

## DESIGN RESEARCH AROUND DESIGN SEARCH

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### Abstract

#### Design research around design search

Trying to find out what is needed to impulse design research, we decided to search around the final project of the students of degree and postgraduate studios of design discipline as a reference. From there, we may establish different conditions on the projects and their classification in an interesting typology, such as: the “**level**” of design research orientation given to the students during the career, so they may be interested in this field in the future; the “**quality**” and importance of the projects developed around research; the “**possibility**” of projects oriented to a future development; the “**quantity**” of products (understudied as the results of the project development) oriented to different goals (market, social aims, self employed, technology based, technology innovation, etc.); the “**injection**” of motivation to continue with design research and postgraduate studies, taking as a starting point the area and/or project orientation as possible field of self development.

The research is based on the studio of 100 thesis from graduate studies on industrial design of UNAM<sup>1</sup>, 100 thesis from graduate studies on industrial design of UdeG<sup>2</sup>, 50 thesis from graduate studies on (integral) design of ITESO<sup>3</sup> and 30 thesis from postgraduate studies on Product Development of UdeG.

### Introduction

Industrial Design in Mexico, as a University degree formal program, has 37 years at institutions as the Universidad Iberoamericana (1968), the Universidad Nacional Autónoma de México UNAM (1969), and the Universidad Autónoma Metropolitana UAM (1975), to mention 3 of the older ones and most important industrial design careers in Mexico City.

At Guadalajara City the degree program on Industrial Design started 31 years ago at the Universidad Autónoma de Guadalajara (1974) and almost 30 years at the Universidad de Guadalajara (1976) as a degree level in Industrial Design and 15 years as a Design of Graphic Communication. The career as Design degree with an integral perspective started at the Instituto Superior y de Estudios Tecnológicos ITESO 11 years ago (1994).

This short period of time has given the chance to develop teaching-learning experience on the design discipline but very few opportunities to consolidate a design research program.

From our platform of the Universidad de Guadalajara related with the degree programs of Industrial Design and Design of Graphic Communication, we consider that some conditions have been set to impulse effective actions to establish a design research program, such as:

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<sup>1</sup> Universidad Nacional Autónoma de México

<sup>2</sup> Universidad de Guadalajara

<sup>3</sup> Instituto Superior y de Estudios Tecnológicos de Occidente

- The Industrial Design degree program have been accredited by the Consejo Mexicano para la Acreditación de los Programas de Diseño COMAPROD (Mexican Council for the Accreditation of the Design Programs)

- Postgraduate studies in Product Design Development have been held at the Universidad de Guadalajara since 1995.

- Academic Bodies (Cuerpos Académicos) are specially organized and registered, implanted by the Mexican Secretariat on Education (SEP)<sup>4</sup> to develop design research around thematic matters such as:

Design Research Center CID; Ergonomics Research Center CIE; Laboratory of Technology Innovation for Design LITED; and Laboratory for Optimisation of Graphic Production LOGRA; with defined research lines in each one of them.

The question is, what is needed to impulse a design research program? (and hopefully a national program design based), been aware of the state of the art about the formal education in design disciplines. We decided, among other actions related directly with the research centres, laboratories and the professional field linked to the designers formed in University programs, to search around the final project of the students of degree and postgraduate studios of design discipline as a reference.

This may give us the idea of type of projects, thematic and design fields that have been attended with more frequency and to analyse the possibilities to develop design research projects to support the areas of interest for each institution, and even more, to develop that ones that have not been studied but seams to be potentially important to empower the design career in turn and the research program itself.

### **How to organized the work**

The quantity and quality of the projects to be analyse needed to be organized in a way that allowed us to control the information fluidness. So, a technique ficha for each project and a general reference framework had to be constructed as a working tool to contain the information and build the *design projects typology*, taking elements and characteristics in two ways: we took as reference Authors that have been discussing some guidelines about product and project classification and on the other hand, taking from the projects analysed themselves, characteristics that may conform and define an interesting typology

With this two main streams to follow, the possibilities were such that we decided to conclude a first step, that is what we present today. The final is far away, even so, we are certain that should be kept a permanent effort to feedback the information and the connection between design degree programs and a design research program. So, the *design projects typology* there is still in construction, but the advances show some very interesting panoramas and to present the advances in the research project we conformed a table of contents that could give us the idea of the whole project and choose only certain characteristics founded based on a “chart of themes” designed especially for this purpose. The chart itself and the design projects typology could be a good reason for another paper to be presented in the future; today we want to concentrate with the

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<sup>4</sup> Secretaría de Educación Pública through the Professors Improvement Program (Programa para el Mejoramiento del Profesorado PROMEP)

general lines of our findings, the tendency of the projects by institution (and an intention to do so as a whole, including the differences) and the potential areas for research development.

