



Beyond photographs: A design exploration of multisensory memorabilia for visually impaired people

Jacqueline Fennell, David Frohlich
Hardcopy Technology Laboratory
HP Laboratories Bristol
HPL-2005-151
August 30, 2005*

memorabilia,
souvenirs,
photographs,
visually impaired,
memory

As part of the future photography work in HP Labs we carried out an inclusive design exercise with the visually impaired. We wanted to know how such people remember and discuss the past without recourse to photographs, and to use this knowledge to generate design concepts for non-visual memory aids. The exercise resulted in two surprising insights. First, we found that a major user need for people losing their sight with age, is for technology which can help them recover visual memories from their existing photograph collections. Second, we discovered a world of multi-sensory memorabilia that are used by sighted and blind people alike, to trigger memories and talk about the past. These insights were then used to inspire ten design concepts presented in the report.

Beyond photographs: A design exploration of multisensory memorabilia for visually impaired people

Jacqueline Fennell & David Frohlich

December 2004

Abstract

As part of the future photography work in HP Labs we carried out an inclusive design exercise with the visually impaired. We wanted to know how such people remember and discuss the past without recourse to photographs, and to use this knowledge to generate design concepts for non-visual memory aids. The exercise resulted in two surprising insights. First, we found that a major user need for people losing their sight with age, is for technology which can help them recover visual memories from their existing photograph collections. Second, we discovered a world of multi-sensory memorabilia that are used by sighted and blind people alike, to trigger memories and talk about the past. These insights were then used to inspire ten design concepts presented in the report.

beyond photographs:

a design exploration of multi-sensory memorabilia
for visually impaired people



How do visually impaired people currently save and share personal memories when the photograph album is inadequate?

Moving towards a multi-sensory view of 'memory triggers,' this project will introduce new kinds of artefacts and processes for capturing and accessing memories.

contents

Introduction

page 2

Informants

page 3

Interviews

page 4

Insights

page 5

Design scenarios

page 9

Concept map

page 10

Concepts

page 11

Lessons

page 31

Acknowledgments

page 32

References

page 33

introduction

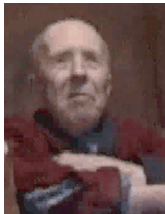
Photographs are only one kind of memory trigger by which people remember the past. Our own experience tells us that there are many other things which bring the past to mind: including chance comments in a conversation, particular sounds, foods or smells, abandoned objects or furniture in the attic, old music tracks and television programmes, or even outworn items of clothing. Recent research has reinforced this common sense view, and suggested ways that technology might be used to support and extend non-visual memory triggers. For example, Frohlich (2004) has shown that recorded sounds can act as effective memory triggers, especially when combined with photographs in a digital camera or photograph album. Other work has shown that objects and souvenirs are displayed in the home for their sentimental value (Csikzentmihalyi & Rochberg Halton 1981), and that these might be used as triggers or elements in personal storytelling activities (Frohlich & Murphy 2000, Holmquist et al. 2000, Stevens et al. 2002).

To extend this work further we carried out a design exploration with what might be called an extreme user group. We recruited a panel of five visually impaired people as informants in a design activity to develop non-visual memory aids. Reasoning that visually impaired people would be experts in the use of non-visual forms of remembering, we interviewed them in depth about their perception and use of memorabilia, and used their insights as inspiration for design. This report summarises the main findings of the interviews and catalogues 10 design concepts arising from the research. These concepts are offered not as product prototypes for HP, but as catalysts for fresh thinking about the role of photographic and related technology in memory and communication. They also represent approaches that might be taken to making HP's digital photography products and services more accessible to the blind.

informants

A small number of informants were chosen as long term partners in the work, rather than recruited as subjects for a single user requirements study. This reflected the participative design approach often used in inclusive design projects (Clarkson et al 2003), and allowed us to return to the informants at different points in the work.

Five informants were selected from local contacts, and included people with two major categories of sight loss. Three people were blind from birth, while two had become blind gradually. These distinctions were felt to be important to the use of multisensory memorabilia, since they differentially affected the role of visual memory triggers such as photographs. People who have initially relied on visual memory and photographs in reminiscing, might have a different approach to non-visual memorabilia than those who have not.



BLIND FROM BIRTH AND EARLY BLIND (congenitally blind)



LOST SIGHT (adventiously blind)

The characteristics of each informant were as follows:

- Glyn – an elderly man who was born visually impaired, only seeing strong contrast colours until his 20's and losing total vision. He lives alone in the house he was born in.
- Becky – a young women who was born visually impaired. Living with her parents, she works as an artist and photographer.
- Matt – a young man who was born with a visual impairment leaving him light-aware, seeing strong contrast colours. He lives alone in a flat with his guide dog, teaching music and singing.
- Elsie – a retired elderly women who recently lost her sight and hearing with age. She lives alone in her marital home which she used to share with her husband.
- Bill – an elderly man who lives with his daughter. He gradually lost his whole sight over the last 25 years. He works as an advisor on accessibility for the visually impaired.

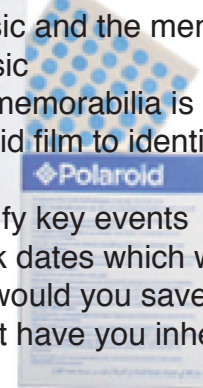
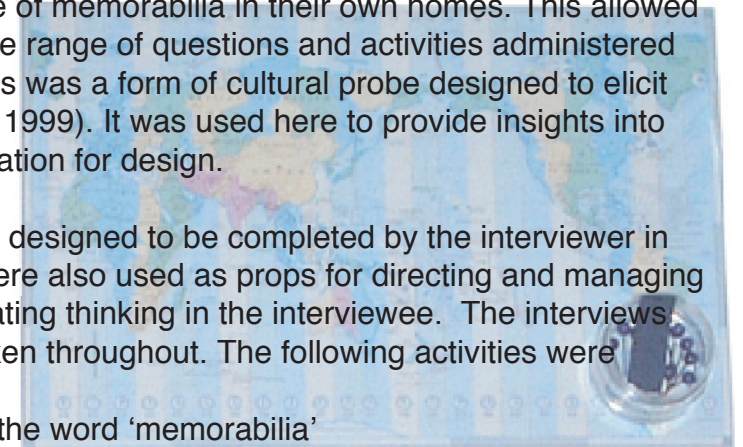
interviews



The informants were interviewed about the role and use of memorabilia in their own homes. This allowed reference to actual items on display, and involved a wide range of questions and activities administered through a 'memorabilia enquiry box' (shown below). This was a form of cultural probe designed to elicit highly subjective comments and reactions (Gaver et al. 1999). It was used here to provide insights into user behaviours and needs, as well as to provide inspiration for design.

The box contained a number of questions and activities designed to be completed by the interviewer in conversation with the interviewee. The box materials were also used as props for directing and managing the conversation, and for sparking enthusiasm and creating thinking in the interviewee. The interviews were recorded on video with additional photographs taken throughout. The following activities were included in the box:

- Blackboard and chalk to note down thoughts on the word 'memorabilia'
- World map to mark places visited and associated memorabilia
- Drawing of the human body to show where they would carry memorabilia
- Container for their favourite food or drink and the memory it triggers
- Timeline of their favourite music and the memories it holds
- CD to copy their favourite music
- House model to show where memorabilia is in their home
- Memorabilia cards and Polaroid film to identify key memorabilia artefacts in their life, and the memories they hold
- Calendar for this year to identify key events
- Calendar for next year to mark dates which will be special to them
- Booklet with questions: what would you save from a house fire? What is your favourite piece of technology in the home? What have you inherited? What would you pass onto someone else? What do you keep in your attic?
- Disposable camera left with them to take photographs of memory triggers, with a return envelope



insights

use and value of memorabilia

People *defined memorabilia very broadly* as anything which reminded them of the past. This encompassed physical objects, ornaments, clothes, furniture and framed photographs, but also included music, food, perfume and other people (see list overleaf). In some cases, these items had developed strong associations with the past ‘accidentally’, through extended use. For example, Glyn’s favourite memorabilia were a giant cup and saucer he used frequently each day. In other cases, memorabilia items were purchased or received with a specific association. This was the case with gifts and inherited objects which were linked to their original owners, and souvenirs bought on holiday which were linked to their place of purchase. Although all participants reported owning a variety of memorabilia, these seemed to be more important to the older participants who had gradually lost their sight. Younger participants were less sentimental about the past, while those who were blind from birth tended not to fill up their homes with items that could be knocked over.

