FLUX: Design Education in a Changing World

DEFSA International Design Education Conference 2007

First Author;

Hester du Plessis
Senior Research Fellow
Faculty of Art, Design and Architecture (FADA),
University of Johannesburg.
South Africa.
e-mail: hesterd@uj.ac.za

Second Author;
Chris Bradnum
HOD Department of Industrial Design
Faculty of Art, Design and Architecture (FADA),
University of Johannesburg.
South Africa.
e-mail: bradnumc@uj.ac.za

Collaborated design based research – the changing landscape

Abstract

There is growing international recognition for the complexity involved in design research. The market driven design era is progressively shifting towards a more people orientated approach with the emphasis on user centered design. Such people centered design practice lead to a shift in research methodology with participatory action research forging links with design practise. The impact of this shift is intensely felt by design researchers within our University. Not only is the demarcation of the design disciplines within research disappearing but the re-positioning of design education and the design curricula requires designers to come up with new strategies, tools and methods for research. To address this complexity faced by researchers, the Industrial Design Department of the Faculty of Art, Design and Architecture (FADA) organised a workshop/project in India to develop both their theoretical understanding of community based research and to gain practical experience.

The workshop took place at Jahangirabad Media Institute (JMI)[1] which is situated in a small village close to Barabanki and the city of Lucknow. The design team collaborated with the staff and a group of students at JMI to identify problems within the production cycle of rice. Agriculture is the backbone and main activity of rural communities in India and farmers are still dependant on traditional farming methods and tools. The workshop looked at this sector because agricultural production has increased significantly over the past century and in 2001, for instance, India's production of food grains exceeded formal storage capacity[2]. The per capita consumption of food, however, remains low.[3]

We found that, with the increase in development of supportive technology to assist farming practises, the input costs are making the price of food unaffordable and it is not always the farmer that benefits from new technology. Access to high technology is limited and not always the perfect solution for production problems - especially in developing countries - as socio-economical aspects, cultural practises, ideologies and gender all played a role in determining the success of technology transfer processes. We could identify a technological need and embarked on an appropriate design to overcome the problem. India's agricultural sector provided us as researchers with an ideal opportunity to look at production systems and agricultural technologies and to interact with a society that still apply their indigenous knowledge systems and technologies.

Keywords: collaborative research, research methodologies. international research collaboration.

Introduction

Due to socio-political issues - such as global warming - academics are re-evaluating historically embedded practises for appropriateness. In the Industrial Design discipline this process is having a noticeable impact. The dominance of the design discourse by the First World has left one with the impression that design ideas are universally applicable, should be appropriate to all communities and worst of all function in an a-cultural manner (Sanders, 2006). Design, however, is going through an awareness transformation shifting the emphasis from a market-driven approach to a people-centred activity leading to a blurring of boundaries between the design disciplines. This leads to new methodologies (so-called actions) that make design accessible through a more general approach:

[1] FADA signed a MOU with JMI in 2005 for collaborative research projects.
[2] according to A. Balasubramanian of the Centre for Indian Knowledge Systems (CIKS)
[3] A. Balasubramanian, 2002. *Modern dilemmas and traditional insights*. Chapter 4; 74. in Haverkort, 2002. Ancient roots, new shoots. London. Zed Books.

- The action now is in the fuzzy front end of the design development process with a focus on experiential rather than physical or material concerns
- The action in the fuzzy front end is all about new ways to understand and to empathize with the needs and dreams of people (Sanders, 2006).

In the field of Industrial Design assumption can be restrictive as there are a vast number of design needs and practises that fall outside either a universalistic construct or a generalist approach. These are the needs and designs embedded in traditional cultures (also referred to as indigenous knowledge systems – IKS) and used within specific localities according to cultural needs. Furthermore these designs are supported by traditional technologies and manufacturing processes with the support of local specific uses underscored by the local communities' understanding of science. The opportunity exists for design researchers to embrace both these worlds. As no culture or traditional technology should be romanticized or be considered as stagnant, the interface with modern technology could be nurtured to produce surprisingly innovative products. It was with this in mind that three staff members (Chris Bradnum, HOD, Department Industrial Design, Angus Campbell, lecturer Department of Industrial Design and Hester du Plessis Senior Research Fellow) all from the Faculty of Art, Design and Architecture (FADA), University of Johannesburg, embarked on a workshop at Jahangirabad Media Institute (JMI) to work within the local agricultural community.

