TOOLBOX

A designers approach towards usability and packaging

In Western countries people open on average seven packagings per day (first time opening). People are thus confronted with packaging every day. Many of these remain difficult to use. Examples of problems that occur are: hard to open or pour, hard to hold, or not enough grip. In many occasions tools are needed to open them, for example glass jars with metal caps, flexible packaging with films that are sealed very tight, carton boxes closed with tape and glue, and many others can be enumerated.

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New packaging concepts are mostly not understood by users because they are not part of their repertoire. Due to the lack of knowledge concerning these new packaging, many people just handle these the way they always do. Users take a packaging and expect it to function. They do not pay much attention to it and hardly analyze the - new - method to open it. They absolutely do not read the information on the packaging about ways of opening (Winder, Ridgway, Nelson, and Baldwin, 2002). This means that new concepts have to be shown to users; they need explanation (demonstration in shop, commercials, adds, apps, etc.). See for example the pictures of the cap (figure 1a) with a special pin on the inside. By pressing down the bull-shaped part of the cap, the pin punctures the alumi¬num seal and by twisting the cap the seal will be broken and pouring is possible immediately after opening. Figure 1b shows the bottom side of the cap with the pin. Hardly anybody understands the opening method, because it is hard to see and understand without previous knowledge. It is not conspicuous, it has the same color and it was not demonstrated. A beautiful concept not being used in the market, because it is not understood by the users.

Research on the usability of packaging has provided many guidelines to design a usable packaging. Despite the fact that there are many guidelines available, a lot of packaging remains hard to use. This article elaborates on

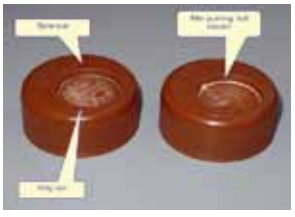

Figure 1a

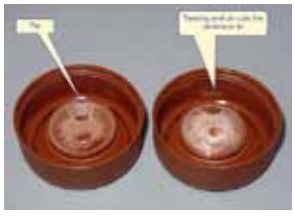

Figure 1b

this contradiction and tries to bridge the gap between users and designers by proposing a designer's approach in implementing the guidelines.

Design practice of packaging/functions

In practice, the focal point of packaging development is often the graphical design and styling of a packaging. The design phase starts with a concept based on a (graphical) design from creative designers. Technical as well as economical feasibility isn't sufficiently taken into account, while managerial decisions already are being made.

The concept has to be translated by structural-packaging designers who look at requirements set by the product, like the required strength, logistics, the packaging process, etc. Primary concern within structural design is the protection of the content. Within the cost constraints -based on the design from the (graphical) designers- this can be hard to accomplish (Ten Klooster, 2002). The structural design of packaging is thus restricted by the technical possibilities and the already-decided appearance of the packaging. Investments that are connected to changing a design on the one hand and by gaining specific knowledge of packaging technology on the other hand are often too large to be justified, which further limits the solution space.

Structural packaging design is currently underdeveloped compared to graphical packaging design and compared to the turnover of the market (Ten Klooster, 2002). But structural design is an indispensible part of the development phase and deserves more attention, even more so when usability is concerned.

The basic functions of a packaging are:
- preserve the quality of the contained product;
- protect the product during transportation and
- store and inform all stakeholders throughout the life cycle.

Structural packaging designers think along the hierarchy of these functions. A packaging has to block its product from all kinds of external influences. For food products, the factor that reduces the quality of a packed product the most is oxygen. Small leaks of only microns in a seal can already ruin the product. The protection of the food thus dictates a hermetic closure of the packaging. This contradicts the usability of the packaging. In fact, many of the basic functionalities contradict the usability of a packaging. Adjoined with the limitations imposed by for example production lines, costs and legislation, elements like usability are liable to be pushed aside. In practice, usability is thus often a derivative from the basic functions of a packaging.

A first step in implementing usability in practice is prioritizing it (Kuijk, 2009). In other words, if usability is considered important, it consequently should get the attention it deserves during the design phase.

Each time, the contradiction between protecting/conserving the product and ease of use has to be overcome. Are the requirements set by the protection function of the packaging too strong or stronger than the use function? Within such trade-offs the already available guidelines on usability can be of real assistance. The next paragraph explores these guidelines for packaging design.

Guidelines for usable packaging

Usability in packaging means attuning the design of a packaging to all of its users, taking into account important aspects of usage. For packaging this means being able to hold and open the package, to pour, dose, reclose the package, and to store the product.
For these aspects numerous guidelines have been developed. The International Standard on Accessible Design provides an elaborate framework for design and evaluation of packaging, incorporating requirements about all usage functions (ISO 11156, 2011). For example, portability, ease of opening, ease of re-closing but also aspects like considering the use of braille. Kecerciouglu (2005) and Freudental (1999) both offer checklists that can be considered when developing packaging. Furthermore a study done by Tiekstra (2005) provides a set of ground rules to be considered during development of packaging of which the first basic steps are illustrated hereafter.

It should be clear where/how to open, use and re-close the packaging.
Many people use packaging in other ways than intended by the designer. Users often do not understand the concept and twist instead of tear or push while they have to pull. The design of the packaging can play an important role. Using transparent stickers to close a box is such an example; it looks good but nobody can see where to open the packaging or understands why the packaging cannot be opened.

The package should be tested in actual situations.
Testing should be done in actual situations. This also means that the designer should avoid testing in situations that are not realistic or testing of prototypes that can differ from the production series. For example, asking respondents to show how they use a bottle of washing liquid is different than watching them doing it without knowing that they are being observed. Many people are not aware of the way they use daily products and/or packaging.

