Section 6: Values Embodied in and Reinforced by Design

6.1 Urban Forms and the Dominant Paradigm

Janis Birkeland

Different values and ethics flow from the philosophical foundations of the ‘dominant paradigm’ as opposed to that of an ecological or systems view. These values, in turn, lead to different approaches to planning, managing and designing the built environment and, as such, are reflected in the design of buildings, spaces and products. The relevance of theory becomes more apparent when we see how designers have unconsciously expressed elements of the dominant paradigm in the design of the built environment.

The dominant paradigm

The cultural, philosophical and structural roots of our unsustainable systems of development have been traced by various scholars to deeply rooted philosophical premises dating back thousands of years. However, the more immediate origins of the Western model of development and urban systems are found in the Industrial Revolution, as articulated in the work of Newton, Descartes and Bacon.

‘Bacon developed methods and goals for science that involved (and involve) the domination and control of nature: Descartes insisted that even the organic world (plants, animals, etc) was merely an extension of the general mechanical nature of the universe; and Newton held that the workings of this machine-universe could be understood by reducing it to a collection of “solid, massy, hard, impenetrable, moveable particles”’. (Dobson 1990, p. 38)

This way of understanding the world, which we can call the Newtonian–Cartesian–Baconian complex, became an integral part of the environmental management professions, institutions and decision-making systems [1.3]. It is generally not recognised, however, that these concepts are also manifested in the design of structures, products, landscapes and urban form. The elements of this complex are defined as follows (Box 6.1.1).

Elements of the Newtonian–Cartesian–Baconian complex are often found in critiques of the dominant paradigm. As a whole, they are sometimes referred to as ‘patriarchal’ (see Table 5.1.1). While this world view and value system is now being challenged and is rapidly changing, the built environment still perpetuates these values, because conventional design has largely reflected culture. The following describes how the elements of this complex are reflected in the built environment.

The dominant paradigm and urban form

Linear progress: Before the industrial revolution in Europe, life was generally conceived of as a cyclical process, like the seasons. This was replaced by a concept of social ‘progress’ that implied a one-way, linear progression out of an earlier state of emersion in nature (Merchant 1980). Humanity was destined to strive to escape the chaos and uncertainty of life by controlling nature through technology. Progress gradually became an ultimate goal of human existence and was associated with freedom from natural constraints. Today, buildings are still celebrated as triumphs of human achievement for their technical mastery and control over nature. The urban environment has extirpated all but artificial and formalistic representations of Earth and Nature, in the apparent conviction that humans do not need contact with the natural environment. Urban form expresses a denial of human dependency on social and ecological support systems, and manifests the belief that we can ignore the ecological consequences of development with impunity. The architecture, landscape and urban design fields have, in effect, worked to reinforce the alienation of humans from the larger web of life.

Individual autonomy: Just as society was meant to strive for progress, or independence from natural constraints, the human (at least the male human) was meant to strive for ‘freedom’ or independence from social control. Human self-realisation meant becoming independent and autonomous, rather than submerged in community and nature, as was the case of most pre-industrial communities. Society, over time, came to be viewed more as a collection of individuals than as
a whole community (a reductionist, atomistic conception of society known in political science as liberalism). These concepts of freedom and independence from society (as well as from nature) led to extreme ideologies, such as economic rationalism. This competitive egotism is to be found in the aesthetics of the urban environment. Most major buildings are attention seeking and often give deliberate visual expression to individualism, autonomy and competition. Ironically, this has led to a certain ‘sameness’ or monotony, such that few can identify different cities by their architecture.

Box 6.1.1: Newtonian–Cartesian–Baconian complex

- **Linear progress**: humanity is destined to transcend nature through technology and social control.

- **Individual autonomy**: people (at least elite white males) are meant to be independent, competitive and freedom seeking.

- **Essentialism**: the idea that humans have an ‘essential nature’, meaning that the ideal characteristics and values attributed to the (white male) elite are presumed to apply to humanity as a whole.

- **Reductionism**: the world can be understood as a composite of separate elements or entities, and problems are best solved by specialisation, simplification and abstraction.

- **Mechanism**: for most purposes, plants and animals are considered little more than (soulless) mechanisms, and engineering can substitute for natural processes.

- **Instrumentalism**: nature has value to the extent it is ‘useful’ and should therefore be harnessed in the service of humanity.

- **Hierarchical dualism**: the world can be understood as sets of opposites or dualisms, and one side (reason, power, control, masculinity) is given more value (see Table 5.1.1).

- **Anthropocentrism**: humans are considered the centre of life; therefore, the interests of animals and ecosystems are given little weight, and are largely viewed instrumentally as resources.

- **Linear causality**: consequences and impacts are seen to be linked to specific causes through linear (cause and effect) relationships and can thus be predicted and controlled.

**Essentialism**: The belief in progress, a kind of manifest destiny to be realised through technology, entailed a particular ‘essentialist’ notion of the nature of humankind. The human (white male archetype) was meant to be rational, authoritative and independent. This ‘essentialist’ view of ‘man’ became a fundamental — if often unspoken — premise of sociological, political and economic theories (Birkeland 1997). Office buildings in particular have been designed to fit this archetypal ‘manikin’. That is, modernist buildings, like automotive design, could be said to honour this essential masculine ideal (rather than, say, celebrating life or nature). Similarly, much design is still misconceived as the autonomous creation of an autonomous designer when they are a product of large teams. ‘Collaboration has not been a defining characteristic of “good” architecture even though it lies at the very foundation of design, development and construction’ (Kingsley 1991). Design has been plagued by the ‘star syndrome’ where buildings, like clothing fashions, are judged by the prestige and individualism of the designer, as much as by that of the design.

**Reductionism**: The technological mastery of nature was associated with reductionist science (the belief that natural systems could be understood by focusing only on their basic elements). The success of early science and technology owed much to the practice of reducing problems to their parts and focusing on small understandable bits, such as forces and particles. Today, science can reproduce nature by cloning mice and sheep, but as some have observed, cannot yet create a successful biosphere. Because science and design have been dichotomised, (and design devalued) some design theorists try to emulate the (old) scientific method (perhaps to tap into some of its prestige) and attempt to reduce design to linear, formulistic processes. Similarly, many designers, like technicians, still work detached from the site. It is common practice to design from a bird’s eye view and base complex development schemes on reductionist design concepts (like basing a whole design on public–private space distinctions or floor plan requirements). This leads to quite different results than would design that facilitates social diversity and interaction with the natural environment.

**Mechanism**: Early scientific discoveries and technical advances supported the presumption that nature is ordered, stable and hierarchically structured, or ‘mechanistic’, and thus replaceable by machines. This mechanistic notion is still reflected in biotechnology (Ho 1999), and the implicit view that parts of natural systems can be traded-off (that a
plantation can replace a native forest, a water treatment plant can replace a watershed). Buildings have replaced natural systems with artificial heating, cooling, lighting and sewage systems, which have proven too costly in resources and energy. Mechanical systems are invariably less efficient and ecologically sustainable than natural systems. Moreover, people have been expected to accommodate the ‘rational’ designs of modernism. The failure to recognize humans as complex biological, emotional and social beings has contributed to sick building syndrome and lower employee productivity due to mechanical air conditioning, synthetic building and furniture materials and chemical pest control [7.3, 7.4]. Projections into the future are even more bleak: futuristic environments are usually portrayed to look like space ports on Mars, devoid of ‘unruly’ plants and ‘dirty’ animals.

