MAGIC BY DESIGN:

TECHNOLOGY TRANSFORMED

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Technology is often associated with the 'magic and miracles of the glittering industrialized world' (Maathai 1995). It is often seen as unattainable for the majority living in developing countries and the fact that it impacts directly or indirectly on everyones' lives is rarely acknowledged. The observation that 'common people and policy-makers alike [view modern technology] with a respect and wonder, usually associated with the occult', is also true to designers (Saha 1990). The South Commission (1990) suggests that countries of the South have consistently undervalued the role technology plays in development and that a 'sense of inferiority in the field of science and technology' is a fundamental problem. Here design has a critical role to play in making technology accessible at all levels.

This paper discusses the current situation with regard to design, technology and development and the potential role for design to transform technology from the unattainable and miraculous to the 'everyday'. The paper argues that the creativity of design can be used to perform magic that results in pleasurable and empowering technology.

OXFAM CATALOGUE SYNDROME

A number of non-governmental organisations (NGOs) notably Oxfam, Traidcraft and others work internationally in the area of craft production for development, as do several other organisations based nationally. These organisations produce catalogues to both promote their development work and sell the products manufactured by their projects. Oxfam is probably the best known organisation currently working in this field and I have therefore opted to describe this approach as the OXFAM CATALOGUE SYNDROME (OCS). However, the term is used generically throughout this paper.

I would argue that design in countries in the South has been and continues to be trapped by the OCS. This syndrome has been derived from an observation made in the United Kingdom where several different catalogues promoting and selling articles from thermal silk long-johns to microwavable hot water bottles are received, usually unsolicited through the post or contained in the folds of the Sunday newspapers. The Oxfam catalogue in particular arrives alongside the Innovations catalogue. The Innovations catalogue is packed with natty if often absurd technological gizmos which can be ordered through the post, for example electronic nasal hair removers, which are marketed along the lines of 'transform your life! indispensable! time-saving!' The contrast between the two is highlighted by the difference in the running commentary each catalogue elicits. The Third World crafts achieve a brief 'Oh this is pretty and would make a nice gift for ...' (fill in a relative for whom present buying is difficult) or 'this must have taken a long time to carve, it's a bit expensive'. In comparison the Innovations catalogue is pored over in detail with exclamations of 'look what you can get now, clever isn't it' and even the extremes of technological irrelevance are grudgingly admired for the technical expertise, miniaturisation, etc. The cost of the products is commented on but the expense is deemed justifiable because of the amount of technology contained within.

Oxfam and Innovations Catalogues

Electronic nasal hair removers

As a consequence of these catalogues, the perception in the United Kingdom of what it is possible to design and manufacture in developing countries is tied to the Western ethnic 'knick-knack' market. I would suggest that the continued emphasis on producing artifacts for this

Top: 'Transform your life'

Right: Politically correct toys

Far right: Impressions of the 'other'

Next page right: Oxfam and Innovations Catalogues

market reinforces the 'sense of inferiority' discussed by the South Commission, because technology is largely absent in the production methods and completely absent in the products being offered for sale. The emphasis is on technology-free artifacts that are decorative first, useful second and devoid of moving parts, be they cogs or 'chips'.

It is argued that a handmade artifact or a visual image can make the observer aware of the culture of the producer. However, with OCS, there is an inequality in consciousness between consumer and producer; a transformation of an artifact from meaningful object to one devoid of symbolism (Brett 1986; Sardar 1993). Also present is the uneasy feeling of superiority on the part of the viewer. The impression of the 'other' is controlled and manipulated (Chowdry 1995: 26). As we leisurely peruse the catalogue in the damp, grey United Kingdom, we imagine the exotic batik bedspread in our bedroom, the exquisitely carved coasters in our dining room and the expertly woven magazine rack at our feet in the lounge. And to cap it all, we can supply our children with 'politically correct' wall hangings and t-shirts to counteract the effect of Barbie dolls and Game-Boys.

Arguably this accessability to difference and the 'other' can result in greater understanding between cultures, but what is being understood and where is the equality of understanding? Rather as Brett (1986) asserts this is the 'commodification of aesthetic feeling and the imperialist assumption that the whole world is available'. There is evidence of this in the introduction to the Autumn/Winter 1996 Oxfam catalogue. As a customer you are invited to:

> choose from our exclusive range of hand-made products and food from around the world. Many of the products we have chosen for you reflect designs and materials that have been passed down from generation to generation, helping to preserve skills and age old traditions. Each of the hand-made items are unique, reflecting the touch of the individual craftperson

This reads like an introduction to a heritage theme park where tradition and culture are preserved and experienced through 'living' history. Both the romanticism of ethnicity and cultural imperialism become overwhelming.