The *placement, storage and display* of memorabilia turned out to be an important factor in how they were used. There was a big split between items on display and those hidden away in an attic or store cupboard. Displayed items included ornaments, clocks, music, large print or braille books and magazines, music, certificates, awards, framed paintings and photographs. These were selected and placed for easy personal access, and with other people in mind. Hence, visual memorabilia such as photographs remained important to this user group as a way of communicating with fully sighted friends and relations. Stored items included clothes, old pieces of furniture or electronic equipment, carpet and wallpaper off-cuts and any kind of displayed item for which there was no longer any room. These items were private and seemed to build up without explicit selection in some of the most inaccessible parts of the house such as the attic. Ironically, we found that people habituated to the nostalgic value of displayed items so that they seldom thought about their associations, until prompted to consider them again by a visitor. In contrast, the surprise discovery of a forgotten item in storage resulted in a powerful form of reminiscing. Sometimes a single item would result in a whole chain of memories flooding back, with an accompanying burst of explanations and stories to the interviewer.

The *importance of storytelling* around memorabilia was a final major insight from the interviews. Memorabilia only appeared to come to life in the minds of the participants when they began to tell us about them in the interviews. They appeared to relive the memories through this telling. From our point of view, these stories were necessary to understand the meaning of various items to the participants. Even in cases where the item appeared to be self-explanatory, as in a photograph, the owner’s narrative about it extended and clarified the meaning for us. We were also told stories about items that were no longer in the possession of the participants, or about events and memories directly. These were triggered by the conversation itself, rather than by any physical artefact or experience.

memorabilia is . . .

satsumas, Aerosmith singing 'I don't want to miss a thing,' 3rd August 2002, handbag, mobile phone, credit cards, purse, hairbrush, cosmetics, Sky TV, photograph albums and frames, videotapes, salmon and cucumber sandwiches on brown bread, albums, CD's, ornaments, envelopes of photographs, photograph of Tia and Nyah sitting in a washing basket with William laughing at them, perfume and aftershave, gin, husband and family, contents of the attic, empty boxes, boxes of clothes and toys, prawn goujons, christmas tree and decorations, christmas and birthday cards, Enid Blyton childrens books, Japanese dolls, 2 wooden Canadian bears, black bullet sweets, book collection, champagne, engagement ring, sunflower picture frames, wedding photo frame, cross stitch, shopping, memories, wedding dress, sunflower trinket box, William's ornaments, people, tea leaves, photograph of late husband, sewing machine, the mind, wedding favours, lily of the valley perfume, cousin Doris, drawings from children, jewellery box, 1934, **results of three informants memorabilia enquiry boxes** leather tooled handbag, locket and chain, owl collection, needlework, oil painting, mirror, Guinness, scraperboard pictures, biscuits, holiday souvenirs, Lambs Navy Rum, bureau, telephone, Rhapsody in Blue by George Gershwin, thoughts, shoes from Spain, radio, Louis Armstrong, Blackpool, instant coffee granules, meat sandwiches, pocket watch, parents, photograph of feeding the pigeons in London, mantle clock, cup and saucer which says 'i'm not greedy but I like a lot,' photograph of father, radio times magazine, photograph taken in 1914, record collection, tea, world service, nurses, glasses from childhood, infancy, book prizes, audio tapes, song called 'Stardust.'

insights **general user needs for memorabilia support**

The insights into memorabilia behaviours described above, suggest a number of user needs for better memorabilia support. For example, ephemeral materials such as music, video, food and scents currently serve as memorabilia but cannot be displayed stored and accessed in the same sort of way as physical memorabilia objects. Nor can they be combined together. Hence there is a requirement to *make memorabilia more multisensory, tangible and manageable* for this purpose. Since the display of items for others is important, *electronic or enhanced memorabilia should be designed for use by visitors to a home, as well as by the occupants themselves*. Furthermore, *displayed items need bringing to life in new ways, or calling attention to themselves, in order to overcome the tendency to habituate to them over time*. Non-displayed items might also do this, to *support the powerful forces of serendipitous discovery of forgotten artefacts and memories observed in the interviews*. Finally, *storytelling should be explicitly supported* in the design of new kinds of memorabilia, because of the importance of the owners narration, both in re-living the associated memories and in communicating them to others.

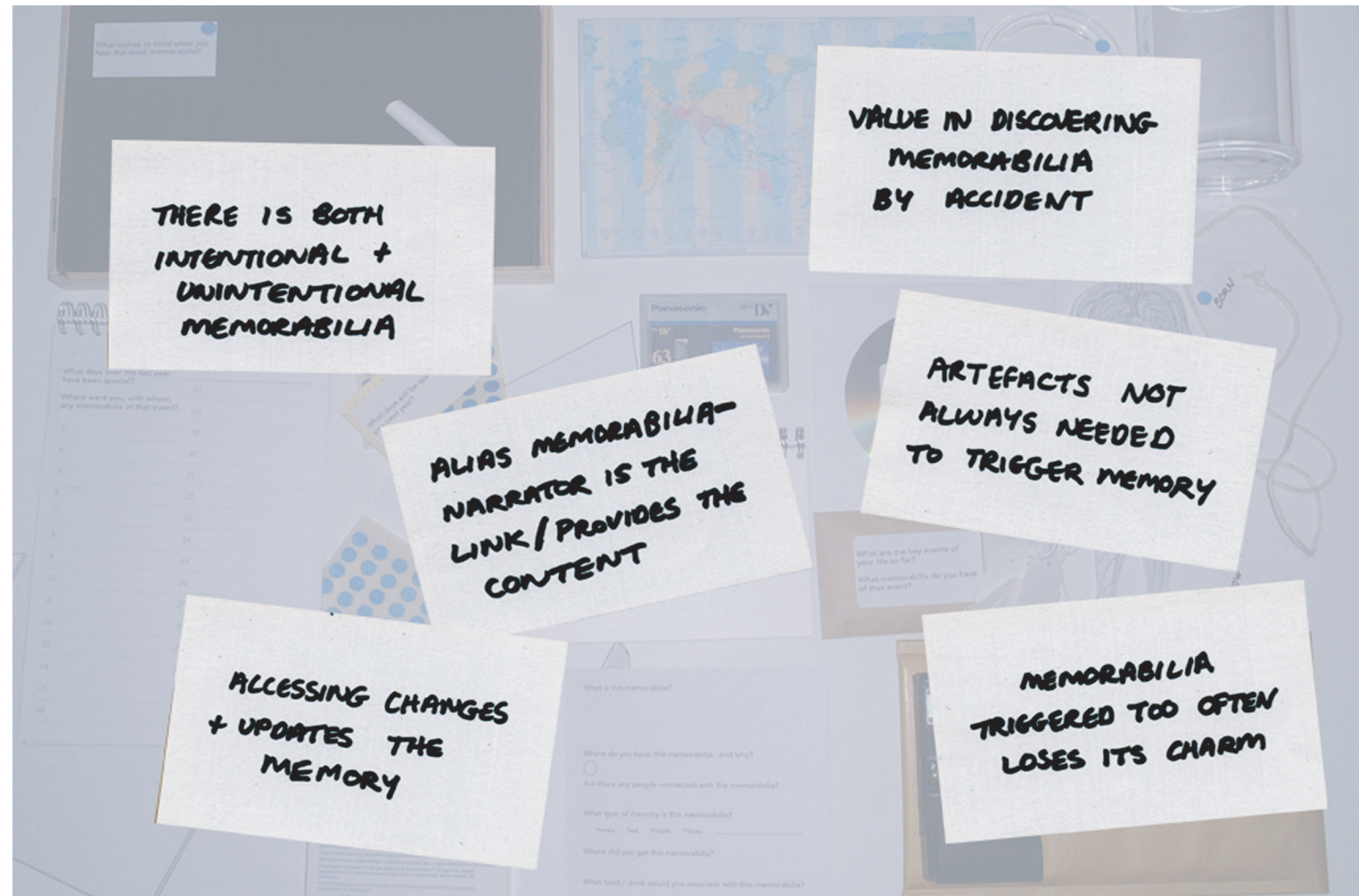
In addition to these general insights and needs about memorabilia, we also identified two specific phenomena and needs arising from the two types of sight loss experienced by participants in the study. In fact, memorabilia needs appeared to differ accordingly - depending on whether sight loss was congenital or gradual.

insights **specific user needs for memorabilia support**

Participants who had been blind from birth, appeared to be less dependent on physical memorabilia for remembering the past. They had very good memories and could often recall facts and events in great detail. However, their lives were dominated and filled with sound. This was reflected by the importance attached to the radio, the telephone, music and conversation, together with assistive technology such as computer screen readers and talking books. To better remember things in sound or by sound, Matt had embraced recording equipment in order to capture information for later playback. Glyn, being older, was less familiar with such equipment but still attempted to remember special radio programmes by keeping hundreds of Braille copies of the radio times. These behaviours might be extended with new media technology which can *make audio recordings easier to capture and handle*, or tie them to other media forms.

