

Contents

Part I Design Theory and Research Methodology

How I Became a Design Researcher	3
Gabriela Goldschmidt	
Why do Motifs Occur in Engineering Systems?	15
A. S. Shaja and K. Sudhakar	
Thinking About Design Thinking: A Comparative Study of Design and Business Texts	29
Marnina Herrmann and Gabriela Goldschmidt	
Advancing Design Research: A “Big-D” Design Perspective	41
Christopher L. Magee, Kristin L. Wood, Daniel D. Frey and Diana Moreno	
Proposal of Quality Function Deployment Based on Multispace Design Modeland its Application	61
Takeo Kato and Yoshiyuki Matsuoka	
Exploring a Multi-Meeting Engineering Design Project	73
John S. Gero, Jiang Hao and Sonia Da Silva Vieira	
Integrating Different Functional Modeling Perspectives	85
Boris Eisenbart, Ahmed Qureshi, Kilian Gericke and Luciënne Blessing	

Part II Design Creativity, Synthesis, Evaluation and Optimization

Information Entropy in the Design Process	101
Petter Krus	
Mitigation of Design Fixation in Engineering Idea Generation: A Study on the Role of Defixation Instructions	113
Vimal Viswanathan and Julie Linsey	
Multidisciplinary Design Optimization of Transport Class Aircraft. .	125
Rahul Ramanna, Manoj Kumar, K. Sudhakar and Kota Harinarayana	
Using Design-Relevant Effects and Principles to Enhance Information Scope in Idea Generation	137
Zhihua Wang and Peter R. N. Childs	
Determining Relative Quality for the Study of Creative Design Output	151
Chris M. Snider, Steve J. Culley and Elies A. Dekoninck	
Development of Cognitive Products via Interpretation of System Boundaries	163
Torsten Metzler, Iestyn Jowers, Andreas Kain and Udo Lindemann	
A Design Inquiry into the Role of Analogy in Form Exploration: An Exploratory Study	175
Sharmila Sinha and B. K. Chakravarthy	
Supporting the Decision Process of Engineering Changes Through the Computational Process Synthesis	187
Florian Behncke, Stefan Mauler, Udo Lindemann, Sama Mbang, Manuel Holstein and Hansjörg Kalmbach	
Concept Generation Through Morphological and Options Matrices	199
Dani George, Rahul Renu and Gregory Mocko	
Understanding Internal Analogies in Engineering Design: Observations from a Protocol Study.	211
V. Srinivasan, Amaresh Chakrabarti and Udo Lindemann	
Craftsmen Versus Designers: The Difference of In-Depth Cognitive Levels at the Early Stage of Idea Generation	223
Deny W. Junaidy, Yukari Nagai and Muhammad Ihsan	

Part III Design Aesthetics, Semiotics, Semantics

A Comparative Study of Traditional Indian Jewellery Style of <i>Kundan</i> with European Master Jewellers, a Treatise on Form and Structure	237
Parag K. Vyas and V. P. Bapat	
A Structure for Classification and Comparative Study of Jewellery Forms	249
Parag K. Vyas and V. P. Bapat	
Product Design and the Indian Consumer: Role of Visual Aesthetics in the Decision Making Process	261
Naren Sridhar and Mark O'Brien	
Effective Logo Design	271
Sonam Oswal, Roohshad Mistry and Bhagyesh Deshmukh	
Effect of Historical Narrative Based Approach in Designing Secondary School Science Content on Students' Memory Recall Performance in a School in Mumbai	283
Sachin Datt and Ravi Poovaiah	
The Home as an Experience: Studies in the Design of a Developer-Built Apartment Residence	293
P. K. Neelakantan	
Meta-Design Catalogs for Cognitive Products.	303
Torsten Metzler, Michael Mosch and Udo Lindemann	
Extracting Product Characters Which Communicate Eco-Efficiency: Application of Product Semantics to Design Intrinsic Features of Eco-Efficient Home Appliances.	317
Shujoy Chakraborty	
Indian Aesthetics in Automotive Form	331
Chirayu S. Shinde	
Understanding Emotions and Related Appraisal Pattern.	347
Soumava Mandal and Amitoj Singh	

