designing and product designing, continuously reframing the problem that they are trying to solve, testing solutions in various stages of development, etc.[7] Here, I consider only one way in which the use-plan analysis may fail to match design practice; the response to this criticism also applies to many other alleged failures.

In some cases, the end product of designing does not satisfy its original goal, but it may be successful nonetheless. One familiar example of such an "unplanned product" is a type of glue, developed by Spencer Silver, which did not turn out to be the looked-for strong adhesive, but a very weak one. This unsuccessful product was later, and by another designer, found to be very effective for another application, namely for removable self-stick notes, and so effective that it became the basis for one of the most successful office products of recent times.

These serendipity effects in designing seem to undermine the intentionalist basis of the use-plan analysis. The end product has only a tenuous relation to the original designer's intentions: the product does not turn out to be what the designer expected. Still, these unintended products exist, they are successfully marketed and used, and they may be as common as "as-predicted" products.

In response, it should be noted that serendipity only undermines some naïve intentionalist accounts, namely those which emphasize a designer's *original* intentions. There is no need for an intentionalist account of designing to be this restrictive: as long as there is a clear basis for selecting some mental states of the designer, or other agents, as focal points of the analysis, intentions may change. The basis for determining the relevant intentions for the use-plan analysis, is provided by the requirement of communication: different use plans may have been constructed, or just entertained, at different points in the actual design process, but only communicated use plans add to the resources available to users. These users may be, and in the case of components typically are, designers of other artifacts (Vermaas, 2006).

In the self-stick notes case, the use-plan in which Silver's material was to be a type of glue *was* communicated, and it provided the basis for evaluating the material as a failure. Then, a different use plan was constructed, in which the existing material played a different role; this plan was effective, and it was communicated to users of the end product, namely self-stick removable notes. Both the construction of the "glue" plan and the material, and that of the "self-stick removable" plan count as designing on the use-plan analysis; the plans can be easily distinguished, and they explain the change in the evaluation of the product. That one component of reusable self-stick notes was previously an unsuccessful type of glue is irrelevant for evaluating its use for these notes.

---

[7] There is a rich body of literature in design methodology that tries to represent designing as (very loopy) flowcharts. The phenomenology of designing suggests that any such chart is an impoverished representation, because of the reframing described in the main text; see, e.g., Schön (1987) and Bucciarelli (1994) for examples from various types of engineering design.

3.3 The Unread Manual

Following up on the serendipity response, one may target the communicative aspect of the use-plan analysis. In this analysis, designer's intentions – structured as a use plan – are the content of some communicative act, meant to address the community of users. Perhaps this account may be developed in sufficient detail, for instance by applying a Gricean theory of communication. But this, so the objection goes, would be a waste of effort. Even if designers attempt to communicate their intentions or plans clearly, and if this communication can be analyzed in some sophisticated manner, no user is interested anyway. Studies into user behavior show time and again that users do not read manuals or pay much attention to any other form of elaborate verbal communication. Yet if use plans are such extensively structured patterns of action, elaborate verbal communication seems to be the only way to communicate them. So whatever analysis is chosen for the communicative actions of designers, it is inappropriate. No-one is listening on the other side of the line.

This objection may be strengthened by a positive account of artifact use and design. Users do not need to pay attention to the communicative efforts of designers, because they already know how to use the vast majority of artifacts that they encounter. Beds, teapots, toast, and newspapers – to give some examples from daybreak onwards – do not come with manuals, nor do users often consult any other information regarding their use. All of these artifacts play their role in an existing, well-established practice. Designers seem to have little freedom to deviate from these practices: designing is not just constrained by physical (im)possibilities, standards and regulations, it is also constrained by traditional patterns of use. For many artifacts, especially simple ones such as teapots and toothbrushes, designers seem to have little choice but to adopt the familiar use plan, because users will execute this plan anyway.

In combination, unread manuals and inflexible existing practices suggest that communicating a use plans is like trying to steer a whale: the only way to pretend one has achieved success and to avoid frustration is to follow the whale's lead and direct it to where it was headed anyway. The use-plan analysis appears to ascribe to designers an unrealistic amount of freedom and authority.

The response is two-sided. First, it may be pointed out that designers are much more effective, and creative, in communicating their use plans to users than suggested above. Manuals are far from the only communication means available, and designers actively search for ever more effective means to promote or discourage user behavior. Commercials and advertisements often focus on the novel features of artifacts, and show users employing these features – which is a clever way of communicating changes or additions to the traditional use plan. Many products guide user behavior by their designed physical features, in ways that the users may not even be aware of.[8] Of course, users can ignore this communication and continue

[8] Well-known examples are speed bumps and the heavy hotel key described by Latour (1991).