The relationship between the consumers and producers can be described further as a dualism, where, as Plumwood (1993: 47) says, it 'is an intense, established and developed cultural expression of such hierarchical relationships, constructing central cultural concepts and identities so as to make equality and mutuality literally unthinkable'. This is perhaps a harsh and shocking analysis of the relationship, but the status quo has to be challenged because as Plumwood asserts: 'once the process of domination forms culture and constructs identity, the inferiorised group ... must internalise this inferiorisation in its identity and collude in this low valuation'. Being technologically incapable, receiving the most patronising forms of 'appropriate' technology is the lot of the inferiorised. The emphasis on craft production for income generation and development is also part of this process of domination.

Designers have a significant part to play in how technology is used for development. Norgaard (1995: 56) argues that 'Societies, rather than picking and molding technology according to their values, are being shaped by technology'. Countries in the South are being shaped by technologies which the North deigns to allow them to have. This is not to suggest that given the choice the South would rush to adopt high-tech over and above the so-called appropriate technologies, but having the power to choose could lead to progress.

I would suggest that it is here that design needs to be mobilised. Aesthetic, ergonomic and environmental considerations are all part of a designer's approach to technology (or ought to be!). Design is the interface between technology and people, and is therefore in some part responsible for the creation of identities and influenc-

ing cultural change. Design can be carried out in a participatory way, again offering a bridge between people and technology, allowing control over, rather than being controlled by technology. As Norgaard (1995: 57) says 'control [over technology] can only be exercised by each society developing a collective sense of self, defining its objectives, and thereby determining what progress is'.

PRODUCTION FOR MODERNISATION

At the same time as design is caught by OCS, there is the paradox of production for modernisation through the manufacture of 'tradition'. Those who are producing the ethnic 'knick-knacks' are advised to do so in order to achieve development and ultimately, modernity. Whatever the liberality of cause espoused by the development/trade agencies involved in this production, they exist in and at least implicitly promote, capitalist market economies: the 'goal of modernisation theory' (Chowdry 1995: 28).

Industrialised nations have not become so through the mass production of ethnic knick-knacks, but through the continued development of technology and products which utilise these technologies. Even where industrialisation has not been the goal, innovation and design have been evident historically in the survival of the human race from agriculture to architecture, communication to travel. Products have not remained static, so why should they apparently come to a standstill in developing countries in the name of 'development'?

Buchanan and Margolin (1995: xii) argue that 'design exists as the central feature of culture and everyday life in many parts of the world'. However, the concentration on and promotion of ethnic artifacts has to a large extent resulted in the tacit knowledge of design being lost through the 'sense of inferiority' remarked on by the South Commission. The producers of ethnic 'knick-knacks' in the South are caught in the developed/not developed 'dualistic structure' (Plumwood 1993: 43) so beloved by development theorists and practitioners.

The cultural imperialism discussed above is also implicated in the control of technology and design. This is evident by the desire expressed in the North that 'the Third World ... avoid the wasteful and socially divisive path of marketing-led design in favour of socially useful products'. As Whitely (1993: 119) continues:

> The logic ought to be in favour of responsible design: Third World countries - almost by definition - are characterized by scarcity rather than surplus and merely owning a product ought, therefore, to matter more to people than its particular make or styling.

