

work at home

the proceedings of
the thinktank on
home-working at the
Royal College of Art
20 April 1999

supported by
Leonard Cheshire



name: **NICK DORNOY**
organisation: **THE FOURTH ROOM.**

*Wilson
in office when at home.*

name: **Leerie Wilson**
organisation: **First Direct Bank**

work at home

Before gaining admittance to the Work at Home thinktank, each participant was asked to sketch on their entrance ticket a product, service or system concept that could improve work at home in the future. That created a mini exhibition of design scenarios even before the event began, and some of that work is shown on the inside covers of this publication.

Foreword

Fuzzy freedom and design challenges

>Daniel Charny

Free to work unchartered hours, wear your favourite old t-shirt, listen to horrendous music on repeat. Free to take unlimited coffee breaks and induce caffeine poisoning. Free to see a matinee without being absent, catch a quick chat with the kids, work in a smoke- filled room without workmates to stop you, intimidate you, harrass you or disturb you with their boring stories of a successful insurance claim for a repetitive strain injury. Free of comments on your new hairdo or tips on a shortcut to a cash-consuming, weight-increasing, lovely little pub-lunch place across the park...

...Freedom from the twice-daily commute, absolutely no reason to get away from the house during rush hour or leave the comfort of its other inhabitants, noises, smells. The knock on the door could be a neighbour, fax paper supply or fresh fish delivery, the phone call a client or your parents asking when are you going to get a proper job...

Earning a living or studying in front of a computer screen for long hours within our physical living space is an increasing choice for a growing number of people and companies.

What makes working at home of particular interest is the unique integration of living and working cultures in a shared territory. This complex blurring of borders affects people from a wide range of economic circumstances, physical abilities and social backgrounds.

This inclusivity is key to the Work at Home design research project at the Royal College of Art. Its partners regard the identification and address of common needs as a constructive way of eroding discriminatory attitudes and exciting interest in producing new designs.

The merging of cultures breeds a variety of ambiguities and new responsibilities—a surface that is both a desk and a dining table; an entrance that is both for social and trade; a dining room chair that supports long hours of working; clothes that are comfortable but do not compromise one's sense of a presentable professional image; bulky technology with lots of cables which fits in a domestic environment; task lighting that is part of the ambience of the living room; efficient communication without social distractions.

Controlling such duality is very much up to the individuals and their households, but it is clear that the work at home culture offers new opportunities and obligations. New concepts of space require new objects and services to enable home workers, their family, friends and employees to cope with the situations and preconceptions that are involved.

New technology is both fuelling this development and rushing to meet its challenges. Once used almost exclusively for work, the computer now caters widely for home-based activities. As a piece of design, the androgynous iMac, for example, has made a successful entry to both home and work environments: although essentially a tool, it doesn't impose on the space around it a semblance of an office.

The distinction between work and un-work need not be abolished—indeed many will find it psychologically and physically necessary to preserve it. But bringing the office ethos into the home or demanding that existing domestic products support the work tasks, may not be the best of solutions.

This design research project, which was effectively launched by the RCA thinktank described in this publication, is not about recommending or condemning the choice to work at home. It is about directing designers to draw inspiration from people's behaviour in the light of this social trend, with concepts that may be thought of as new types.

image of home:



image of work:



from ThinkTank workbook by Monica Buenc/RCA-Computer Related Design

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Office, sweet office.

1980s British Telecom press advertisement highlights a growing trend

introduction

A key social trend

>Jeremy Myerson

This publication sets out to capture the ideas and inspirations of a special day at the Royal College of Art. On 20 April 1999, the RCA's Helen Hamlyn Research Centre held its first thinktank on changing patterns of work. The subject was work at home, a theme which was originated in the Design Products studio by tutor Daniel Charny and has now become a growing research programme within the College.

Work at home is one of the key social trends of our time. In Britain, at least one employer in ten today employs some form of home-based worker and an estimated two million people now work wholly or partially at home. This includes 1.2 million professional teleworkers—around 4.5% of the working population—who work via computer and telephone and a 'hidden' workforce up to 800,000 home workers mainly doing clerical, assembly and manual work on piecework rates. Work at home has profound practical design implications, many aspects of which have yet to be properly understood.

The purpose of the RCA Work at Home thinktank was very simple: to bring together for the first time a broad cross-section of interested parties to explore the underlying issues and develop an agenda for practice-based design research. 120 people attended, including designers and architects, furniture and lighting manufacturers, IT service providers, retailers, and representatives from disability groups, homeworking associations and the media, as well as RCA staff and students.

The thinktank was sponsored by Leonard Cheshire, the leading charity provider of care and support for people with disabilities, and its aim was to be inclusive in terms of age, ability and socio-economic groups. It did not seek to promote working at home but to stimulate new design thinking, especially among RCA design students. The morning was devoted to 'expert' presentations on a range of themes; the afternoon to working in four smaller workshop groups to 'brainstorm' the design agenda.

Each Work at Home participant completed and returned the 'blue pages' of a special thinktank workbook, giving us valuable data, feedback and sketches which are reproduced throughout this publication. For example, a clear majority of thinktank participants could name more than 20 people they knew personally to be working predominantly at home—reflecting the steady rise of this trend.

At the thinktank's core was an observational research study of home workers, entitled 'Borders', commissioned by Leonard Cheshire. This teamed RCA design researchers with a psychologist and presented four generic models of homeworking which provided the conceptual basis for the four afternoon workshops.

What emerged from the thinktank? There were historical insights into the 'cult of domesticity' as Professor Penny Sparke described it—the 'separation of the spheres' between work and home which is 150 years old but is now threatened by the rise of homeworking. There was the demographic picture presented by Clare Lees of the Henley Centre, who predicted that more than 30% of the workforce will be homeworkers by 2006. And the interests of Britain's 6.2 million disabled people were discussed by Dr David Bonnett—a group which, in many cases, has no choice but to work from home.

The motivations of employers were examined by Frank Shepherd of BT, who prefers the term 'flexible working' to being stuck at home. The technology push of the IT innovators was examined by Philip Ross of Cordless Communications, heralding not only the 'death of distance' but your e-mails on the fridge door. Ultimately, the day yielded the prized design agenda—a wishlist of 30 projects, some of which the RCA is set to take forward on its Design Products (formerly Industrial Design + Furniture) course, in collaboration with a range of external partners. The Work at Home thinktank marked a beginning, not an end. This is an issue that won't go away...

Jeremy Myerson is the Co-Director of the Helen Hamlyn Research Centre, Royal College of Art, and the author of a number of books, including *New Workspace: New Culture* and *The Creative Office*.

Ultimately the thinktank yielded the prized design agenda—a wishlist of 30 practical projects, some of which the RCA is set to take forward

Leonard Cheshire

Leonard Cheshire is the leading charity provider of care and support to people with physical and learning disabilities, both in the UK, and in more than 50 countries around the world.

For the past 50 years, our services have enabled people with a wide range of disabilities to lead more fulfilling lives. Our services have changed, but our philosophy has remained the same. We have always worked with disabled people, to provide each person with the choice about how they live their life.

In the UK today, we run 140 services, creating opportunities with more than 10,000 disabled people. Our international services operate over 200 services in 50 countries, providing support to a further 15,000 disabled people throughout the world.

We work in partnership with people with a wider range of disabilities than any other charity—enabling people with multiple sclerosis, cerebral palsy, muscular dystrophy, learning disabilities, acquired brain injury and sports or industrial injuries to live lives of opportunity.

We have developed a diverse range of services in response to the ever-changing requirements and aspirations of our service-users. Our services now include Care at Home, independent and supported living, residential and nursing care, day services, respite care—and countless other services which are individually tailored to ensure that every one of our service users can take full advantage of life.

These services provide a broad spectrum of flexible and appropriate support—for people with severe disabilities who need high level nursing care, right through to those who require only occasional help and support.

We also enable people throughout the world to gain access to education and employment, to take holidays, to make the most of their leisure time, and to have opportunities for self-development.



Tupperware party, 1960s: women in the home as consumers, not producers

domesticity

Separation of the spheres

>Penny Sparke

I want to swiftly outline the story of the 20th century home from a particular angle. I want to look at the changing gender roles within it and their relationships with work. At the outset it is important to say that the concept of domesticity—defining the home as a sanctuary from the world of work and as a repository of the ethical and the socio-cultural values of the nuclear family—is only about 150 years old.

Prior to what historians have called the separation of the spheres in the mid-19th century, much work went on in the home. Whether farming, running small businesses or manufacturing, it appears that men and women worked together to maintain and sustain the family. The home was the site of work, nurturing and family life.

There has always been a gender division of labour. But this has shifted through history, and historians are currently finding out more about women's work, in particular in the pre-19th century period. Back in the 16th and 17th centuries, for example, it seems women were responsible for a wide range of work, including textiles, everything connected with the dairy, and interestingly, brewing. Something I learnt very recently is that all words ending with 'ster' are feminine words, hence the word spinster and the surname Brewster—the female brewer.

With industrialisation, however, came the physical separation of men and women, especially in the middle classes. This ideology then spanned through into the working classes as men began to go out much more to the factory.

The women were left behind as guardians of the home, and from this shift developed a new image of the home. The Victorians dubbed it 'the cult of domesticity'. Apart from working class women who had no choice but to join their partners in the factories, women were removed from the sphere of paid labour.

The roles left behind for women included beautifiers of the home. It is significant that the aesthetic dimension was left for them. They became nurturers of their children and providers of an ethical upbringing. Most importantly, women were left behind to be consumers. They had to go shopping because production had been taken out of the home—they needed to buy goods rather than make them. The house became a site for consumption rather than production. This has remained with us and is one of the overriding definitions of the home in the 20th century.

The idea of the female as primary consumer, even if she hasn't earned the money to consume with, is something that sticks with us today and is linked to the home. So where does this leave the home in our century? There are a number of ways to think about it. First and foremost, it is important to say while the appearance of the home has changed dramatically, becoming first of all modernised and then I'd argue de-modernised, its underlying ideology has remained much more constant.