**Instrumentalism:** The idea that nature can be reduced to simplistic processes and substituted by machines, reinforces the ‘instrumentalist’ view that nature is merely a resource for human needs and desires. Nature is ‘used’ for purposes of physical comfort and efficiency, or aesthetic pleasure and spirituality. When designs are described as ‘working with nature’, it usually means that nature provides a picture for windows to frame, a source of heat, light and air, protection from bugs, vermin and the forces of sun, wind, rain, or a backdrop against which to photograph buildings. This instrumental view also describes the 20th Century designer’s regard for the users of buildings and products. In many ways, the built environment is still designed as if humans were mice in a maze — having only simple physical needs and senses. When designers concern themselves with the emotional needs of users, it is often to use those needs to manipulate people to behave in certain ways — like gambling or spending money (Birkeland 1995).

**Hierarchical dualism:** Modern architecture often reflects the dualisms of Western thought structures, where mind, culture and spirit are deemed of a higher order than the ‘mundane’ sphere of body, feelings and earth (Table 5.1.1). These dualisms are gendered and unbalanced, as the left side of each rung of the ladder is considered higher than the other. Nature and society are seen as separate spheres, while indigenous peoples and women (as a caste) have been devalued as being more emersed in nature, or less transcendent and autonomous. Design has been denigrated by its association with the feminine side of our lobotomised culture (as subjective, emotional, sensual) and ordinary craft has been marginalised as routine production or meaningless ornamentation (Table 6.1.1). On the other hand, ‘high art’ is elevated by association with the masculine sphere of culture (transcendent, cerebral, spiritual). Artistic endeavours are often regarded as a ‘higher’ order, as if transcendent and apotiological. Yet ironically, ‘high’ art is very political: buildings and products (such as prestige cars and boats) have been designed in a way that projects status or power at the expense of ecological efficiency, public health and social responsibility.

**Anthropocentrism:** The nature—culture division in Western thought is a fundamental dualism reflected in our anthropocentric (human-centred) values. The growing realisation that culture and nature exist in an inseparable and reciprocal relationship has not found real expression in building design, let alone urban form. Most buildings are still designed as introverted boxes, which turn their back on nature as if nature were the opposite of civilisation. While educated designers are beginning to employ environmental management tools and life cycle analysis in design decisions [12.3], the buildings themselves still look much as before. Sustainable design ‘has insufficiently considered how people derive a host of intellectual and emotional, as well as physical and material, benefits from connections with natural process and diversity’ (Kellert 1999, p. 40).

Even suburban developments, which promise an escape to garden lifestyles, are little more than boxes in green moats symbolically protecting people from neighbors and untamed nature [6.2]. Housing models such as ‘New Urbanism’ ‘unself-consciously help reinforce the injustices of environmental discrimination and trivialise ecological planning as a luxury item, analogous to organically grown produce in the grocery store’ (Ingersoll 1996, p. 150). Seldom does community design represent a restructuring, or even a questioning, of the human’s antagonistic relationship with nature. Traditional zoo design, for example, manifests a profound disregard for the life quality of animals (see Polakowski 1987).

**Linear causality:** Because science has simplified things in order to understand them, there is a tendency to see problems as a result of single causes. Recently, an Australian city official declared that many road accidents were being caused by ‘killer trees’ that therefore needed to be removed from the sides of roads — not the alcohol or testosterone levels of drivers, not cars, not roads, but natural elements that get in the way. In a complex environment, such linear thinking has often led to solutions that have become problems in
themselves. For example, a jail addition in Melbourne was
designed to be vandal proof, but had to be dismantled a few
years after construction (see Bessant et al 1995).

Environmental controls have been added on to traditional
building forms that were dictated by structural and practical
limitations that are no longer valid constraints. These
controls such as mechanical heating and ventilating systems,
have in turn created problems of air quality, noise and heat.
Design must recognise and deal with complex and wide-
open systems not by sterilising the natural environment, but
by naturalising the built environment.

Table 6.1.2: Design paradigms

<table>
<thead>
<tr>
<th>Pyramidal design values</th>
<th>Pyramidal design devalues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linear</td>
<td>Cyclical</td>
</tr>
<tr>
<td>Hierarchical</td>
<td>Lateral</td>
</tr>
<tr>
<td>Mechanistic</td>
<td>Organic</td>
</tr>
<tr>
<td>Quantitative</td>
<td>Qualitative</td>
</tr>
<tr>
<td>Objective</td>
<td>Subjective</td>
</tr>
<tr>
<td>Reductionist</td>
<td>Holistic</td>
</tr>
</tbody>
</table>

Eco-logical design would represent a rebalancing
of these two value systems

Conclusion

Art and architecture historians have examined the embodied
values and concepts of buildings and artefacts for decades,
but have paid little attention to how these creations reinforce
the alienation of humans from the larger web of life.

Human constructions create new environments or contexts
(as well as artefacts) which alter existing social and natural
relationships and provide both new opportunities for, and
constraints upon, human and biotic communities. By
analog, useless vehicles are sometimes reused by placing
them strategically in the ocean to help reefs to re-establish
themselves and restore the aquatic environment. These
artificial reefs can be seen as metaphors for eco-logical urban
design, in that they create a means for diverse creatures to
reproduce themselves and their environments, recreate
communities and regenerate damaged ecosystems.

References and further reading

Bessant, J., Carrington, K. and Cook, S. 1995, Cultures of Crime
and Violence: The Australian Experience, La Trobe University
Press, Vic.

Birkeland, J. 1995, ‘Ecophysics and the Built Environment’, in
Pacific Visions: Ka Tiroyaha o Te Moana-Nui-A-Kiwa, Ecopolitics
VIII Conference, Centre for Resource Management, Lincoln
University, Canterbury, NZ, 8–9 July.

Economy, Allen and Unwin, Sydney, NSW.

Dobson, A. 1990, Green Political Thought, Unwin Hyman, London.

Temple University Press, Philadelphia, PA.

Ho, M.W. 1999, Genetic Engineering: Dream or Nightmare?,
Gateway Books, Bath.

and Architecture’, in T. Dutton and L. Mann, eds, Reconstruc-
ting Architecture: Critical Discourses and Social Practices, University of
Minnesota Press, Minneapolis, MN.

and Sustainability in the Built Environment’, in C.J. Kibert, ed,
Reshaping the Built Environment: Ecology, Ethics and Economics,
Island Press, Washington, DC.

Kingsley, K. 1991, ‘Rethinking Architectural History from a Gender
Perspective’, in T. Dutton and L. Mann, eds, Reconstruc-
ting Architecture: Critical Discourses and Social Practices, University of
Minnesota Press, Minneapolis, MN.

Polakowski, K.J. 1987, Zoo Design: The Reality of Wild Illusions,
University of Michigan, Ann Arbor, MI.

Questions

1. Think back to your favourite environments in your childhood (tree house, garden, lake, bay window, class room, beach, TV room). Describe how it made you feel and why. Compare these adjectives to the list in the chapter.