FADA and the University of Johannesburg signed 4 Memorandums of Understanding with educational institutions in India during the past few years. One of these Institutions is called Jahangirabad Media Institute (JMI). Gauhar Raza, a long standing research collaborator and colleague from the Institute of Science, Technology and Development Studies (NISTADS), CSIR in New Delhi took up the position of Director at JMI during his sabbatical of one year and invited the team of researchers at FADA who work collaboratively under a *Design for Development* project to visit the institution and to teach and conduct research for a period of three weeks. It was decided that the research will be centered on the agricultural process followed during the production of rice which is one of the main crops produced in the surrounding villages. The same FADA team members participated in the Interdesign workshop on Alternative Transport held in South Africa during April 2005. There they gained some valuable insight into the process of working within a community as well as some experience in participatory action research (PAR), a methodology they value. It was decided to use the Interdesign experience as a framework to embark on a smaller but well structured project based on the production process and related systems of rice.

The idea to focus research on *Design for Development* was generated and supported by external factors such as the 1989 decision by the Design Institute South Africa of the South African Bureau of Standards (SABS) to develop a focus on 'design for development' and on design education for developing countries. In 1997 the 'design for development' initiative was officially launched and this lead to the *Design for Development Association* in 2006. In this regard Adrienne Viljoen, Manager of the Design Institute South Africa and board member of the ICSID stated that '*it is imperative to develop strategies that utilize the scientific and technological know-how and the considerable design skills of people of Africa for the development of the continent*'. Our incentive is therefore in support of the principles of the ICSID Interdesign workshops as well as to assist in building capacity in the local South African endeavor of *Design for Development*. The FADA team deemed it appropriate to develop a *Design for Development Research Niche Area* (RNA) in 2002 to form a University based support.

Background

Agriculture is the backbone and main activity of rural communities. In India the agricultural production not only feeds its vast population but it has also increased significantly over the past century and, according to A. Balasubramanian of the Centre for Indian Knowledge Systems (CIKS), India's 2001 production of food grains exceeded formal storage capacity. The per capita consumption of food, however, remains low.[4] With the increased development

[4] A. Balasubramanian, *Modern dilemmas and traditional insights*. Chapter 4; 74, in Haverkort, 2002. Ancient roots, new shoots. London. Zed Books.

of farming supportive technology to upgrade farming practises (such as tractors replacing oxen) the input costs to farm end up making the price of food expensive with low monetary profit to benefit the farmer. It can be argued that high technology is not always the perfect solution for production problems/practises - especially in developing countries. Very often socio-economical aspects, cultural practises, ideologies and gender all play a role in determining the success/failure of technology transfer processes when introducing new technologies. Communities unable to adapt are often marginalised and demoralised to the benefit of big corporations. Due to the vast range of small scale farming in India the rural agricultural sector provided us as researchers with an ideal opportunity to look at production systems and agricultural technologies whilst interacting with traditional societies and their indigenous knowledge systems and technologies.

Rice is grown in a number of countries. We identified India to serve as an example because of the specific methods used by mostly rural farmers as well as the way small areas of land is utilised. In India 63,389 small farms are under I hectare each, 20,092 is 1 hectare and less and 13,923 is 2 hectares and less. This is a model that functions well and serves as a feasible solution for the production of small scale farming in Southern Africa. Neighbouring countries around South Africa are not able to fulfil local demand and statistics show that they received rice aid in 2000 as follows: Angola: 19.8 (000t) and Mozambique 16.8 (000t). In that same year India received 18.4 (000t). India only manage to donate rice in 1980, 1990 and in 1998. India has 155.81 million hectares of arable land. Uttar Pradesh, the province in which we did the project is the area with the highest irrigated rice area in the country consisting of 3549 (000ha). This area around Lucknow falls into the area known as the Gangetic plain.

