

Risks of Open Design

The synthesized findings also reveal the potential downsides of leaving the design completely open: **ineffective appropriation caused by misalignment between the use and design**. Let's first start with showing what the two different perspectives look like before diving into the risk of ineffective appropriation.

The perspective of design is oftentimes taken by professional designers, which involves manipulation with components from the object side mainly including selecting and prioritizing a certain set of physical affordances and digital functions over others to craft the artifact to satiate the drive to strengthen certain capabilities (Figure 45). In this project, the goal is to support the well-being of older people during aging-in-place by providing PSS that can be appropriated in various ways tailored to daily needs.

The perspective of use (Figure 46) starts with the desired capabilities/human drive. Artifacts are merely seen as the means of attaining certain ends. There is no so-called proper ways of use. As long as the ends can be attained, it is the proper way, unless the designer strongly imposed or nudged so (i.e. exerting normative pressure).

So, how can the misalignment between design and use happen and why should we be wary of it?

Usually, the misalignment happens when the the actual use of the design is different from designers' expectations (Figure 47). But wait, isn't the whole point of open design is to encourage and accommodate the possible different ways of use? Now why should we be concerned about the actual ways of use being different from what's expected? Indeed, the core of open design is to leave the design open to various ways of use

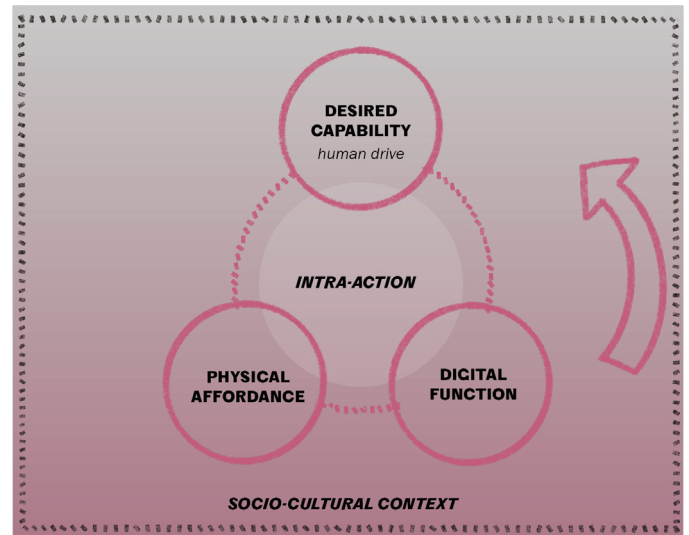


Figure 45 The perspective of design

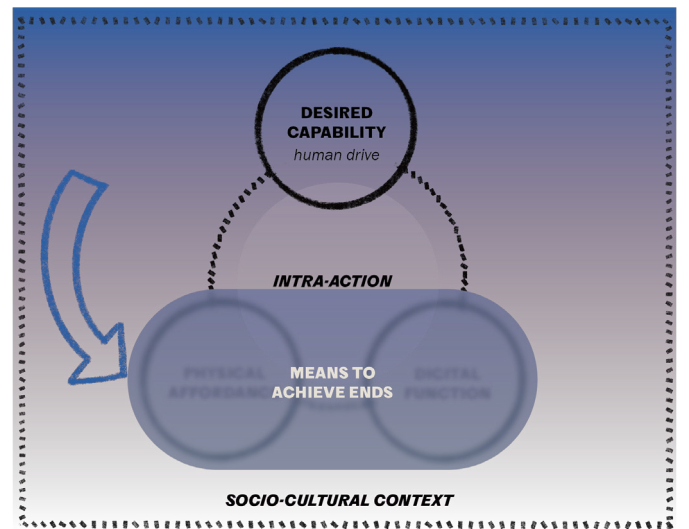


Figure 46 The perspective of use

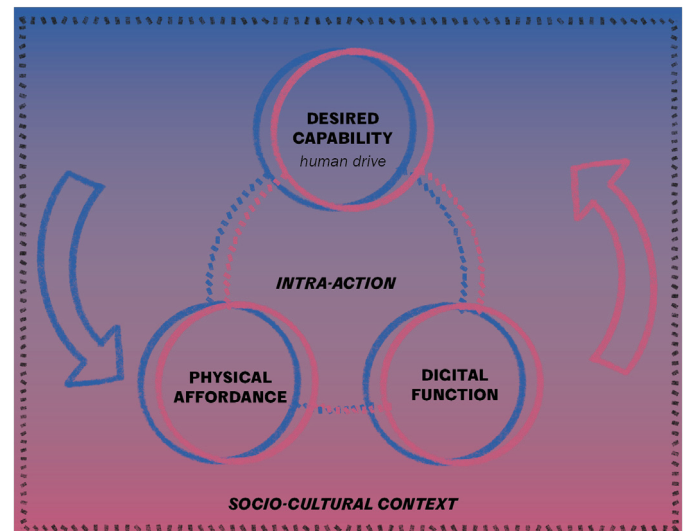



Figure 47 The misalignment of two perspectives

*The shades of color in the background indicate the degree of control. Designers have more control on the object side which is indicated by the darker pink shade at the bottom. Users are the sources of human drives which is illustrated by the darker purple shade on the top.

according to different individuals' daily needs. However, what is proposed to avoid here is ineffective ways of use. For instance, a piece of paper can certainly be repurposed as a knife by using the sharp edge, but it's far from effective ways of use like using it to take notes or fold it into an origami capsule to collect paper clips. Here, the ineffective appropriation is what should be avoided.

Therefore, instead of leaving the design completely open, certain design efforts should be put into providing enough use cues to lower the misalignment of use and design thereby improving use efficiency.

In the most extreme case, the misalignment might even cause the loss of usefulness. For example, the set-up of the workshop was an experiment to turn the participants into designers to decide upon the combination of certain physical affordances and digital functions according to the drives stemming from their daily lives. Though the researcher attempted to simplify the process by translating the 'physical affordances' into the choosing of the provided objects and substituting the abstract 'drives' into valued activities, the participants still had great difficulty in pairing the objects and the functions according to their needs. The difficulties encountered during this