2. How many ways can gardens and moving water be integrated into ‘modern’ office buildings to improve air quality and other amenities (e.g. atria)? Use sketches or diagrams.

3. List some of the possible reasons that Western culture has a tradition of ‘great artists’, whereas in some indigenous cultures everyone was an artist: eg. the patronage of kings? the division of crafts and high culture? the money and power involved in contemporary architecture?

4. ‘Architecture defines the barrier between humans and nature.’ Discuss. How can the barrier be challenged through design?

5. Describe the design appeal of the motorcycle in terms of (so-called ‘masculine’) attributes and metaphors discussed in the chapter.

6. Debate: ‘The built environment shapes our experiences with the natural environment and hence our attitudes towards nature.’

Projects

1. Look through recent architecture magazines and try to find buildings that exemplify each of the elements described as the ‘Newtonian–Cartesian–Baconian complex’.

2. Many high-rise housing projects constructed in the 1960s were later torn down because they were being vandalised and destroyed by some of their occupants. Can this phenomenon (antagonism towards the built environment) be related to the elements described as ‘Newtonian–Cartesian–Baconian complex’? Discuss.
6.2 Models of Ecological Housing

Liz James and Janis Birkeland

Ecological housing initially referred to housing that conserved energy through passive solar design, and gradually included the use of low-impact materials and closed-loop water and waste systems. More recently, it has sometimes been suggested that ecological housing, by fostering the psychological health and well-being of its occupants, will also lead to enhanced care for the environment. However, in the context of social divisions and extremes of poverty and wealth, just how sustainable are these new, often expensive, ecological homes?

Introduction

Shelter is a fundamental human need, but how this need is satisfied in developed nations is largely culturally determined. As the design of habitats tends to reflect the social order, designers need to be aware of the role that housing plays in maintaining a sometimes materialistic, competitive and power-based society. Even ‘green’ housing designs are seldom responsive to wider social justice imperatives, such as environmental space [people’s fair share of the Earth’s resources]. Though many new ecological homes reduce pollution and embodied energy per unit of material or energy used, they are nonetheless resource and energy intensive per capita. Further, both housing design and settlement patterns can reinforce gendered and inequitable power relationships (Roberts 1991; Weisman 1992; Wajcman 1991). As a template, ecological homes do little to challenge conventional (suburban) settlement patterns: they segregate the rich from poor, home from work, and individuals from community and nature.

As inequitable social structures are incompatible with ecological sustainability and environmental justice, it follows that the current model of suburban housing arguably impedes social transformation. If this is case, an entirely new conception of housing may be a necessary part of the transformation to a sustainable society. This new form of housing must not only be eco-efficient, but foster cultural and biological diversity, assist dematerialisation and ecological restoration, promote health and well-being, discourage consumerism and contribute to community building. The following evaluates two basic models of eco-housing against criteria that are derived from (predominantly feminist) critiques of housing.

The home and culture

Before examining ecological homes, it is necessary to provide a capsule overview of some of the studies of the home in its social, political and historical context.

Housing design and settlement patterns have responded, broadly speaking, to social imperatives, even when mediated by formal planning and public policy. One such fundamental imperative was the Industrial Revolution, which was facilitated by the ‘... new sexual and social division of labour, the division between production and reproduction, production and consumption, work and life’ (Mies and Shiva 1993, p. 146). These gendered dualisms served the needs of a new social order: women became increasingly depicted as weak, dependent and sentimental, while rationality, autonomy and individualism were celebrated as the achievement of male maturity (Table 5.1.1, p. 96). Just as the female role was seen as dependent but supportive (Gilligan 1982, p. 23), the ‘home’ was sentimentalised as a ‘feminine’ refuge from the labours of the masculine public sphere; a haven to which the modern man could escape to renew himself.

The noise, dirt and pollution of industrialisation led to the further spatial segregation of home and work, deemed necessary to maintain social morals and healthy living conditions (Davison 1993, pp. 3–4). The home also came to represent a moral counterpoint to the world of economics and politics (which became reified as the ‘real’ world of male exploits). The depiction of women as the soft, moral and caring gender belonging to the private sphere (in contrast with a supposedly ‘hard’, pragmatic and decisive gender), rationalised the abdication of an ethic of care and nurture in the (masculinised) public sphere. This has tended to relieve decision makers in the public arena of the responsibility for not just personal care, but for the more basic necessities of life.
Feminists have argued that the concept of ‘home’ itself became an embodiment of Western patriarchal culture. The public/private, work/home divisions meant that human dependency on both home and nature – the bases of sustenance, maintenance and reproduction – was obscured. In turn, a domestic idyll developed which contributed to the conception of women as a resource or support base, subservient to Man’s needs in a valorised public sphere. This further devalued the ‘feminine’ by association with domesticity.

The growing division between work/home and the public/private spheres was later reinforced by the early 20th Century concept of technical rationality, which encouraged an even ‘more strictly defined and specialised division of sexual labour’ (Greig 1995, p. 124). The notion of scientific motherhood emphasised clinical standards of hygiene, and the ‘moral and caring’ woman was transformed by the new home economics into the ‘efficient’ housewife that was glamourised in advertising of the 1940s. The domestic science and modern childcare movements contributed further to the growing disassociation of people from natural processes and human necessity (Roberts 1991).

The devaluation of the values of intimacy and nurturing associated with the home was also compounded by the emergence of the Fordist regime of accumulation and mass production after the First World War. The suburban home was integral to the success of such a divided production/consumption system, and it became a container for the accumulation of new consumer items. Advertising rose to a central role in encouraging domestic consumption. By targeting the idealised notion of the home and the ideal of the modern housewife, advertising campaigns reinforced these ‘domestic’ stereotypes. In the process, advertising trivialised and marginalised women and what are considered ‘feminine’ values in a patriarchal society.

Suburban conformity, by grounding the domestic support system and denying its diversity, further reinforced women’s lower status as a caste. The ‘suburban imperative’, as an expression of individual autonomy, has also substantially contributed to the demise of the concept of community (Greig 1995). The insularity and uniformity of the suburban home reinforces a false sense of autonomy, where the market – rather than the community – is seen to provide for basic needs. In fact, suburban housing could be seen as a manifestation of market relationships. With a growing sense of anonymity, social interactions have increasingly become based on instrumental, exchange relationships (Ife 1996). This has culminated in a trend towards walled suburbs and a ‘domestic fortress mentality’ (especially those suburbs surrounded by major traffic thoroughfares).

**Themes in housing literature**

There are several implicit and interrelated themes that emerge from the above snapshots of the literature. These can be used to create criteria against which to examine the current models of eco-housing:

1. **Hierarchical dualisms:** A devaluation of the domestic sphere and women where both are defined as subservient to the dominant public, ‘masculine’ culture. This devaluation of the activities of the home and homemakers represents a denial of dependency on the basis of reproduction and sustenance – nature.

2. **Groundedness:** The public-private dualism separates the morality of home (necessity, maintenance and responsibility for others) from that of work (power seeking, independence and competition). Further, those well placed in the public sphere are impacted less directly by the environmental consequences of their decisions.

3. **Interdependence:** The marginalisation of community through the creation of introverted suburbs and atomistic domiciles undermines the sense of interdependency, awareness of the effect one’s actions have on others, and the possibility of positive, symbiotic relationships among humans, or between humans and nature.

