
Industrial Design education and South African imperatives

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The first tertiary programme in industrial design in South Africa was offered at the School of Art, Johannesburg (SAJ) at the start of 1963 (Wood 1963:88). The SAJ then became the Technikon Witwatersrand (TWR) in 1979 (Brink 2006:119) and finally the University of Johannesburg (UJ) in 2005 when it was merged with the Rand Afrikaans University (RAU). This was the only programme in industrial design in South Africa for 25 years, until the establishment of a second one at the Cape Technikon¹ in 1988 (Verveckken 2007) and a third in 2008 at Tswane University of Technology (TUT). Since the curriculum for any technikon programme was controlled by the convener technikon, which in the case of industrial design was the TWR, the two technikon programmes have maintained many similarities particularly in terms of the curriculum (Verveckken 2007) and the TUT programme has been started by an industrial designer educated at the TWR. Both UJ and CPUT have been required to cater for the growing demand for designers in industry and have only as recently as five years ago been increasingly pressurised to expand areas of design study from vocational training into research at post-graduate level. In keeping with all tertiary offerings in the country, the unique political and economic challenges facing South Africa have demanded a reconsideration of what is taught and how it is taught.

Unfortunately the changes that industrial design education has undergone in South Africa since its inception and specifically how it has been adapted to suit the products and projects required by a developing African continent have not been documented. In this article I do not attempt to write a history of industrial design education, but explore three significant influences on the programme currently offered in the Faculty of Art, Design and Architecture (FADA) at the University of Johannesburg (UJ). These three influences are the historical beginnings of the department; recognition of the socio-economic setting in the country; and the focus on design for development. With regard to the latter, particular reference is made to the International Council of Societies of Industrial Design (Icsid) Interdesign workshops participated in by the Department in 1999 and 2005. The intention is to indicate how, through a timely evolutionary process, the first programme in South Africa has moved from initial beginnings with an approach based on colonial ties, to becoming something truly South African with a curriculum and the teaching of additional design processes more suited to a South African context.

Historical beginnings

It is important to understand the underpinnings and context of the initial programme at the SAJ since it was the seed that led to the three industrial design programmes offered today. The programme at SAJ was personally implemented by Philip Botha² in 1963. Botha was a graduate of the Central School of Art in London (CSA) during the late 1950s (Brink 2006:88). Although Botha studied applied art, he spent much of his time absorbed in his passion which was industrial design. The Central School of Art had established a course entitled

Design for Light Industry in 1938. This was the forerunner to the Department of Industrial Design, developed after a post-war reconstruction by its principal William Johnston (CSAD 2007). Botha spent an additional year at the CSA after receiving his qualification, working as a postgraduate student and gathering information to create a methodology for teaching industrial design in South Africa (Botha 2007). He immersed himself in the teachings of the lecturers at the CSA in industrial design and is able to recall all of their names (Botha 2007): Allen Pratchet, Robert Adams, Walter Scott, Jock Miller, Robert Walsh, Arthur E. Hallowell and Prof Bruce Archer who 'was instrumental in leading the designers of his generation to accept that their discipline was just that, a discipline, with its own requirements for systematic research and methodological rigor at all times' (Times Online 2005).

In December 1944 the Council of Industrial Design (CoID) was launched in Britain. It had a powerful influence on design education through its publications and exhibitions specifically intended to create a better public awareness of design. Products displayed at the *Britain Can Make It* exhibition in 1946 as exemplars of good design exhibited the simple stripped-back aesthetic preferred by the CoID (Jackson 2007). In an article published in the first issue of *Design*, a journal published by the CoID, Gordon Russell (1949:2) described what both he and the CoID classified as good design: 'Good design always takes into account the technique of production, the material to be used, and the purpose for which the object is wanted'. This statement closely follows the Modernist tenant of 'form follows function' and can be employed to frame the type of design education and ideologies Botha received in London in the 1950s and his perception of what an industrial design programme should consist of in South Africa.

When the South African programme was initiated it had very defined ties with the country's manufacturing industry. Opposite the SAJ Bok Street campus were multiple manufacturing factories which the industrial design students visited as part of their training to gain an understanding of manufacturing techniques (Botha 2007). The exhibition of the first group of students to graduate in 1967 was attended by many people from the manufacturing industry and this emphasised the technological approach the programme had adopted to the designing

of products for mass manufacture (Botha 2007). The industrial design programme offered at the SAJ was also greatly influenced, although slightly later, by the Design Institute South Africa (DISA), a branch of the South African Bureau of Standards (SABS) which was founded in 1965. DISA saw as part of its goal the need to have 'steps taken to put design education on a healthy track. However, since the Institute was modelled on the British Design Council and staffed by British citizens, the emphasis was on the first-world component of the country's population' (SABS Design Institute 2007a).

Philip Oosthuizen, presently a senior lecturer in the Industrial Design Department at UJ and a student of the industrial design programme offered at TWR from 1981 to 1983, echoes this sentiment. Oosthuizen (2007) remembers when he was studying the distinctly first world focus of the types of products given as design exercises, as well as a first world marketing emphasis of those products in subjects such as product graphics and packaging. Also of importance, according to Oosthuizen (2007), was the fact that the initial programme was taught by lecturers mostly from an industrial arts teaching background; this together with the vocational approach to learning tended to result in a very hands-on workshop-based offering with little focus on research.

Socio-economics and the emergence of design for development

From its inception, industrial design has typically been a white male dominated practice and discipline. As may be expected, the initial programme at SAJ was no different (this can be evidenced through student enrolment figures). The social and economic circumstances of many of its students would have been a seemingly first world British colonial perspective. The curriculum content therefore suited this context and little attention was devoted to the realities that were ignored by the prevalent systems of apartheid. Botha (2007) stresses that he had fought the 'powers that be' responsible for preventing non-white students from studying at the department, but to no avail. Although Botha obviously did have an understanding of the injustice of apartheid, the way it

segregated what could be classified as developed and developing elements of South African society was highly effective and pervasive. The needs of diverse communities thus received little emphasis in teaching. Design projects dealing with issues of disability and design for the elderly were undertaken by students, but utilising a very Eurocentric approach.

