artifact can respond to a number of different technical and social situations. And it is happening anyway; design is changing in a post-industrial world.

Kroes (2001) describes the "dual nature of technological artifacts" as being both physical and intentional. They extend philosophical inquiry of the engineering artifact into its techno-social aspects. In line with their stated intention of investigating function, Kroes and Meijers (2002b) explicitly reject investigating a "thin notion of function," one that has reliable association between input and output. In their view, a thick notion of function would include some of the deeper issues of intention important to engineering design; as would moving their concepts into proximate design fields, such as architecture and building science. This chapter outlines some of the deeper implications of intention that can be analyzed by moving outside of engineering design. In other words, in this chapter I argue for an even thicker notion of function.

From this designer's point of view, describing artifacts as both technical and techno-social is an important step in the assignment of function to human creations.[1] While it is true that designers, especially engineers, imbue function into artifacts; designers can also intend functionality for their artifacts. In architectural jargon, one is called a "tight fit" solution and the other a "loose fit" solution. Simple engineering, such as the design of the first jet engine, is an exemplar of "tight fit." The house construction system in the case study is an example of a "loose fit" technology. This distinction differentiates engineering from other design fields, and the engineering emphasis in the philosophy of technology leads to the conflation of function with functionality. Showing my bias, I think that any emphasis on engineering in philosophy of technology tends toward instrumental and essential argumentation. This would put engineering design on the weak side of functionality and on the strong side of function.

As an architect-designer, I find it easier to imagine ambiguous artifacts as intentionally ambiguous, rather than simply assume unforeseen appropriations by others, note, this is not the multiple realizability of functions, these are intended designs resulting in the multi-functionality of objects rather than accidental functions such as a hammer being used as a doorstop. Andrew Feenberg (1999) discusses the historical discovery of function during technological development. Instead, architects are historically conscious designers that intend ambiguous function. The wood frame construction system is a nineteenth century version of a technology that surrounds us, as are computers. Both combine homogenizing tendencies with new opportunities for appropriation, as in Borgmann's (1992) case for computers as homogenizing technological artifacts and Feenberg's (2002) optimistic critique for democratic computer design for such things as distance learning. In addition, part of the post-modern condition of contemporary design anticipates multiple appropriations, in other words many contemporary artifacts are designed for functionality.

[1] However, function is still assigned an instrumental, and perhaps essentialist (Feenberg, 1999), importance in Kroes' arguments and in his critique of Searle (Kroes, 2003).

1.2 Use and Usability

Tom Moran (2002) argues for usability as design intent. Software demonstrates the distinction between the use of an artifact and its usability. It is created with different design intent than the technical artifacts of engineering, more open to manipulation, redesign, and sub-design. In other words, there is a middle design realm between production and consumption where successful design is measured as much by resilience and ease of appropriation, where economics are more complex than simple technological production. Perhaps, use and usability are the consumption side of function and functionality (Cowan, 1985).

1.3 Intention and Intentioned

Now that I have questioned a distinction made in philosophical studies by introducing a double aspect of design intent, namely function and functionality and have suggested that even users are to some degree designers; I would like to suggest that the term intentioned could capture the contemporary post-modern attitude that designs for functionality and usability. This suggests a thick notion of intention. Of course, this does not assume that a design can anticipate all unintended consequences, but it can expedite a realm of secondary design to engage these consequences. As usability and functionality imply a more graduated differentiation between design and use, suggesting that intermediaries can be designers and users at the same time, so can design intent be subjectively plural with origins in another design.

Moreover, "intentioned" in its strongest sense associates a set of unrelated designers tackling the design of the same artifact (houses) or practice (methods of building houses). They might co-operate or compete, but each designer is aware of advances on the common project. Designers often are a "set of agents that share the same ontology … able to communicate about a domain of discourse without necessarily operating on a globally shared theory [and] its observable actions are consistent with the definitions in the ontology" (Gruber, 1993). Design intentioned, as distinguished from intent, explains situations where different companies are designing the same type of product, and explains many indigenous traditions. However, another, more focused possibility of "collective intentionally" can be the root of design. The radical technological revision of wood building practice in North America was conceived collectively, and was an accretion or assimilation of many different cultural practices forged under the catalytic, homogenizing influence of new technology in construction and wood production. Here, perhaps, is an extreme example of techno-social designing.

This definition of collectively intentioned effectively reframes a discussion in the philosophy of technology. I propose that use and usability is the subject of the following discussion and explains the ambiguity identified. According to Kroes (2003), there is an