4. **Consumerism:** The repetition of homes in islands of grass surrounded by pavement duplicates services, appliances, products, furnishings and fixtures – wasting space, materials and energy. Such duplication also fosters competition, materialism and conspicuous consumption.

5. **Social divisions:** The above four themes indicate how our contemporary models of housing – whether eco-efficient or not – reflect power relations that militate against environmental justice and hence sustainability. Also, the permanent allocation of land (essentially on a first-come, first-served basis) has meant that much real wealth is attributable to capital and wealth accumulation (and inflation) across generations, rather than to personal effort.

Since the 1960s, various models of eco-housing have been developed by both professional and ‘lay’ people interested in...
appropriate technology and alternative ways of living — although mainstream society has largely ignored such initiatives. While there may be substantial overlaps, eco-housing divides easily into two fundamental approaches to sustainability — technical (‘nuts and bolts’) and organic (‘nuts and berries’). How do these approaches to ecological housing measure up against the above five criteria?

The ‘nuts and bolts’ model

The more technical, ‘nuts and bolts’ approach developed in response to the recognition of the limits to fossil fuel resources, and has perhaps been the most influential. Often called passive solar or bioclimatic design, it addresses sustainability primarily through the efficient use of energy (Vale and Vale 1991). With a growing awareness of the environmental impacts of building materials, this response has been extended to encompass a more comprehensive approach based on life cycle analysis. The following paragraphs assess this style of ecological housing against the above five criteria.

Hierarchical dualisms: This technical approach relies on science and technology to provide discrete solutions to narrowly defined problems (Ife 1996), such as the development of solar cells for domestic power generation. As such, it does not challenge the devaluation of what patriarchal society has defined as ‘feminine’ values, or the imbalance toward linear, reductionist ‘rationality’. Consequently, such homes often have a cold, cubist, mechanistic aesthetic that excludes natural elements and plants.

Groundedness: As passive solar homes do not rely on mechanical heating and cooling, occupants must participate in the operation of passive systems. In making adjustments to features like ventilation and shading devices, the users (theoretically) become more attuned to diurnal and seasonal changes. While this may be a disincentive to their use, it fosters awareness of human dependence upon natural processes and weather.

Interdependence: Proponents of this model often aim for physical ‘resource autonomy’, seeking to draw all water and energy from the site. This form of independence from community infrastructure (ie pipeless, wireless housing) is perhaps a prerequisite of sustainable housing. However, most examples of eco-housing do not challenge the atomistic residential settlement pattern — with its duplication of products and created demand for private transport (see Mobbs 1989).

Consumerism: This tradition values efficiency, but its advocates have generally tried to sway the public by promising greater material standards of living through eco-efficiency. The duplication of products (lawn mowers, hair dryers, washing machines) are seldom addressed, which counters efficiencies achieved by eco-logical design features.

Social divisions: These technologically advanced homes are generally only available to elites. As status symbols, their market price can escalate out of the reach of average citizens, even when they cost less to build than traditional homes. However, this is gradually being remedied by legislated energy standards that apply to all homes, not just new ones.

The ‘nuts and berries’ model

Disenchantment with capitalist values in the 1960s and early 1970s prompted an ‘alternative lifestyle’ movement in Western nations. This led to the establishment of many intentional communities that practiced more self-sufficient and integrated ways of living. Housing associated with this alternative movement, the ‘nuts and berries’ approach, addresses sustainability through more ‘natural’ lifestyles and personal transformation, to ‘... heal ourselves and, in the process, heal the planet’ (Pearson 1989, p. 8). This model of eco-housing often entails a spiritual dimension which has affinities with the deep ecology movement (Kanuka-Fuche 1991, pp. 7–16; Pearson 1989, p. 28; Baggs and Baggs 1996, pp. 14–15). The proponents of this approach suggest that the design of the home should embody principles such as those set out in the Gaia House Charter — design for the health of the body, for the peace, for the spirit, and for harmony with the planet (Pearson 1989, pp. 40–41). Does this style stand up better against the above five criteria?

Hierarchical dualisms: The emphasis on the home as the centre of a ‘new awareness’ indicates a revaluation of the domestic realm, even if the home is still seen as a personal and spiritual haven. By offering an integrated ‘good life’, it should help to heal the split morality of the public—private division (though work and home may remain physically separate for many occupants).

Groundedness: Natural materials and environmental controls, and the engagement of all the human senses (and sometimes Feng Shui principles), are employed to create a spiritual connection to nature. This is considered to provide ‘... direct pathways towards the goal of caring for the earth’ (Baggs and Baggs 1996, p. 14). Once we learn to ‘optimise
health, beauty and conservation of the Earth’s resources, the practices we institute can be extrapolated to society at large’ (p. 16). But while proponents of this method advocate a moral perspective, it is entirely unclear how this will affect the lives of the disadvantaged to any measurable extent.

**Interdependence:** The nurturing of a ‘sense of place’, integral to this organic approach, does promote attachment to the particular, and a feeling of connection. Also, the house is often portrayed as an ecosystem or recycling system by advocates of this model. However, it is still generally designed as an autonomous physical and social unit, and dependency on community is de-emphasised. The family is still a tribe that potentially competes for status or wealth.

**Consumerism:** Living ‘as one with nature’ is largely only in spirit, as many of these model ecological homes express materialism, elitism and ample leisure time. Regardless of how little energy these may consume, the Earth cannot support this amount of consumption and space for everyone (with the exception, perhaps, of very low-impact ‘hippy’ versions).

**Social divisions:** In this model, change relies on transformation at an individual level (rather than at the social and institutional level). Encouraging people to live the good life while tending only to their own gardens can reinforce the concept that they are only responsible for their own direct impacts. The concept of personal change through identification with the larger whole of nature, or Gaia, could also be said to reflect ‘... the familiar masculine urge to transcend the concrete world of particularity in preference for something more enduring and abstract’ (Kheel 1990, p. 136) – and thus excuse one from the hard work of communication and social change. Those living the good life must take affirmative action to change the system which prevents others from enjoying such elegant living.

**Conclusion**

These two basic models of ecological housing are admirable, but they have not yet achieved their transformative potential. These designs do not address the power structures and resultant spatial patterns that perpetuate poverty, social alienation and environmental inequities. Further, their design seldom challenges the tradition of architecture as a barrier between human and natural environments. If human demands are to respect the limits of nature, a fundamental shift in living patterns is required. The home can play a pivotal role in the transformation towards sustainability, through the development of self-sufficient lifestyles, community building and the fostering of non-patriarchal values (White 1990; Plant 1990). However, in order to create transformative homes and settlements, designers will need to undertake more rigorous intellectual work. This will include rethinking the concepts of domestic life, work, reproduction, the division of labour, and the private/public, nature/culture, mind/body dualisms and other vestiges of the dominant paradigm that are still manifested in even eco-housing design.

**References and further reading**


Davison, G. 1993, *The Past and Future of the Australian Suburb*, Urban Research Program, Research School of Social Sciences, ANU, Canberra, ACT.


Questions

1. Can a new model of housing foster greater ecological awareness? How?

2. Discuss the following quote in relation to housing: ‘The rich should live simply so that the poor may simply live’ (Trainer).

3. ‘Passive’ solar homes are said to require ‘active’ occupants. Why?