We incorporated the contributions, knowledge systems and working conditions of women in this project. Why? Dr. C. Gosh reported in her presentation at the Third World Organisation for Women in Science as follows: *'It was reported by census of India (1997) that agriculture employs 70% of the total working population, among them 80% of all economically active women'*.[5] The table accompanying this statement shows that 34.5% of cultivators are women (39.9% are men), 44.2% are agricultural labourers (20.8% are men), 2% look after livestock (2.1% of men) and 18% are involved in other activities such as services (37.1% of men). She further comments that *'Even though women play a predominant role in agriculture, they have been almost completely marginalised from extension services, training and access to productive source. The green revolution in India which focused on increasing yields of rice and wheat entailed a shift in inputs from human to technical. Presently women's knowledge and inputs were now marginalized by technological interventions. Their role in agricultural production thus shifted from being primary producers to subsidiary workers'*. [6] Further statistics reveal that women spend 105.4 days per year in 'shifting cultivation' and men 59.11 days. Some 80 days per year are spent by women and 27 days by men who are involved with 'settled cultivation'. These statistics should be sufficient to address the point that women, on the whole, carry the highest burden of work in the agricultural sector. During our workshop we found women to be very active in the agricultural process and, where possible, we incorporated their role in the design process.

In the area around JMI, which is situated in one of the major rice growing areas of the continent, workers of both sexes are still prepared to harvest the rice for the payment of one bucket for own consumption against every 10 harvested[7]. This unfair practice is not new. In 1946 the Bengal Provincial *Kisan Sabha*, a Peasant's Organization, tried to change this quota system to allow a two-thirds share to the workers. Known as the *tebhaga* movement

---

[5] Gosh, C. 1999, The attitudinal changes in women on social and environmental issues: an Indian perspective; pages 193 - 198, in The Third World Organisation for Women in Science conference proceedings February 1999).

[6] Quoted from Shiva, V 1988. Staying alive. Women. Ecology and survival in India New Delhi: Kali for Women.). In a most revealing statistic (provided by Fernandes and Menon,1987. Tribal women and forest economy. New Delhi. Indian Social Institute.),

[7] Survey done by **Mohan Kumavat,** postgraduate student at JMI during a workshop presented by H du Plessis of FADA in November 2005 at JMI.

this incentive spread throughout the country and young communists assisted peasants to take the harvested crop to their own threshing floor instead of to the rich landlords (*jotedars*). (Forbes,1996; 215 – 216)[8]. An interesting history followed regarding the political mobilization of women in India's rural areas. Despite a number of organized 'struggle' groups, such as the *Telangana people's struggle* that lasted from 1946 to 1951, and other more recent movements run by women activists such as the National Federation of Indian Women (NFIW), gender justice was never achieved as these activists *never advocated emancipation from patriarchy* (Forbes, 1996:222).

A number of efforts were made to understand the plight of women. The Indian Council of Social Science Research, the Centre for Advanced Research in Women's Studies at SNDT Women's University and others looked into all aspects of women's lives and provided some insight regarding women's socio-economical situations, health issues and others. Even though women in India today are able to enter the formal political arena – something that is seen in South Africa as an empowering situation – in India it is obvious that such emancipation is only possible for a small percentage of women. The intricacy of the accumulative facets of women's roles in agriculture such as their socio-economical levels, their cultures and traditions, the traditional farming methods that was ousted during competition with modern systems, religious backgrounds and patriarchal social systems were all aspects to consider and was studied during our research.

At best we were striving towards the development of a team of researchers who are able to develop the necessary skills to cope with such complexities. We therefore maintained a standpoint in this project that:

- Technology should be developed through taking into account the socio-economical aspects of the community.
- The existing traditions and systems should inform the design process.
- Special attention should be paid to women who are bearing the biggest burden in the agricultural field.
- Visual dissemination of the design process (such as video documentation) is important for the sharing of data in a predominantly illiterate community.

Implementation of community based research

The researchers followed Industrial Design principles and accepted methodologies in the development of products to be used in the targeted agricultural community. This methodology is based on a user centred research processes. This means that the design process does not exclusively involves the designers and exclude the users but it is a process that integrates the users (traditional) knowledge of design of products for their specific needs. Developing countries have a variety of contextual localised design needs that could be addressed in this method, ranging from products to assist in the transport of goods, easing labour involved in agriculture as well as easing the domestic burdens such as cooking and house building. Some of the solutions can be found with the use of a high tech design approach to solve problems and depend on the process of design for mass manufacture. This involves special knowledge of design possibilities and of materials used for mass manufacturing. It requires knowledge of systems to develop products that would be cost effective (because of quantities produced) as well as ensuring the marketability of the products. Some solutions lies in looking at existing systems and products and assist in the innovation of these systems and products to be more efficient for the community. It is a combination of the two aspects that we applied in this project.