The late 1980s and early 1990s witnessed a realisation that the industrial design programme needed to change. The intense struggle to abolish apartheid in the 1980s and the period after the first democratic elections in 1994 revealed the realities of segregation in South Africa in a glaringly obvious manner. Industrial designers and design educators started to challenge the status quo and question the world in which they lived. The profound effect that industrial design could have in improving people's lives was a logical progression of this type of thinking. In response to this, both lecturers and students from the TWR began briefing and undertaking design projects more appropriate to a developing South Africa. Many of these projects adopted a difference in approach to the typically consumer-driven mass production of first world products previously expected to be outcomes of the programme. Community-orientated projects undertaken from 1989 can in essence be categorised into four groupings, namely: special needs, particularly for the disabled and shack dwelling communities; energy saving devices; recycled materials; community skills development (see Figures 1 to 4 for examples).³

These projects were underpinned by awareness and understanding on the part of lecturers that industrial design in South Africa could not simply duplicate a British model of industrial design. Content and a design process that suited a developed country could not possibly completely suit a country like South Africa which had a distinct dichotomy of developed and developing society. The DISA also realised that very little attention had been paid to this developing component of society and in 1990 the Institute outlined a more inclusive strategy with its most significant consequence being the founding of the Design for Development Initiative (SABS Design Institute 2007a). This Initiative proposed that the design culture of a country should be relevant to its socio-economic needs; together with the fact that the flexibility of design enables it to address problems of unemployment,

underdevelopment, environmental issues and poverty; design could become a very important role-player in sustainable economic development in southern Africa (SABS Design Institute 2007b).

This broad perspective on the role of design in sustainable economic development was in tandem with thinking in developing countries such as India. Victor Margolin (2007:112) contends that after Victor Papanek's seminal text *Design for the real world* was published in 1971,⁴ 'design for development became associated primarily with low technology projects that addressed community survival needs more than they contributed to national development strategies'. Margolin highlights the *Ahmedabad Declaration on Industrial Design for Development* (1979) as having a very different approach to its understanding of design for development. The publication is the tangible outcome of a conference held by India's National Institute of Design (NID) which resulted from a memorandum signed between the United Nations Industrial Development Organisation (UNIDO) and the Icsid in April 1977. Margolin (2007:112) emphasises the fact that the memorandum was signed by the UNIDO and not the United Nations Development Programme (UNDP) 'reinforcing the fact that the UN originally understood design to be part of the process of industrial development rather than a partner in the humanitarian effort to alleviate poverty'. Margolin (2007:13) examines the *Ahmedabad Declaration*, and emphasises that '[w]hile the declaration acknowledges that design in developing countries had to utilise "indigenous skills, materials and traditions", it also stated that design had to absorb "the extraordinary power that science and technology can make available to it."' This perspective, Margolin believes, may be viewed as a significant compliment to Papanek's community-oriented ideas about development. This view that high technology and mass manufacture can be of great benefit to community-oriented development projects, even when integrated with seemingly opposing indigenous skills, materials and traditions, has had a great influence on the UJ Department of Industrial Design's attitude towards community-centred design projects.

While the *Ahmedabad Declaration* crystallised some ideas about design for development, other international initiatives also contributed to the approach adopted



Figure 1: An example of a special needs project: a multifunctional pushchair for handicapped children. M-Dip Tech project: Philip Oosthuizen, TWR, 1992.



Figure 2: An example of an energy-saving project: a clf (low energy bulb) lamp. Third year TWR student project, 2001.



Figure 3: An example of a product that considers recycling: coathanger made from recycled extruded plastic. Second year UJ student project: Victor Bezuidenhout, 2007.



Figure 4: An example of a community skills development project: jewellery designed to be made by the Elim community. Third year UJ student project: Christie Davidson and Melissa Nijhuis, 2007.

by the Industrial Design Department. One such initiative was the Icsid Interdesign Workshops. Icsid have not only played a role in furthering the interests of design across a broad front but have been practically involved in promoting collaborative design workshops worldwide. Since 1971 Icsid's Interdesign Workshops have been devoted to analysing, developing and solving issues of international significance. Generally hosted by an Icsid member society, Interdesign Workshops are forums in which designers from different countries and cultures work together with local experts for an intensive two-week period exploring design issues of regional, national and global importance. These workshops seek to provide innovative and appropriate solutions intended for implementation. Over the years, workshops have covered a broad range of themes, including design for the environment, specific user groups, specific materials, product development strategies and legislative guidelines (Icsid 2007). Two Interdesign events have been held in South Africa and both are relevant to the development of the Department of Industrial Design at UJ. Students and lecturers from the Department were involved in both these workshops and the approach Interdesign workshops had to solving community problems through design had a profound influence on the way the Department continued its teaching.

Interdesign workshops and the consolidation of 'Design for Development' at UJ

In 1999 DISA funded and organised an Interdesign event entitled *Interdesign 1999: Water*. The South African event ran concurrently with one in Mexico and one in Australia. The South African event focused on the clean harvesting and storage of rainwater, accessories for the conservation of water, costs involved in supplying water, as well as the distribution, transportation, conservation and sanitation of water (Kruger 1999:2). The concept of international designers coming together for a two-week period and brainstorming ideas to solve water-related issues in South Africa was commendable; however, the single biggest downfall to the South African *Interdesign 1999: Water* was that not a single design solution went any further than the conceptual phase. In 2005, the DISA

organised and co-sponsored their second *Interdesign*, this one titled *Icsid Interdesign 2005: Sustainable Rural Transport*. It can be seen that lessons were learnt from the first workshop through the inclusion of 'sustainability' in the second workshop's title as well as the specification of outcomes being defined prior to the workshop. BTEch students (4th year degree students) from the UJ Department of Industrial Design had been involved in *Interdesign Water 99* together with lecturer Chris Bradnum, so when a second Interdesign workshop was organised, the Department was again approached by DISA to participate, as were students and lecturers from CPUT.