Even the most rational, labour-saving, technological homes which developed in the 1930s remained feminised. Modern was the ideal, but ideologically, little changed from the values of the 19th century home. And by the 1980s, there was even a process of de-modernisation with a strange decorative shift back to the mid-Victorian era in some homes.

Until recent years, the separation of the spheres has remained fixed in our minds. Paid labour has for the most part remained outside the confines of the domestic sphere. The idea of going to work has dominated our culture for a century and a half and, I would argue, it continues to do so. The continued emphasis on the home as a site of consumption, leisure, release from work, ethical values and family life is an emphasis that is promoted emphatically by the media.

The idea of men working from home has only been with us as a cultural concept for little more than a decade. The second major technological revolution of recent centuries, the rise of electronic communications, is at the root of it, together with what one might call de-industrialisation.

Top 10 most powerful
images of home:

- 01__comfortable
- 02__my room/belongings
- 03__love/family

- 04__peace/quiet/private

- 05__relaxed
- 06__safe
- 07__warmth
- 08__enjoyment/stress-free

- 09__food
- 10__bed/sleep

Source: RCA Work at Home
thinktank participants

Top 10 most powerful
images of work:

- 01__pressure
- 02__stress/busy/fast pace
- 03__creative
- 04__social environment/
people
- 05__telephone
- 06__technological systems
- 07__efficiency/decisions/
juggling
- 08__team/consultation/
meetings
- 09__information overload
- 10__office politics

Source: RCA Work at Home
thinktank participants



Images of the British home from the 1950s: despite modern design, values remain Victorian

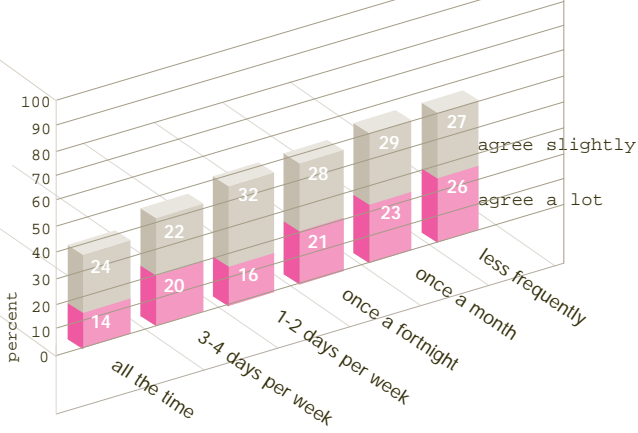
The first separation of the spheres happened with industrialisation. The ideological effects of this new techno-economic shift will in due course be as dramatic as the one that took place in the mid-19th century. We are witnessing something very significant. However, it is also problematic in that technological change has preceded cultural change and the time-lag between the two means that we are currently living in a world full of contradictions.

However strong and real the image of what the media calls 'the new man' actually is, the home is still primarily perceived as a feminine sphere. That may be gradually changing, but slowly. And while we place more importance on the concept of services and communications—in other words, our de-industrialisation has taken us into a new kind of industry—it is still consumption that keeps the wheels of the economy moving. I don't think many politicians would disagree with that.

Domesticity and consumption are intrinsically linked culturally. Until that changes, we are not actually going to see a really significant change in the way homes are used. Despite a rise in the curve of masculine consumption, women are still the prime consumers, and women and homes still go together. This needs to be sorted out before we can shift cultural patterns. So where does this leave us in terms of the cult of domesticity and paid labour in the home? It leaves us in a period in which culture is running fast to catch up with technology, but is not yet winning the race. I wonder when it ever will.

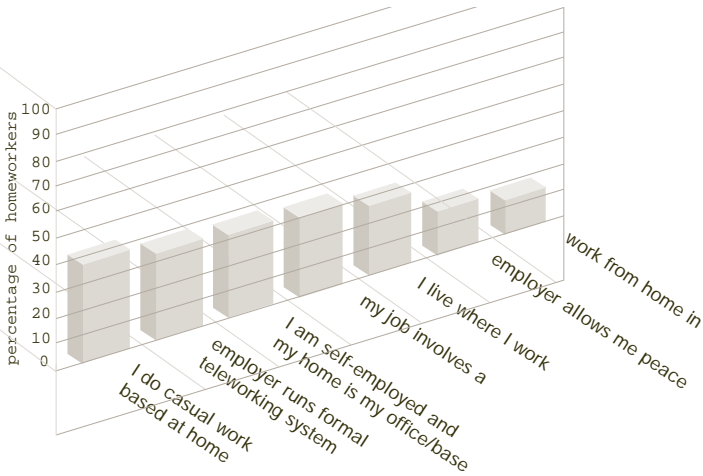
Penny Sparke was Professor of Design History at the Royal College of Art until summer 1999. She is now Dean of the Faculty of Design, Kingston University.

Technological change has preceded cultural change and the time-lag between the two means that we are currently living in a world full of contradictions



PERCENTAGE OF HOMEWORKERS WHO AGREE THEY MISS HAVING ACCESS TO A FULL RANGE OF SERVICES AND FACILITIES

source: Henley Centre Newspaper
Society Homeworking Survey 1998



WORKING AT HOME

source: Henley Centre Newspaper
Society Homeworking Survey 1998

The age of the homeworker?

>Clare Lees

I want to discuss what is meant by homeworking, what is driving it and what can stall it. Is this the dawn of a homeworking future? And if so, what are the implications?

There is much talk today of a revolutionary new world of work—a nation of workers in virtual offices, linked via technology, and avoiding commuting altogether. A world in which the divide between home and work is blurring. All of this implies a new set of needs and demands, and the requirement to adapt to a very different way of life. But how true is this picture?

Well, there is no doubt that there is a homeworking universe in the UK. According to the Henley Centre's 1998 Newspaper Society Homeworking Survey, 30% of the workforce do some work from home; 46% of business people have an office or work area in their home; a third expect to do more work from home over the next few years; 9% of the workforce work from home all the time; and 1% of homeworkers operate under a formal teleworking system.

In the main, circumstances of homeworkers are dictated by the nature of their work. There are various types of homeworkers: 39% take work home in the evenings/weekends when busy; 25% are self-employed and home is office; 10% work from home on an ad hoc basis when they need peace and quiet; 6% spend a lot of time on the road (with office at home and work); 5% do casual work (at home) paid by the hour; 4% live where they work; and 1% are formal teleworkers.

SHARE OF WORKFORCE HOMEWORKING (PERCENT)

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1998

all the time	06
3-4 days/week	02
1-2 days/week	04
less	12
TOTAL	24

2006

all the time	09
3-4 days/week	03
1-2 days/week	08
less	11.5
TOTAL	31.5

source: Henley Centre,
Planning for Consumer
Change 1999

THE HOMEWORKING UNIVERSE

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30% of the workforce do
some work from home

46% of business people
have an office or work
area in their home

A third expect to do more
work from home over the
next few years

9% of the workforce work
from home all the time

source: Henley Centre
Newspaper Society
Homeworking Survey 1998

The drivers of homeworking include social, economic, political and technology factors. Chief among these are increased workloads—everyone is running out of time, it seems. 61% of the population agrees with the statement 'I never seem to have enough time to get things done', according to the Henley Centre's study Planning for Social Change 1998. Pressure at work is increasing for everybody: 73% suffer from stress sometimes at work; 59% feel pressure at work has grown over the past three years; 40% say their hours of work have increased over the past three years; 34% occasionally work late because of work pressures; and 26% did not take their full holiday entitlement last year.

The need for flexibility—in both lifestyles and organisations—is another driver of change. Inside organisations, competitive pressures leading to downsizing are playing a part in the shift to work at home. Information technology penetration is a further factor. In 1997, 30% of UK homes had a PC. The Henley Centre estimates that this will increase to 40% by 2003 (Media Futures 1999).

Then there is the growing trend of what is termed the 'culture of smallness'. Small firms and the self-employed constitute a large proportion of the homeworking market. Small firms account for more than 99% of stock of UK business. Organisational change in large businesses is driving growth in small firms, and the Government is actively supporting small businesses. All of which points to a rise in the number of homeworkers.

There are, however, several barriers to homeworking. The homeworker can become a 'non-employee'—not subject to same legal status and benefits as office workers; low paid homeworkers are more likely to be exploited; there is a fear of being over-looked for promotion; and there can be lack of trust on the side of the employer

In addition, distance can potentially cause isolation and lack of motivation—and isolation is felt by more of those who work at home all of the time than others; self discipline is needed in large quantities; and homeworkers miss the social contact offered by office life. The results of the Newspaper Society survey on homeworking reflect this.

Top 10 best things about working at home (in order of importance):

- 01__flexibility, particularly of time
- 02__peace/quiet/less noise/no interruptions/privacy
- 03__no travel
- 04__self management/freedom from supervision
- 05__sharing family responsibilities/being with the children
- 06__familiarity/comfort
- 07__control of environment/atmosphere/home
- 08__productivity/high concentration
- 09__cheapness/own lunches
- 10__creativity of environment

Source: RCA Work at Home thinktank participants

 Top 10 worst things about working at home (in order of importance):

- 01__isolation
- 02__no separation between work/private life, no boundaries
- 03__lack of office support, technical and social
- 04__distractions
- 05__need for strong self-motivation/discipline
- 06__need for time management
- 07__space—either lack of or too much
- 08__can't escape the household chores
- 09__lure of the garden/sunshine
- 10__outsiders/visitors/friends

Source: RCA Work at Home thinktank participants

demographics

There are other conflicts too. Lack of clear time boundaries can result in people over-working—those who work from home, for any period of time, tend to work longer hours, take less time off sick, and take fewer days holiday. The boundary between work and family life can cause rifts, especially because of the distraction that this can cause. All types of homeworkers agree that they can get distracted; interestingly, those least in agreement—those who live where they work—are most likely to have formal, physical borders between home and work.