Part IV Human Factors in Design

Force JND for Right Index Finger Using Contra Lateral Force Matching Paradigm	365
M. S. Raghu Prasad, Sunny Purswani and M. Manivannan	
Modeling of Human Hand Force Based Tasks Using Fitts's Law . . .	377
M. S. Raghu Prasad, Sunny Purswani and M. Manivannan	
Self-Serving Well-Being: Designing Interactions for Desirable Social Outcomes	387
Soumitra Bhat	
Do We Really Need Traditional Usability Lab for UX Practice? . . .	399
Anshuman Sharma	
Muscle Computer Interface: A Review.	411
Anirban Chowdhury, Rithvik Ramadas and Sougata Karmakar	
Preliminary Analysis of Low-Cost Motion Capture Techniques to Support Virtual Ergonomics	423
Giorgio Colombo, Daniele Regazzoni, Caterina Rizzi and Giordano De Vecchi	
A User-Centered Design Methodology Supported by Configurable and Parametric Mixed Prototypes for the Evaluation of Interaction	435
Monica Bordegoni and Umberto Cugini	
Study of Postural Variation, Muscle Activity and Preferences of Monitor Placement in VDT Work	447
Rajendra Patsute, Swati Pal Biswas, Nirdosh Rana and Gaur Ray	
Relation-Based Posture Modeling for DHMs	463
Sarath Reddi and Dibakar Sen	
How do People View Abstract Art: An Eye Movement Study to Assess Information Processing and Viewing Strategy	477
Susmita Sharma Y. and B. K. Chakravarthy	

Part V Eco-Design, Sustainable Manufacturing, Design for Sustainability

Sustainability and Research into Interactions	491
Suman Devadula and Amaresh Chakrabarti	
Residential Buildings Use-Phase Memory for Better Consumption Monitoring of Users and Design Improvement	505
Lucile Picon, Bernard Yannou and Stéphanie Minel	
Developing Sustainable Products: An Interdisciplinary Challenge . . .	517
Kai Lindow, Robert Woll and Rainer Stark	
Life Cycle Assessment of Sustainable Products Leveraging Low Carbon, Energy Efficiency and Renewable Energy Options . . .	529
S. S. Krishnan, P. Shyam Sunder, V. Venkatesh and N. Balasubramanian	
Inverse Reliability Analysis for Possibility Distribution of Design Variables	543
A. S. Balu and B. N. Rao	
Analyzing Conflicts Between Product Assembly and Disassembly for Achieving Sustainability	557
S. Harivardhini and Amaresh Chakrabarti	
Conceptual Platform to View Environmental Performance of Product and Its Usage in Co-Design	569
Srinivas Kota, Daniel Brissaud and Peggy Zwolinski	
Design of Product Service Systems at the Base of The Pyramid	581
Santosh Jagtap and Andreas Larsson	
Re-Assignment of E-Waste Exploring New Livelihood from Waste Management	593
P. Vivek Anand, Jayanta Chatterjee and Satyaki Roy	
Conflicts in the Idea of ‘Assisted Self-Help’ in Housing for the Indian Rural Poor	605
Ameya Athavankar, Sharmishtha Banerjee, B. K. Chakravarthy and Uday Athavankar	
A Method to Design a Value Chain from Scratch	617
Romain Farel and Bernard Yannou	

Part VI Design Collaboration and Communication

Developing a Multi-Agent Model to Study the Social Formation of Design Practice	631
Vishal Singh and John S. Gero	

Improving Common Model Understanding Within Collaborative Engineering Design Research Projects	643
Andreas Kohn, Julia Reif, Thomas Wolfenstetter, Konstantin Kernschmidt, Suparna Goswami, Helmut Kremer, Felix Brodbeck, Birgit Vogel-Heuser, Udo Lindemann and Maik Maurer	

Issues in Sketch Based Collaborative Conceptual Design.	655
Prasad S. Onkar and Dibakar Sen	

Strategies for Mutual Learning Between Academia and Industry . . .	667
Margareta Norell Bergendahl and Sofia Ritzén	

Participatory Design for Surgical Innovation in the Developing World	679
Florin Gheorghe and H. F. Machiel Van der Loos	

Co-Web: A Tool for Collaborative Web Searching for Pre-Teens and Teens	691
Arnab Chakravarty and Samiksha Kothari	

Part VII Design Management, Knowledge Management and Product Life Cycle Management

Modeling and Analyzing Systems in Application.	707
Maik Maurer and Sebastian Maisenbacher	

A Categorization of Innovation Funnels of Companies as a Way to Better Make Conscious Agility and Permeability of Innovation Processes	721
Gwenola Bertoluci, Bernard Yannou, Danielle Attias and Emilie Vallet	

A Methodology for Assessing Leanness in NPD Process	735
B. A. Patil, M. S. Kulkarni and P. V. M. Rao	

PREMAP: Exploring the Design and Materials Space for Gears. . . .	745
Nagesh Kulkarni, Pramod R. Zagade, B. P. Gautham, Jitesh H. Panchal, Janet K. Allen and Farrokh Mistree	