*Interdesign 2005*⁵ was not just a project dreamt up as a good design exercise. In 2002 the South African Bureau of Standards was approached by the North-West provincial government to develop specifications for the building of a donkey cart for specific local uses (Kruger 2005: 4). This request highlighted the problems surrounding rural transport in southern Africa and in 2003 the DISA decided to present an Interdesign workshop as an approach to addressing the issue. In 2004, together with the South African National Department of Transport (DoT) as funders, Icsid and the International Council of Graphic Design Associations (Icograda) were approached for their endorsement. Documents relating to transport issues in South Africa were collected, experts⁶ were found and briefed about the event, a website was developed and an active planning phase was entered into. Finally from the 3-6 April 2005 'designers from 15 countries gave of their time and design capabilities to come up with viable and sustainable solutions to challenges surrounding non-motorised rural transport in developing communities' (Kruger 2005:4). An important question asked by the DISA was why should a project of this magnitude focus on non-motorised rural transport in this high technology age? The answer was simple considering the statistics from the National Travel Survey undertaken by the National Department of Transport in 2005: more than 60 per cent of rural households in South Africa (13.5 million people) claim that motorised public transport is not available or inaccessible for them. In addition, aggravating the situation is that of the almost 16 million children who travel to school every day, 76 per cent (12 million) walk and about 5 per cent (550 000) of these pedestrians spend more than two hours a day on their journey (Kruger 2005:4).

Interdesign 2005 was organised into four separate focus areas, namely, animal-drawn carts, bicycles and tricycles, alternative modes of transport, and communication. As part of the bicycle and tricycle team, the author was able to document the experience firsthand. Although design of the prototypes and their eventual manufacture are of great importance, of greater relevance to this article is how the 2005 workshop led to new developments in the industrial design programme at UJ. These relate specifically to a review of the design process, systematic and active participation of the community, and finally, research development.

Design process

The typical industrial design process taught to students at UJ is shown in Figure 5. The diagram simplifies what is in fact a very complex procedure and what has become an area of design research in its own right. It is included to highlight its linear approach to a design solution as well as, in the majority of cases, the incorporation of little or no input from the user in the designing of the product other than possible market-testing.

What was required for the *Interdesign 2005* to be successful was something rather different. The end result was still a product, but in order for that product to be accepted by the community and in order for the product to suit the needs of the user, the community had to be actively involved in the design process. Since 1971 Icsid have used a loose formula of community engagement in their workshops around the world. This formula is not a defined interaction between designer and community, but a far more informal understanding that the designers, in many cases, are from different backgrounds to the communities they are designing for, so specific interaction is necessary for a successful solution to community problems. There were ten individuals in the various teams that were brought up in rural areas of southern Africa, but the majority of the designers involved in *Interdesign 2005* had absolutely no experience in designing products specifically for rural transport, and even with the involvement of experts from relevant disciplines outside of design, the community ultimately knew far more than the designers with regard to their transport needs.

Figure 6 is a diagram that was created at the *Interdesign* workshop to try and capture what happened in the bicycle and tricycle team during the two-week workshop. A similar process was used by some of the other teams as well. The design process started as a typical industrial design project, but it was soon realised that the designers in the team had serious mis/preconceptions about what was acceptable to the community in terms of aesthetic, function and ultimately requirement. The most important thing learnt by both designers and students in the team was the value of the information gathered from people in the community. The easiest way of getting relevant information was to include people from the community as much as possible at all stages of the design process. This was done either by taking the designing out of a studio environment and into the community or bringing the community to the design table. Feedback was gathered through translated questionnaires, sketches and verbally with the assistance of translators. This tended to create a process of 'two steps forward and one step back' which at times was frustrating, but even at a slower pace the team could clearly see the results of design concepts that were headed in the right direction.

Much design research has been undertaken worldwide in design processes such as 'user-centred design', 'inclusive design', 'design for all', 'USERfit' and 'participatory design',⁷ categorisations that all relate in some way to the design process including the user to a much greater extent than the traditional industrial design process. Although there were two experts in design and community interaction at the *Interdesign 2005* (H du Plessis and Prof MP Ranjan), what generally happened at *Interdesign 2005* was an attempt in involving the community in the design process based on the approach of previous *Interdesign* workshops. There was a learning curve for all involved with regard to successful interaction with the communities. This was where the industrial design programme as offered at UJ gained its most beneficial insights. Initially due to time constraints, members of the workshop were bussed into the rural areas in luxury coaches *en masse*. This highlighted a rather ironic contrast, designers arriving in first class air-conditioned transport to try and solve local transport problems for people who had very little access to transport let alone luxury coaches. The mass convergence on the communi-