4. Some people criticise the suburbs, but many also prefer suburban living. What factors could explain this dichotomy? Do you think that most people who were raised in suburban home environments are happy and comfortable living in the suburbs when they grow up?

5. Typical housing plans have changed over the years. One notable change is the increased size of kitchens, which are often linked to family rooms. What factors might have contributed to this? TV? The feminist movement? Increasing affluence? Discuss.

6. ‘The design of suburbs isolates and disempowers home makers.’ Is this statement true today as it may have been a few decades ago? What factors could influence the social impacts of suburbs on home makers.

Projects

1. Some greens favour urban decentralisation while others favour consolidation (also called compact cities) [8.3, 8.4]. The apparent contradiction is explained by different assumptions about how these two strategies would be designed, developed and implemented. Set out the basic factors in each case that would ensure each strategy were ecologically sound.

2. In small groups, come up with design ideas that can integrate plants, natural lighting and outdoor access for medium-density urban housing. Use diagrams and sketches to convey these ideas to other groups.
Box 14  Adaptable Housing

Robert Moore

Adaptable housing is that which can accommodate anyone over time; that is, it allows for diverse needs, lifestyles and ages in the future as well as the present. The provision for future changes to the house plan are incorporated into the design, so that changes or additions can be made at a later date without costly structural alterations. Adaptable housing will require a fundamental shift in the thinking of developers, builders and designers, who generally focus on the current preferences of the immediate user groups or clients.

Adaptable housing should not be considered an added requirement, cost, or tax on the construction industry because, through good design, it should be cost-neutral – or even profitable. There is a minimal cost outlay involved in incorporating principles of adaptable housing with a potentially high financial return. This is due to an increasing demand for flexible design as awareness grows about the costs of having to relocate to more suitable accommodation as one’s family and life circumstances change.

When people think of adaptable housing, they generally think of issues like unimpeded access and circulation spaces for people with disabilities, or the provision of handrails in bathrooms and toilets for the elderly. However, these considerations should be provided in all housing – as standard practice. In fact, the principles that apply to design for such special groups usually apply to other people as well, such as:

- Providing for privacy, security and safety.
- Ensuring good lighting where required.
- Creating thermal comfort through natural means, such as solar access, wind protection, and natural ventilation.
- Providing for the supervision requirements of parents or carers.
- Maximising the relationship between the internal and (natural) external environment.

- Recommended operating controls and fixtures.
- The provision for personal space.
- Ensuring the entire house and site are accessible by the disabled.
- Adaptability – the provision to incorporate future modifications at minimum cost.

The above criteria (which are only a representative sampling) generally need to be applied at the initial planning concept stage. What becomes immediately evident is the importance of planning for intended future modifications, which could be thought of as ‘reverse construction’. The following is one example of planning for adaptability:

- The wall between the bathroom and the WC should not support any structural load, nor should it contain any electrical or plumbing services. It is preferable to add this wall as a removable partition after the floor, walls and ceiling have been finished, complete with relevant cornices and skirtings.
- During construction it is advisable to add wall sheeting (12mm plywood) behind the conventional sheeting for walls that may require future grab-rails or a shower seat.
- P traps to toilet pans are recommended because they permit easier relocation of the pan further out from the wall, if required for a wheelchair user. Decomposting toilets need to be at ground level.
- The bathroom floor should be waterproofed for a horizontal distance of 1.5m from the shower rose, irrespective of any shower screen. This allows removal of the screen (and hob) for a possible future wheelchair shower area.
- The kitchen cupboards should be constructed after the floor surfacing has been finished right through to the walls. The units should then be assembled to allow sections to be removed below the bench top for wheelchair and for the height adjustment of the bench tops.
6.3 Marketing-led Design

Sam Davidson

Mass market toys are often criticised for the values and behaviours they encourage in young children, including consumerism, violence and gender typecasting. Given the power of design to influence preferences, designers need to continually question their own attitudes and motivations. Designers also need to consider effects on user groups for whom products are designed, and accept responsibility as contributors to children's social development.

Criticisms of toys

Toy design has been subject to criticism on several counts. For example, it has been alleged that toys actively promote consumerism, individualism, and gender-stereotyped role play. It has also been argued that they encourage domineering relationships and violence among children. Some of these criticisms are canvassed below, before considering the extent to which design influences children's preferences.

Consumerism

Some researchers contend that children's play has become 'commoditised', such that children are encouraged to own ever more toys. The toy industry and the media have been intimately associated for mutual commercial benefit. Children's television serves the marketing functions of introducing new heroes or personalities into children's culture and then leading children to use those characters in play (Kline 1993, p. 280). Consumerism is also encouraged by the cross-promotion of toys, such as 'Beanie Babies' or figurines, which advertise McDonald's, Pizza Hut or other chain stores which, in turn, promote the toys (Varney 1997).

Toys inspire a certain type of play and, in cases of over-structured toys, the avenues for play are narrowed (Varney 1997). As diversity of use in play is diminished through overspecialisation, more toys and accessories are required to maintain the child's interest. Toys that rely heavily on props, such as accessories and other characters in the same line, are a popular method by which designers increase the commercial potential of a range of products. Further, it is argued, a toy's lack of creative play value 'encourages an acquisitive, throwaway mentality' (Stern and Schoenhaus 1990).

Some toys, such as the 'Let's go shopping? Barbie' and the 'Mall Madness' game promote gratifying behaviour that makes 'an extravagantly wasteful and consumerist society seem natural' (Varney 1997, p. 10). The promotion of vanity, fashion and shopping is common in girls' toys such as the Barbie range by Mattel, where activities include beautification and preening, hairdressing, bedroom socialising and baby care (Varney 1997, p. 12).

Identification with the fashion industry ideology is nurtured by the content of Barbie magazine, with pre-pubescent girls modelling the latest in clothing trends. This encouragement of materialistic ambitions in the young arguably undermines hope for a change in future consumption patterns (see Rosenblatt 1999).

Gender stereotyping

Toys are often targeted at separate markets defined by gender, and their designs encourage behaviour associated with traditional gender roles or stereotypes. These gender stereotypes associate masculinity with action, assertiveness and outdoor activity, and associate femininity with passivity, self-reflexiveness, and concern with an interior, decorative world (Buckley 1996; Whiteley 1993). Gender stereotypes in design are strikingly apparent in toy stores where, for example, toys for boys involve the use of tools for construction, while doll-houses for girls feature a mother/daughter picture on the packaging and boast 'no assembly required'.

The popular Lego range (and Duplo for younger children up to five years) are widely considered as 'unisex' products; however, the play-sets portray females as nurses, rather than doctors, or as engaged in activities such as ironing, vacuuming, child care and beautification. A particular Lego product aimed at girls (through pink packaging) features an outdoor refreshment bar where a female serves a male on his return from a bike ride.
A new rival for Barbie, named Sailor Moon, has been introduced via an associated television cartoon series. Considered to be a major improvement on Barbie in the area of intelligence, Sailor Moon still portrays an unrealistic and questionable feminine image of anorexic proportions (Molitovitz 1997, p. 11). While Action Man has up to 20 movable joints, and some versions have even included (anatomically impossible) movable biceps, Barbie usually only has joints where the head and limbs meet the body (Attfield 1996, p. 84). Exceptions to this convention were introduced when Barbie began to play golf and tennis; however, Attfield notes that these additions only enhance Barbie’s ability to pose for which she was designed.