PREMAP: Exploring the Design Space for Continuous Casting of Steel	759
Prabhash Kumar, Sharad Goyal, Amarendra K. Singh, Janet K. Allen, Jitesh H. Panchal and Farrokh Mistree	
Requirements for Computer-Aided Product-Service Systems Modeling and Simulation	773
Gokula Vasantha, Romana Hussain, Rajkumar Roy and Jonathan Corney	
Designers' Perception on Information Processes	785
Gokula Annamalai Vasantha and Amaresh Chakrabarti	
Assessing the Performance of Product Development Processes in a Multi-Project Environment in SME	797
Katharina G. M. Kirner and Udo Lindemann	
Information in Lean Product Development: Assessment of Value and Waste	809
Katharina G. M. Kirner, Ghadir I. Siyam, Udo Lindemann, David C. Wynn and P. John Clarkson	
A Method to Understand and Improve Your Engineering Processes Using Value Stream Mapping	821
Mikael Ström, Göran Gustafsson, Ingrid Fritzell and Gustav Göransson	
Lifecycle Challenges in Long Life and Regulated Industry Products	833
S. A. Srinivasa Moorthy	
Idea Management: The Importance of Ideas to Design Business Success	845
Camille Chinneck and Simon Bolton	
The Role of Experimental Design Approach in Decision Gates During New Product Development	859
Gajanan P. Kulkarni, Mary Mathew and S. Saleem Ahmed	
Design Professionals Involved in Design Management: Roles and Interactions in Different Scenarios: A Systematic Review	873
Cláudia Souza Libânio and Fernando Gonçalves Amaral	

Design Professional Activity Analysis in Design Management: A Case Study in the Brazilian Metallurgical Market	885
Cláudia de Souza Libânio, Giana Carli Lorenzini, Camila Rucks and Fernando Gonçalves Amaral	
Analysis of Management and Employee Involvement During the Introduction of Lean Development	897
Katharina Helten and Udo Lindemann	
ICT for Design and Manufacturing: A Strategic Vision for Technology Maturity Assessment	913
Mourad Messaadia, Hadrien Szigeti, Magali Bosch-Mauchand, Matthieu Bricogne, Benoît Eynard and Anirban Majumdar	
Part VIII Enabling Technologies and Tools (Computer Aided Conceptual Design, Virtual Reality, Haptics, etc.)	
Approaches in Conceptual Shape Generation: Clay and CAD Modeling Compared.	927
Tjamme Wieggers and Joris S. M. Vergeest	
Optimization of the Force Feedback of a Dishwasher Door Putting the Human in the Design Loop	939
Guilherme Phillips Furtado, Francesco Ferrise, Serena Graziosi and Monica Bordegoni	
Cellular Building Envelopes.	951
Yasha Jacob Grobman	
Development and Characterization of Foam Filled Tubular Sections for Automotive Applications.	965
Raghu V. Prakash and K. Ram Babu	
The Current State of Open Source Hardware: The Need for an Open Source Development Platform	977
André Hansen and Thomas J. Howard	
Part IX Applications in Practice (Automotive, Aerospace, Biomedical-Devices, MEMS, etc.)	
Drowsiness Detection System for Pilots	991
Gurpreet Singh and M. Manivannan	

Discussion About Goal Oriented Requirement Elicitation Process into V Model	1005
Göknur Sirin, Bernard Yannou, Eric Coatanéa and Eric Landel	
Prediction of Shock Load due to Stopper Hitting During Steering in an Articulated Earth Moving Equipment	1015
A. Gomathinayagam, B. Raghavarman, S. Babu and K. Mohamed Rasik Habeeb	
A Simple Portable Cable Way for Agricultural Resource Collection	1023
Shankar Krishnapillai and T. N. Sivasubramanian	
Bio Inspired Motion Dynamics: Designing Efficient Mission Adaptive Aero Structures	1031
Tony Thomas	
External Barriers to User-Centred Development of Bespoke Medical Devices in the UK	1039
Ariana Mihoc and Andrew Walters	
Autonomous Movement of Kinetic Cladding Components in Building Facades	1051
Yasha Jacob Grobman and Tatyana Pankratov Yekutiél	
Design, Development and Analysis of Press Tool for Hook Hood Lock Auxiliary Catch	1063
Chithajalu Kiran Sagar, B. W. Shivraj and H. N. Narasimha Murthy	
Design of a Support Structure: Mechanism for Automated Tracking of 1 kWe Solar PV Power System	1077
Pravimal Abhishek, A. S. Sekhar and K. S. Reddy	
Automated Brain Monitoring Using GSM Module	1089
M. K. Madhan Kumar	
 Part X Design Training and Education	
Mapping Design Curriculum in Schools of Design and Schools of Engineering: Where do the Twains Meet?	1105
Peer M. Sathikh	