process indicate that it is usually counter-intuitive to force the users to customize the smart things from the perspective of design. Theoretically, there are so many combinations that the participants can make to suit a great deal of different needs and it should be super useful to cope with different situations. Practically, however, the complete freedom of customization engenders enormous complexity in actual use which leads to a sheer drop in usefulness. This paradox can be well summarized by the 'problem of level of tools' put forward by Don Norman (1986).

 A major issue in the development of tools is to determine the proper level. Tools that are too primitive, no matter how much their power, are difficult to work with. The primitive commands of a Turing machine are of sufficient power to do any task doable on a computer, but who would ever want to program any real task with them? Most people need higher-level tools, tools where the components are already closely matched to the task. On the other hand, tools that are at too high a level are too specialized. An apple-peeler is well matched to its purpose, but it has a restricted set of uses. Spelling checkers are powerful tools, but of little aid outside their domain. Specialized tools are invaluable when they match the level and intentions of the user, frustrating when they do not. (Norman 1986)

In this case, to leave both physical affordances and digital functions open is on a too primitive level to easily work with.

How to maintain the openness of design on a level that is effective for users to use? The design principles for designers to lower the misalignment between these two perspectives while still remaining open to a variety of use will be discussed in the next chapter.

Discussion

The co-speculation sessions with older people were not plain sailing. The different personalities of older people make the facilitation of each session a new adventure. For example, some participants are more talkative and diverging and necessary interventions are needed to steer the direction of diverging. Some participants are more thoughtful and better at abstract thinking, some guidance toward concretized speculation is needed. Overall, it was a great pleasure to co-speculate and discuss with a variety of people. The discussion sometimes went surprisingly deeper than expected. The outcome of the sessions was full of surprises and effectively exposed the blind spots the investigator had. Besides, topics on autonomy and agency, chronological evolution of use, technology-utopian, etc. were touched upon during the sessions, which were quite inspiring and brought much intellectual pleasure.

One recurring pattern in the sessions with the older people was that they would be positive about the value of gerontechnology, but then hurry to add that they themselves would not need something like that yet (i.e. it was useful for *other* older people, with more health issues). This might be partly true in this case, because many of the participants are in good condition. But sometimes, it might be that participants don't feel comfortable to talk about their own issues openly. This can be an obstacle in co-speculation if they were asked to ideate solutions for themselves. Hence, situated elderliness was used to detach the participants from their own experience. Activity cards were used as provided situations which are not necessary to be their own experience. In this way, participants will have no scruple to brainstorm and co-speculate.