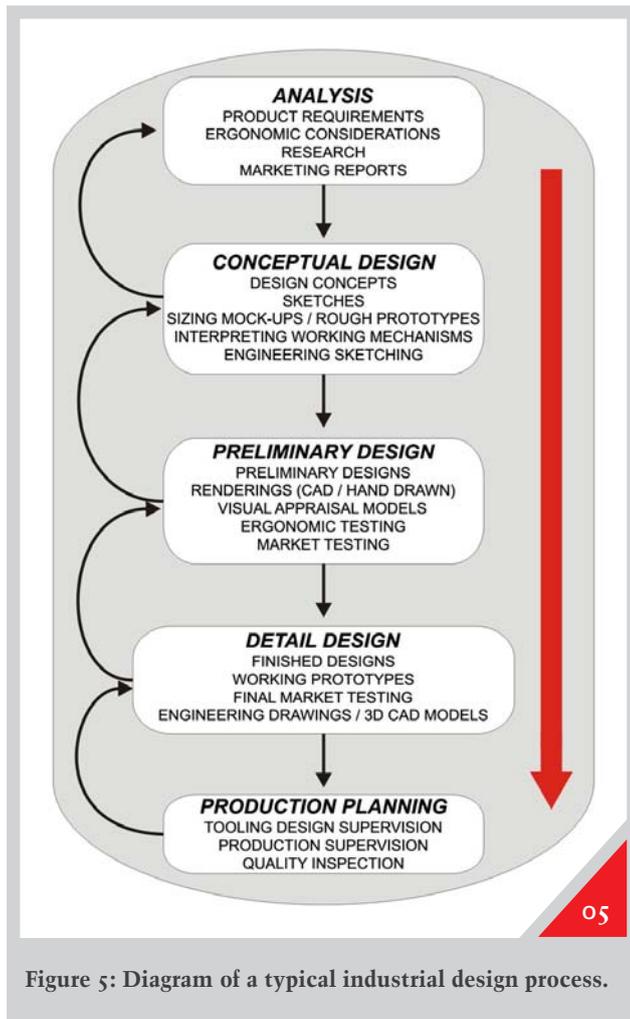


Figure 5: Diagram of a typical industrial design process.

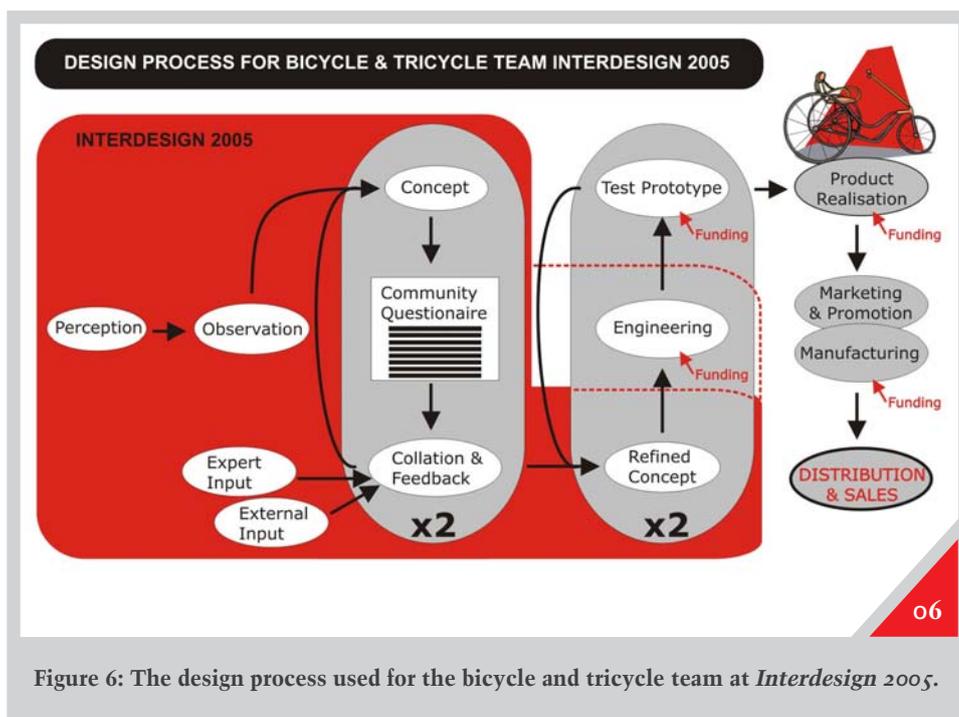


Figure 6: The design process used for the bicycle and tricycle team at *Interdesign 2005*.

ties rather than creating a comfortable discussion platform became an atmosphere of the observed and the observer (see Figure 7).

The members of the bicycle and tricycle team voiced their discomfort at the situation and, after the first weekend of visits, used far less imposing transport, and would arrive at communities with only a handful of designers. The team designed questionnaires (both visual and textual) relating to transport solutions that they felt would suit the communities based on their initial impressions of what they had seen (Figure 8). The first set of feedback highlighted to what extent personal agendas and preconceptions had clouded the designers' initial judgments. After interacting with the communities on a more casual, less intimidating level (two designers per group questionnaire) and by focusing on specific user groups by need (transport for women, transport for children, load carrying transport and modular transport), far more accurate information was gained from the local communities. However, even with this much more successful level of interaction, the two-week period only provided sufficient time to generate solutions to concept level (Figure 9). The lecturers from the UJ Department of Industrial Design, through their involvement in the different groups, began to understand the real need for design of a community centred nature in South Africa, and at the same time became very aware of their inadequacies in understanding the appropriate process for such design interaction.⁸

Implementation, systematic testing and community participation

In order to further their exploration into community centred design, the Department continued their involvement in the *Interdesign 2005*. In 2006, BTech students developed engineering drawings (which could be used for mass manufacture) for four different conceptual solutions, namely the Z-frame kid's bicycle (Figure 10), the 'Tin-Lizzy' single-axle donkey cart (Figure 11), the 'refurbish' single-axle donkey cart (Figure 12) and the double-axle donkey cart (Figure 13). These drawings were then used to manufacture working prototypes at 2M Sporttrailers

in Johannesburg (Figure 14) with funding from DISA and the DoT. During March and April 2007, three lecturers (including the author) and four BTech students from the UJ Department of Industrial Design were involved in the practical testing of the carts and bicycle prototypes manufactured in 2006 in one of the communities involved in the initial workshop. Students and lecturers lived in the rural homes of people in the Pitsedisulejang community for the ten-day period during which testing was undertaken. They had no access to transport other than that available to the community and by being physically immersed on a one-to-one basis with members in the community, a far better understanding of transport issues was gained. This differed greatly from the *Interdesign 2005* workshop where the designers stayed in the comfort of a hotel and visited the communities for short periods of time in order to question community members.