In addition, office facilities and services are missed by homeworkers. More than a third agree that they miss having access to a full range of services and facilities all the time.

So, are we really at the dawn of a homeworking future? More people will work at home due to several key trends: the rising number of people working for themselves; the changing nature of work which will increasingly lend itself to homeworking—‘knowledge work’, for example, is forecast to increase its share of work from 37% in 1996 to 40% in 2006 (Institute for Employment Research); and progress in IT and management techniques, as well as falling communications costs, which will make working at home more practical. The Henley Centre therefore forecasts a steady growth in homeworking from 24% of the workforce in 1998 to 31.5% in 2006.

What are the implications of this growth? Anyone interested in the homeworking market has to track its potential, gauge the economic and political climate, and use their own organisation as a litmus test. While macro trends point towards increased numbers of homeworkers, micro barriers (such as isolation) can always counter-balance these. However such micro-level disadvantages can provide opportunities. Remember that homeworkers face special pressures and have special needs which arise from general characteristics and the lifestyle of working at home.

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Everyone is running out of time. 61% of the population agrees with the statement ‘I never seem to have enough time to get things done’



Four models of work at home: Contained/Permeable/
Overflowing/Imploding

borders

Four models of work at home

>Iain Ellwood and Alma Erlich

This is the start of a series of research studies at the RCA into the subject of work at home. By its very nature it is exploratory. Today, we can only hope to draw a preliminary map of the landscape of working at home. The objective of the study is to identify commonalities and differences in the environments, motivations and needs of people working at home. The aim is that such insight will spark design ideas and involve student and professional designers in projects which facilitate work at home.

The study brings social, psychological and design perspectives 'on site'. Social researchers and designers worked together from the formulation of questions, through the collection of data and the analysis, to the brainstorming of implications. The model or map that comes out of the data is an integrated perspective. This should help to integrate critical design research with studio practice at the RCA.

Research methods and participants

After formulating our approach, we held in-home, semi-structured two-hour interviews with homeworkers. Critical observations of the work activities and work space were noted. Audio and visual records of visits were captured. The interview/observation brief included identifying workers' reasons for working at home; their perceptions of the advantages and disadvantages; the subjective descriptions and evaluations of the workspace and equipment; a complete description of the tasks and activities of a 'typical' working day; work-related communication and negotiations with colleagues, members of family and friends.

The participants were 12 men and women working at home, plus, where possible, other household members. Participants were chosen to represent the most inclusive definition of work at home, reflecting typical occupations and sectors, and including homeworkers (typically manual, sewing, assembling, routine clerical, 95% women) and teleworkers (employed and self-employed). We interviewed paid and non-paid workers and those that study; those with low skills through to managerial and professional workers. We looked at participants who worked part or full time at home. Participants were in different domestic situations (eg. living with family of origin, single person household, couple household, family with children) and at different lifecycle stages (eg. young adult, parent of young children, parent of older children, older retired). A wide range of physical ability is represented.

Participants were recruited through professional and support organisations and through word of mouth. Interviewees were from varied geographical areas including Manchester, Nottingham, Leicester, London and Berkshire.

Overview of analysis

Workers at home organise their work environment in an attempt to maximise the gains and minimise the negative effects of working at home. Working at home produces some strong positive synergies of resource. These are known, and stated as the most common reasons for work at home. For example, caring for children while working; utilising the care and rest facilities that are in the home to accommodate illness and disability; utilising the quiet of the home for concentrated work; using available space and equipment rather than renting an office.



Sites for research

But work and home life are in very basic ways mutually exclusive and their co-existence may affect both negatively. Work at home may drain resources away from the home and put new spatial or behavioural demands on personal and family life. Children, for example, may not be allowed to touch, enter, answer the phone in case it is a client calling, or play noisily in the next room. Normal domestic roles, and home leisure and social functions may suffer, and need to be delayed or reduced.

Conversely, the demands and temptations of the home may interfere with the ability to perform the work. Children or uninvited visitors, or the proximity of the television and sofa can all impinge on and compete with work. More insidious is the difficulty of projecting a working image when the common expectation seems to be that the importance of the work is diluted by the proximity to home.

Given this very dynamic and competitive relationship between work and home, people working at home set up 'borders' to protect and enable work within the home. Depending on the particular constellation of demands from work and home, as well as their attitudes and priorities, they set up these borders to achieve different degrees of structure and separation between work and home.

The borders delineate the time and place of work, but also set out the rules of behaviour and expectations that differentiate the worker from their other home roles and activities as partner, parent, homemaker, host, or just relaxing at home. The borders are therefore spatial, temporal, social, psychological, and related to role.

We have identified from our interviews and observations of workers at home, four generic types or models of working at home which are distinct in the way they construct or fail to construct their borders.

People working at home set up spatial, temporal, social, psychological and role borders to protect and enable work within the home

The first we called the **Contained Work** model, where the borders constructed around work are solid, allowing little that doesn't belong to pass in or out, and defining clearly the parameters of work within the home. Spatial borders are marked: *'This is my work area here and it stops very smartly here where the kind of private, domestic mess starts'*. Temporal borders are defined, and time plans and schedules adhered to. Psychologically, the distinction is kept clear in the worker's mind. Negotiated role borders spell out the behaviours and expectations of the worker and of other household members.

Sitting on the opposite end of an axis in terms of the degree of separation of work from home, is the **Permeable Work** model. Here the borders are constructed to allow a planned integration of work and home activities and easy two-directional access. Work is often not confined to the work space, and people and objects come and go, though selectively: *'The children get much quieter as they come towards the office'*. Often domestic and work activities are intertwined or run in parallel. Temporal and role borders are kept open and flexible to facilitate the movement and communication between the work at home and the external world.

The third and fourth model—the other pair of work at home arrangements—illustrate situations where borders are not successfully constructed or maintained, and, on the evidence of the workers themselves, balance between work and home is not achieved.

The **Overflowing Work** model is where the work has burst its banks and flooded the home. The work is not contained by spatial or temporal borders, it cannot be shut or folded away, the worker is constantly occupied or pre-occupied, investing more and more time in the work and neglecting other basic functions of home life. *'I put the machine in the living room and when I worked my girl was sitting behind me in my chair. She grew up like that'*

PERMEABLE PEOPLE

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Asked to respond to the four work at home models presented in the Borders research, around two-thirds of RCA thinktank participants described themselves as working in a Permeable model. Around 30% identified with the Contained unit, and 20% with the Overflowing model. But hardly any said they worked in an Imploding model.

Recorded observations by thinktank participants of the four different work models reflected different levels of acceptance of what the concepts implied.

Contained unit: seen as requiring extreme self-discipline, as well as the space and finance to achieve the physical separation. Regarded as the easiest way for control freaks to manage work—an insurance against the risk of work overflowing or imploding. But there was also a danger that it could be uncreative, unsociable, too contained and too clinical—an environment which limits interaction with others. -->

Its counterpart is the **Imploding Work** model, where resources are drained or channelled away from work and less and less work is achieved. Work space shrinks both psychologically and practically. Long and short-term time plans disintegrate, and motivation and discipline weaken in the face of competing demands and constant interruptions and diversions (visitors, babies, builders, depression).

These four typical models provide contexts for thinking about design for work at home. It is important to say that we found these types, and variations of them, prevailing across very different types of work and right across the classic divides of gender, class, age, ability and wealth. Though we expect they may be more common in some groups than others, the interesting thing to observe was how people in very different circumstances were actually grappling with similar organisational problems and pressures.

The four cases described on the following pages are constructed from an amalgam of the data rather than portraying particular individuals. The first two models, the Contained and the Permeable, are situated at opposite ends of an axis which defines degrees of separation of work from the home, although both are shown as working well for their users. The extent of the separation is determined by a set of borders: spatial, temporal, psychological and role borders.

The third and fourth models show scenarios where working at home does not work well, which is instructive. The Overflowing and the Imploding models reflect an imbalance of work and home life, and the effects this can have on the workers and the household. Some or all of the spatial, temporal, social, role or psychological borders have broken down in these two scenarios.

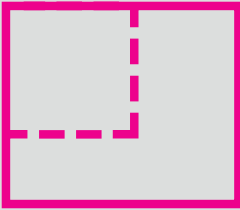
Iain Ellwood is a Visiting Tutor in Design Products at the RCA. A trained industrial designer, he holds a Masters degree in sociology and is a consultant on brand and design strategy.

Alma Erlich is a research psychologist, with a background in academic and applied research and consultancy.

Permeable model: commended for its realism, but again it required strong self-discipline to achieve a rounded life. The mental attitude of the worker would determine how well it worked. It was seen as only for people who love their work—and it required both home partners' involvement to succeed, especially given the need to maintain selective privacy.

Overflowing model: seen as destructive, unhealthy and exploitative—the result of a lack of discipline and time management. The low productivity was regarded as frightening, indicating a need for greater employer support and training. The model was linked to small houses and low pay, a vicious circle with no way out. Storage equipment was identified as a design solution to erect external visible barriers and hide work away.

Imploding model: regarded as stressful and psychologically damaging. It was pointed out that some people don't have the organisational skills to work at home. Borders were badly needed not only to protect work but to sustain fragile self-esteem.



THE CONTAINED MODEL

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Anna has been working at home for the past 20 years, sewing lace or typing or copywriting medical texts, or designing. There have been ups and downs, but now she feels she has a balanced working system which suits her and her household very well.

Spatial borders are essential to her in order to prevent the mess from her work overflowing into the house, as well as to protect her expensive equipment from little hands, or teenage viruses in the case of a computer. It is also essential in order to achieve the level of concentration needed for her work.

She has always worked in a separate room, and now has her own small box-room extension off the kitchen. The work is delivered and collected weekly in large heavy boxes through a separate side entrance. The solid spatial borders she has constructed are highlighted by a dress code, where she'll put on her 'work clothes' with their functional specifications. She would never take her lunch into her work space.