Participants who had once been fully sighted but then lost this sight gradually, appeared to be more dependent on physical memorabilia. This included photographs which they could no longer see properly. This was an unexpected finding of the study, since it showed that visual memorabilia remained important to certain classes of visually impaired people, as triggers for their visual memories of events. This was illustrated most dramatically by Elsie who told us she would sometimes touch a framed photograph on her wall, in order to remember what it looked like now that she could no longer see it. Hence there is a need to *bring photographs back to life, by rendering them in some other sense such as touch*.

design scenarios



An outcome from the interviews were a set of design issues / scenarios which illustrate the characteristics of memorabilia artefacts, and the process of triggering memories. It was intended that this list also serve as an evaluation tool, as it is also a list of design criteria that any design proposal in this project should satisfy. This list was also used as inspiration during the design stage.

concepts mapped against
the issues they have been designed in response to
and the frequency of use

concept map

MEMORY CAPTURE

how can memories be collected and saved
using senses other than vision?



• HISTORY ANSWER MACHINE:
keeping conversations and offering
them for playback on their birthday each year

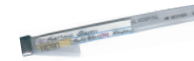


• MEMORY SHELF:
creating a database of objects
recognised by their weight

• TEXTURE TRANSLATOR:
keeping textures like
a 3D photograph



• BEST CHINA:
recording memorable
conversations around
the dinner table



• HOSPITAL ARMBAND CHATTER:
recording conversations
around the hospital bed

everyday

now and then

once in a lifetime

MEMORY ACCESS

how can memories be accessed other
than through sight?



• MEMORY FOOD:
re-branding food
in relation to the
memories they
trigger



• PERSPECTIVE FURNITURE:
placing the body in positions
that trigger memories

• history answer machine

• MEMORY MAP:
creating maps of special days and
memorable places visited



• EMBOSSED PHOTOS:
embossing photos
accessed through
touch



• VIRTUAL TEXTURE:
offering feedback of textures
on-screen through a mouse



how can memories be
collected and saved using
senses other than vision?

best china

getting out the best china only happens on very special occasions,
perhaps those occasions when you want to capture memories.



what if the items you use during special occasions recorded those memories?
what if you were reminded of the last time the whole family sat down at the table for a meal together?
do you remember what happened at the last dinner party?

The concept for best china is a teapot that captures conversations around the dinner table. Solid state audio devices are fitted into the lid of the teapot. When the lid is in record mode, and there is hot liquid inside the teapot, the starts to record the conversations around it. The playback of the conversations can be heard through the speaker in the lid of the teapot, which plays the sound into the body of the teapot. The body of the teapot amplifies the sound, this amplification varying depending on how much tea has been drunk. The teapot lids have labels on the edge to allow the owner to identify the memories they hold.



record mode



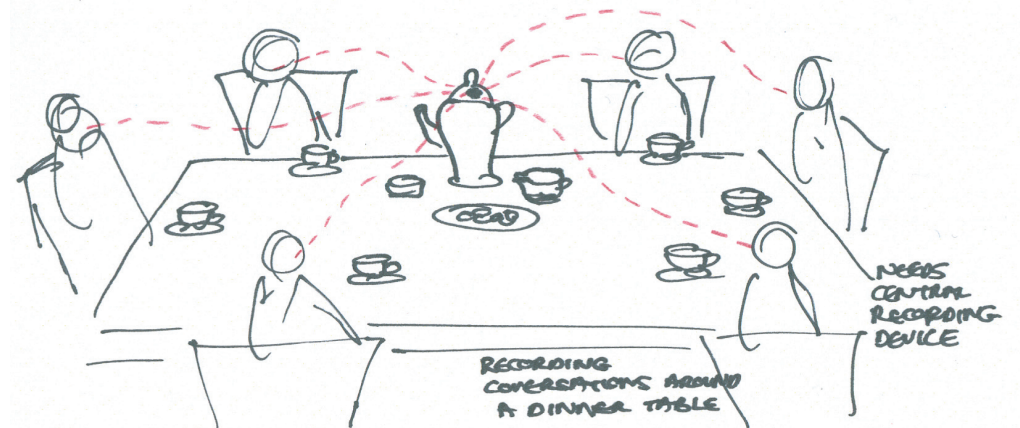
... turn 180 degrees ...



playback mode

"I put my minidisc player on the table when I have a meal with my family, like at christmas, to record what people say. They don't really like it, but its my way of keeping a memory of the occasion.

Matt Brown, Congenitally blind



how can memories be
collected and saved using
senses other than vision?

memory shelf

shelves in a home are used to display ornaments and personal memorabilia items with their own unique history, memories and physical characteristics



what if items placed on a shelf identified themselves by weight and their history?
what if objects in your house were 'logged' in to your own personal memorabilia database?
what stories would groups of objects on the shelf tell?

The design of memory shelf is built with a weighing platform and display at one end with the rest of the shelf left for the display of memorabilia objects, as a shelf is normally used. When the artefacts is placed onto the weighing platform, any audio memories that are associated with that weight are played through the speaker on the front of the shelf (hopefully the audio memories associated with that artefact). If there is no audio attached to that weight, new audio memories can be recorded by using the record button and microphone in the shelf.



0080g knife



0082g screwdriver



0082g mobile phone



0084g ornament



0088g playing cards



0090g kitchen timer



0090g mobile phone



0094g video remote



0094g carrot



0100g serving spoon



0102g mouse



0102g tv remote



0104g cd



0104g dvd



0104g can opener



0106g glasses



0118g nutcracker



0118g tea towel



0120g remote hifi



0122g toothbrush



0122g perfume



0124g keys



0124g phone



0132g coathanger



0132g tv remote



0134g toilet roll



0152g stanley knife



0154g tissues



0156g sieve



0156g map



0156g wine glass



0158g photo frame



0160g minidisc player



0160g umbrella



0162g wash up liquid



0166g air freshener



0178g book



0232g slippers



0264g glass



0268g coffee mug



0290g corkscrew



0302g weighing scale



0304g brown sauce



0306g coffe mug



0310g make-up



0338g peas



0342g side plate

house weight audit

The initial development of the memory shelf concept began by carrying out an audit of the weight of objects in the home. Comparison databases were compiled of: household objects that weighed the same, objects carried by the person, objects classed as typical memorabilia items and objects received as presents. This research was used to show the value of using weight to identify objects, and to highlight unusual scenarios that might evolve through using such an unconventional means of identification. Of course, this research into the weight of household objects proved the method an inaccurate way of identifying such objects: some objects weigh the same. The inaccuracy of the system was 'played' on and these scenarios for how people might use (and abuse) the shelf developed. These scenarios provided the basis for explaining the concept of the memory shelf.



