lens, for these open design processes and the final projects to be sustainable in both the economic and environmental sense in Turkey, more consideration should be given to them in terms of being resourceful and functioning.

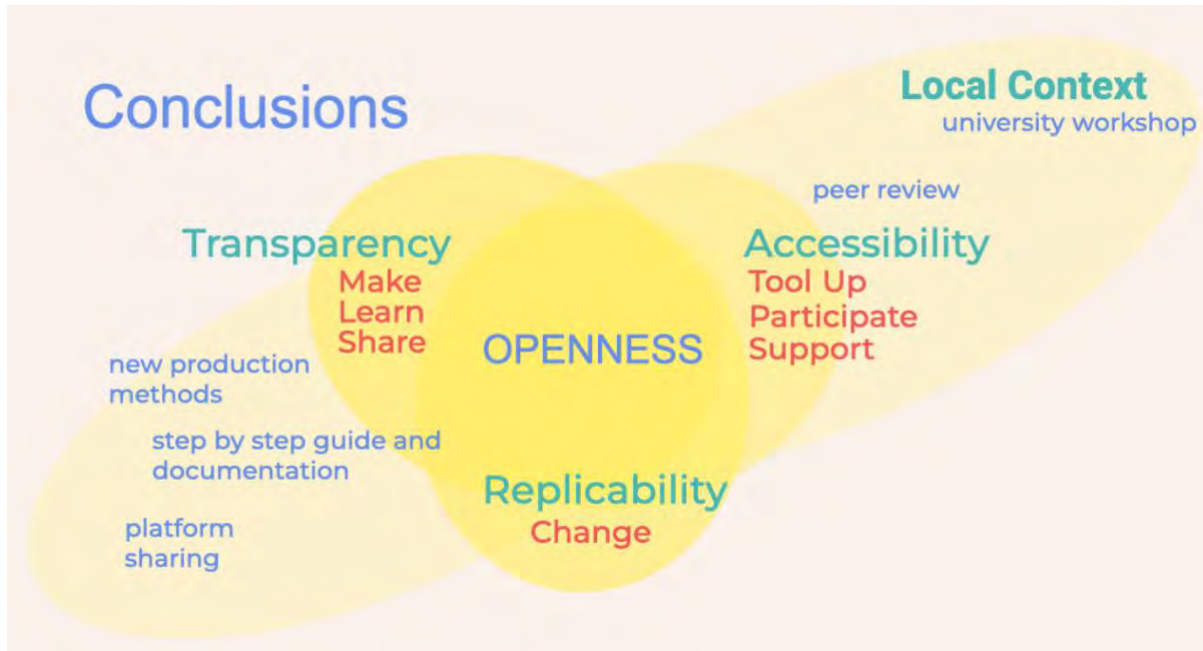


Figure 3. Adoption of Hatch's (2013) *Maker Movement Manifesto* and Balka et al.'s (2010) *Aspects of Openness* for the context of this research.

Secondly, it identified that the researchers' roles and backgrounds affected the process. It was realized that the creative involvement of the researchers cannot be identified with Sanders' model (*Doers, Adapters, Makers, and Creators*) since all the roles are fluid in their nature and one can have multiple roles while conducting an open design project. Designers may still protect their designer identity, but they may also produce freely as users, depending on the project's requirements and roles.

Finally, as designers and makers, we can contribute to openly sharing designs, knowledge, and experience; however, if those interested in and wanting to access the projects cannot due to uncontrollable economical and social circumstances, we must delve deeper into the root causes. Although the *change* aspect of the movement has not been fully implemented in Turkey, those who know and are proficient in open design concepts and who are active in these communities can push for change wherever possible.

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Notes

1. 3D Printed, Dyed Easter Eggcup <https://www.instructables.com/Funny-Dyed-3D-Printed-Easter-Egg-Cup/>
2. Small Minimal Laptop Stand: One Size Fits All <https://www.instructables.com/Small-Minimal-Laptop-Stand-One-Size-Fits-All/>
3. Turkish Coffee Grounds Based Bioplastic Objects <https://www.instructables.com/Turkish-Coffee-Based-Bioplastic-Objects/>
4. Notebook by Using Discarded Cardboard <https://www.instructables.com/Making-Notebook-by-Using-Discarded-Cardboard/>
5. Garden Sprinkler <https://www.instructables.com/Garden-Sprinkler/>
<https://www.thingiverse.com/thing:5409514>
6. Travel Wallet: Easy and Practical



<https://www.instructables.com/Travel-Wallet-Easy-and-Practical/>

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