A number of aspects and issues were prioritised:

- To study the use of IKS within the production cycle of rice.
- To establish the level of scientific knowledge of the rice cultivators.
- To possibly improve the quality of products manufactured locally at cost-effective prices for the local and export market through design innovation.

[8] More details on studies in India are available in Forbes, 1996. Women in modern India. Cambridge, Cambridge University Press.

- To develop industrial design expertise and provide professional practitioners with the knowledge and skills in the above mentioned research areas.
- To identify areas for further research and development within this theme (rice production) that could result in new products and technologically advanced processes.
- To develop a coherent approach in the existing available technology – that will include the indigenous uses of technology.
- To develop an infrastructure to adapt innovative ideas into saleable products.
- To develop a set of standards to measure the quality of design, especially the visual aspects of design.
- To engage in scholarly debates on issues pertaining design theory (design epistemology) and philosophy during the workshop period and beyond.
- To engage in participatory action research methods (PAR) to enrich the current design methodologies used within academic faculties teaching design.
- To improve the qualifications, research capacity, output and experience of team members and contribute to the development of a research culture.

Specific areas investigated:
- Innovation of design – such as improving existing products.
- New product development and the commercialisation of these products.
- Innovation and technology transfer in existing technologies.
- Development of old and new emerging technologies
- Existing research on current indigenous technology.
- Expanding on the knowledge base of design theory and design philosophy.
- Developing research material on science, technology and production techniques.
- Design tools, improve processes and provide solutions
- Introduce business development for the innovation

Research methodology

FADA developed a research niche area (RNA) that focus on the interlinked fields of research in design (design epistemology and practise), technology (modern technologies, technology transfer and indigenous technologies) and community based development incentives. The specific focus of the RNA is threefold and underpin the incentive of this project.
- The RNA undertakes and promotes research into how local cultural values and practices (i.e., indigenous knowledge systems) and indigenous aesthetics inform the design of artefacts and utility objects that find application within targeted communities (product design).
- The RNA undertakes research on the impact of newly introduced, recently emerging and recently designed products and technologies in community development (technology transfer).
- The RNA uses the research method of participatory action research (PAR) to situate the researchers inside the communities and to incorporate communities into the research process (following the Mode 2 of knowledge production as identified by GIBBONS, 1994)

Community centred design – the practical process.

"The majority of the world's designers focus all their efforts on developing products and services exclusively for the richest 10% of the world's customers. Nothing less than a revolution in design is needed to reach the other 90%." (Dr. Paul Polak, 2007) [9]

The design process required to develop products or solutions for developing communities is what we at the UJ Department of Industrial Design loosely term community centred design. The principles behind this process can be traced to a variety of research and participatory experiences that the members of the Department of Industrial Design and Faculty of Art, Design and Architecture at the University of Johannesburg have accumulated over the past