0202g potato



0206g dog bowl



0222g camera



0260g A-Z



0260g marmite



0264g video

how can memories be
collected and saved using
senses other than vision?

texture translator

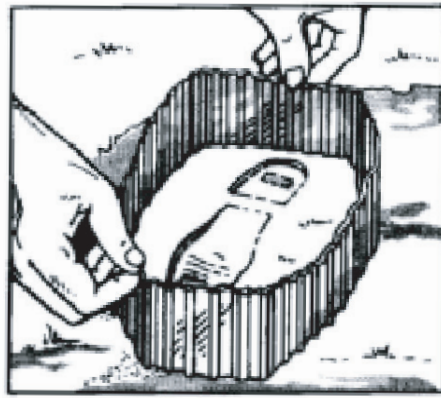
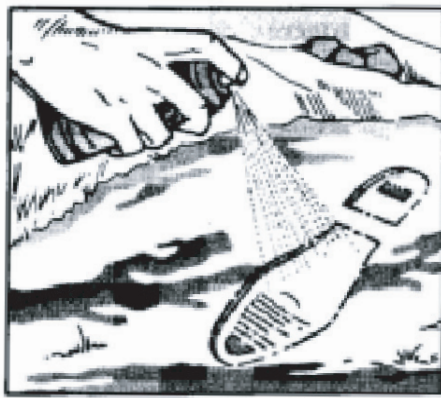
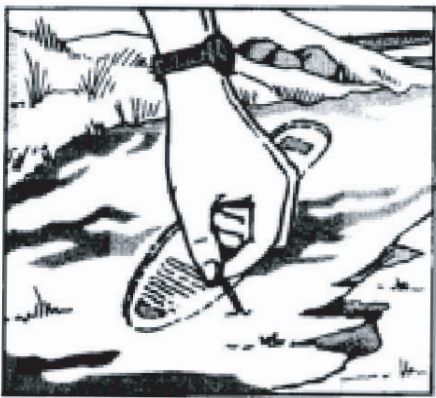
touch [tʊtʃ] *n.* sense by which qualities of object are perceived by touching
touch'ing *a.* emotionally moving

what if you could keep a copy of something you touched?
what if a 3D camera took a physical copy of a surface, texture or shape?
could you create a 3D photo album of memories?

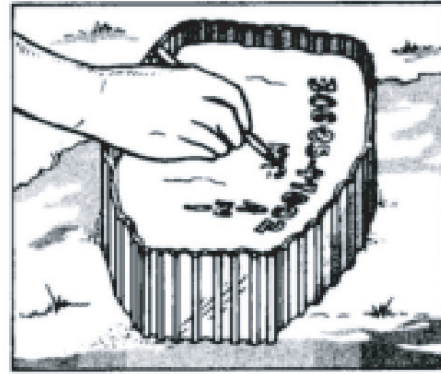
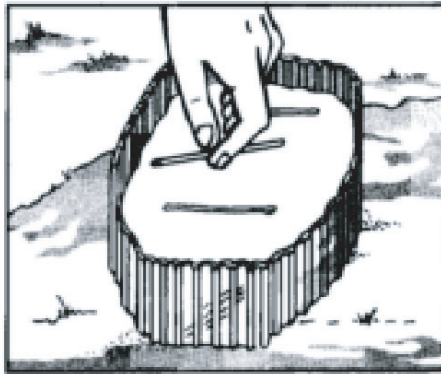
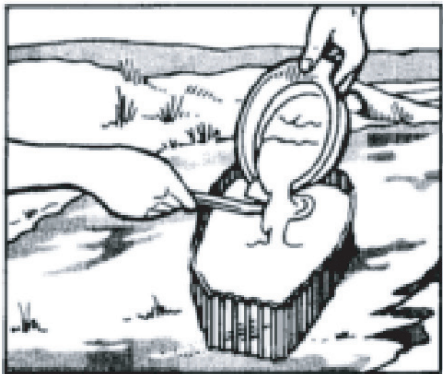
"I am developing the art of gazing with my hands. I like to hold and re-hold and go on holding a beautiful object, absorbing every aspect of it."
[John Hull, Adventitiously blind](#)



The texture translator concept can best be described as a 3D camera. The texture translator take 'pictures' of surfaces and textures, similar to the pin art object shown here. Similar to the Polaroid concept, maleable pieces of film allow pins to form the texture and shape of the surface by distorting the film. The texture is set as a permanent shape in the film, allowing the owner to keep it in a similar manner to photographs.



Remove loose debris, spray to stabilize loose dirt, then surround with a form to confine and build up the mixture.



Pour plaster over a spatula; add reinforcement, followed by more plaster; then mark cast with ID and arrow pointing North.



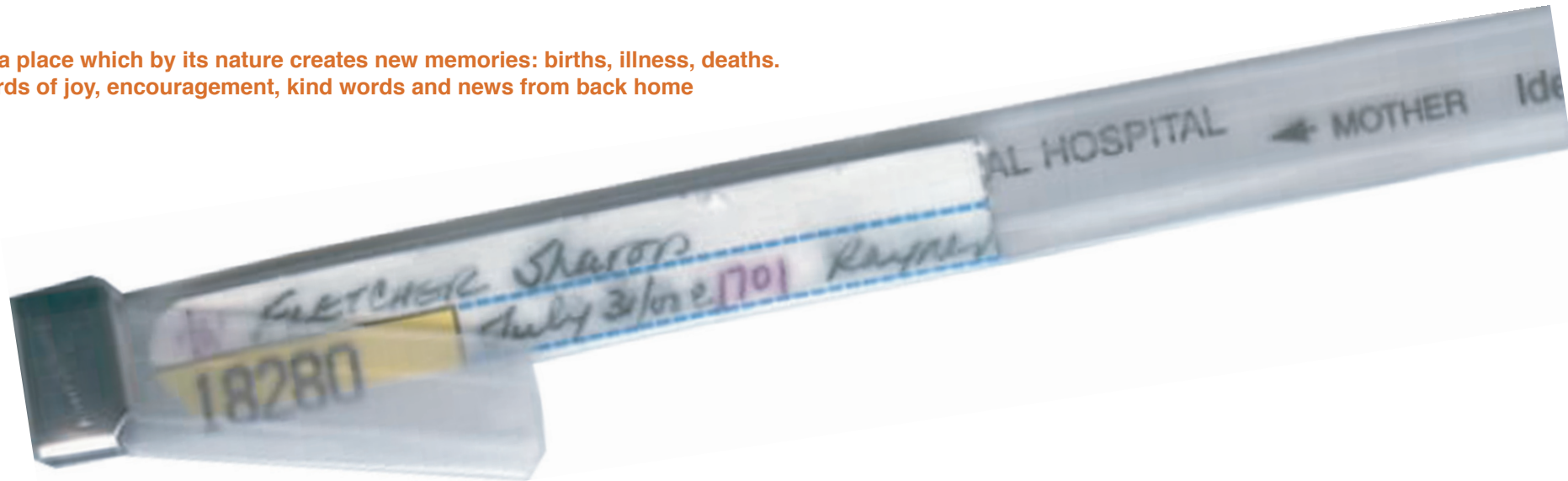
The texture translator would be like casting or vacuum forming a texture



how can memories be
collected and saved using
senses other than vision?

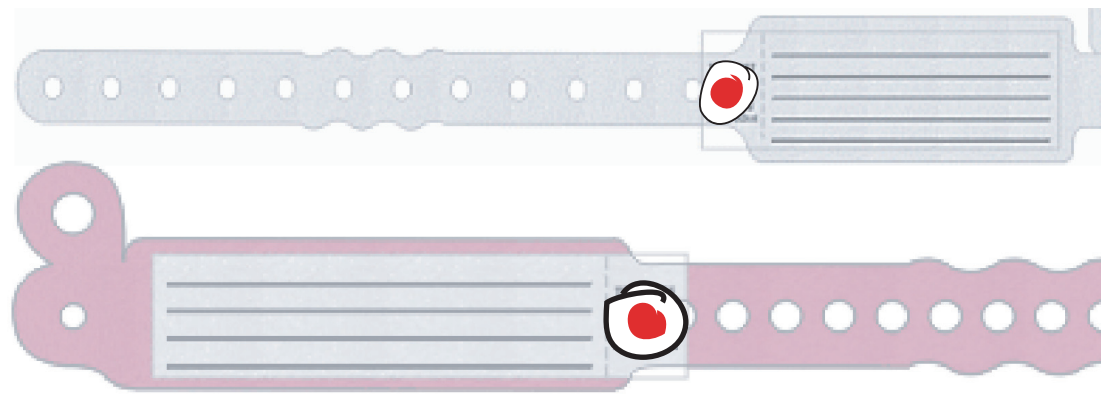
hospital armband chatter

the hospital bedside is a place which by its nature creates new memories: births, illness, deaths.
people visiting with words of joy, encouragement, kind words and news from back home



what if hospital armbands recorded conversations?
hospital armbands are often kept as a memory of a hospital stay, so
what if the armband captured what family and friends said the first time they saw the baby?
what would it be like listening to what people said when they first saw you?