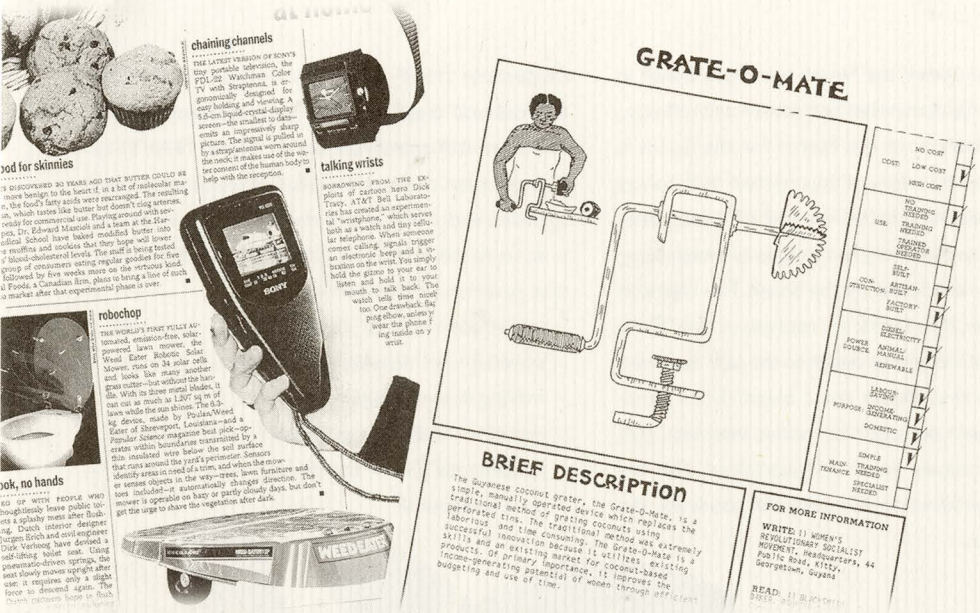
Why are responsible design and market-led design seen as incompatible? Why should they be presented, as they usually are, as a dualism? I would suggest that this has been the result of the implicit cultural imperialism which continues in design for development. As we have seen above, the North perceives design in the South to be dominated by tradition and ethnicity. Design carried out in the North for the South is dominated by the image of 'appropriate' technology where this means solar power, fuel efficiency, basic needs etc. There are very few images of design being executed for the South by the South. The Ugandan design teacher, Pido (1995: 35) recognises that 'There is a need to fit indigenous design to the cash economy' and suggests that 'design could blend skilled hand-production and domestic economic interest ...[to] produce consumer goods for ourselves'. The key here is the production of consumer goods for the home market.

DESIGN AND DESIGNERS

Writers and practitioners from the South acknowledge that design is an 'ancient activity' (Ghose 1995: 193), and 'an instrument of everyday life' (Pido 1995: 35) but this 'everydayness' has resulted in both its invisibility and paradoxically its professionalisation. The professionals live in the industrialised countries because, I would suggest, design in many developing (and some industrialised) countries is only associated with craft production, when it is considered at all.

A vicious circle becomes clear, one where the OCS cannot be escaped from. OCS does not promote cultural diversity as it might first appear but initiates and sustains the dualism of tradition and modernity. The UNESCO paper on *Human Resources Development, National Policies, Global Strategies and International Cooperation* (1988) asks how 'indigenous spiritual and cultural creativity [can be transformed] into initiatives and entrepreneurship' (Cole 1990: 374). This question needs to be asked of the development agencies, and designers in the South should be the ones to do the answering. Ghose (1995: 199) argues that governments will have to:

> introduce national design policies that will dovetail with developmental policies, thereby making design an agent of the visual manifestation of the ideologies of development. Thus, if the fundamental aim of the developmentalist is to provide national confidence and self-reliance and bring some sense of equity, visible symbols of this confidence will have to be shown not only in the styles of architecture adopted, but also in the materials and processes adopted, the manner of advertising undertaken, the styles of clothing exhibited, the nature of products manufactured, and the skill in converting modern imported technology into products distinctive for the specific needs of the people.



Representation of consumer goods

Ghose (1995: 188) suggests that indigenous design cannot be separated from technology transfers, foreign aid and trade, and obviously the reality for many governments of developing countries is that their hands are tied by 'tied aid', structural adjustment, loan repayments and similar issues. As Ghose (1995: 201) says 'design and development is a quest for non-standardised answers in an age of standardisation'.

creativity + complexity
compromise + choice
= development

Deforge (1995: 21) argues that technological objects have two functions, 'utilitarian and sign'. The technological component of an object gives it another dimension, often concealed and unconsidered. Design makes implicit and explicit decisions about how to use the technological component and if, as Deforge argues, technology has always avoided ethical questions, it follows that designers have too. Responsibility is required of designers to ensure technology is put to honest, open use and not used to conceal inadequacies. Technology is too frequently proclaimed as a cure all; from clean and easy housework to clean and easy war, from solar powered stoves to smart bombers. Eisler (1990: xx) suggests the emphasis of technological developments has been on destruction and domination and that it is this emphasis 'rather than technology per se, that today threatens all life on our globe'.

Walsh et al (1992: 49) point out that it is 'very easy to ignore the wider consequences of design'. This is pertinent to both the negative and positive aspects of design: it is easy to ignore the environmental consequences of the 'throw-away society' and equally easy to ignore the potential in design for creating positive change. Both require designers to accept a degree of responsibility to move beyond their own personalised fantasies and seek the views of the potential users/customers. This is not to devalue the tacit knowledge which is 'regarded as an essential component of the skills and quality of designers', but to suggest that design involves the potential users in the 'product development process' (Walsh et al 1992: 50, 243).

Four 'common features' in design practice which may provide a useful guide to understanding the role of design in the product development process are identified by Walsh et al (1992: 52). The authors refer to these features 'the 4 Cs of design':

Creativity: design requires the creation of something that has not existed before (ranging from a variation on an existing design to a completely new concept).