In 2007, community members were still interviewed with questionnaires (Figure 15) but in addition, the physical prototypes were tested. People in the community could see, touch, sit on and try out (Figure 16), allowing for far better in-depth feedback. Many of the community members had used donkey carts and bicycles their entire lives and were true experts in their understanding of the conditions the prototypes would need to work in. It was people in the community who highlighted design inadequacies and pointed out design successes in the prototypes. Running changes were made to the carts and bicycles where possible (Figure 17), bigger changes were noted to be undertaken back at UJ with machinery that was not available in Pitsedisulejang. One of the major inadequacies highlighted on this trip was the need for a low cost simple harness system for the donkey carts. A basic harness design had been conceptualised at *Interdesign 2005* and material was brought with the students to Pitsedisulejang. Together with members of the NSPCA and John Sneed from the Fort Hare University Animal Traction unit, an initial, although not completely satisfactory, solution was found (Figure 18). The local cart users helped in the making of the harnesses, gaining skills in their manufacture and learning some important animal husbandry from the NSPCA.



Figure 7: Members of *Interdesign 2005* workshop interviewing donkey cart owners *en masse* in the North West Province, 2005.



Figure 8: A member of the bicycle and tricycle team using a visual questionnaire to get school children's feedback regarding a bicycle designed for transport to and from school, 2005.

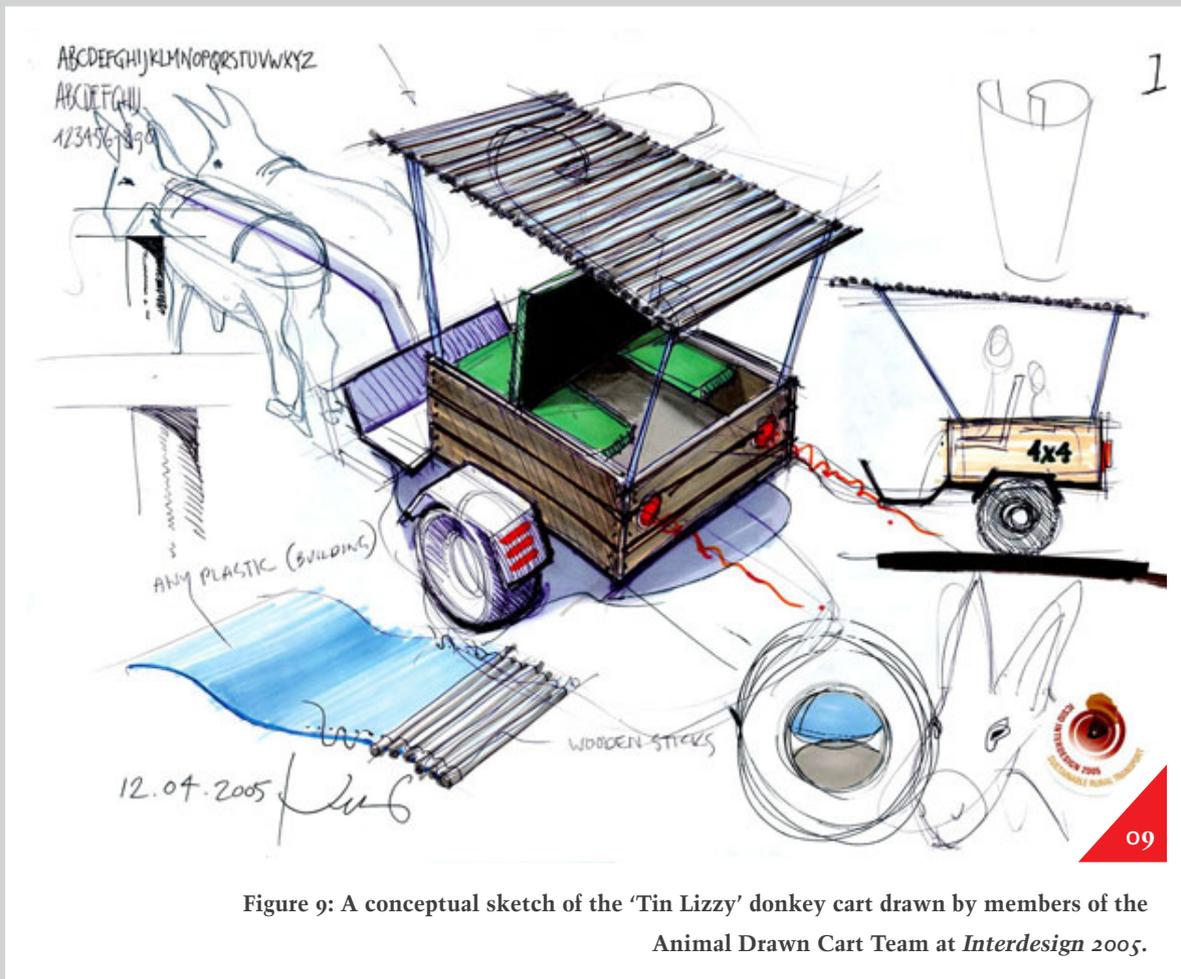
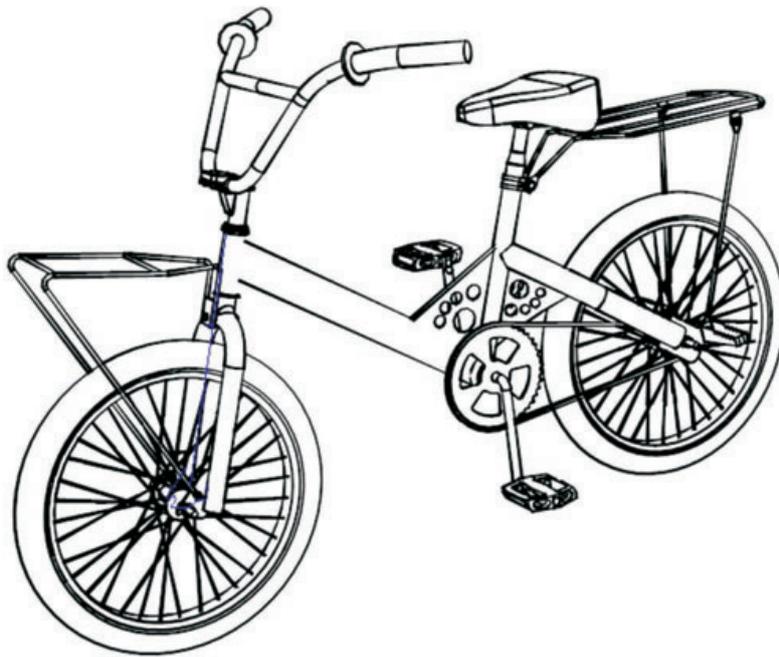
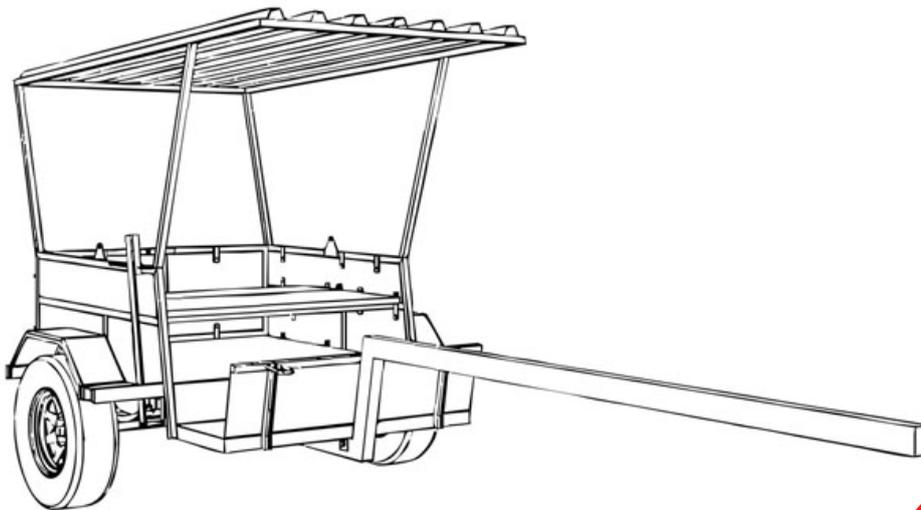