The concept for hospital armband chatter is to record conversations around the hospital bed. Time spent in hospital usually brings with it visits from people close to you, sharing stories of joy and elation around the birth of a new baby, or even sadness and reminiscing during times of emotional worry. What would it be like to keep the conversations around the hospital bed?



20 YEARS LATER ...

I looked nothing like my dad



how can memories be
accessed other than
through sight?

embossed photos

taking a photograph captures and preserves a moment in time,
and traditionally relying on vision to access the contents



what if you could no longer see the photographs you once took?
is there another way to trigger the same memories a photograph does visually?
what if you could access the contents of a photograph through touch?

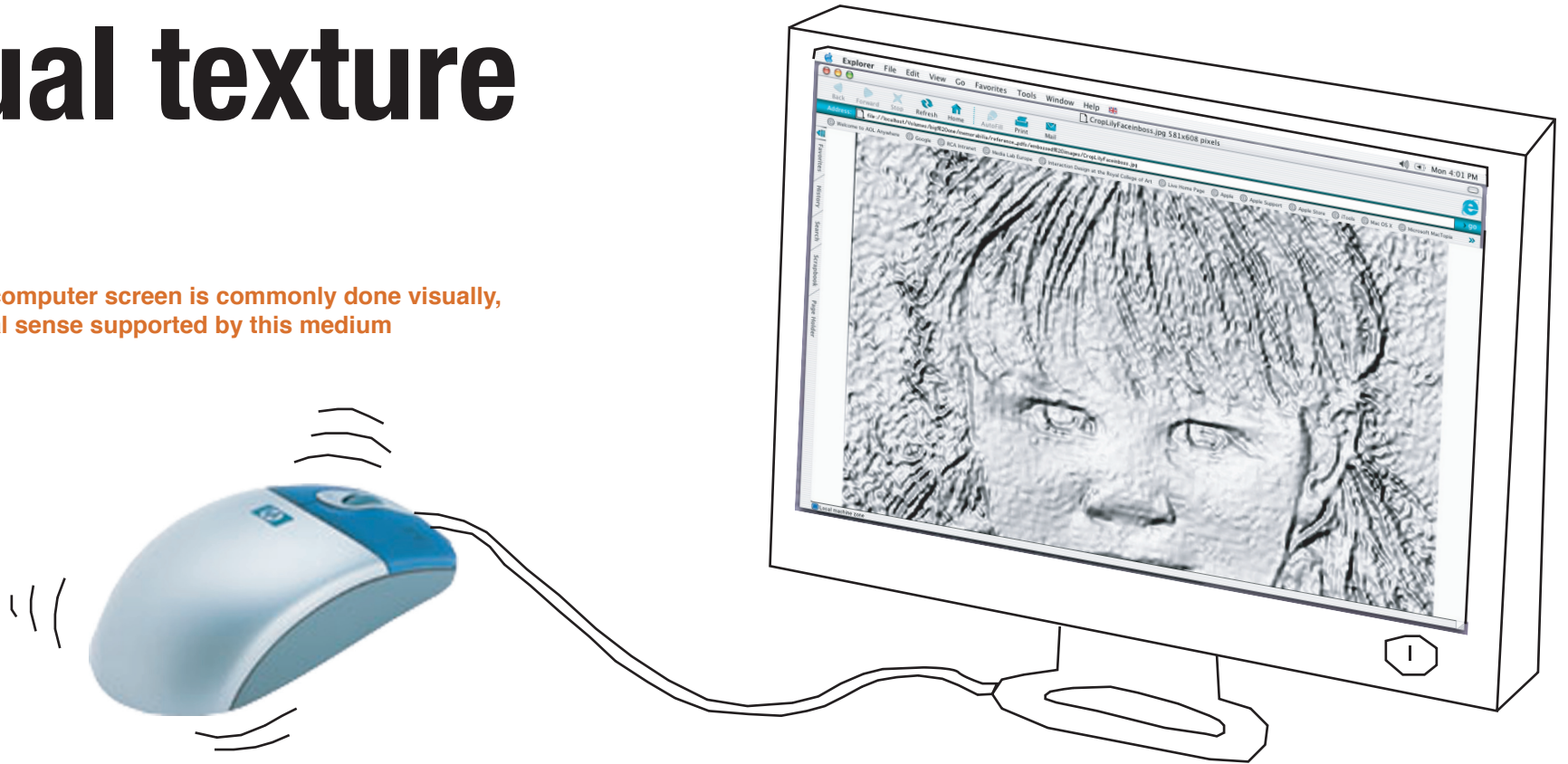
The concept for embossed photos takes a standard photograph and enhances it by producing a raised surface. By taking the light and dark areas of the image and converting this to high and low areas, a tactile version of the photo can be printed out on a 3D printer. This can also be taken further to produce a high contrast black and white tactile version of the original photo. This enhancement of photos can help people with gradual sight loss (the most common form of sight loss), offering a new way of accessing their original photos which can be learnt over time, adding new filters, texture or contrast as their sight deteriorates.



how can memories be
accessed other than
through sight?

virtual texture

absorbing information off the computer screen is commonly done visually,
sound being the only additional sense supported by this medium

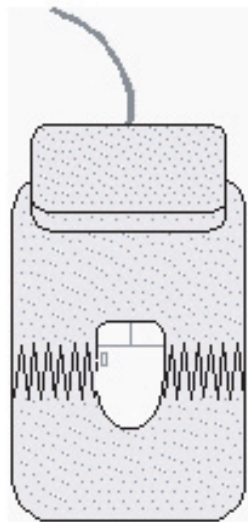


what if you could 'feel' images on the computer screen?
what if the concept of 'embossed photographs' was translated to screen?
could a digital photograph album be experienced through touch?

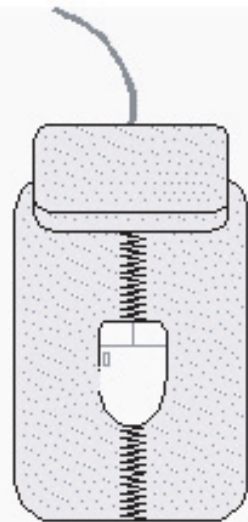
The concept for virtual texture is a computer mouse that relays feedback to the user of the light and dark areas of the screen image. The feedback is in the form of vibrational haptic force feedback. By using a mouse with the capabilities of force feedback, the user is able to feel their way around the screen, feeling where they cross boundaries and enter different areas. It is proposed the concept for haptic feedback of on-screen photos is worked with the software developers kit from immersion studios (<http://www.immersion.com/developer/technology/tools/tool.php?t=7>).

Screen shots from the 'Immersion Studio' website. This website offers the software developers kit we propose this concept works with. The images show the way haptic feedback can be manipulated to the desired effect and the types of feedback possible.