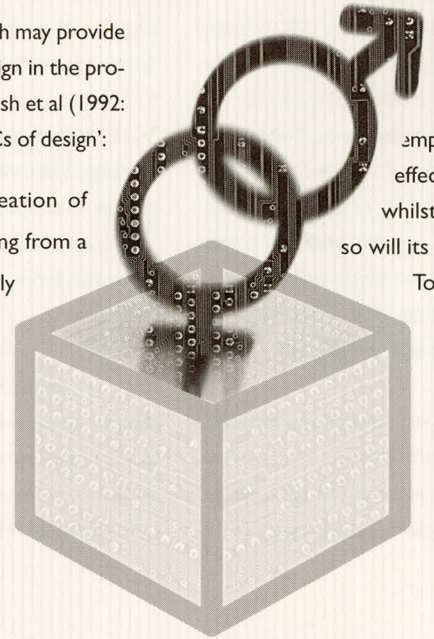
Complexity: design involves decisions on large numbers of parameters and variables (ranging from overall configuration and performance to components, materials, appearance and method of manufacture).

Compromise: design requires balancing multiple and sometimes conflicting requirements (such as performance and cost; appearance and ease of use; materials and durability).

Choice: design requires making choices between many possible solutions to a problem at all levels from basic concept to the smallest detail of colour or form.

I would suggest that the four words: creativity, complexity, compromise and choice, have similar meanings in development where situations are often complex and require a creative approach to choice and usually result in compromise. The '4 Cs of design' could be used to emphasise the importance of the design process and the potential of technology.

GENDER, TECHNOLOGY AND DESIGN



Another layer of inferiority is added by the remarkably globalised 'cultural stereotype of women as technologically incapable' (Wajcman 1994). The technical empowerment of women is vital to effective development efforts, but whilst technology remains gendered so will its inherent power (Stamp 1989). Too many technological advances have resulted in women's lives deteriorating despite the 'potential to transform lives ... in a positive way' (Ng Choon Sim & Hensman 1994).

The role of designers is to package technology to make it accessible, desirable and usable to the people who live with and employ it (Dormer 1991). Unfortunately, technology remains 'both the social property and one of the formative processes of men' (Cockburn 1994: 56) and designers are predominantly male. Consequently, the people for whom technology is made accessible are usually men. As an inanimate object technology can cross international and cultural boundaries but as it does so it remains the 'social property' of men and in many instances comes to represent '... the strongest force of male dominance [in] the public sphere' (MacKenzie & Wajcman 1994: 22). This is evident in military hardware, the electronics industry (where women are employed for their 'nimble fingers'), and water pumps (where men are trained to service them) amongst many others.

One of the guiding precepts of design as it is taught and practised (certainly in the North), is that people buy particular artifacts in order to express and/or confirm their identity. If this is the case then designers have a considerable part to play in defining the cultural system. However, unless cultural systems are redefined in relation to women, women will continue to be disempowered by technology. Technology will further entrench cultural taboos rather than negate them. Both men and women will be the poorer.

Buchanan (1989: 98) highlights the problem of 'technological reasoning, where beliefs and values always condition products, whether they are recognised explicitly, are implicitly assumed, or ignored completely'. The belief that women are technologically inept is so ingrained that it is invisible, never mind ignored. Once again this is apparent in the dualistic structures: culture/nature, modernity/tradition and developed/undeveloped.

These dualisms provide a key to understanding the complexity of the relationships between gender, technology, design and development and how the OCS is involved in sustaining these relationships:

	Technology	Handicraft	
	Developed	Undeveloped	
Design	Modernity	Tradition	OCS
	Culture	Nature	
	Male	Female	

For a dualism to exist there has to be a relationship of dominance, one is seen in terms of the other. The relationship of dominance implicit in the OCS is there both for women and men.

There is an urgency to move towards multicultural designers as Balaram (1995: 137) asserts

> for designers to be convincing they too have to become involved with the object of design ... only then can they expect to produce artifacts that are meaningful in the sense of reflecting the very mythology that guides users.

Equally there is an urgency to involve women in design, or rather recognise and validate the invisible design already being carried out by women (this is also the case in industrialised countries). Design carried out cross-culturally can add a layer of obscuration to technology for men and an additional layer is often applied for women.

If, as Krippendorf (1995: 157) argues so eloquently, product semantics goes further than

> industry's immediate concern with production and consumption [because it is concerned with the] celebration of wholeness ... the respect for mythology and archetypes that are rooted deep in the collective unconscious

then the absence of cultural and gender diversity amongst global/international designers is an anathema. At the very practical level, the absence of women designers results in the 'application of "tacit knowledge" about women users' needs happen[ing] only rarely in product design' (Walsh et al 1992: 244).