In terms of temporal borders, her daily routine is tightly planned, and large, clear periods of time are allocated to getting the work done. She is very aware of time and efficiency, which she calls 'clockwatching': *'I can start at 8am and work with no distractions. I get through a lot of work. More than I would do in the office.'*

She goes into the kitchen for half an hour for lunch, and works until dinnertime. *'I told them [her suppliers] not after 5, I don't want any work calls.'* She talks about having flexibility with her time as one of the main advantages of working at home, yet she uses it very sparingly.

In terms of the domestic roles, she has negotiated the sharing of the cooking and some of the housework with her husband to allow her to work solidly. At weekends she catches up on shopping and cleaning.

Psychologically she is well motivated for work, but equally she is able to disengage and resume her other tasks and activities at home. She keeps her work and home life separate and distinct in her mind and adapts easily to the transition. *'I find going into work is no problem. As I'm walking towards the door I'm already in it, already geared up for work'.*

borders

She has set up social borders to enable her to work: *'They know I'm working so they don't come.'* Yet, to keep herself from feeling lonely and bored she has incorporated some pressure valves: she may drop in on her friend next door for a half hour coffee break. Into her little work space she has brought a telephone, a television, a radio, an intercom and an emergency buzzer.

The work space is her own private space, no one is invited in. In line with this, there is nothing in it geared for presentation or show. The space holds only work-related equipment and tools, except for the above mentioned communication devices.

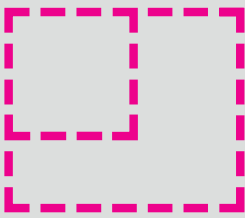
The factors that have contributed to her 'design' of the space are overwhelmingly functional, and the problems and needs expressed by her are all to do with making safer and better use of the very limited space. She has put her machine by the window so she has good natural lighting and a view to her garden.

She doesn't have enough storing space or shelving, and storage needs are constantly growing. She has yet to find a comfortable chair, she says, and has cushions propping her up and the occasional backache. She is particularly worried about the long-term effect of the dust her work produces. Her husband has constructed yet another improved extractor fan which still does not seem to do the job.



Though many of the design issues are very specific to the task and the space, requiring tailor-made solutions, some general questions are raised, for example, the lack of suitable seating.

The contained work model is often a mini-sweatshop or a clone-office in a home environment. Space is often very limited and the furniture, lighting and storage makeshift and recycled. Design needs to take seriously the work aspects while also taking seriously the additional implications imposed by the home environment. Spaghetti cables, for example, are all the more a problem when rabbits chew on them, babies pull them and visitors trip on them.



THE PERMEABLE MODEL

John and Barbara run a small clothes importing business at home—or it could be a printing and publishing business. They have tried to balance their professional needs with their home life. They achieve this by developing a series of permeable borders and gateways that allow flexible changes to occur in their lives. John is partially disabled with a hearing defect, but found that careful planning and a special set-up on his telephone and computer have minimised the effect on their business.

They work in a dedicated room at the top of the house, which means that everything and everybody must come through their home. This requires flexible delineation of their domestic and work spaces, with several degrees of spatial borders throughout the house. Their secretary and the delivery drivers happily make coffee in the kitchen and then return to the workroom. John and Barbara try to keep the bedroom doors closed, creating some separation of the domestic and work. When the bank manager visits they only use the front room which is the most formal room in the house.

They try to create a professional yet stylish and relaxed image to external visitors and their employees. But: *'The house invades the office too much.'* School reports, old photo albums and other household items are stored in the office. They also have a flexible approach to dress codes at work, wearing more formal clothes for certain meetings and dressing down on other days.

The couple have flexible temporal borders that must adapt around their work and time with their two children. In the mornings, John will work for a half an hour, then join the family for breakfast and then continue working. Barbara takes the children to school, works until the afternoon, then picks up the children and sits with them until dinner time. *'In theory I'm part-time, which I dispute. I work 9 to 3. I come in a couple of hours in the evenings, at weekends.'* By taking a pliable approach they are able to manage their home life and work time with relative harmony.

Socially, they try to see their friends as often as possible, sometimes they combine this with a visit to a supplier or client. Barbara tends to take care of the after-school socialising with the other parents. They encourage friends not to visit them during certain hours of the day, but are flexible at other times.

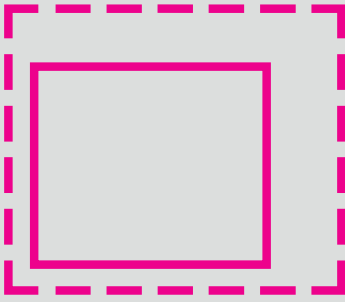
John and Barbara balance their roles as parents with those of business partners and employers. They have adopted a flexible regime that allows them to switch roles easily and quickly. *'You go out, scold a child, come back and do the accounts.'*

They vetted their employees not just for proficiency, but also their personal chemistry with the family. It was important that anyone they brought into the heart of their home would be able to cope with the ambiguity of these multi-functional roles.

Allowances and structures need to be negotiated between family members and a tolerance accepted. *'There are times when it's quite noisy, and you bang on the window asking your child and her friend to be quiet when you've got an important phone call.'* The flexibility to psychologically shift your frame of mind requires a lot of energy. It also requires a pliable and open attitude. *'Being a mother and working at home, I am multi-tasking continuously.'*



John and Barbara's space has been designed as an office, using second-hand office chairs and built-in furniture. One of their biggest needs is for an aesthetic dualism in combining visible professionalism that can also be relaxed, informal and still a home for the family. The constant shifting of borders and roles means that objects and spaces must have a wide tolerance. Can designers generate a series of visible or tangible signals that suggest different levels of openness or privacy that can be easily and flexibly managed?



THE OVERFLOWING MODEL

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Lisa (or Jack) feels under pressure. Since she started working on direct mail shots (or button-making or data entry), she has not managed her work and home life well. The work has overflowed into her home life so much that the work controls her life rather than her controlling the work. It has squeezed out every other activity around the home, leaving only the all-pervasive work present. This situation is not just found in manual or clerical work—you will recognise the problems of most workaholics in this scenario. Possibly the motivation of workaholics may be different, but the borders between work and personal life are equally flooded.

There are no spatial borders between Lisa's work and her family who are constantly surrounded by the evidence of her work. This is physically light and small, but because the task takes her so long it is never packed away in a cupboard. Lisa likes to work in the middle of the living room floor as this makes her feel most comfortable. This means that there are always business papers and receipts covering the floor that visually destroy her carefully chosen domestic furniture and fittings.



She found working in the kitchen too 'cold' and not cosy—the living room is the reward she gives herself for working so hard. It is also easier for her to watch her young son playing at the other end of the room. Lisa doesn't have a proper chair and mostly sits on the floor. When she starts to get backache she moves to sit on the easy chair which doesn't really help. In the evenings, the family watch TV, sitting in amongst the piles of papers.

The company has fixed very hard time schedules for the work and it always takes Lisa far longer than she imagined to complete her daily allowance. The work is delivered each morning and must be completed for the next day, even if it arrives late. This means that she literally has to work all day and often long into the evening to finish the work. *'Nobody should work more than 8 hours a day, and if you're working from home with a child, you're better off working 5 or 6—a realistic 6, not 6 converted into 12.'*

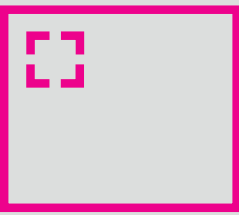
Time available for the rest of the family and household chores is very limited and when she has time she is often too tired. It also means that Lisa does not have time to look after herself, by eating properly or taking breaks and exercise to stay healthy. She is not in control of her own time or that of the household. Socialising has become very limited, because she has no time available and because friends do not like to visit. If they do, they are often co-opted into helping with the work. *'Nobody comes here because they all end up on their knees...I've seen her mother and her father, and her auntie, and her grandmother sitting here working.'*

Her role as a mother has been undermined as she feels unable to give her son the proper supervision and attention he needs. *'I'd have a friend over to play with my son in his room. I wasn't supervising. They'd eat 4 or 5 packets of crisps each before I knew it. Poor little thing. I feel quite guilty now.'* Family life has been totally disrupted as the role borders break down: *'Everything is going into the job. I come home, what are we having for tea? And she says, oh I'm too tired. And we end up having a take-away which takes the profit of the day.'*

Psychologically, Lisa feels constantly under pressure and vulnerable, resulting in low self esteem. It makes her depressed as she cannot escape the constant work activity. Lack of breaks or socialising make her feel more and more isolated. The problem has become a downward spiral difficult to escape.

She has not managed to balance the need to work with the needs of herself, her home and her family. *'I am around the house but I am never available, for a chat or cup of tea, I am just physically here.'* Even though she knows that she will get backache, she prefers to sit on the floor, which is psychologically demeaning. Lisa's work space is completely undesigned for the tasks she has to do. She has no specific furniture or tools for the work, other than a letter opener and tape. The type of work that she does is repetitive and tedious so she uses the TV or radio to keep her mind occupied while at work. She has constructed no physical or mental borders to try to separate her work from her home life.

Could we design a space that encourages this separation? Her time and work management is poor. Could these be aided by objects that structure and process the work better? She needs to feel that what she is doing is worthwhile. Can the furniture help give her a feeling that she is in control of the work and not the other way around?



THE IMPLODING MODEL

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Dan is a research writer (or freelance designer or student) who has been working mainly from home for the past few years. He describes his present work-at-home situation as unsorted, with pressures at different levels coming together to drain and squeeze his work ability until it is no longer functional. His circumstances are an example of the Imploding model in which the work caves in under pressures of home—in direct contrast to the overflowing model in which work swamps the home. *'The feeling of control you have working at home, at its best, is just fantastic. And that's what I've lost in the past year, I've lost that feeling of control.'*

The big change is that his partner has given up her job outside the home and is now at home during the day. New assumptions and demands on his availability are being made. *'I have got completely spoilt working alone in the house, and now I have somebody who notices where I am...Suddenly it's somebody else's space as well as mine.'*

The room he works in triples as a guest-room and storage space—*'all our junk is in here.'* It has served him well till recently. It seems that he used the quiet and meditative atmosphere of the whole empty house as an extension to his work space, and now that bubble has burst. Not only does he find it impossible to concentrate with so much going on outside of his study door, but the physical borders of his work space are not respected—partner and visitors freely intrude or coax him out.