Figure 9: A conceptual sketch of the 'Tin Lizzy' donkey cart drawn by members of the Animal Drawn Cart Team at *Interdesign 2005*.



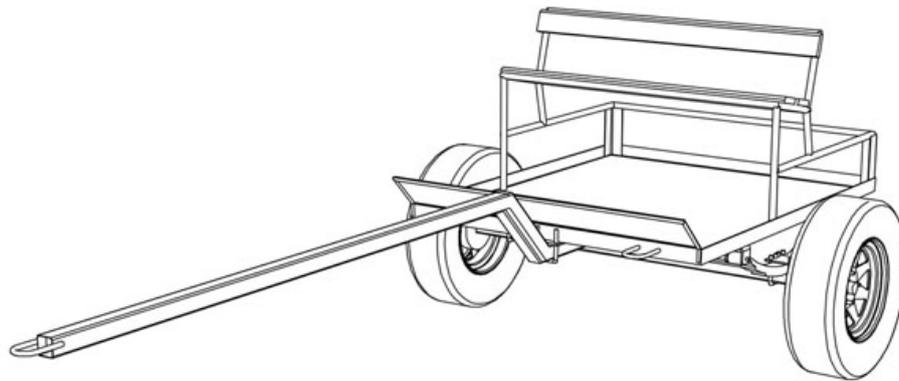
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Figure 10: A CAD isometric view of the Z-frame kids bicycle, UJ BTech Industrial Design students, 2006.



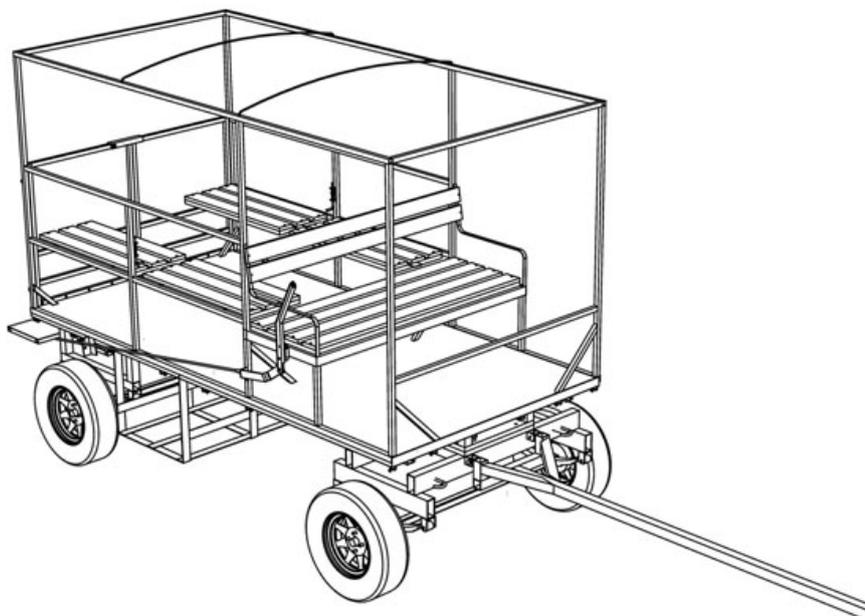
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Figure 11: A CAD isometric view of the 'Tin Lizzy' single-axle donkey cart, UJ BTech Industrial Design students, 2006.



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Figure 12: A CAD isometric view of the 'refurbish' single-axle donkey cart, UJ BTech Industrial Design students, 2006.



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Figure 13: A CAD isometric view of the the double-axle donkey cart, UJ BTech Industrial Design students, 2006.



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Figure 14: The manufacturers undertaking the final touches to the double-axle cart at 2M Sporttrailers in Johannesburg, 2007.



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Figure 15: BTech Industrial Design student interviewing a local cart owner in Pitsedisulejang, North West Province, March 2007.



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Figure 16: Community members testing the water carrying capabilities of the 'Tin Lizzy' single-axle donkey cart prototype, March 2007.

