

Two, the use-plan analysis is primarily a reconstruction that retrospectively models the beliefs held by, the decisions made by, and the actions taken by a rational designer, in order to satisfy the standards of practical rationality. In doing this, the use-plan analysis ignores many aspects of actual designing: among other things, it does not consider the interaction between designers and manufacturers; it merely touches upon the role of safety regulations and standards in designing; and it has nothing to say about teamwork in designing. This is not to say, however, that the analysis is completely insensitive to the phenomenology of using and designing, as I will show in the next section.

3 Accounting for Actual Use and Design

In this section, I consider four objections against the use-plan analysis. All of these objections are inspired by the phenomenology of artifact use and design, and by existing anti-intentionalist accounts of these activities, philosophical or otherwise. However, for the sake of clarity, I have schematized and increased the critical portent of the phenomena discussed to such an extent that the objections only resemble points raised in the literature; I have largely omitted references to avoid possible straw-man fallacies. The goal of this section is, in any case, not to polemicize against existing or possible anti-intentionalist accounts, but to show how the use-plan analysis provides a phenomenologically viable framework for understanding designing.

3.1 *Creative Use*

It may be objected against any account of artifact use that centers on designer's intentions, that actual use is not necessarily or even typically related to the efforts of designers (e.g., Preston, 2003). In many cases, users have invented new ways to use existing artifacts, have modified the artifacts accordingly, and have communicated alleged successes to others. Examples range from the rustic to the revolting: the use of beer to keep slugs from eating garden vegetables has been discovered and communicated by various gardeners, and is currently promoted by organic gardeners, not by any brewing company; and it is unlikely that any airplane manufacturer imagined, let alone promoted the idea, that some of its products could be used as flying bombs as in the 9/11 terrorist attacks.

In all of these cases, part of the use-plan analysis applies: agents construct and communicate use plans, which may then be executed or rejected by others, for instance on the basis of their effectiveness. Yet the plan-constructing agents are not designers, but users. Thus, the objection targets the use-plan analysis insofar as it exclusively reserves plan construction for designers, which it does explicitly.

Phrased in this way, the objection may immediately be turned into a response. Creative use does not show that designer's intentions are irrelevant for actual use. Instead, it shows that agents who typically use artifacts can occasionally, or even regularly, be designers, i.e., the constructors and communicators of use plans. The use-plan analysis concerns *roles*, and does not make any claims about which agents may play these roles. Just as agents engaged in designing, say civil engineers, are typically also engaged in using artifacts, for example when driving to their work or brushing their teeth, so agents who are typically engaged in using can occasionally or regularly engage in designing. In the examples given above, the creative users were designers by definition: in constructing and communicating a use plan, they have fulfilled all the conditions for playing this role.

This does not mean, however, that there is no distinction between agents who occasionally engage in designing and those who do so on a daily basis. Apart from relevant experience and expertise, which may improve the quality of the designed use plans, it is an elementary social fact that some agents are *professionally* engaged in designing, and other agents are not. Contemporary societies are characterized by a multitude of divisions of labors and specializations; that between professional designers and, for want of a better term, "consumers" is one such division. This social mechanism does not make designing by consumers impossible; it does not make the use plans produced by professional designers rational by definition; and it does not preclude "consumer designers" from producing rational use plans. However, the distinction between professional and non-professional designers shows up in several normative notions, such as that of "improper" use, which serve to privilege – socially and legally, if not rationally – some use plans over others. These notions, and the tension between the rational reconstruction and the social mechanism, form the backbone of the use-plan analysis as an evaluative framework for artifact use and design. In section 4, I list the basic elements of this evaluative framework, and indicate some further ramifications.⁶

3.2 *Serendipity*

Another objection may target the description of the design process given in section 2. Actual designing is not a linear process. Designers do not start with a user goal, which is then translated into specifications, which are subsequently and successively satisfied by constructing a use plan or a material object with particular physical features. In reality, designers switch back and forth between specifications, plan

⁶Many anti-intentionalist accounts of artifact use and design, most notably constructivist accounts in Science and Technology Studies, lack evaluative notions such as "expertise" and "properness", or lack ways of relating such notions to values such as practical rationality. Recently, a similar lack has been noted by prominent researchers in this tradition, most notably Collins and Evans (2003).