Socially, he finds he cannot negotiate the borders that will allow him to work: *'It's hard, because people knock on your door and they don't accept that you are doing work. They think, they're at home, let's go visit, and bring the children. I won't say anything but I can't continue working.'*

In addition there has been a prolonged redecoration of part of the house, with builders in and out for the past six months, which he thought he could manage easily being at home. A prolonged illness or need to care for others had produced a similar effect on the ability to work in others we interviewed.



In terms of time borders, long term plans have completely collapsed. Dan rarely manages to put in the substantial period of time he needs in order to concentrate and advance his writing. He finds himself adapting to the rhythms of his non-working partner, or maybe it's just harder to get up early in winter, he says. In any case he procrastinates. *'I have no discipline, I get up so late it's disastrous, and drink coffee, and read the paper, and talk, and drink another coffee. I get to my desk about 11am.'*

He realises that much of his inability to work is to do with his low motivation at present and his increased need for company. And he knows he is making compromises in his work. He is even lazy now about initiating work meetings and new work. Psychologically, he needs structure to work but can't create it. *'I can never get down to the work. You find ways of distracting yourself, you go out, you do anything because you don't like being on your own doing the work.'*

It's a vicious cycle. The less he achieves, the less he can enthuse himself to work, the more he succumbs to and perhaps encourages the many distractions and temptations of non-working life. When prompted to think about reorganisation and design for his work, he asked whether we can design anything against partners being at home. Though said half-jokingly, this is the challenge: to renegotiate his borders and defend his space for work in a home which is now fuller, busier and more demanding.

What are the signs that will signal the 'realness' and urgency of work? Can design help to keep out interruptions, aid concentration and up motivation? Can it help to restore a balance between work and other home roles and demands?



Rise and Shine (Seasonal Affective Disorder light): Lotta Vaananen/RCA Design Products.
A new product idea which addresses a disability through design (photograph: Ivan Coleman)



ideas...



...or shared ideas

disability

Extending choice

>David Bonnett

I am here today wearing three hats. One hat is as an adviser to the Leonard Cheshire Foundation. The second hat is on behalf of people with disabilities. The third hat is as an architect interested in effective designs. I undertook some research of my own in the early 1990s looking at buildings and designs to facilitate independence for disabled people. I have to say that most of those buildings failed because they were deterministic, in other words they restricted choice. The exciting thing about the RCA's Work at Home project is that it aims to extend choice.

Let's look at some statistics. Can I ask people here, is there anybody who has experienced a severe mobility difficulty in their lives? It may be a broken leg from a skiing accident, it may be from being pregnant or having children. Anybody here who, if they accidentally left their glasses when leaving this room, would have great problems getting home? Anybody here with a hearing problem? Anybody left handed? Anybody colour blind? I know I shouldn't ask that at the RCA.

Anybody who has not so far raised their hand at all—I would suggest you represent probably a quarter to a third of the room. Interestingly, of course, you represent normality—it is for you that people design buildings, not for the majority of us. Add to that the fact that most working architects tend to be men rather than women, for all sorts of reasons we don't need to dwell on now, and the fact that most people design for a youthful image of themselves. Young men who do not wear glasses and can jump gates and hear perfectly represent about 18% of the population. The question is: what about the other 82%?

An estimated 6.2 million people in Britain are disabled, significantly so. That represents about 10% of the population. Breaking that down a little, 2 million people wear hearing aids because they cannot hear, 1 million are blind or visually impaired. A third are wheelchair users. The great majority have difficulties in simply getting around—mobility problems. I have to add that the only reason I am talking from down here rather than from up there on the podium where the other speakers were talking from, is the absence of two 10 inch steps and a hand rail. These things could of been overcome given a little bit more forethought.



marathon wheelchair...



...or mountain bike



hearing aid...



...or walkman

I want now to come to the nature of work. Oscar Wilde said that 'work is the refuge of people who have nothing better to do'. Oscar at his best, of course. Alternatively, JM Barrie said that 'nothing is really work unless you would rather be doing something else'. This is a profound and interesting view. Just looking at work in conventional terms, between a third and a half of that disabled population, 6.2 million, is of working age. In contrast with the so-called normal population, the unemployment rate is at least 20%. Close on 150,000 of this disabled group are self-employed and most disabled workers are in the low income bracket.

This paints a picture which I think will dovetail with the thinking behind the RCA's Work at Home project. To my mind, this project should not be dominated by the specific concerns of disabled people, but its outcomes should be shared by all. As my modest little sketches indicate, there is not a great distance between the hearing aid on the one hand and the Walkman on the other. Dark glasses often worn by people who have visual impairments are a fashion accessory too. We also share the technology of those wheelchairs used in the London marathons with the modern bicycle.

There is, of course, a danger that we could be seen to be promoting home working for disabled people at the expense of encouraging the integration of features into office buildings to make them more accessible to those with disabilities. My own research into people in residential care homes indicated that their overwhelming wish was an opportunity to engage in work, but on their own terms. That opportunity just wasn't there, simply because of the way those homes were designed. Their only private space is their bedroom. So I think I would take a hopeful and positive view about a project which sets out to offer choice to people with disabilities, rather than let homeworking turn into a tyranny.

David Bonnett is an architect specialising in access for disabled people and an adviser to Leonard Cheshire. He is principal of David Bonnett Architects.

Young men who do not wear glasses and can jump gates and hear perfectly represent about 18% of the population. What about the other 82%?



disability

DISABLED WORKERS AT HOME
>IAIN ELLWOOD AND ALMA ERLICH

SAMPLE

We set out to interview three disabled workers at home. But in the course of our home visits, two more of our contacts described themselves as disabled. They gave their respective disabilities as their reason for working at home. The five interviews (out of 12 interviews with workers at home) were conducted with:

[1] A young man, severely disabled. Recently graduated, he has come back to 'full time' home life, with mother as carer. He sees computer studies as an opportunity to enhance and develop skills that will be essential in getting paid work. He also uses his acquired technological knowledge creatively, for pleasure and communication pursuits. His long term wishes are to work out of home, but states it is more realistic that he will do work at home. His short-term worry is that of losing benefits if he starts to earn money.

[2] A man in his forties, severely

disabled, began to study and work with computers, initially solely at home. As technology evolved and enabled both work and a degree of independence, his work developed and continues to increase in responsibility and workload. It now involves a proportion of out-of-home meetings and contacts and a flow of work-related visits at home. He expresses the wish to split the work base between home and out-of-home.

[3] A man in his fifties who, five years ago, had to give up his factory work because of a disabling injury, and has since joined his homemaker wife sewing on an industrial machine. For him, working at home offers the opportunity to remain economically active and productive. He paces himself according to his ability. In a few years, when his children leave home, he plans to retire.

[4] A woman in her sixties suffers from a progressive disablement. She has had to give up long-term outdoor and sport pursuits and has replaced it with a growing involvement with computers. She spends much of her time in out-of-home course/activities and a few hours a day creating and studying with aid of the computer at home. She sees her newly acquired skills as a great asset of which she is proud. Also, she believes they would stand her in good stead if and when her physical ability deteriorates further.

[5] A man in his seventies has set up his own financial business at home, post retirement. He is long-term partially disabled. His work at home involves long hours of sitting. His work also involves a great deal of travel and out-of-home meetings. He maintains his disability is irrelevant and bears little impact on his work, or on his decision to work from home.

APPROACH

In the Borders exploratory research, the disabled workers were observed and analysed alongside their physically able counterparts, in an attempt to construct an inclusive theoretical framework for thinking about work at home. All workers at home were concerned with finding the right balance between work and other domestic and non-work activities and needs. Many of the problems they were facing and the solutions they were seeking were similar regardless of physical ability. With various success, all attempted to manage a degree of separation of work and home which would benefit both their work and home lives. They constructed and maintained borders—spatial, social, psychological and role—in order to differentiate and protect their work space.

The 'Borders' theoretical framework and the various Work at Home models were therefore constructed on the basis of data integrated from all interviewees regardless of physical ability and apply to all workers at home. We observed disabled workers whose work arrangements are widely different from each other—ranging from the Contained Model with its solid borders to the Permeable Model with its flexible, open borders to the outside and to home life. Since this is a small-scale qualitative study, we cannot quantify typical types of work arrangements amongst disabled workers.

The few cases of disabled people working at home whom we have observed are different from each other in most possible ways, including type and severity of disability, type of work and life-cycle stage. We find that we have very limited information to generalise about the circumstances of disabled people working from home. However, bearing in mind these limitations, a few observations seemed more clearly of relevance to disabled people.

In addition, disabled workers at home expressed the feelings that work fills their day with a meaningful activity, structures the day, develops skills that will stand them in good stead, keeps the mind alert and exercised, and often provides a sense of achievement and pride. It may also offer some relief from discomfort and pain:

MAIN OBSERVATIONAL POINTS

[1] Ambivalence

The ambivalence about the merits of working at home seems more pronounced amongst disabled workers. On the positive side, there is a strong recognition that work at home holds important benefits for the disabled, to do with care, rest, pace, and tailored facilities for the accommodation of disability. Working at home produces synergies which are especially important to the disabled:

'Now I have a voice activator, I work as much as I like whenever I like. I work as many hours as I feel able to and that for me is the whole idea of working from home.'

'Because of my health I had to stay at home. I sat at home all the time. Then I tried to use the machine and I learnt and practiced. If I'm tired I can switch off and rest for half an hour.'