The difficulties the students and staff faced living and undertaking a project in the Pitsedisulejang community were similar to those faced by community members themselves. There was limited access to electricity, where electricity was available it was metered and was such a precious commodity that it felt an imposition to use too much. Where it was initially planned to work at night



Figure 17: The *dissel boom* on the 'Plain Jane' donkey cart is shortened according to community feedback regarding its length, 2007.



Figure 18: Cart drivers from Pitsedisulejang help to make donkey harnesses, learning the process as they go, 2007

on computers documenting the day's findings, the students had to revert to pen and paper, keeping digital photographs on their cameras for organisation on return to the UJ campus. The availability of donkeys in the community was also problematic because the animals were used for their owners' livelihood and worked fetching water and firewood during the day. Some of the changes necessary for the carts required machinery not available in Pitsedisulejang; these changes were in most cases simplification of the original designs to reduce cost and weight and to increase longevity. There were also functional changes necessary to hitch up the donkeys, highlighting the difference between designs on paper and the practical testing of the prototypes on live animals. The 2007 industrial design students, on their return to Johannesburg, edited the 2006 technical drawings to reflect the changes identified from community feedback and the personal experience of living in the community for ten days. These changes were in some cases undertaken at external manufacturers; otherwise they were made in the workshop in the UJ Department of Industrial Design.

The project did not end at this juncture; final prototypes of the three carts, the final bicycle and a new harness system were tested in May 2008 in Dwarsberg, North West Province. This testing was undertaken by the 2008 UJ BTech Industrial Design students and the same lecturers involved in the project from the *Interdesign 2005* workshop. Dwarsberg was identified in the previous Pitsedisulejang testing as an ideal spot to test the final designs because of its location. Dwarsberg is situated at a crossroads and consists of a local store including a petrol station, hardware, food and furniture supplies. It serves seven villages (including Pitsedisulejang) in the area and is owned by Johnny Smit who plays a very active role in the local communities. This involvement also extends to his organisation of yearly donkey-cart races with sponsored prizes.

Testing at the Dwarsberg site included the evaluation of a new harness manufactured with a new material and based on feedback from the 2007 survey.⁹ The testing of the final prototypes and harness included a day where about 25 carters and their carts came from the surrounding villages to give their feedback and to test the prototypes (Figures 19-21). The volume of carters giving their

input helped to highlight design considerations that were not brought to the students' attention in the 2007 testing. In this round of testing the students and lecturers stayed at J Smit's lodge right next to the shop. This allowed for evening discussions and computer work (Figure 22), as well as facilities that could enable the students to make the final changes to the prototypes. The facilities were not too removed from the local community and were better suited to this stage in the testing process. While testing in 2007 clarified the situation related to community needs for rural transport, this round allowed for the generation of solutions that balanced community needs and mass manufacturing.

The final outcome of the testing at Dwarsberg were the three donkey carts and the bicycle with final changes made *in situ*, as well as the development of a set of manuals to visually and textually explain to local artisans exactly how to manufacture each of the carts and the bicycle. These manuals are due to be tested in the area in 2009. The plan is for the Dwarsberg store to supply the required materials for the carts' manufacture and for the local artisans to manufacture carts from the manuals generated by the 2008 students (Figure 23). The final prototypes of the carts and bicycle will be tested at the SABS in Pretoria. This testing will contribute to the creation of a standard for the requirements of donkey carts on South African roads. It is also being undertaken to ensure that if the final designs are sent for tender, they meet all safety requirements for a vehicle carrying loads and for transporting of people. This phase of the *Interdesign 2005* project brings the initiative full circle from workshop to reality. Over the years, the community have progressively seen their interactions with the designers become more tangible, even if the pace is not quite what they had hoped for.

Research development

The need for further research into community-centred design and mounting pressure from the University and higher education to become involved in research, have lead the Department to become actively involved in research within the gamut of what has been termed 'Design for Development'. Excluding the *Interdesign* workshops, a post-graduate project has included an exploration of



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Figure 19: Donkey cart owners and local community members examine the latest 'Tin Lizzy' prototype in May 2008, Dwarsberg, North West Province.



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Figure 20: Donkey cart owners examine the new harness system designed by the BTech students, May 2008.



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Figure 21: The 'Plain Jane' donkey cart and harness system being tested on Dwarsberg roads, May 2008.



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Figure 22: UJ Industrial Design staff members, BTech students and experts discuss the day's findings and community feedback.

the design process, specifically with a focus on user-centred approaches to industrial design.¹⁰ Staff members have also investigated what design for development means in other developing countries around the world¹¹ and supervised post-graduate research in developmental design projects.¹²

Under the umbrella of design for development research, the Department and its students have engaged in the conceptualisation of a product to aid rice harvesting in India, a water filter project in Venda, an African soccer boot design in Mozambique and a low-emission coal stove design, also in Mozambique. This article does not allow for expansion into each of these projects but simply high-

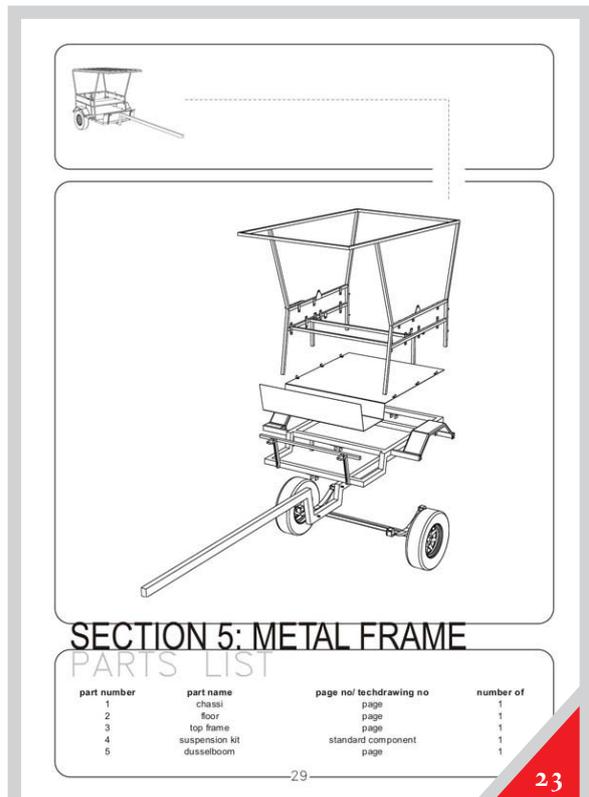


Figure 23: A page from the 'Tin Lizzy' 'do-it-yourself' manufacturing manual.

lights that all of them entail an element of community-centred design in conjunction with the latest developments in industrial design technology, communication and manufacture found in the global arena.

