Creative Methods for Unlocking Consumers' Tacit Knowledge

Practical tools for designing experiences

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Introduction – the need for new thinking tools

Industrial designers have always been concerned with the effect of their work on people's experiences but this has tended to be the hidden part of the designer's role. We present ourselves as masters of form and visual identity partly because those are the things that are easiest to demonstrate and recognise.

The increasing importance of information and communication technology (ICT) has made this concern with experience much more relevant. Starting with the design of human-computer interaction and more recently in the design of "intelligent" products, it has become clear that we need ways to understand how people will use the things we produce, and design the "system of use" with as much care as we might take over attractive form and other physical functions.

Of course this is as true of traditional products as it is of those with some kind of electronic function, but the presence of ICT in almost every aspect of our lives has given us systems of use that are capable of far more, and far more likely to break down, than a traditional design. For example there is a very definite limit to the amount of information that can be provided by a traditional pack so we have to decide what is most important and leave out the rest. If the pack contains an ICT device, or allows us to connect it to an ICT system[1] then, in theory, there is no limit to the information we can provide and the problem of how people will deal with this bewildering opportunity becomes very significant.

Luckily, because these problems have been around in some form for quite a long time, there are some helpful ideas and tools available to help us. Ideas that appeared in computer interface design in the 1980s have been adopted by some designers of intelligent products in the past ten years and it is possible to see ways to apply them to opportunities in packaging. This is not just relevant to ICT, with some creative thinking we can adapt the same principles to any design problem where we need to think about the whole life of our design and how people will deal with it at each stage.

[1] While there is a lot of speculation about new ways to make packaging more "intelligent" through new kinds of devices and materials, the bar code already provides a way that every pack can be "connected" to intelligent products and networks to allow very rich information to be attached to the pack and accessible to its users.

Beginnings – Hot Metal to Cold Data

In the 1980's, when the newspaper industry was undergoing a transformation from traditional "hot metal" technology to computer-based editing and production, designers of the new computer-based systems faced two great difficulties. The people who would use the new systems and had all the newspaper expertise had no knowledge or experience of computers, and the computer technology that would make it all work only existed in the form of laboratory prototypes. Two Danish designers, Pelle Ehn and Morten Kyng, came up with an ingenious solution that they called the "cardboard computer"[2].

Their computer was a crude mockup – the screen was a piece of paper fixed to a wall with sticky tape, a box of matches represented the mouse and a cardboard box stood in for the laser printer. However this proved to be the perfect environment for getting people to act out their experiences and develop the ideas that would be used in the new computer system. Because there was nothing that was precious or difficult to change, the newspaper people would change the layout of the screen or create their own design, they would move things around to create the best working arrangements and, most importantly, they would demonstrate their tacit knowledge - the skills, practices and insights that we all gain through our experiences - knowledge that we may not be able to articulate but is an essential part of our ability to operate in our work and in every other aspect of our lives.

This technique of creating a "play space" for people to show us how they operate and how they might respond to new situations, has become widely used by software designers and increasingly by industrial designers. It is often described as "paper prototyping" or "low-fidelity prototyping" but there are no particular rules about how prototypes should be produced, the challenge is to find the quickest way to try out an idea and modify it, in partnership with representative users. It is not a market research or market testing tool, the aim is not to come up with thoroughly tested end-products but to explore needs, identify opportunities and eliminate problems.

Examples – moving from digital to physical products.

Although these techniques first developed in software design and then moved to interactive products like mobile telephones, we are gaining experience in mainstream industrial design, including packaging design. These examples come from work by postgraduate students at Sheffield Hallam University, all of whom are working also as professional designers. For reasons of commercial confidentiality I am not able to describe some of the outcomes of this work as fully as I would like.

Parvinder Chahal is a designer who uses her creative skills in research that investigates new product concepts for telecommunications companies among others[3]. From published research, she had identified a number of trends in the way that teenagers use text messaging and she went on to identify a number of product ideas that telecoms companies might introduce. At that stage these were fairly simplistic ideas, typical of the results from a first brainstorming session. One example was the idea of incorporating a printer into a phone, another was the use of fabric-like digital displays to incorporate images or text from the phone into garments.

[2] Ehn and Kyng's work is described in: Pelle Ehn & Morten Kyng "Cardboard Computers: Mocking-it-up or Hands-on the future" in Greenbaum, J. & Kyng, M. (eds) Design at Work: Cooperative design of computer systems, Hillsdale NJ, Lawrence Erlbaum, 1991 pp169-195

[3] Parvinder Chahal is a partner in the Light Minds product and service innovation consultancy, http://www.lightminds.co.uk/

The important part of the research was to work with a group of 14-year-olds at a local college to see how these ideas would fit into their lives and meet their aspirations. She used cartoon storyboards together with a collection of simple props – Polaroid photos, a cardboard "printer" fixed to a phone with Blu-Tac, small paper "text messages" etc – to stimulate the teenagers to act out how they might use these new products, at each session feeding back their previous responses in the form of new storyboards which were further refined and so on. The result of the exercise was a completely new product concept, recognisably developed from the original ideas, but much more realistic and highly focused on the lifestyle and interests of the teenagers. Subsequently this concept has gained a high degree of recognition and a positive response from other teenagers who have seen it.