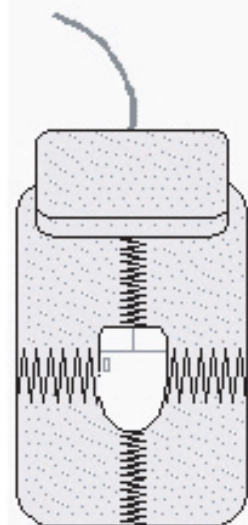
<http://www.immersion.com/developer/technology/tools/tool/php?t=7>



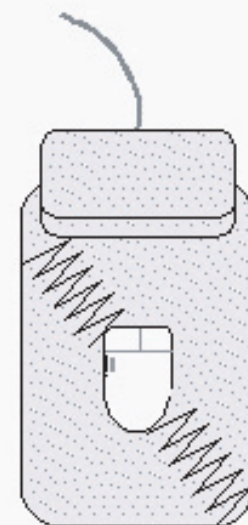
X-Axis Spring



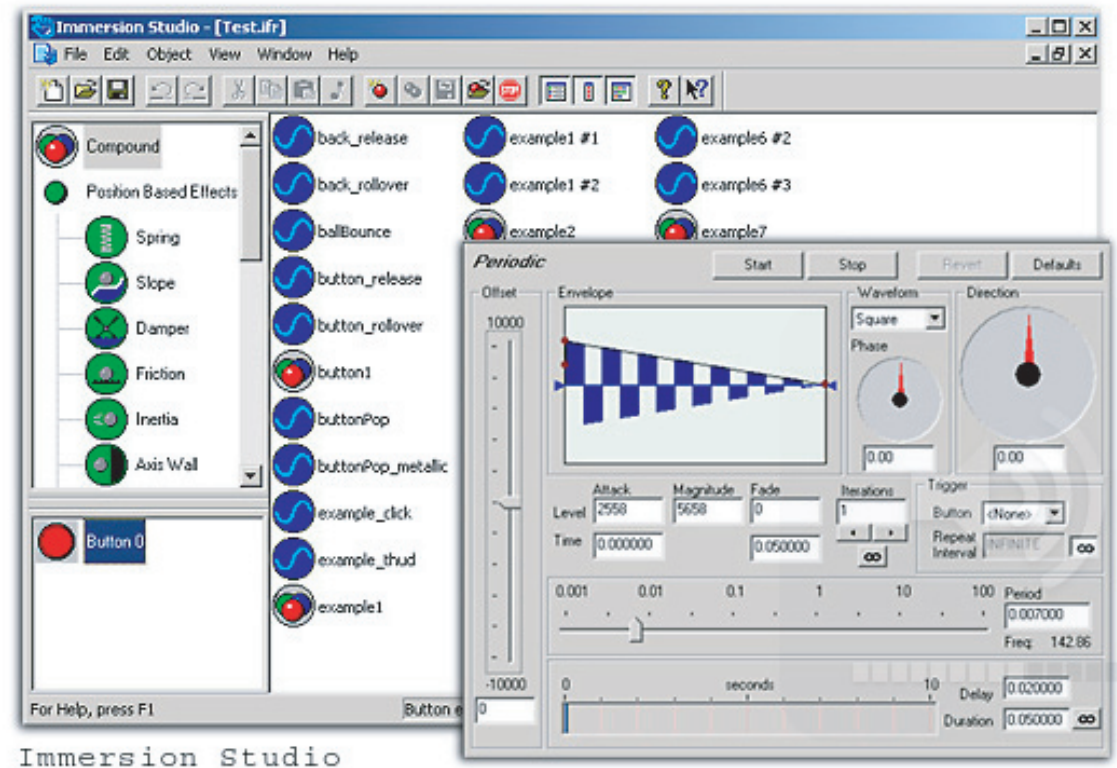
Y-Axis Spring



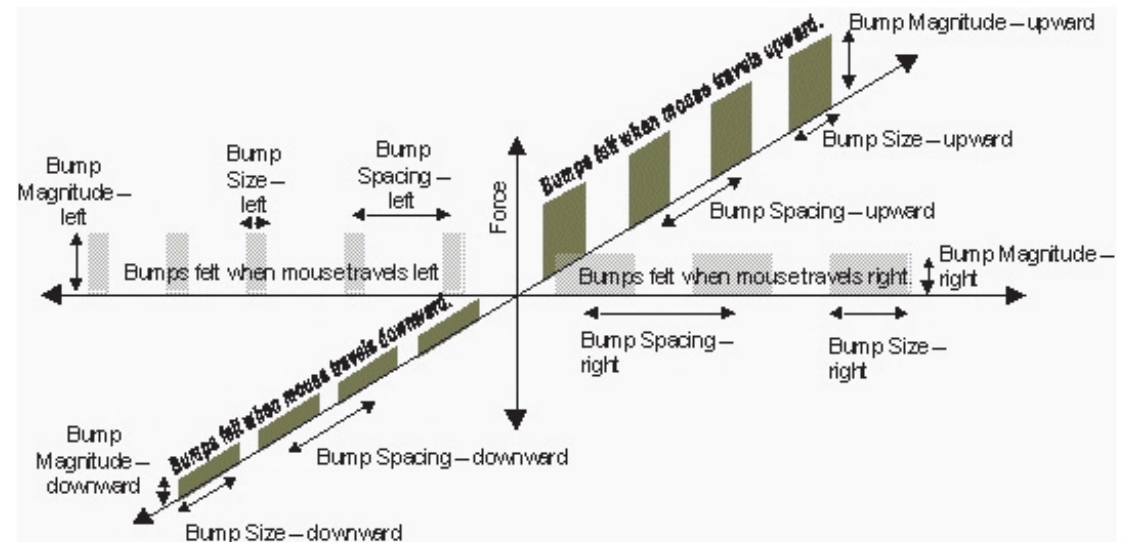
Dual-Axis Spring



Directional Spring



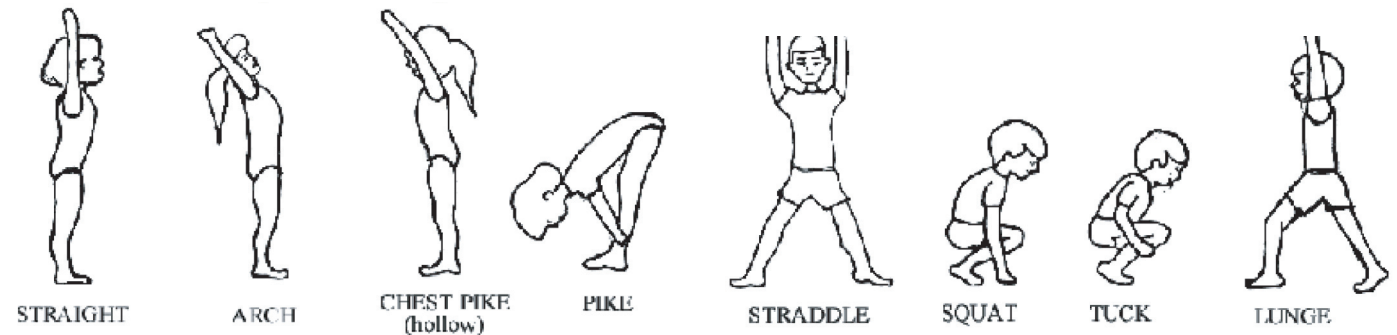
Immersion Studio



how can memories be
accessed other than
through sight?

perspective furniture

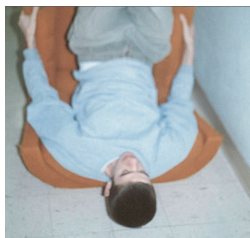
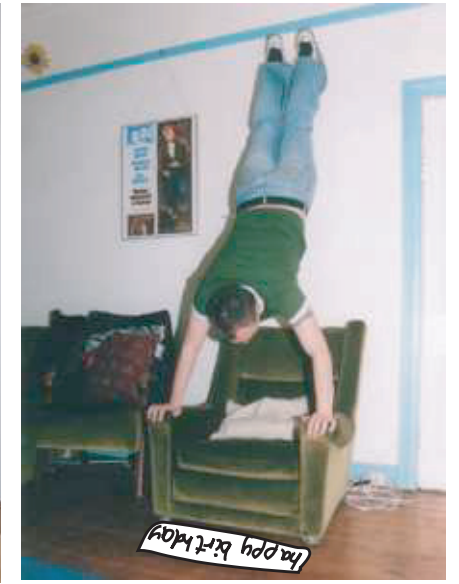
sitting on chairs designed for children triggers memories of when you were young
looking at the world whilst upside down gives a different perspective on the familiar



what if furniture was designed to put the body into unusual positions?
what if these positions triggered memories of childhood activities or memorable events?
what if perspective furniture forced your focus onto specific memorabilia objects?

The concept for perspective furniture is furniture which is designed to put the body into different positions. The body in these positions would trigger memories. For example, sitting on children's school chairs on parents evening, triggering memories of when you were a child and at school. Other concepts include forcing the body into a position so that it focuses on specific memorabilia objects: memorabilia placed in windows on the floor, memorabilia upside down, memorabilia in the ceiling.