**Individualism**

Toys are considered by some researchers to encourage a shift in the focus of children’s play from the development of relationships with others to relationships with the toy. Due to the market-oriented approach to toy design, ‘toys are reshaping play towards less imaginative and more solitary activity’ (Varney 1997, p. 13). Such toys discourage the development of social interaction skills such as cooperation. Varney argues that to the extent toys become a substitute friend and teacher of social roles, this may work against the development of an understanding of interdependency and cooperative relationships with others through interactive social play (p. 10). It could be said that children are being taught to communicate with products (toys) in place of people. Further gender specific toys commonly discourage children of different sexes from playing together, fostering a trend towards individualised play.

**Violence**

Another frequent criticism is that ‘war toys’ targeted at boys may encourage aggressive behaviour (MacNaughton 1996). Researchers have observed that play associated with these toys often involves repetition of the story-lines of related television shows that feature violence (Levin and Carlson-Paige 1995). The deregulation of children’s broadcasting in the US has made it possible for manufacturers to make television programs directly related to toys (Levin and Carlson-Paige 1995, p. 68). Further, toys that encourage violent play are usually very specialised or over-structured, in that their visual appearance is so detailed that they foster play specific to their obvious use, rather than more imaginative interpretations (Levin and Carlson-Paige 1995).

The toy industry is aware of the above criticisms about how toys play a part in child development. A typical response is: ‘We are not in the business of setting values for children. It’s a question of giving them what they want, so long as it’s not illegal, harmful or unwholesome’ (Bullivant 1993, p. 25). In any case, the solution may not be as simple as placing responsible toys on the shelves, as toy design for the mass market is always subservient to its marketability (Varney 1997). Often, toys that have been introduced as a result of concerns raised by parents have not met with commercial success (Attfield 1996). This may be partly because children often select their own toys, and parental values and concerns are undermined by advertising. Often, the media bypasses parents through the direct targeting of pre-school age children in television advertising. Advertisers realise that children are consumers with considerable purchasing power, due to their persuasiveness within the family, and thus target children with direct advertising from a very young age (Hendershot 1996).

The position of the industry suggests that it is not enough to design toys that promote good values; the determinants of children’s preferences must also be considered by designers.

**Toy design and children’s preferences**

Designers of products for children need to familiarise themselves with the research into how children’s preferences are formed, and how the development of children’s values is influenced by socialisation from external influences such as parents, peers, toys and the media (Almquist 1994). The jury is out, but it would appear that toys are accepted as being an integral part of children’s socialisation. While the literature on the formation of children’s preferences cannot be summarised completely here, some views are canvassed below.

**Parents:** The influence of parents on a child’s toy preferences and understandings of appropriate gender behaviour is widely believed to be most significant factor. Parents, for example, may wish to select sex-neutral toys on principle; however, their own values are influenced by gender and other social norms and advertising as well (Almquist 1994). Studies suggest that boys are more often discouraged from playing with cross-gender toys by parents than girls. This may partly explain a tendency for boys to favour more sex-specific toys than girls (Almquist 1994). In a study by McGuire (1982), it was found that ‘fathers held clearly delineated ideas about which toys and activities were suitable
for either sex child’, and that ‘... girls often experienced the kind of situations which accentuated male power over them, with fairly firm guidelines about how they should behave’ (Butterworth 1991).

**Figure 6.3.1: Circularity of influences**

![Circularity of influences diagram]

**Gender identity:** Regardless of the sources of gender identity, gender identity is reinforced through play itself. ‘... play is assumed to be the prime scenario where children portray their conceptions of male and female roles in society, as well as their own gender identity and understanding of sex-role behaviours; not least through their toy choices and play patterns’ (Almquist 1994, p. 62). According to Almquist, children’s toy preferences are usually sex-typical throughout childhood: children usually prioritise their choice of toy around sex-appropriateness, rather than characteristics such as the activity level and type of play involved (1994, p. 70). Taking a somewhat different view, Kline surmises from the results of studies conducted with children that they do not base their preferences on perceived differences between the sexes. Today, they believe it is 'all right' to play with cross-gender toys; however, they simply prefer not to (Kline 1993, p. 342). But while it is difficult to determine exactly why children prefer toys 'suited' for their own gender, it seems that most toys available to children are associated with one gender only. This limited choice is a result of designers' decisions.

**Packaging:** Toy catalogues and packaging designs flag which gender the toy is intended for. Packaging is an extension of gender-specific design, and probably serves to bolster children's existing sex-typed preferences (Almquist 1994). Gender-specific images and the use of strong contrasts in colour range — such as pinks and pastels for girls, and strong red, black and blue for boys — enforce unmistakable messages of gender appropriateness. Boys and girls are rarely pictured playing together. Kline suggests that toy designers and advertisers are well aware that children are less concerned with the particular attributes of a toy, or the type of play it will involve, than its image or symbolic design content (1993). If so, then designers have scope for design decisions in packaging and advertising that avoid sex stereotyping in their use of image and symbolism.

**Conclusion**

It would appear from the above views that the issue of children’s preferences is circuitous and complex (Figure 6.3.1). Toys have become increasingly dominant in child’s play, and toy design has been shown to influence the nature of play and socialisation. Considering the complex nature of children’s relationships with parents, peers, TV and the market, however, one cannot regard children as passive recipients of the values communicated by designers (Hendershot 1996, p. 8). Given the many factors in children’s preference formation, it might seem reasonable for designers to feel that constructive design intervention will have little impact.

Conversely, this complex range of influences could also be taken to mean that designers have even more opportunities for influencing the market. If designers view their role in society more broadly, they cannot claim to be innocent victims of market forces. Designers can work collectively to create public awareness and bring their influence to bear — as parents, consumers and citizens, as well as designers. To be ‘passive’ about how design influences social values and relationships is to be actively complicit in the existing problem. For a start, the design profession can challenge the toy industry’s failure to acknowledge and accept responsibility for its influence on children’s socialisation and toy preferences.

**References and further reading**


Hendershot, H. 1996, ‘Dolls, Odour, Disgust, Femininity and Toy
Questions

1. List and describe your favourite toys that you had as a child. Did your preferences reflect gender identification? If you played ‘cowboy or Indians’, did you prefer to play a cowboy or an Indian? Discuss.
2. Debate: ‘Children will unthinkingly soak up all the gender messages implied in the product’s design.’
3. How can the design of children’s toys continue to influence consumerist behaviour when they become adults?
4. Should the advertising of toys on children’s TV programs be allowed? Why or why not?
5. List reasons for and against an independent Design Review Board for children’s toys.

Projects

1. Design and make a toy that you think is gender neutral. Arrange to have it displayed at a childcare centre, or appropriate school level, and determine whether girls or boys prefer it equally. If there is a difference in preference by gender, try to determine why.
2. If you were going to design a toy that incorporated positive social values, how would you ascertain children’s preferences? Work individually to develop a method. Compare and critique strategies. Based on this evaluation, develop a strategy for determining preferences.
Box 15 The Rebound Effect

David Harrison, with Ann Marie Chalkley, Eric Billett

Designers need to think about the rebound effect: if people save money using a more efficient product, what is to prevent them from spending the savings on more products?