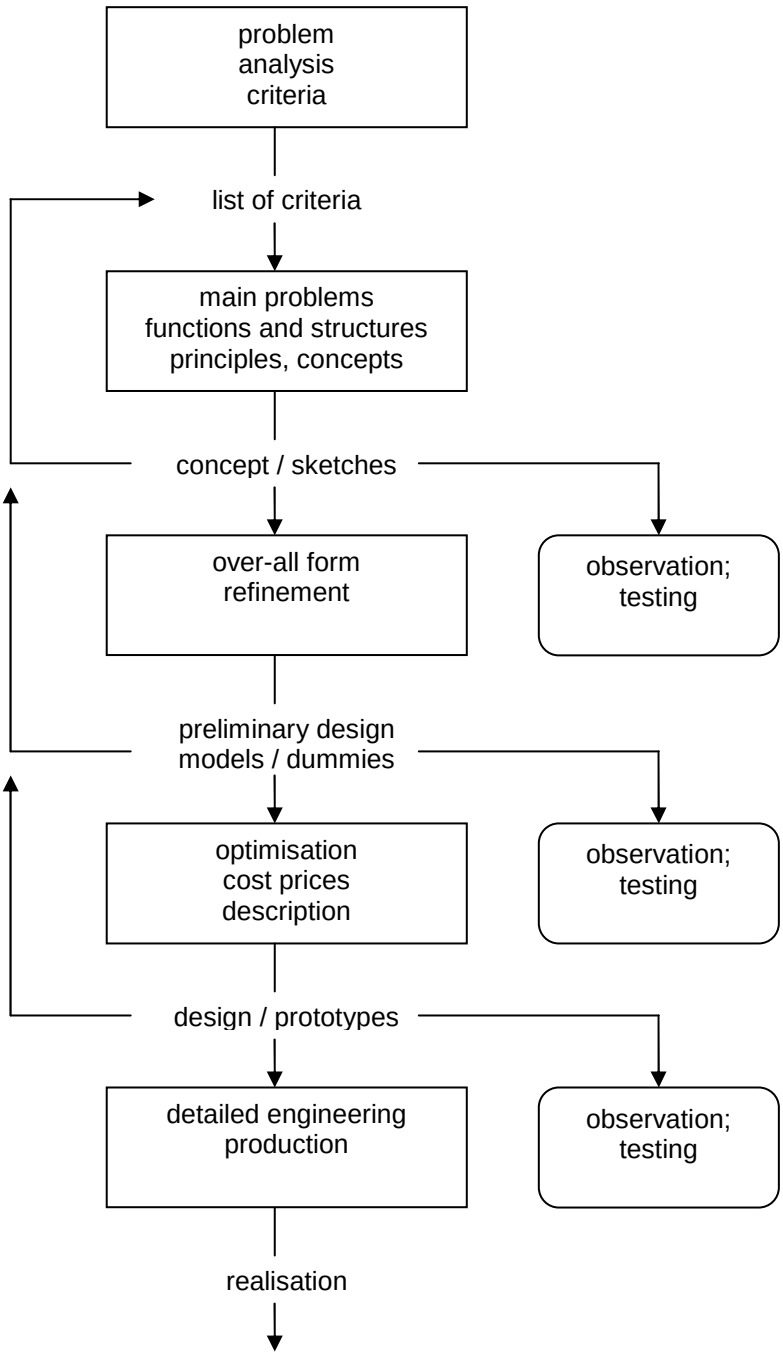
[9] Dr. Paul Polak, International Development Enterprises**,** A REVOLUTION IN DESIGN. http://other.cooperhewitt.org [June 2007]

10 years. These experiences include involvement in the two ICSID supported SABS: Design Division sponsored InterDesigns and extensive experience in IKS and PAR. This experience has led to the understanding of a process that works well for community centred projects such as this rice project. The community centred design process allows the designers the opportunity to observe, research and communicate with the community in question on the procedures they follow to achieve the desired goal, in this particular project - rice production. An enormous aspect of this process is the observational; this being an opportunity for the designers to simply learn the highly evolved systems and skills that individuals and communities have developed (over centuries) to make their working life easier or give better results to the end product. Once the design team has gained a level of understanding of all the issues related to the procedure the user will go through, the complex issue of trying to devise a suitable and sustainable solution begins.

Many of the problems uncovered during the project could not be addressed in the short time available for the project and the manpower on hand. This leaves the team with a list of other design problems in need of intervention and provides more opportunities for future workshops. The main issues identified through observation, research and the communication process were:

- The transportation of rice from the field to the cleaning area
- The planting of rice clumps
- The harvesting of rice
- The collection of the rice from the field

The design team decided to adopt the broad framework of design process from Den Buurman (Den Buurman, 1997 by Kahmann & Henze, 1999 in Green & Jordan, 1999). Of course not all aspects of the Den Buurman process were necessary, but the broad framework gives a good principle to follow.



“The process of user-centred design”(Den Buurman, 1997 by Kahmann & Henze, 1999: 114 in Green & Jordan, 1999).

The agricultural process: we were in the Lucknow region during the harvest time and the design team focussed on the problems related to the harvesting of rice. The harvesting process begins with labourers cutting the paddy (rice) at about 25 to 50mm from the roots, placing the paddy carefully on the ground where it was cut and then leaving the paddy to dry out in the field for about a week. Thereafter several different mechanisms are used to separate the paddy from the chaff, either in the field or at a specific location on the farm.

The design team decided to try to reduce some of the drudgery in the current system of rice harvest by looking at solutions that would convert the current tool (a small sickle) and the current poor ergonomic position of the user when cutting the paddy (squatting position) which caused serious back problems into a solution that would ergonomically be healthier for the users and accompanying this a tool that could harvest and place the rice in the correct

manner for drying. This process required continual and sustained interaction with the community members involved. We required the product's potential users to assist and give input in as many aspects of the product development process as possible.