Images from www.housegymnastics.com



how can memories be
accessed other than
through sight?

history answer machine

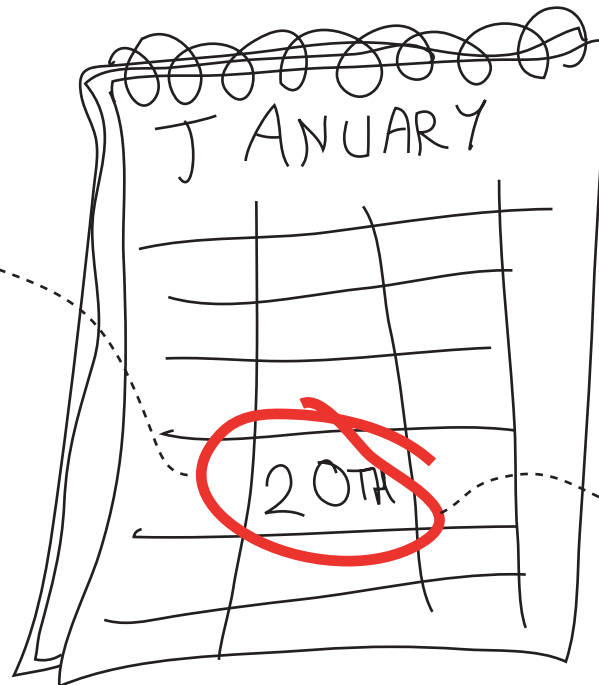
conversations on the telephone are about the sharing, informing and receiving of news
phone calls on certain days of the year are significant in forming new memories and triggering old ones



what if you could listen to a phonecall from your mum on your birthday last year?
what would it be like to access the phonecalls you've had on the same day for the past 20 years?
would you listen to your history answer machine everyday or just on the dates special to you?

The concept history answer machine stores all conversations on your telephone, and archives them according to the date they occurred. Over time, many years, the archive provides a rich source of memory indulgence for your special days during the year. On your birthday you may have 14 history conversations waiting for you on your answer machine to listen to. This concept also applies to any data with a date log, for example, all your emails you received after you made an important announcement or the photos you took at the New Years Eve party. You would receive prompts to your past when it's relevant... your special days in the year.

stores conversations by logging the date recorded



once the system reaches that date it sends conversations as recorded messages left on the answer machine

how can memories be
accessed other than
through sight?

memory food

visiting the supermarket triggers memories of forgotten foods,
creating an edible trip down memory lane



what memory does buying a packet of jammie dodgers have?
what if vending machines sold teas which taste as different as they do on holiday?
what if you could choose authentic meal bags by listening to music?

The concept memory food considers the role food plays in the triggering of memories. We all have our favourite foods and these seem to change as we get older, or during different times of the year. This concept suggests that food retailers re-brand their food into the type of memory they trigger. Supermarkets would have 'childhood memory food' sections with the Jammie Dodgers, Parma Violets and Black Bullet sweets you ate as a child. The 'British memory food' section would stock all food items that typify quintessential Britain.

Memory Tea



Menu for tea drinking around the world

Memory Tea

Menu

British tea	60p
Irish tea	60p
French tea	60p
Spanish tea	60p
German tea	60p
Indian tea	60p
Portuguese tea	60p
Dutch tea	60p
Swedish tea	60p
Finnish tea	60p
Russian tea	60p
Turkish tea	60p

They would also provide meal bags from the places you visited on holiday, containing genuine local food. You would choose the meal through your holiday photos and the music from that region.

Cafe's would sell memory tea and coffee from different countries, which taste authentic to that place, using the ingredients native to the country... it may be Nescafe, but the water and the milk isn't the same as back home.

Memory Tea

Menu

Moroccan tea	60p
Italian tea	60p
Chinese tea	60p
American tea	60p
Japanese tea	60p
Australian tea	60p
Brazilian tea	60p
Canadian tea	60p
Danish tea	60p
Mongolian tea	60p
Thai tea	60p
Turkish tea	60p

CHRISTMAS MEMORY FOOD

CHILDHOOD MEMORY FOOD

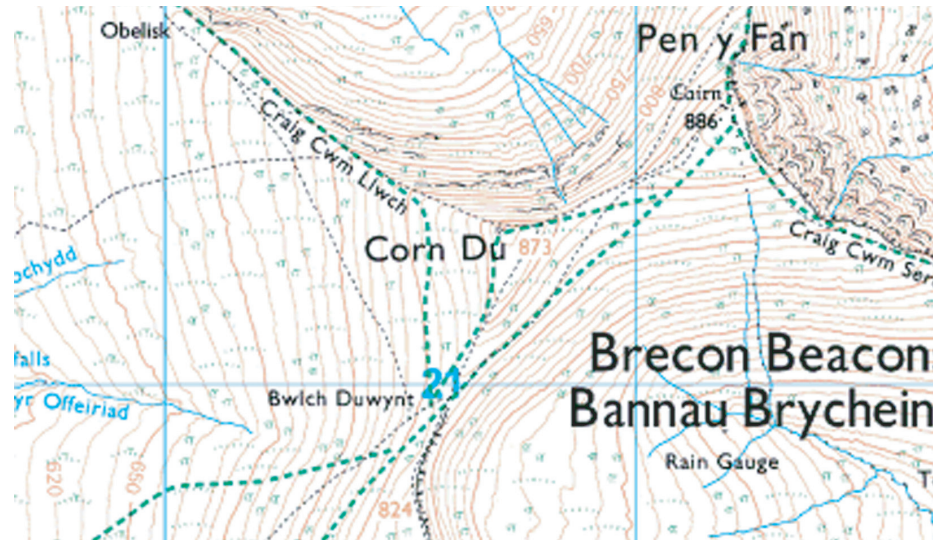
BRITISH MEMORY FOOD



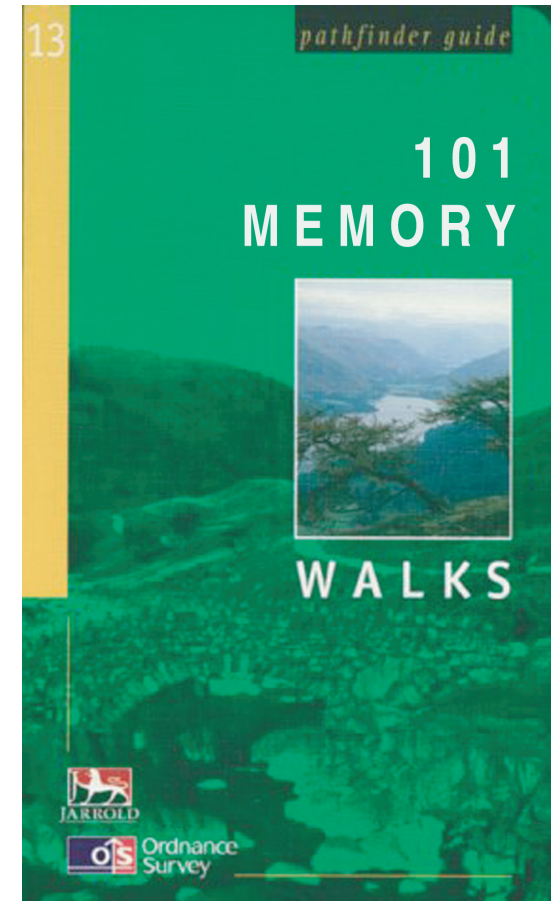
how can memories be
accessed other than
through sight?