'I forget about my back when I'm working on the computer. I get so involved.'

[2] Social isolation

On the negative side, there is more of a tendency amongst disabled workers to view work at home as a second best option and to express a preference for work outside the home. Underlying the worry about work at home is the belief that it compounds the existing problem of social isolation, especially relevant to disabled people.

Work at home is perceived as responsible for diminishing contact with people outside the home, and for reducing impact and presence in the 'real world'. Work at home is also seen as affording less opportunity for learning and development. And last but not least, work at home does not provide the opportunity to distract oneself from everyday, personal problems.

All of these disadvantages of work at home are expressed and shared to some extent by physically able workers, but they have a particular poignancy for the disabled. Still, in our small sample, only the severely disabled talked of isolation. Isolation, whether for disabled or able workers at home, depended highly on their support networks, and on their ability to compensate and balance social life and activities outside the home, while making sure that their work time was uninterrupted.

'I would rather be in a workplace. I worry that I'm losing my ability to communicate. If you haven't been out for a while you worry—what am I going to talk to them about? I would like to work out a couple of days a week.'

[3] Private sanctuary

Again, not unique to disabled people, but perhaps more poignant is the idea that the work and its space offers a kind of private sanctuary within the home. Where the dependence on carers and family is more intense, so are the borders separating work from home geared at maintaining independence, control and privacy. Borders which need to be left open for care may be made solid for work. The work may become the 'escape' from dependent relationships, and provide an alternative role and identity.

'He likes his computer room where it can be private, where he can sit and work and be quiet. I pop in to get some milk and he's got that game on the screen, and you know he's been talking to someone, and you think who has he been talking to? But there again he's 20, we're not interested, I came in to get the milk.'

(mother of disabled student)

[4] Transitional stage

Work at home may be limited to a period of time and tied to a particular set of circumstances that makes it necessary or advantageous for that time. Work at home is often a transitional stage, a stepping stone to work out of home. In many instances it provides the skills, experience and confidence to move on. Sometimes, ties with the outside work world are maintained and enhanced while working at home, and provide the opportunity for work out of home.

The perception of work at home as a development stage can be most important. It can resolve the conflict between the perception of work at home as 'the ultimate isolator' and the recognition that it is at times the most beneficial and rational solution. But the freedom to choose work at home as a good option is only viable in a context of opportunities and choice for work out of home.

[5] Design needs

Where disability is severe and movement is restricted, a few needs with implications for design become paramount, namely the need for accessibility, visibility and order of the equipment, tools, files, materials, etc.

'Files dotted around the house, box under the table over there, files on the couch. It's really irritating at times. If I had one wall space where I could see what was there.'

[6] Technology management

Where there is heavy reliance on technology, especially personally-adapted technology for work and environment control, the sheer bulk of equipment, cables, and accumulating accessories needs management for safety, accessibility and aesthetic reasons. Also, separation of work space from living space may be complicated by problems of mobility.

'Worse thing is working in my living space. I'm constantly reminded of what I have to do. And because I can't walk away...'

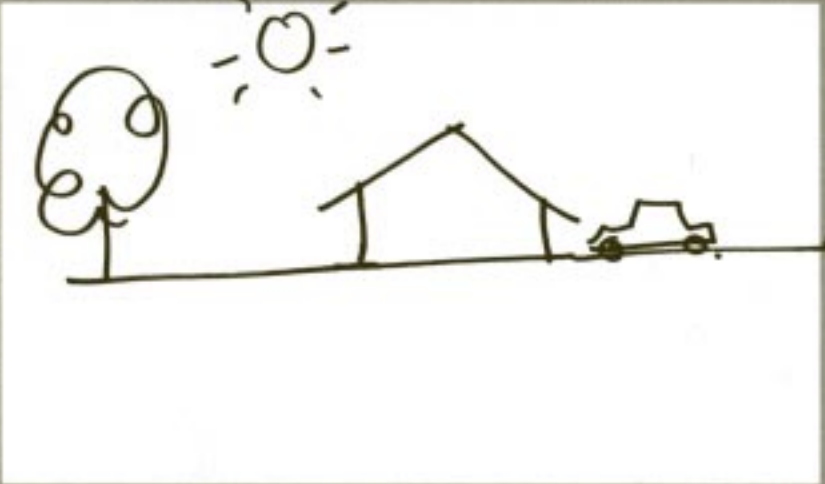
[7] On-line communication

Communication via the Internet and on-line relationships are, again, not unique to disabled workers at home. But with certain disabilities, and because isolation can have a particularly compounded impact on the disabled worker at home, communication via technology has an urgency as an isolation-breaking device which has the capacity to by-pass disability.

'He doesn't say a lot when he's face to face with people but put him on the computer and he doesn't stop, he'll talk and talk for hours.'

'I like chat sites because I'm not able to have a rich social life and this way I can talk to people via the computer, make some friends.'

Your image of home:



Your image of work:



John Connor/PriceWaterhouseCoopers

employers

Benefits of flexibility

>Frank Shephard

I like to call it flexible working rather than teleworking. I think there is a big mindset in industry and society at large that teleworking is 9 to 5, five days a week stuck at home. That's a view I don't encourage within BT or with our clients. What we try to promote is flexibility.

Back in the early 1990s, BT was spending something like £400 million a year on its buildings in terms of rent, rates and running costs. It won't surprise you to learn that up to 30% of that space was vacant on any one day—£100 million straight down the drain. We launched BT's Workstyle 2000 in 1993 to rationalise our property portfolio and move our cost base from a fixed to a variable cost scenario. The programme has been enormously successful. We have saved large amounts of money and introduced a whole new work culture.

The catalyst for this change was to look at the work people were doing and the style in which they were doing it, recognising in particular the need for greater work-life balance. Who uses that office between 9 and 5 five days a week? Very, very few. The nature of work has changed. Who, on the other hand, spends perhaps a day or two in the office, a day or two on the road, and a day or two at home? The majority of us. I'm not saying do away with office property, but the way it works needs to change towards a more social environment.

Employment patterns will never return to those of the 1980s. The flexible workforce is here to stay. There is increasing growth in home working, but it is not necessarily 9 to 5, five days a week at home. It is work at home on a partial basis and this is where the design opportunities come in, because most people haven't got a spare room to use as an office. What they need perhaps is a workstation in a corner of a lounge or a living room.

Who has ever been stuck on a train going to or from work?
Who has ever been stuck in a traffic jam or on a motorway?
We all have. Who believes hand on heart that the road network is going to improve across the UK? Who has got every faith in government policy that public transport is going to improve? Very few of us—and our time is precious. Who could do with another two-and-a-half days in their diary every week? Commuting is stressful, especially if you're going to loads of meetings.

The answer, I believe, is to exploit and optimise the opportunities for flexibility generally. Quiet, considerative aspects of work might be done when we are more productive before 9 and after 5. We might then use the office a day or two a week for the more socially dynamic and team-based activities.

BT's human factors people carried out a study revealing that social interaction at work within an enclosed environment is perhaps 10% over the course of any day, week or month. That would suggest that 90% of the time we're actually focused on the job we are paid to do. As soon as you put up the physical restrictions, the level of interaction directly or indirectly falls to about 2%. Put people on a different floor and they may as well be on a different planet—you already have a geographically dispersed work force without anyone leaving the building.

What we need to do is move people from that insular scenario to collaborative working where organisational and cross-functional learning is faster, where you meet and greet a greater number of people from all other parts of the business. Less than 10 years ago, it was considered there were three major work styles: office or fixed location; the road warriors of this world; and teleworking from home. What we have today is a great number of mobile workers who roam between these modes. I, myself, am totally nomadic. I use the home as a base, but I only ever spend one or two days at the very most at home. I manage my time so that it is never two days consecutively. I like to think of myself as a knowledge worker.

Top 10 equipment purchases for working at home:

- 01__computer/PC
- 02__desks/tables
- 03__printer
- 04__lights/Lamps
- 05__chairs
- 06__filing boxes
- 07__fax
- 08__modem
- 09__storage
- 10__scanner

Source: RCA Work at Home thinktank participants

Top 10 professions of people working at home:

- 01__designers
- 02__artists
- 03__writers
- 04__consultants
- 05__researchers
- 06__editors
- 07__journalists
- 08__teachers/Academics
- 09__sales people—
particularly
computer/ software
sales
- 10__therapists

Source: RCA Work at Home thinktank participants

BT's Workstyle 2000 programme has had a lot of exposure. But nobody was forced to become a flexible worker—people were encouraged to exploit the benefits to their full potential. Today we have 18,000 flexible workers. Around 3,500 have actually changed their terms and conditions of employment and have become home based because of the health and safety and tax implications.

Flexible working is not just about property rationalisation, or taking costs out of the organisation. What we recommend to everyone is that they take an holistic perspective. Don't consider any single element in isolation. It's about people, property, IT and the policies that make an organisation tick. In particular, people need to be taken through a change management plan which considers such elements as facilities management and appropriate technologies.

We recently worked with the Automobile Association which has a call centre in Leeds employing 300 people. The AA wanted to expand its operation by 10%—30 people. It considered buying a bigger building at huge cost, but then we got involved and spoke about remote automatic call distribution taking the technology to people's homes. The AA wasn't really comfortable with the concept of flexible working or teleworking, but it recruited 30 people. 10 of those 30 people were disabled, dependent and confined to home through no fault of their own. They are now AA call centre operators. In terms of equality of social opportunity, that is an inclusive approach.

Frank Shephard is Business Development Manager of BT Workstyle Consultancy Group and a pioneer of flexible working. Contact frankshepherd@bt.com

**Who could do with another two-and-a-half days in their diary every week?
Commuting is stressful, especially if you're going to loads of meetings**



New communication tools like this make the person the office, not the place.

technology

Death of distance

>Philip Ross

Digital living and working will include less and less dependence upon being in a specific place at a specific time, according to Nicholas Negroponte in *Being Digital*. 'If instead of going to work by driving my atoms into town, I log into my office and do my work electronically, exactly where is my workplace?' he asks. A good question indeed. The 'workplace' is set to fragment into a series of different places to work, including the home, all connected by digital technology that has presided over the 'death of distance'. This is a giant leap from today's restricted set of work choices.