The design team also carefully considered how, where and what could be manufactured close to the source of the problem. To this end the design team members sourced craftsmen and local manufacturers in Barabanki village which is located within 2km of Jahangirabad village and the campus of JMI who serviced the farms the project was testing on. Through the research a number of manufacturing opportunities presented themselves to the team. Barabanki as well as Jahangirabad villages have several crafters and manufacturers who could make products from wood and metal who are able to work these materials with an enormous range of processes that would usually only be found in bigger towns.

The design process broadly followed the steps outlined in the Den Buurman process with each phase being tested against the community around JMI campus. The design team were fortunate to have access to local farmers at a variety of levels from the subsistence farmers to farmers who employed a number of local labourers to work their crop for them. As concepts were developed, so community members were brought in and asked to give feedback. This process threw up a few issues related to the understanding of industrial design type concept drawings. The design team used the JMI students to translate when discussing the drawings with the farmers. The drawings that showed the product with a person using it were far more accessible than the product on its own. So as the project progressed so the design team tried to include the human figure in the sketches. Once the design team, in conjunction with the community members, narrowed the design concepts down to three or four solutions, it was decided to have these manufactured as working prototypes and then test these in the harvest process.

A craftsman located in Jahangirabad village manufactured the first solutions. The blades were manufactured from the leaf springs of a Bajaj taxi (three-wheeler) and the handle was made from locally used building material wood. The cost for six prototypes (three each of two different designs) was the equivalent to twice as many sickles (+/-Rupees 15 for sickle, +/-Rupees 30 for our design as prototypes). This made manufacturing the prototypes externally an easy and painless option. Another positive spin off would be that giving the designs over to the craftsman it was hoped that, if the designs worked, this craftsman could become the manufacturer of these products for the area.

The first set of prototypes were tested and filmed and we received favourable feedback from the users (translated to us by the JMI students). The positive feedback included an increased speed of harvest, users indicated that they would no longer suffer the back pain that plagued them in their normal posture for harvest work, and that the products would allow them more rest time due to the increased speed. The indication was for minor changes to the blade i.e. a serrated blade versus the smooth blade we had originally used and slight changes to the handle.

The second iteration of prototypes were made by the same craftsman with the changes as discussed, but the prototypes only arrived on the morning before we were to leave India. These prototypes were immediately taken to a different group of users, who were harvesting at the time, by the students. The prototypes failed completely. The issues that appeared to be non-issues when the first round of testing was done now became the focus issues. Even the changes to the blade were met with disapproval. Of course this was frustrating and demoralising for the design team, but did throw up some important learning factors that will be used when completing similar projects in future. It highlighted the complexity of the process of technology transfer and the delicate communication balance required when working with local communities. Unfortunately the design team needed more time to complete the project and continue sustained testing before a final or evolving design could be delivered to the users. This project needs to be taken up again and developed further.

Conclusion

This project provided the FADA *Design for Development* research team with some valuable experience. Working in a different culture with different needs and different design

sensibilities presented us with the opportunity to test design research methodologies and to design solutions to problems that even the community never considered possible to solve. The process highlighted the complexity of design based research and the necessity for a multi-disciplinary research team to solve community based design problems. Tripartite research possibilities between University, community and Industry were succinctly experienced and the experience is feeding into the team's epistemological understanding of design research.

Bibliography and reading list

BLESS, C. & HIGSON-SMITH, C. 1995. *Fundamentals of social research methods - an African perspective.* Lusaka. Landsdown.

BRIDGSTOCK, M. & BURCH, D. & FORGE, J. & LOWE, I.1998. *Science, technology and society*. Cambridge. Cambridge University press.

BUHLER, W. & MORSE, S. 2002. *Science, agriculture and research*. London. Earthscan Publications Ltd.

BULMER, M. & WARWICK, D. 1998*. Social research in developing countries: surveys and censuses in the third world.* London: UCL Press.

CALHOUN, C. 1995. *Critical social theory*. Oxford. Blackwell.

CHAMBERS. R. 1983. *Rural development*. Essex. Addison Wesley Longman Limited.