memory map

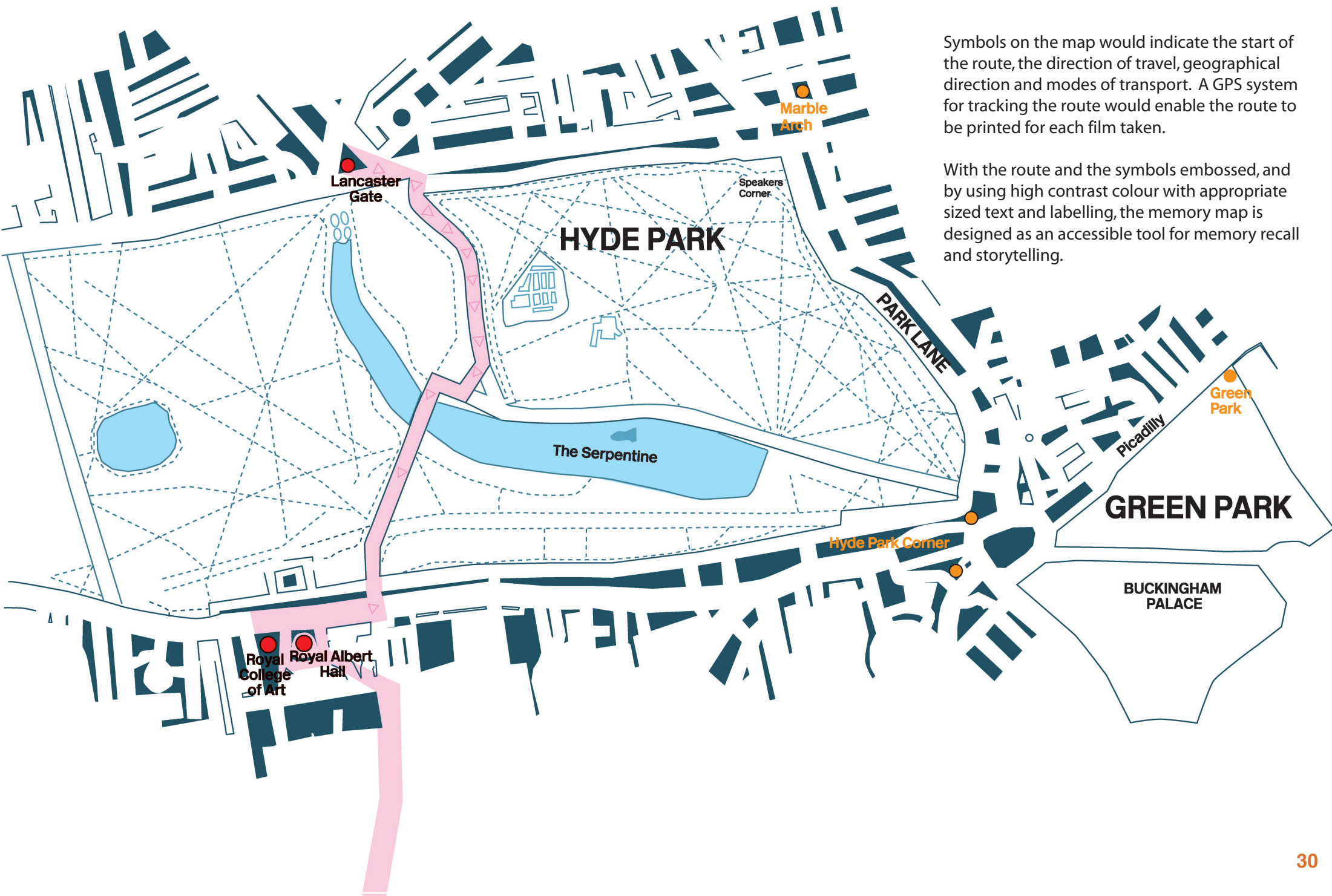
visiting a new place creates new memories
re-visiting that place triggers those memories



what if you triggered a memory by re-tracing your steps?
what if your phone's GPS recorded the places you visited and printed a map at the end of the day?
could a book of memory maps trigger memories like a photograph album does?



The memory map concept was developed from the view that there are times where the whole day is memorable. Memory map records the whole day as the memory: the places visited, the route taken. Each memory map is shown through a printed embossed route that can be read through touch. As well as indicating the route taken, the map also highlights geographical landmarks, distance travelled and even the speed of travel between places. Technical possibilities for the application of the memory map system consider its integration into a photographic camera. The memory map would act as a geographical version of the index print which is currently printed when developing film. The photographs along this route would show as landmarks on the route. There is also the possibility of categorising these landmarks through the settings used on the camera, for example, people, landscapes and fast moving objects!



Symbols on the map would indicate the start of the route, the direction of travel, geographical direction and modes of transport. A GPS system for tracking the route would enable the route to be printed for each film taken.

With the route and the symbols embossed, and by using high contrast colour with appropriate sized text and labelling, the memory map is designed as an accessible tool for memory recall and storytelling.

design lessons

Three of the listed concepts were developed into working prototypes for exhibition and feedback. Best China and Memory Shelf were exhibited at the 2003 Helen Hamlyn end-of-year show at RCA, and also shown to a group of 15 visually impaired people for feedback. Embossed Photographs were shown only to the latter group. Feedback on all three concepts was positive, but tended to throw up questions about the cost and practicality of each item. The visually impaired group liked the idea of recording special conversations or the stories on displayed objects in the home, but worried about the social issues of sound recording, and about washing and storing electronic teapot lids. They also wondered how a story could be recorded on a gift item, if both the giver and receiver didn't have a memory shelf. The same group welcomed the innovation of embossing special photographs for tactile exploration. They preferred the high contrast printed photographs to the resin relief, because it provided simpler, clearer and more accurate information about the outlines in the image. As most participants did not use a home computer or printer, they wanted to obtain embossed versions of existing prints as a service from a print shop or high street retailer.

Further development of these and other concepts would benefit from field trial testing, so that potential users could explore the use of each concept over an extended period of time. Such trials might be done with fully sighted as well as visually impaired users to ascertain the value and attraction of each concept to each group. Our prediction, going into this study was that by designing non-visual memory aids for a non-visual population we would be serving that group in a new way, whilst also opening up new ways of serving a visual population. This is a version of the general argument for inclusive design, that by focussing on excluded user groups we make design better and more accessible to all (Clarkson et al. 2003). This could be tested in a future study with the current concepts, which were designed specifically for the visually impaired. Such work is now in progress as part of a broader design exercise to support storytelling with objects for the general population (Fennell 2004). For now it is sufficient to reiterate the main insights the current study has already thrown up regarding memorabilia and its support. These include the facts that

- multisensory memorabilia are already used extensively to remember the past but are seldom supported by new technology
- the sonic environment is both a vehicle and a subject of human memory, especially for the visually impaired
- passive memorabilia need bringing back to life in unexpected ways to counter habituation and forgetting
- photographs are a form of visual memorabilia which remain important to visually impaired people

acknowledgments

This work was carried out whilst the first author was working as a Research Associate at the Helen Hamlyn Research Centre (HHRC), Royal College of Art (RCA), London. We are grateful to Jeremy Myerson, co-director of the Helen Hamlyn Research Centre for his guidance and management of the research project. Thanks to Huw Robson and Hewlett-Packard for being research partners of the project and for the sponsoring and support of future design research around storytelling with objects. Thanks also to the following people for their advice during various stages of the project:

Indri Tulusan for design concept generation and development, discussions and workshop participation throughout the whole of the project,

Rama Gheerwaro for support and guidance on inclusive design practices, managing the project and help with organising the end of year show and symposium,

Margaret Durkan for compilation of printed and visual material for the public events surrounding the Research Associate year at the HHRC,

Julia Cassim for expert advice on visual impairment and providing contact to user focus groups,

Irene McAra-McWilliam from the Interaction Design department at the RCA for advice on direction of the project and concept development,

Guy Adams and Andy Hunter for input into the possibilities of prototyping Best China and Memory Shelf, and finally to all of our informants (Glyn, Becky, Matt, Elsie and Bill) for their continued support and insights throughout the project

references

Clarkson, J. et al. (Eds.) (2003) *Inclusive Design: Design for the whole population*, London: Springer-Verlag

Csikszentmihalyi, M. and Rochberg-Halton, E. (1981) *The Meaning of Things*, Cambridge: Cambridge University Press

Fennell, J. (2004) *Biographical Objects: the role of objects in storytelling*, London: The Helen Hamlyn Research Centre

Frohlich, D.M. (2004) *Audiophotography: Bringing photos to life with sounds*, Dordrecht: Kluwer Academic Publishers

Frohlich, D.M. and Murphy, R. (2000) 'The Memory Box', *Personal Technologies*, 4 (4), 238-240

Gaver, W. et al. (1999) Design: Cultural Probes, *Interactions*, 6 (1), 21-29

Holmquist, L.E. et al. (2000) Every Object Tells a Story: An Experiment in Tangible Narrative. in: *Proceedings of NordiCHI 2000*, Stockholm, Sweden. (short paper)

Stevens, M. et al. (2002) 'The Living Memory Box: Form, Function and User Centred Design', in: *CHI'02*, 20-25 April 2002 Minneapolis, New York: ACM Press, 668-669