Marchand and Parpart (1995: 17) highlight the role of the 'analyst/expert' which they say 'reminds us of the close connection between control over discourse/knowledge and assertions of power'. The Northern design discourse is rarely bothered by or with discourse from the South. Equally it is rarely concerned with women and/or gender; occasionally chapters are written by women from a feminist perspective or feminism/women and design is mentioned by the male author (Walker 1989; Attfield 1989; Buckley 1989; Whitely 1993).

In product design practice, design is only gender aware in so far as giving products masculine and feminine attributes for the differentiated markets. Of course what it is to be feminine is decided by male designers and as Eisler (1990: xviii) says

> in male-dominated societies anything associated with women or femininity is automatically viewed as secondary ... to ... be addressed, if at all, only after the 'more important' problems have been resolved.

I suggest that if design addressed gender seriously it would be able to fully understand that although professional designers have 'long argued that ... [they] represent the human being and the human dimension of product development', they no longer have to struggle to come to terms with the fact they do not 'possess special knowledge about what people want and need' (Buchanan & Margolin 1995: xiv). Design's creative energies could then be applied to possibly revolutionary ideas for development, both in the North and South.

CONCLUSION

Design treats women is much the same way as development is addressed. There is the patriarchal assumption that 'we' know best and as a consequence we rarely look at alternatives. Development agencies are adopting participatory approaches and dealing with issues of empowerment, but design has a long way to go. At present design models are largely incompatible with those of development and consequently there is a lack of awareness of the issues by both parties. Through the OCS indigenous designers are being sold a model of design that is fossilised and can make no use of technological innovation. Production methods might be incrementally improved but the artifacts produced remain firmly situated in the tradition and decoration department and continue to be for export.

Southwell (1995) has suggested that design could take a participatory approach, using and adapting a development model in order to improve the process of design. It could also help make those involved in development aware of what design has to offer. Attention to the '4 Cs' discussed earlier could provide an accessible design discourse which, if used alongside participatory methods, could help bring design and development together. A discourse that can be mutually understood is necessary if the work of designers is to 'contribute more concretely and effectively toward a more humane existence in the future' (Rams 1989: 113).

Design is critical for the integration of technology into social structures, for making technology accessible and creating identities and consequently culture. Obviously technological progress has to be approached with caution to avoid the linear model highlighted by Norgaard (1995: 55), where 'better science leads to better technology and more rational social organisation and thereby to more material well-being through more effective control of nature'. However, unless technological progress is allowed to play a part in the products being designed and manufactured, the current state of stasis will remain. It is also important to remember that tacit knowledge has to be allowed to develop or it too will stagnate. I would suggest that imagination is needed to explore the possibilities of technological integration, to break down the barriers built by the OXFAM CATALOGUE SYNDROME. Design could provide the method to do this.

There has to be a recognition that technology is not a 'universalism' and that 'naturalism' cannot be used to explain the status quo with regard to women's involvement with technology. Equally, it has to be recognised that 'universalism' and 'naturalism' cannot be used to justify the status quo with regard to products designed and manufactured in the South. I am not suggesting that the production of handmade crafts be abandoned completely, or that it is in some way bad. Like technology, it exists in a globalised social structure and is only negative when seen as the 'other'. I am arguing for a pluralistic and creative approach to technology, one, or rather several, which may involve handmade artifacts, batch production, mass-production etc., running in parallel and occasionally converging. An approach which gives the producer and user control over what is being produced. As a designer, I perhaps not surprisingly believe product design practice has much to offer the transformation of technology. Not transforming through unattainable 'magic and miracles', but by 'spilling' the secrets of the magic circle.

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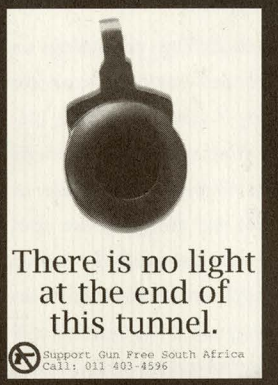

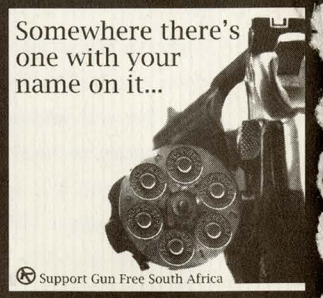

Hannes van Eeden - campaign for Gun Free South Africa

Olivier Schildt - fund raising campaign for Pretoria Child and Family Care Society