Janet Shipton is an experienced packaging designer who is conducting doctoral research alongside her professional work[4]. Her aim is to understand how consumers re-appropriate packaging for other uses, and consider how packaging design might encourage this kind of re-use as part of a sustainable design strategy. Having identified a number of factors which appear to encourage re-appropriation, she designed a new pack for a garden product incorporating features that might encourage its re-use, for example as a cloche. The design was in the form of a hand-made prototype but, using photography and digital imaging, she was able to present a highly finished image of the product that looked convincing and conveyed its important features. She was then able to use the image in discussions with gardeners to explore their reactions to the design.

From this she encountered three different kinds of response, all of which helped greatly in understanding how her ideas fitted with the lives and values of her audience. Firstly a number of people were able to recognise the secondary use that the pack allowed, secondly some also felt that the same features that promoted re-use also made it a more practical pack design and thirdly, there are some people for whom the plastic material of the new design made it less acceptable than previous paper board packs since they had a very strong perception that paper products were environmentally more sound. While the first two findings were useful confirmation of earlier research, the third was completely new information and might not have been uncovered without a plastic prototype to tap into their feelings about materials. The important feature of any prototype is that it enables you to find out things that you have not foreseen and therefore cannot test by questioning people.

My third example is of a designer of packaging for fast-moving consumable products. He is currently investigating ways of quickly mocking up 3-dimensional packaging during sessions with users, and how to create low-fidelity mock-ups of domestic environments to test out different scenarios. However his practical work so far has used existing products to see how people behave in their own homes. To do this he recruited people to go out and buy a food product, then prepare and eat it in their own homes. This allowed him to observe how people conducted the whole process, using a notebook and/or video camera as appropriate.

This kind of approach, often described as ethnographic research although it lacks the depth of a true long-term ethnographic study, can yield valuable insights but it is important for the researcher to recognise how they themselves are influencing the behaviour they are observing. Ironically, in this case, one of the most useful results came from this very effect since the designer realised that the consumer was "on his best behaviour" with a guest present, serving the food more formally than he would on his own. Questioning both him and members of his family about this revealed that there were a number of different ways that they would use the product, depending on

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[4] Janet Shipton leads the Packaging Partnership Consultancy unit at Sheffield Hallam University providing Packaging and Branding Design services to regional and international clients.

the social setting and this diversity of practices has become the foundation of a new design programme.

This particular project was influenced by the work of another postgraduate, David Rudge, who was working on the design of tourist information delivered by text message[5]. To develop this product David used a rolling programme of exercises in which he sent people out on "missions" to try out his system. He went along with them to play the part of the computer that provided the information. This involved staying a metre or so away from the subject and out of their field of vision. They would write their text message on a slip of paper and pass it to him, he would respond with another slip containing the message that the computer would have sent in reply.

He could have produced a much more realistic prototype, for example using real text messages, but his "quick and dirty" approach had a lot of advantages. By being on the spot using the hand-written messages he was able to work more quickly, see the situation that had led to the message, note any mistakes made by the user (but overlook them to keep the action moving), and freeze the exercise at any time to renegotiate/redesign any aspect of the messaging rules or the written instructions and map that were causing problems.

The tests used two kinds of users. He had a small panel of regular subjects, mostly friends and family, who had used the system from the start and could be brought in quickly to try out any new developments or consider any new problems. At the same time he had a continuing programme of recruiting new users to test the system as complete novices at each stage. Neither could be said to give robust quantifiable results, there is still a need to evaluate the final product thoroughly, but this approach provided him with a way of putting end users at the centre of his design and development programme and embedding their real experiences and needs in the design.

Conclusions – no fixed prescription

The approaches I have described all have one thing in common, they make hands-on research with users a central part of the designer's work. This allows the research with users to feed directly into designers' thinking and feed their tacit understanding of the people they are designing for, quite different to providing them with results from research by other people. It also allows the research to employ the things that designers are good at - finding ways to prototype and represent objects and activities that don't yet exist, so we can explore how they would work in real people's lives and give our users a voice in development, even when they may not be good at speaking for themselves.

I have not provided a strict prescription and each designer and manufacturer must work out their own way to develop the user's role in product development. Not all companies or designers will find it easy or possible to work this way, not everybody will have the imagination to come up with a relevant approach and tease out from it useful results, but we have gained enough experience of how it can work, and seen sufficient evidence of growth in these methods, to say that they can open a door to innovation and provide a way to respond to new technologies.

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17 October 2004
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[5] Fuller details of David Rudge's I-Map project can be found at http://www.davidrudge.com/uni/