A National Academic-Industrial Research Program with an Integrated Graduate Research School	1117
Göran Gustafsson and Lars Frenning	
Future Proof: A New Educational Model to Last?	1129
Mark O'Brien	
Talking Architecture: Language and Its Roles in the Architectural Design Process	1139
Yonni Avidan and Gabriela Goldschmidt	
Cross-Disciplinary Approaches: Indications of a Student Design Project.	1151
Helena Hashemi Farzaneh, Maria Katharina Kaiser, Torsten Metzler and Udo Lindemann	
Reflecting on the Future of Design Education in 21st Century India: Towards a Paradigm Shift in Design Foundation	1165
Indrani de Parker	
Design of Next Generation Products by Novice Designers Using Function Based Design Interpretation.	1177
Sangarappillai Sivaloganathan, Aisha Abdulrahman, Shaikha Al Dousari, Abeer Al Shamsi and Aysha Al Ameri	
Changing Landscapes in Interactive Media Design Education.	1189
Umut Burcu Tasa and Simge Esin Orhun	
System Design for Community Healthcare Workers Using ICT.	1201
Vishwajit Mishra and Pradeep Yammiyavar	
Developing Young Thinkers: An Exploratory Experimental Study Aimed to Investigate Design Thinking and Performance in Children	1215
Anisha Malhotra and Ravi Poovaiah	
 Part XI Posters	
Learning from Nature for Global Product Development.	1231
Axel Thallemer and Martin Danzer	
Design2go. How, Yes, No?	1243
Nikola Vukašinović and Jože Duhovnik	

Integrating the Kansei Engineering into the Design Golden Loop Development Process	1253
Vanja Čok, Metoda Dodić Fikfak and Jože Duhovnik	
Design and Development: The Made in BRIC Challenge	1265
Luciana Pereira	
Stylistic Analysis of Space in Indian Folk Painting	1277
Shatarupa Thakurta Roy and Amarendra Kumar Das	
Classifying Shop Signs: Open Card Sorting of Bengaluru Shop Signs (India)	1287
Nanki Nath and Ravi Poovaiah	
PREMAP: A Platform for the Realization of Engineered Materials and Products	1301
B. P. Gautham, Amarendra K. Singh, Smita S. Ghaisas, Sreedhar S. Reddy and Farrokh Mistree	
PREMAP: Knowledge Driven Design of Materials and Engineering Process	1315
Manoj Bhat, Sapan Shah, Prasenjit Das, Prabash Kumar, Nagesh Kulkarni, Smita S. Ghaisas and Sreedhar S. Reddy	
Bridging the Gap: From Open Innovation to an Open Product-Life-Cycle by Using Open-X Methodologies.	1331
Matthias R. Gürtler, Andreas Kain and Udo Lindemann	
Researching Creativity Within Design Students at University of Botswana	1345
Chinandu Mwendapole and Zoran Markovic	
Role of Traditional Wisdom in Design Education for Global Product Development	1357
Ar Geetanjali S. Patil and Ar Suruchi A. Ranadive	
Color Consideration for Waiting Areas in Hospitals	1369
Parisa Zraati	
Hybrid ANP: QFD—ZOGP Approach for Styling Aspects Determination of an Automotive Component	1381
K. Jayakrishna, S. Vinodh and D. Senthil Kumar	

Kalpana: A Dome Based Learning Installation for Indian Schools	1391
Ishneet Grover	
Design and Development of Hypothermia Prevention Jacket for Military Purpose	1403
S. Mohamed Yacin, Sanchit Chirania and Yashwanth Nandakumar	
Decoding Design: A Study of Aesthetic Preferences	1413
Geetika Kambl	
Earthenware Water Filter: A Double Edged Sustainable Design Concept for India.	1421
M. Aravind Shanmuga Sundaram and Bishakh Bhattacharya	
Designer's Capability to Design and its Impact on User's Capabilities	1433
Pramod Ratnakar Khadilkar and Monto Mani	
Author Index	1445

ICoRD'13

Global Product Development

Chakrabarti, A.; Prakash, R.V. (Eds.)

2013, XLVIII, 1448 p. In 2 volumes, not available separately., Hardcover

ISBN: 978-81-322-1049-8