A key method to reduce environmental impact of a product is to make it more energy or resource efficient. However, the improved efficiencies are often partially negated by increased use of the product. For example, up to 20% of potential energy savings from improved fuel economy in cars is lost in increased travel.

The rebound effect has been discussed by a number of authors, including Rademacher, who defines it as ‘the subsequent erosion of the positive potential of technological innovation by increases in overall activities, and the concomitant increase in consumption of material and energy’. The effect is particularly clear in products that have been made ‘greener’ by reducing their energy consumption during use: by reducing energy consumption, pollution and natural resource use is often also reduced, but the resulting lower running costs may encourage greater use of the product. Further, if a user reduces costs by using a more energy efficient product, it is likely that as well as increasing their use of that product, they will spend the saved money on other products or services which themselves may be significant users of energy. Thus the net effect of the more energy efficient product on the total consumption of energy may be limited.

Although the local rebound effect within a product has been described and quantified, there has been little investigation of the global rebound effect in which benefits gained by improvements to one product or service are, in part, negated by increased use of another. A case study below examines the extent of this effect in the sphere of consumer products.

Condensing boiler case study

Comparing gas bills from a house before and after a standard boiler (seasonal efficiency 70%) was replaced by a condensing type boiler (seasonal efficiency 92%), it is possible to calculate the fuel savings.

- Annual cost of fuel for standard boiler = £301.24
- Annual cost of fuel for condensing boiler = £190.86

Assuming the boilers are in use for ten years, the total fuel use and amount of CO₂ released during the boilers use can be calculated.

- Fuel cost saving over lifetime = £1103.76
- CO₂ released by standard boiler = 42,562kg
- CO₂ released, condensing boiler = 26,967kg
- CO₂ saving over ten years = 15,595kg

On average, the purchase price of a condensing boiler is £400 more than standard model, so the overall cash saving = £1103.76 - £400 = £703.76, which is the cost of a return flight to Sydney. Each passenger causes the release of 3150kg of CO₂ per return trip, or 20% of the 15,595kg of CO₂ saved.

Conclusions

Although the global rebound effect is 20% of the CO₂ originally saved, resource efficiency still saves resources per unit of service provided — while allowing more service to be provided from fewer resources. In this case study, the additional service is the enriching experience of travel to Australia — and 80% of the original CO₂ saving still stands.

An strategy could be to encourage consumers to spend surplus money on products with high perceived value, but little environmental impact due to their low resource intensity; for example art, sport, information products, learning circles, or antiques. The concept of low-cost, but high perceived-value products is well known to product designers, but they should be made develop this further as an environmental as well as financial strategy.
6.4 Gender and Product Semantics

Karen Yevenes

'Messages' instilled in product designs indicate how they should be used and who should use them. Product semantics is the study of such meanings, as communicated through manufactured objects using a visual alphabet of signs and symbols made up of colour, shape, form, and texture (Giard 1990). Without an awareness of product semantics, designers may inadvertently fail to appreciate some of the wider social implications of their designs and product semantics.

Introduction

A designer's tacit knowledge affects their design decisions and is shaped by their unique backgrounds and sociological influences, including gender (Whiteley 1995). Similarly, the consumer's subjective response to a product depends on how the codes, metaphors, or symbols embodied in the design correspond to their own backgrounds and influences. For example, this hidden 'visual language' can reinforce gender stereotypes. Further, problems can arise when the visual elements (colour, shape, form, and texture) of a product are assumed to be appropriate for particular consumer groups, such as women.

Gender in design

Designers can create objects that are gender exclusive through the decisions they make — consciously and unconsciously. Products are often designated an appropriate owner or operator through their shape or form. For example, products are encoded with design elements that suggest which gender is expected to use them. Thus, products intended to be used by men often have large, bulky features, restricting their use by women and reinforcing the position that only men or strong people can perform the task (or vice versa). Obvious examples are hand-drills and similar workshop tools.

Gender-exclusive design does not mean, of course, that women design differently than men. After all, women study design under the same conditions as their male counterparts, and the profession does not really allow women to design differently. For example, at a 'design crit', a male representative from the commercial design field told a student, with disapproval, that her coffee pot 'looked too maternal' (she had not intended to design a 'maternal-looking' product). The work was immediately dismissed as a design that did not reflect what the consumer wants: the 'contemporary', 'modern', 'slick', 'executive' design that she was meant to aim for.

Likewise, gender identification does not mean that male designers design only for men. Designers create objects for all consumers according to what they believe to be marketable and aesthetically correct. However, men have dominated the design profession and therefore, some believe, a 'masculine aesthetic' has evolved that is perceived to be correct. Elements such as sharp lines, stark materials, and bold colours are some qualities associated with the contemporary masculine aesthetic that dominates the profession.

Penny Sparke analyses what she considers the well-established masculinist 'canons of taste' and aesthetic in an historical analysis of design principles. She attributes much of this to 'modernism' with its conception of social, cultural and economic order. The impact of improved metals technology, assembly lines, production techniques, and plastics technology has fostered the design of products that express this industrial technology and aesthetic.

'The shift from a world in which the female consumer played a central role to one in which rationalised, standardised mass production began to dictate a new aesthetic and role for the domestic object, came with the marriage of technological and economic modernity to cultural modernism.' (Sparke 1995, p. 10)

Sparke argues further that post-modern design has now allowed 'feminine taste to be legitimated'. However, given the gender imbalance in the profession, one wonders if objects represent feminine taste, a new male aesthetic, or simply continue to demonstrate what designers perceive to be feminine taste.
Women’s cultural codes are produced within the context of patriarchy. Their expectations, needs and desires as both designers and consumers are constructed within a patriarchy which prescribes a submissive and dependent role to women. [and also] ... that the codes of design, as used by the designer, are produced within patriarchy to express the needs of the dominant group. They are, therefore, male codes.’ (Buckley 1989, p. 260)

If both men and women designers feel they must produce designs which reflect a male-defined aesthetic, the creation of an alternative aesthetic based on women’s tacit knowledge may be impeded (Whately 1993, p. 146).

**Gender-blind design**

The semantic decisions of designers go largely unchallenged during the design process, since the designer’s colleagues are mostly male, and deviation from established product semantics is considered too risky in a global marketplace. Research into consumer needs, tastes and desires is not common. According to Giard, designers feel that they have the skills to make the correct visual statements, and therefore invest little time in understanding and evaluating possible user responses. Designers assume that consumers embrace certain well-established ‘canons of taste’, and they lack time and financial support for market research (Giard 1990, p. 5).

As a consequence, products commonly used by women often suffer from inappropriate semantic definitions, such as lack of sufficient attention to female proportions and physical capabilities. For example, various screwdriver sets have interchangeable heads, whereas a set providing interchangeable handles as well would allow smaller women to perform a wider range of workshop tasks. This is despite the fact that research detailing female size and strength parameters is widely available in the ergonomic literature. [Box 16]. On the other hand, objects for cleaning and cooking are encoded with stereotypical features that suggest women should perform those tasks. This arguably reinforces the association of women’s work with what are usually considered routine, menial, or custodial tasks.