COHEN, G. 2004. *Technology transfer. Strategic management in developing countries*. New Delhi. Sage Publication.

CRESWELL, J. 1994. *Research design. Qualitative & Quantitative Approaches*. California: Sage.

DE BEER, F. & SWANEPOEL, H. 1997. *Introduction to development studies*. Oxford: Oxford University Press.

DEN BUURMAN, 1997 "The process of user-centred design" by Kahmann, R; Henze, L; 1999. "Usability Testing under Time-Pressure in Design Practice" in GREEN, W.; JORDAN, P. (eds.) 1999. *Human factors in product design*. London. Taylor and Francis.

FORBES, S. 1996. *Women in modern India*. Cambridge, Cambridge University Press.

GEERTZ, C. 1973. *The interpretation of cultures*. London: Fontana Press.

GOSH, C. 1999, *The attitudinal changes in women on social and environmental issues: an Indian perspective*. (pp 193 – 198), in The Third World Organisation for Women in Science conference proceedings February 1999).

HAVERKORT, B & VAN 'T HOOFT & HIEMSTRA, W. (ED).2002. *Ancient roots, new shoots.* Leusden. ETC Compas. London. Zed books.

RAZA, G & du PLESSIS, H. 2002. *Science, craft and knowledge*. Pretoria. Protea Boekhuis.

RIANA, D. & HABIB, I. 2004. *Domesticating modern science.* New Delhi. Tulika Books.

ROSS, A. 1991. *Strange weather*. Culture, science and technology in the age of limits. London. Verso.

THAPAR, R. 1992. *Interpreting early India*. New Delhi. Oxford University Press.

THAPAR, R. 2002. *The penguin history of early India*. New Delhi. Penguin Books.

POLAK, P. 2007. *International Development Enterprises**, A REVOLUTION IN DESIGN* http://other.cooperhewitt.org [June 2007]

SANDERS, E. 2006. Design Research Quarterly. Volume.1: 1 September 2006.

HESTER DU PLESSIS

Hester Du Plessis is a Senior Research Fellow at the Faculty of Art, Design and Architecture (FADA), University of Johannesburg, South Africa., South Africa.

She is an Art and Design Historian and Fine Artist by qualification and has been lecturing in Theory of Art, Design and Applied Design as well as Drawing at the Tshwane University of Technology in Pretoria for 15 years. She initiated an African Art R&D Centre at the Tshwane University of Technology in 2002 to facilitate African studies and Africa-based research. This initiative included the developed of African Studies for inclusion in the theoretical curriculum of the Fine Art, Applied Design and Graphic Design Departments.

She joined the Faculty of Art, Design and Architecture (FADA) of the University of Johannesburg in 2002 as a fulltime Senior Research Fellow. She is currently enrolled for a DLitt et Phil in Philosophy and political studies at the University of South Africa (UNISA).

She has been involved with a number of research projects with the Department of Industrial Design at FADA. Her field of expertise in the development of design research and design research methodology within FADA contributes to the Research Niche Area within the Faculty called *Design and Development*. Her research collaborator in India is Gauhar Raza, a scientist at the National Institute of Science, Technology and Development Studies (NISTADS), CSIR, New Delhi, India. They have been working and publishing together in the fields of Indigenous Knowledge Systems (IKS) and Public Understanding of Science (PUS) since 2000.

CHRIS BRADNUM

Name:
Christopher Michael Stephens Bradnum
Work Experience:
January 1991- August 1996: Industrial Designer for a variety of Professional Industrial Design Consultancies.
August 1996 – December 2005: lecturer at the Technikon Witwatersrand in the Department of Industrial Design.
January 2006 – present: Head of Department at the University of Johannesburg: department of Industrial Design.

Various duties include: managing the Department of Industrial Design; managing the B-Tech Industrial Design year group; lecturing: Presentation Media II, Engineering Media III.
August 1996 – present: Industrial Design consultant for my own company Bradnum Le Roux Technology (previously Product Design Avenue) in which various products has been designed from concept to manufacture (won an SABS Prototyping Award 2003, PSASA Paraffin Stove Design Award 2004)
Education:
1990: National Diploma Industrial Design (Technikon Witwatersrand);
1998: B-Tech Industrial Design (Technikon Witwatersrand);
2003 – present: Currently registered for Masters: Industrial Design due to finish end 2007