To open the package, the consumer needs few manipulations, short time and limited force.
This guideline defines the physical aspect of using a packaging; the less manipulations in shorter time, the better the design will be judged.

When people with less strength are able to use it, people with more strength are too.
Adjust your design to those who determine the weakest link of the design chain.

Designers should consider lateral grips.
This guideline gives a preference for a certain way to handle packaging; lateral grips are seen as being more natural than others.

These guidelines are a first step in addressing usability in the development process of packaging. However, there is one remarkable aspect in all of these guidelines. They do not take the packaging designer and the way the designer thinks as the starting point. This might be a reason why many designers in practice do recognize the importance of usability but don't know how to put it into practice. Therefore, the key is the integration of these guidelines in daily practice of structural packaging design.

For this reason, an attempt has been made to come up with an approach that can be used for structural packaging design based on the way designers think.

Model: a designers approach

For the designer's approach, the guidelines of Tiekstra (2005) are used as a starting point to set out a logical sequence of decisions that have to be taken by a packaging designer. The design process often begins with knowing which users are part of the target market. This determines the weakest users and by using quantitative data, requirements can be set like maximum torque value of a cap or maximum lateral pulling force of a top seal. After the analysis, the designer starts thinking about solutions based on many requirements in which the protection function should serve as starting point within packaging design. Materials, production techniques, logistics, all have to be taken into account and lead to concepts. In this phase already usability has to be included in the decision process of the designer. When the first sketches for a new packaging concept are presented, the first question that has to be answered is: does the user understand the concept? Is it clear where to start opening the packaging and what to do next?

To test if this ground rule is applied in packaging, 40 students of Industrial Design Engineering were asked to judge more than 20 types of packaging on their comfort to open. They analyzed the packaging on the ways to open them. They looked at all possible ways to open them, the use of tools and the most logical way to do it. Some remarkable results came out of these analyses.

- For some packaging it is absolutely unclear how to open them. A transparent packaging was closed with a trans¬parent, nearly invisible, sticker.
- A flow pack for bakery products had a special opening device, which was not noticed by the students. A pac¬kage like this, a so called flow pack, normally does not have an opening device like this and therefore it is not expected to be present (figure 2). This is in line with the cap from figure 1. If people do not expect an opening device, it is harder to recognize.
- If an opening device does not function well, this frustrates the user and will lead to a negative judgment: 'we will never buy this' (the flowpack with opening device).
- Some people have rituals in opening a packaging. They like to do it in a special way which pleases them. Twisting the film or folding a small paper for example.

Figure 2a

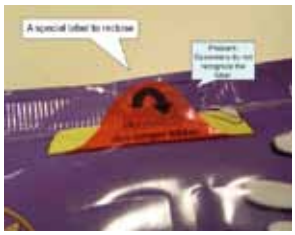

Figure 2b

Rituals can influence the way of opening. To be sure that these rituals are incorporated in the approach, another group of 40 students of Industrial Design Engineering was asked to take pictures while opening the packaging using their own standard ritual. They all came up with a series of pictures which showed that everybody has his/her own - weird - way of handling packaging, for example:

- taking off a straw of a carton board drink packaging while leaving the plastic cover of the straw on the packaging;
- opening a carton board with dough for homemade croissants;
- many ways to shoot a crown cork off a beer bottle;
- drinking out of a plastic milk cup with the top seal still on the cup and pierced in a special way.

After analyzing the pictures of all possible ways to open a packaging, the most logical ways and rituals are incorporated in the chain of decisions a packaging designer has to make.
There is a sequence in thought in usability. First target the market, than integrate usability in the sketches. Thereafter, the concept has to be detailed in such a way that few manipulations are needed in a short time and with limited force. Simple tests should reveal how many ways and rituals have to be taken into account. Lateral grips have preference

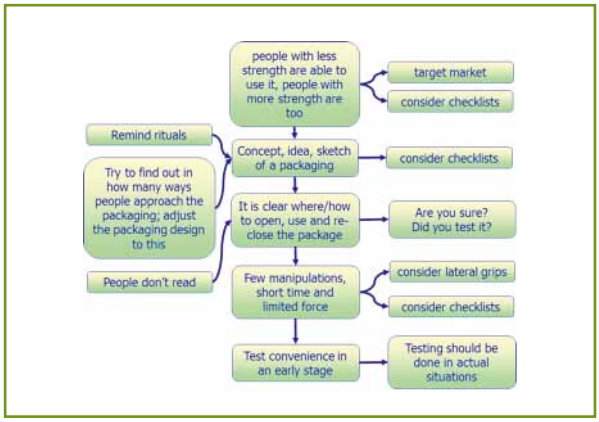

Figure 3

above other grips and checklists can be used to value the design proposal. At last the concept has to be tested at an early stage. If it is possible to make test series, this should be done. A graphical representation of the status quo of the approach is shown in figure 3.

Conclusion

Usability has proven to be hard to implement in the design process of packaging. The hierarchy of functions forces structural packaging designers to start with a concept designed by (graphical) designers and within the constraints of costs, logistics and the packaging process. An approach, which integrates usability at an early stage, can overcome the problems in which the first step is prioritizing usability. This approach is an important step towards truly integrating usability principles in the design process of packaging. With the many checklists already available, it should be further developed and completed. More importantly, the approach needs to be tested in the field to determine if it really leads to userfriendly packaging. Furthermore, a wealth of knowledge on product usability is barely widely known, let alone used in the field of packaging. A translation of these theories and guidelines is an important next step in conjoining usability and packaging development.

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Gespot

Verboden op de bril te hurken

De universiteit van Wageningen kent vele buitenlandse studenten en bleek daarom een extra pictogram op hun toiletten nodig te hebben.