Technology currently still connects places, not people. The telephone extension number in today's workplace represents a desk or an office, not the individual to which it is assigned. Technology in today's world is centred on the office building which remains the communications hub for even the most mobile, nomadic workers. While GSM (Global System for Mobile) telephones and the emergence of personal communications has given workers freedom to communicate 'in the field', their focal point for messages, faxes and information is still the physical office location.

Tomorrow's environment will be different. Communication will be divorced from bricks and mortar. The user will become the focal point. Wherever they choose to work, they will be in touch. We are on the brink of communications technology becoming independent of place—and this has significance for people who work at home. As companies begin to encourage mobility outside of the traditional workplace, and as technology allows real-time information while representatives are with customers in the field, in a hotel or at home, work patterns will change.

Corporate buildings are statements of stability, certainty, permanence and predictability for people with a sedentary office-based existence. But these values belong to yesterday's order. Tomorrow's workplace will be different—less predictable and permanent, and as likely to be based at home as anywhere else.

Technology led the last wave of real estate change in the 1980s. But just how intelligent was the intelligent building? Even today, 70% of business phone calls do not reach the person you want to speak to because they are away from their desk and cannot be found, even though they may want to receive the call. Business communications remain inefficient, unsophisticated and outdated.

To understand the future of work at home, it is clear that we need to understand the death of work 'at work'. For British Airways, which recently moved into a new £200 million state-of-the-art headquarters near Heathrow called Waterside, new technology was integral to the building design. To quote Chris Byron, BA Project Director, 'The environment was driven by the latest thinking on technology, organisational culture and team space.' Cordless telephones and radio links for portable computers allow BA staff to connect to the network from anywhere on the facility's central street, and to make and receive phone calls from anywhere inside or outside the building. This technology is fundamental to future work patterns.

There is now widespread use of cordless telephone systems using the Digital Enhanced Cordless Telephony (DECT) standard by corporations around the globe and by people at home. The system provides digital quality phone calls with one big difference: the phone is no longer tethered to a fixed desk. From anywhere around the home, a telephone call can be taken, making the entire house the 'home office'.

With recent advances, the new so-called 'Dual Mode' telephone provides a GSM phone for use on the move and a DECT handset that can be used either in the home or office (where it logs into the switchboard). This introduces one phone and, more importantly, one phone number for flexible workers.

With cordless data, progress has been slower. Infrared has taken off, with many portable and laptop computers adopting the IrDA (Infra-red Data Association) standard, linking together peripherals such as the cordless mouse, keyboard and printer as well as the computers themselves. New mobile phones have infrared ports, allowing a laptop to connect through the GSM phone without the need for a physical cable.



Radiowave or radio frequency links can also be used to create a cordless local area network (CLAN) in office or home. These are less well developed, although some good products exist from companies such as Lucent, Proxim and Digital. There are two competing technologies, frequency hopping and direct sequence, and one will emerge as the future standard. Whatever it is, there are systems being developed to offer moderately high-speed cordless data transfer.

Such systems have already found greater acceptance in the non-office environments of retail, healthcare, distribution and manufacturing. The home could be next. Alongside the current cordless systems, a new standard called Home RF is due to launch in 2000. This will bring a dedicated cordless technology to the home environment, allowing work from anywhere, as well as connecting other equipment—from TVs and stereos to domestic white goods—together in a transparent network. In the future, the door of your microwave or refrigerator might show your e-mails as they arrive.

The implications of such technology for both office and residential property are considerable. In the short term it implies that we can introduce connectivity into environments which have historically been difficult to cable. Listed, older or historic buildings, with no provision for raised floors, or common areas such as atria spaces or restaurants, can now be used more productively for work with a cordless infrastructure offering connectivity for voice, e-mail and information resources. Remember that Britain has an old housing stock in comparison with continental Europe.

Young and mobile: technology can now introduce connectivity into environments which have historically been hard to cable

In the future, the door of your microwave or refrigerator might show your e-mails as they arrive



Julian Burton/Delta 7

At home, a networked infrastructure may eventually see all appliances linked together. In this scenario, the Internet Protocol (IP) is used to connect not just computer and printer or television but the washing machine and microwave which will become web enabled. In June 1999, Bosch launched the world's first internet dishwasher. Other appliances will follow Bosch's dishwasher onto the *infobahn*.

But with the death of the office and the growth of homeworking, where does social networking take place? Again, technology is suggesting solutions. People will meet and network in their local urban environment—the nearest market town if you're working from a country cottage. Successful networking environments will be those which combine close-at-hand homes providing space for working with transportation hubs, public information systems and local shared facilities for work. Wherever we are, be it home, office, railway station or a park, we will increasingly expect office services to be anywhere (and everywhere) as definitions and destinations blur.

Whatever the end-game, there is no doubt that with convergence and a move towards a digital world, technologies, especially cordless ones, will emerge over the next few years to challenge all our assumptions about home and work.

Philip Ross is a director of Cordless Consultants. He is an adviser, commentator and writer on new ways of working and technology futures.

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THE CONTAGION OF CONTINUOUS WORK

>DANIEL ENGLENDER

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I run a furniture factory that specialises in hospitality furniture. I have been a homeworker for the last five-and-a-half years. It's not all about technology. I know some of the great strains it puts on myself and my family. Technology is there to help, but is there anywhere in the world I can go to escape?

I consider myself a genuine home worker. I have worked in the spare room (which we don't have any more), the bedroom (for 18 months until the sound of faxes coming through at 3am was too much for my wife to bear), the kitchen (that lasted about four days), and I have worked in the dining room (for about six months). We ended up having to build a single room extension for extra living space and I have now taken over one of the ordinary rooms in the house as my own workspace.

I am not proud of this, but for the past five-and-a-half years I have not slept in the same bed seven nights on the trot. We have a factory up in Derbyshire. I travel up there and I travel abroad. That takes up 30% to 40% of my time. The problem is that I hardly ever see my son. My wife says she hates it when I go away and she hates it when I come home.

I work from home on average two days per week—never the same two days each week. The times of day I am at home are random too. Of course, unlike most of my friends, I can see my son during the day when I am at home without guilt. I can also work when I want to. I am most productive between 9pm and 1 or 2 in the morning, I can do much more work then. At midnight I come home and there's a fax coming through from the States. Half an hour later they are waking up in Japan.

The problem is that you can very easily become a continuous worker. My life has been completely blurred for the past five-and-a-half years—between work and home, day and night, weekdays and weekends. It's great when you are buzzing with energy, but the rest of the time it can actually be a terrible bind. You've got five minutes spare, so you go to your computer, log on. Have I got any e-mails? Can I quickly write a message? It destroys any free time that you have. And you suffer when the technology is down—I only have one computer.

When I am not in the office, they probably think I sit at home with my feet up all day. If I take telephone calls, the sounds of the home give it away for me. My child thinks I don't work. Other kids come round and say 'why isn't your daddy at work?' When people phone up for me at work, they are given 'Daniel's number at home', which is the wrong thing to say. One day soon, phone numbers will relate only to people, not their locations.

project of desktop



Work out from home

'The Dancing Desktop'

exercise whilst you work
healthy body = healthy mind
no more RSI!!

name: CHELLE HUGHES
organisation: RCA COMPUTER RELATED DESIGN (STUDENT)

design

An agenda for change

>workshop outcomes

Four afternoon workshops at the RCA Work at Home thinktank were led by four professional design consultants to tease out the practical design implications of the four 'Borders' work at home models—Contained, Permeable, Overflowing and Imploding. The workshops were led by **Ross Kinneir, Paul Atkinson, Nick Dormon and Jane Dillon**. The following agenda of 30 potential design projects emerged from their sessions:

Environments

Power

[01] Energy needs that can integrate business equipment with domestic supplies. Cabling issues, networking, safety, adaptability. Efficiency and repairability.

Security and Safety

[02] IT security for transfer and saving of knowledge.

[03] Physical security of space and upgrades from domestic level security.

[04] Security for other members of family, ie children, older people.

[05] Health and safety protection from dangerous machinery and environments.

Screens and Filters

[06] Exploration of acoustic management and filtering techniques.

[07] 'Subtle boundaries', using physical artefacts to define and delineate borders—flooring, shelving, mirrors.

[08] Moveable screens that are flexible for repositioning, catering for expansion and change in use of spaces over time.

[09] Transition zones—transitional spaces that can be controlled, opened and closed to varying degrees to suggest the level of activity in the space.

[10] 'Rethinking the front door'. Chameleon doors that can service both domestic and business needs. They should be able to welcome both kinds of visitors as well as handle and sort deliveries.

[11] Transformable physical spaces that can easily adapt to work and domestic needs.

Objects and furniture

- [12] 'Job Mapping'—task-specific furniture, lighting and objects. With functional rather than domestic aesthetic solutions.
- [13] Design which improves ergonomics, health and safety. Combats RSI etc.
- [14] Better seating. Chairs that can be used for long periods but are also more suitable for domestic environments.
- [15] 'Computer screens and the home'—a new 'breed' of displays (positions, styles formats, technologies) that can be used easily in the home environment.
- [16] 'The Kitchen (work)table'. A table that can flexibly accommodate work patterns, computers/paperwork and domestic rituals and needs.
- [17] Lighting. Consider ways to combine decorative and business lighting needs.
- [18] Aesthetic dualism. Generate a design language that combines visible professionalism and domestic suitability.
- [19] Adaptable objects and furniture that can be used temporarily for work and then easily transformed for domestic use and vice versa.
- [20] Objects that can create, encourage and manage routine actions of work. This includes segmentation of the work and effective processing techniques.
- [21] Time management objects. These include schedules, timers and supporting materials.
- [22] 'Disguising work'—explore ways to make work invisible, facilitating mental opening and closure of work tasks.
- [23] 'Symbolic Boundaries'—explore ways to communicate boundaries in a symbolic way beyond the physical properties, for example, a task light expressing a sense of place.
- [24] Signals/objects to negotiate and express social borders and contracts.