The application of functionalist concepts like ‘utility’ and ‘usefulness’, commonly applied by designers, can also be problematic (Partington 1995, p. 213). What are considered ‘universal’ criteria usually have a gendered (masculine) quality. Crozier’s research into meaning and design found that men demonstrated instrumental, activity-related, functional and self-oriented concerns – whereas women placed importance on relational, symbolic and emotion related categories (Crozier 1994). Ironically, functionalism, without an awareness of gender difference can lead to dysfunctional design.

Male designers applaud other male designers and award prizes for their formally breathtaking, but often functionally mind-numbing, objects of desire. An iron ... may be aesthetically pleasing and visually sophisticated by the standards of a classical aesthetic, but it may still be poor at coping with the ‘fiddly’ bits of a sleeve.’ (Whiteley 1993, p. 146)

Conversely, the idea of ‘women’s tastes’ is often reduced to a set of universalised needs in the dominant (patriarchal) design process. For example, some designers assume that all women like pink products and floral motifs, and want to be personified as the care-giver or housewife. Sparke devotes much of her text, *As Long as its Pink: The Sexual Politics of Taste* (1995) to this phenomenon. During the 1950s, a wide range of pink shades were used throughout domestic interiors, epitomising what was believed to be ‘feminine taste’. Exactly how ‘pink’ became associated with ‘the feminine’ is uncertain. Sparke attributes its widespread use during the 1950s to its connections with the past; it was used extensively in combinations with gold, mimicking 18th Century interiors.

While colour decisions in contemporary design have become less gender exclusive, current appliance catalogues are still saturated with colour stereotyping. For example, paint strippers and hairdryers are two objects that are comparable in size. Both perform similar functions – to expel hot air – yet they are strikingly different in terms of shape and colour coding.

**Conclusion**

What can designers do to avoid the conflicting effects of tacit knowledge, gender biases and user stereotyping in Western culture? Some of the literature which addresses the relationship between semantics and patriarchy proposes that objects should be more ‘androgynous’; that is, less gender specific. Yet, as consumers have grown accustomed to feminine- and masculine-looking products, many enjoy this particular quality in their objects. Furthermore, gender neutrality may be a false concept in our culture since, as suggested above, ‘non-gendered’ objects are designed within the dominant masculine paradigm in accordance with a
masculine aesthetic. Nonetheless, the above discussion suggests at least three areas where the design process can be improved.

**Designers:** Given that stereotypes exist, the extent of their influence has much to do with designers and their perceptions of society and women. Designers need to be more open to issues of gender and to be more self-reflective generally. They must also be more aware of the social implications of the symbols they use when designing objects.

**Design education:** Affirmative action in industrial design schools and the profession could aid in identifying gender issues and in providing consumers with products that meet the needs of more subcultures in the community. Also, while it is difficult to change the patriarchal weave of society, the inclusion of women in a greater range of product design teams could add different perspectives.

**Consumer research:** Designers must ensure that the objects are in fact accurate representations of peoples’ tastes, desires, and needs, and therefore appropriate for a wider range of users. The profession can examine the latent perceptions it has with regard to designing for women and cultural minorities through extensive product research. Greater research into women’s actual needs at the elementary stages of product development could result in less gender exclusive designs and, therefore, better products.

**References and further reading**


---

**Questions**

1. Debate: ‘Objects should be designed to be gender specific, not androgynous.’

2. Why do some tape and video recorders have many (often redundant) knobs with very small labels which most elderly could not read without magnifying glasses?

3. Why are many chairs not ergonomically designed, despite the fact that industrial designers are aware of such criteria?

4. List some of the social and environmental impacts of lawn mowers. What are some design solutions for this? Investigate native grasses or ground covers that do not require mowing.

5. Apply the concepts of this chapter on gender to an ethnic minority of which you have some familiarity. Can you think of any product designs that are insensitive to cultural differences?

6. Have ‘feminine’ interiors (e.g., use of pink, floral patterns, etc.) disappeared because of wider life style choices for men brought about by the women’s movement – or because men now have more control in the ‘home territory’ due to men’s liberation? Discuss.

---

**Projects**

1. Obtain a large catalogue and cut out the individual pictures of the hair dryers, power drills, coffee makers, irons or other such appliances. Each member of the group should select their own preferred items from each set of pictures. Do any patterns emerge among the choices? Are there discernible differences in gender preferences?

2. Set design criteria for a stove top. Consider: (a) safety, convenience, ease of cleaning, and how to let the user know which control goes with which burners; (b) needs of different users, such as children, blind, one-armed, elderly, non-English speaking; (c) costs of manufacture. What else must be considered? (For an answer, see Donald Norman, 1988, The Design of Everyday Things).
Box 16  Ergonomics or Human-centred Design

Bill Green

As defined by the Ergonomics Society of Australia, **ergonomics** is the matching of products, activities and environments with the needs of people. It is based on the ancient human notion of ‘fitness for purpose’, but is relatively new in scientific terms, the name having been coined in the late 1940s (from the Greek, ergon = work and nomos = laws or norms). It should be the fundamental basis for human-centred design, but ergonomic data are frequently inadequate, or are ignored, or are presented in ways which are inaccessible to designers. In the past 50-plus years, ergonomists, along with physiologists, psychologists and others have gathered huge amounts of data on human characteristics, such as their size, strength, endurance, vision, hearing, reaction times and diurnal rhythms. Recently, however, the focus has shifted to an emphasis from what people are, to what they actually do.

**Boundary conditions:** There is a seductive and scientifically supportable path available to the ergonomist in measuring human beings. Hard physical data can be generated, analysed, generalised and confidently presented; hence what might be termed the ‘boundary conditions’ of product and environment use have been specified. We can say, for example, that a doorway 2m high will admit around 98% of the world’s population (Kroemer 1997); that a normal adult chair with a 420mm seat height will, when placed in a school classroom, leave 100% of eight-year-olds with their feet dangling above the floor (Steenbekkers 1993); and that prolonged maintenance of certain muscular tensions can eventually result in musculo-skeletal problems. We also know quite a lot about the way our physiological systems work, and have some general notions about the behavioural patterns of some populations. By observation and experiment, relationships emerge between certain product entities and what people do with them. For example, there is a general expectation that turning a knob clockwise will result in some increase of output, and that turning a steering wheel to the right will result in a corresponding vehicle movement.

**Human interaction with the product:** What we do not know much about is actual individual behaviour in specific situations. We can easily make a chair which is possible for 95% of all people to sit on, but we do not know exactly how they will then use it. Maybe to stand on to change a light bulb? We know that ordinary people are sometimes tired, angry, distracted, excited and so on, and that these emotions affect much of our interaction with our products, systems and environments. These conditions, together with age, physical decline, handicap, etc are those which push so-called ‘normal’ populations towards, and over, the boundary conditions set by human characteristics data.

**The future of ergonomic research:** Ergonomics is at an important stage in its development as a discipline. It is clear that the gathering of characteristics data must go on, as populations shift and change, but such data are no longer seen as adequate predictive bases for human-centred design. While much of the ergonomics profession remains (properly) concerned with scientific probity, a movement is gathering pace which recognises the need to understand the emotive connections we make with our products and environments. Emotional satisfaction comes from a complex mix of safety, useability, efficiency and joy. This is notoriously difficult to research, and is the future challenge of ergonomics in the real world.