Conclusion

James Fathers (2001) provides a very concise overview of literature relating to the cyclical nature of interest in design and development in a paper presented at the Design Education Forum of Southern Africa conference *Mapping New Territories in Design Education*. Fathers highlights that 2001 saw another world-wide wave of interest in design for development. He suggests that the interest seemed to be of a purely academic nature and, with few exceptions, not 'quick and dirty' approaches which acknowledged participating with local people to identify local needs and provide sustainable answers (Fathers 2001:1). In a way Fathers laid down a challenge that has been taken up by the programme at UJ and described in this article.

The UJ Department of Industrial Design has included an increasing number of projects using an *Interdesign* type design process (Figure 6) in its teaching programme. These projects include more user or community interaction, which ultimately, in comparison to the traditional design process (Figure 5), promotes the acceptance of new products by the user or community because they have been included in the design process and the product is designed specifically to suit their needs and not the designers' interpretation of their needs. The teaching of this design process is better suited to South African contexts because of the need to use design to the benefit of both developed and developing society.

The community-centred process of design development undertaken in the *Interdesign 2005* project together with the benefits of the technological mass production of traditional industrial design, echo Margolin's (2007) point of view regarding the power of such an approach. Projects of this nature are also a convenient and appropriate platform to respond to national and university imperatives for research development. They create opportunities for cross-cutting research and practice – in faculty and across faculties and institutions. The inter-

disciplinary nature of the *Interdesign* workshops brings a wide range of skills and disciplines into a community-centred project which is vital for the success of such interactions. In addition, developmental design projects can bring business, government and education into collaborations that improve the likelihood of sustainability. The realisation of design solutions which answer to problems for developing South Africa could not be a better addition to an African programme in industrial design. Students' practical involvement in projects such as the *Interdesign 2005* promote positive outcomes in terms of their exposure to the broader society in which they live as well as providing hands-on work experience. In order for design for development to successfully engage with societal issues, students need to be educated in methods of designing that suit a developing context as well as the developed market, the dichotomy that makes South Africa so unique.

Notes

- 1 The second industrial design programme in South Africa was set up and headed by Bev Gower at the Cape Technikon in 1988 (Verveckken 2007). Bart Verveckken was employed at the Cape Technikon in 1990 as its first industrial design qualified lecturer. He had been educated in Product Development in Belgium in 1978 and had worked at the TWR in a part-time capacity in the Department of Industrial Design from 1986 to 1988 (Verveckken 2007). Verveckken is presently the Head of Department of the Cape Peninsula University of Technology's (CPUT) Department of Industrial Design.
- 2 Philip Botha was telephonically interviewed on the 11 July 2007. Botha is currently retired after working for the Department of Education in general education curriculum inspection.
- 3 For a documented list of projects from 1989-2008, see Campbell 2008.
- 4 *Design for the real world: human ecology and social change* originally published in 1979 was revised by the author in 1985.
- 5 For more detailed information relating to *Interdesign 2005*, visit the website <http://www.interdesign2005.org.za>. See also articles by R van Zyl and H du Plessis published in *Image & Text* 12, 2006.

- 6 Experts were sourced to interact with design groups on social, gender, as well as technical topics and issues. Experts were drawn from the: R & D division of the SABS; National Department of Transport; North-West Provincial Government: Department of Transport, Roads & Public Works; Bojanala Platinum District Municipality; CSIR: Roads & Transport Technology (Transportek); CSIR: Manufacturing & Materials Technology (National Product Development Centre); National Society for the Prevention of Cruelty to Animals (NSPCA); Donkey Power Consultancy; University of Pretoria: Department of Visual Arts, Information Design division; Hahn & Hahn Inc. Intellectual Property Lawyers; Cyc-ous Bicycles; Tracka Trekka donkey carts; Bicycling Empowerment Network; Kingdom Tracks; and Valtyn Moshate welding company (Kruger 2005:14).
- 7 More information on these topics at:
User-centred design: Black, A. 2007. *User-centred design*. Design Council, <http://www.designcouncil.org.uk/en/About-Design/Design-Techniques/User-centred-design/>
Inclusive design: Inclusive design toolkit, <http://www.inclusivedesigntoolkit.com/>
Design for all: European Design for All e Accessibility Network, <http://www.edean.org/>
UserFit: European Design for All e Accessibility Network, <http://www.edean.org/index.php?row=3&filters=f16&cardIndex=21>.
Participatory design: Sanoff, H. 2007. Editorial: special issue on participatory design. *Design Studies* 28.
- 8 It is of interest that the Department of Industrial Design at Cape Peninsular University of Technology (CPUT), which also participated in *Interdesign 2005*, has also included more community-orientated and developmental projects than when it began in 1988 (Vervlekken 2007).
- 9 The harnesses tested in 2007 were made from off-cut conveyer belt rubber. This material was cheap but unfortunately was too rough on the skin of the donkeys and created welts.
- 10 Bradnum, C. 2007. A study of domestic paraffin stove design factors in South Africa. MTEch dissertation, University of Johannesburg.
- 11 Lecturers from the UJ Department of Industrial Design lectured at and facilitated a rice research project at Jahangirabad Media Institute in India from 2-24 September 2006.
- 12 Fowler, R. 2005. The design of a wax-burning stove. MTEch dissertation, University of Johannesburg.

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