Above and overleaf:
Workshop participants ponder
work at home

Networking systems

- [25] 'Cheaptch'—communication systems that can integrate business with domestic networks in a cost-effective format.
- [26] Transportable communication systems that are light, easy to maintain, upgradeable and cost effective.

Communication materials

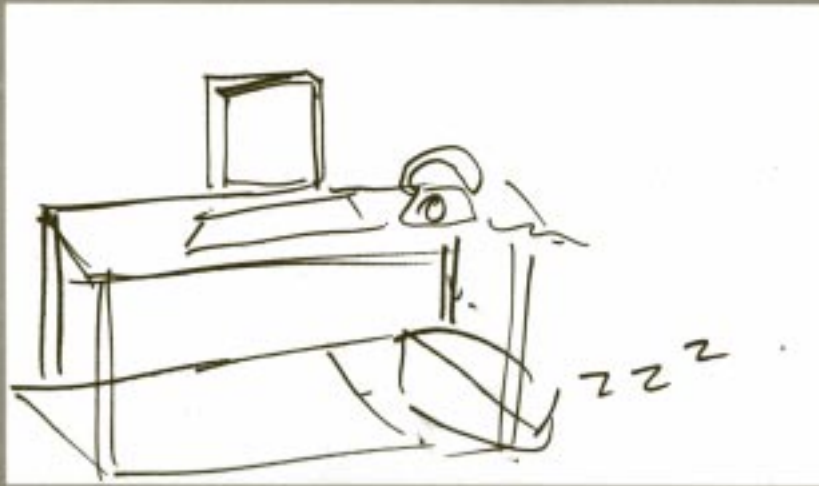
- [27] 'Induction for homeworkers'—communication materials to give homeworkers a training pack. This should disseminate best practice and encourage better commissioning of home working objects and furniture. It should alert them to key design issues about homeworking and where to get help.
- [28] Internet/CD-ROM technologies can be used to provide information on how to be more productive and motivated, forming self help groups etc.
- [29] 'Building social communities'—a project to enhance a sense of 'virtual' community.
- [30] 'Routines and Rituals'—explore ways to create subconscious rituals for working at home. How to communicate these to others at home.



design



Your image of home:



Your image of work:

As Above .

Sonia Dahl/RCA Vehicle Design

next steps

Work at Home at the RCA

Following the Work at Home thinktank, a Work at Home research group has been formed on the Design Products course at the RCA to pursue the design agenda through practice-based research projects.

Three Research Associates have been appointed for one year on the Helen Hamlyn Research Associates Programme, starting October 1999. This programme is a new initiative which enables RCA students to spend an extra year in the College design studios upon graduation, working on research & development projects related to social change and inclusiveness. These special research posts are funded jointly by external industry partners, who set briefs and participate in projects, and by the Helen Hamlyn Research Centre, which manages the programme.

Yuko Tsurumaru is investigating new 'design borders' for the home worker juggling work and family life.

Sponsors: Design Council and Geoffrey Reid Associates.

Lotta Vaananen is developing new solutions for disabled people working at home.

Sponsor: Leonard Cheshire.

Ian Johnston is researching the design needs of the continuous worker who operates nomadically from a number of places, including home.

Sponsor: Samas Systems Furniture.

A 'core group' of Work at Home thinktank attendees who intend to follow and support the RCA's work in this area has been formed, creating a knowledge network around the Research Associates.

If you would like to join this network or you require more information about the Helen Hamlyn Research Associates Programme or future Work at Home activities and events, please contact:

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Antonio Arevalo/Royal College of Art
Christine Atha/
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Paul Atkinson/Atkinson Design Associates
David Barker/Intercraft Design
Alison Black/IDEO
Jilla Bond/Artemide Ltd.
David Bonnett/David Bonnett Architects
Andy Boucher/Royal College of Art
John Bound/Royal College of Art
Monica Bueno/Royal College of Art
Julian Burton/
London School of Economics
Dean Carbis/Royal College of Art
Itsasne Casas/Royal College of Art
Daniel Charny/Royal College of Art
Roger Coleman/Royal College of Art
Max Comfort/Author, *Portfolio People*
John Conner/PriceWaterhouseCoopers
Gillian Crampton-Smith/
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Rajko Debeljevic/Royal College of Art
Jane Dillon/Dillon Design
Nick Dormon/Coley Porter Bell
Tony Dunne/Royal College of Art
Margaret Durkan/Royal College of Art
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Iain Ellwood/Royal College of Art
Brigitte Emerson/
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Daniel Englender/Englender Furniture
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Alan Felstead/University of Leicester
Emma Finlon/Samas Systems Furniture
Thorsten Franck/Royal College of Art
Hubert Gasthaus/Royal College of Art
Rama Gheerawo/Royal College of Art
James Goggin/Royal College of Art
Nicola Greenaway/Samas HNB

Richard Hagan/Crystal Doors
Ashley Hall/Ashley Hall Design
Julie Hamilton/Leonard Cheshire
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Tina Hancock/IKEA
Sarah Harris/Leonard Cheshire
Joe Heapey/Priestman Goode Design
John Hemsley/Leonard Cheshire
Rod Hermeston/Disabled News
Sue Hewer/RSA Design Section
Mark Hockley/ACCO Europe
Rob Holdway/Royal College of Art
Graham Hughes/Parcelforce Worldwide
Chelle Hughes/Royal College of Art
Deborah Hunter/Sharps Home Office
Jeff James/Home Business Alliance
Lesley James/RSA--Redefining Work
Denice Jaunzens/
Building Research Establishment
Philip Joe/Royal College of Art
Robin Johnson/Soho Life Magazine
Barry Jones/MSF
Ian Jones/Reuters
Sylvia Katz
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Rod Kiddell/Soho Life
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Ross Kinneir/Kinneir Dufort
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Jimmy Loizeau/Royal College of Art
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Louis Wustermann/Flexible Working
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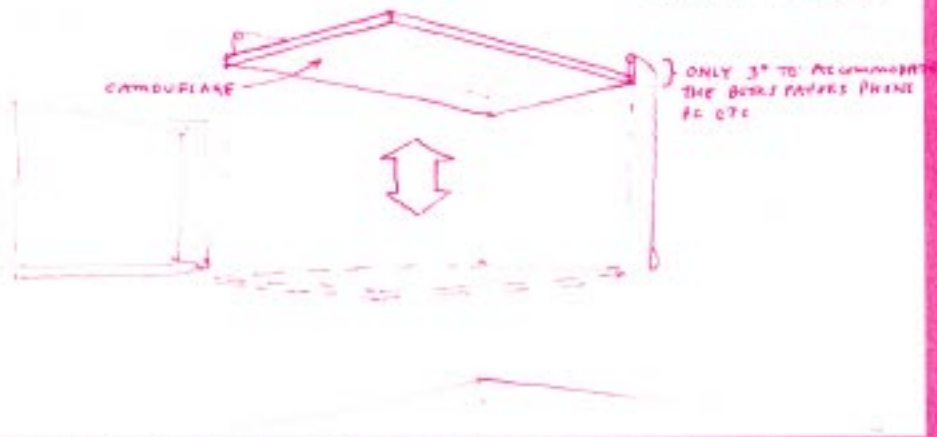
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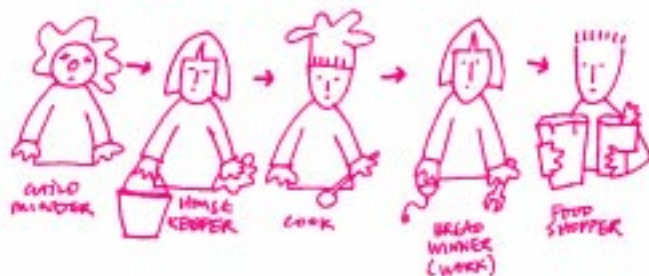


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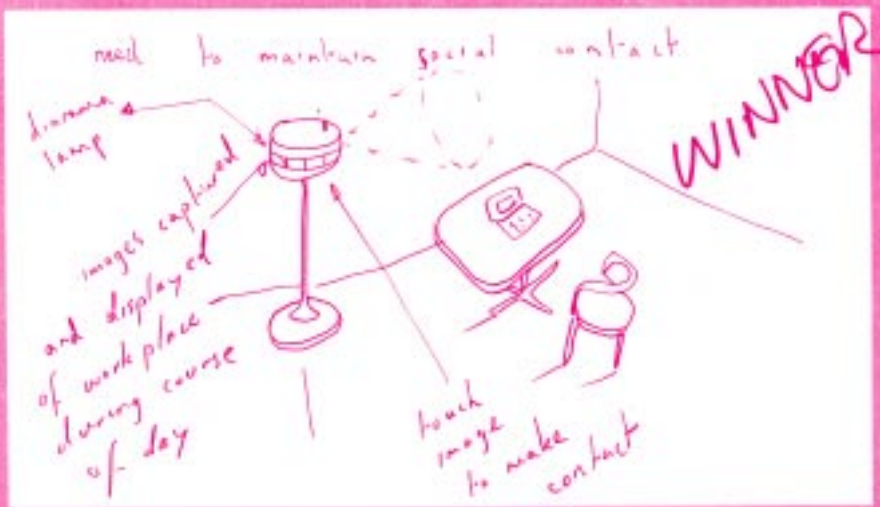
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name:

organisation:

A room with a view



name: Jack Mama
 organisation: Philips Design



name: Michael Walker
 organisation: NCR Knowledge Lab

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name: Tom Lloyd
 organisation: Puma Lloyd

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