We establish a compromise to feedback each design program with the results of the research so they may use them to know what have been observed and make some research planning about, the presentation of some possible actions may settle the conditions for institutional exchange of efforts around design research, hoping it is possible to consolidate an inter-institutional design research program.

### **Analysed universe**

The research is based on the studio of 100 thesis from graduate studies on industrial design of UNAM<sup>5</sup>, 150 thesis from graduate studies on industrial design of UdeG<sup>6</sup>, 107 final projects from graduate studies on Graphic Design Communication of UdeG; 82 thesis from graduate studies on (integral) design of ITESO<sup>7</sup> and 25 thesis from postgraduate studies on Product Development of UdeG.

The first stage, and included in the actual paper, it is conformed with the ones who represent the Guadalajara City area in a graduate studies: industrial design of UdeG, Graphic Design Communication of UdeG; (integral) design of ITESO . As a second stage it is plan to be included the postgraduate studies of UdeG and the graduate and postgraduate studies which belong to the Universidad Nacional Autónoma de México UNAM at México City.

The research is based on the final project's characteristics such as: Problem, Context and Solution (results) represented by keywords that allowed them to be classified to build a reference framework that locates diversity, tendency, coincidence and to establish a relationship system to allowed further seeking.

The classification references are taken from the performance areas of industrial and graphic design supported by three main lines:

Authors such as: Bonsiepe, Rodríguez y Magón; Keywords from papers presented at the era05 pre-Congress to be held at Denmark and intervention areas taken from the projects that have been analysed.

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### **Proyectual problem classification<sup>8</sup>**

Bonsiepe (1978) declares that a problem is well defined when the variables that integrate it are closed, on the other hand, a problem is not structured when the variables are open. Therefore a proyectual problem may be classified as:

Defined problems (structured)

Not defined problems (unstructured)

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<sup>5</sup> Universidad Nacional Autónoma de México

<sup>6</sup> Universidad de Guadalajara

<sup>7</sup> Instituto Superior y de Estudios Tecnológicos de Occidente

<sup>8</sup> Bonsiepe, Gui. Teoría y Práctica del Diseño Industrial. Elementos para una manualística crítica. Editorial Gustavo Gili, Barcelona, 1978

Another spectrum of options is based on a triple articulation of the problem components:<sup>9</sup>

Initial situation

Final situation

Transformation processes to go from initial situations to final situations

The options may varied depending if the initial and final situations are more or less defined. Four possible combinations:

Initial situation well defined, final situation bad defined

Initial situation well defined, final situation well defined

Initial situation bad defined, final situation bad defined

Initial situation bad defined, final situation well defined

This taxonomy does not give any clue about the difficult grade of the proyectual problems that depend on other factors, such as: the complexity and the knowledge of the problem (preceding experiences to be taken as a reference). On the other hand, the difficult grade can not be related to the social importance of the proyectual objective<sup>10</sup>.

### **Design action spheres<sup>11</sup>**

Among the different possibilities of design intervention it is important to consider the areas in which design has an important impact, specially in the actual times and because of Mexico conditions:

Physically less favoured groups

Socially non favoured groups

Environmental respect

Life and Health respect

Alternative technologies generation

Ancestral technologies rescue (revalue)

Historic and cultural values impulse (re-semantic)

Information “translation” (interface)

Together: Sustainable development impulse

### **Form Configurative Schemes<sup>12</sup>**

Designing product development is essentially a form configuration, and this is the specific (for some authors even an exclusive) area of intervention for an Industrial designer. To accomplish this task Rodriguez (2000) says that it is necessary to consider four vectors that defined the form of the product:

Technology vector: materials, processes and costs

Functional vector: mechanisms and ergonomics

Expressive vector: perceptual and symbolic factors

Commercial vector: users expectative and commercialisation

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<sup>9</sup> Reitman W., *Cognition and Thought*, John Wiley and Sons, Londres-Nueva York-Sidney-Toronto, 1966, pp. 133 a 142. Quoted by Gui Bonsiepe, *op. cit.*

<sup>10</sup> Gui Bonsiepe, *op. cit.*, pp. 150-151

<sup>11</sup> Flores Magón, Héctor. *Diseño como Estrategia*. Tesis de Posgrado: Maestría en Desarrollo de Productos, CUAAD-UdeG, Guadalajara, julio 2003, pp. IV-10 y 11

<sup>12</sup> Rodríguez, Luis. *El tiempo del Diseño. Después de la Modernidad*. Editorial UIA, México, 2000

Each design product development will have a strong vector to be defined as the essential one and to get special emphasis during the design process and for final evaluation of results.

### **Keywords**<sup>13</sup>

History: History of Mexican<sup>14</sup> design; History of world design  
Business: Design law; Design management; Innovation through design; Globalization; Starting a company  
Education & career: Career development; Education  
Starting a design company: Marketing; Starting manufacturing  
Arts & handicrafts: Glass & ceramics; Textiles; Jewellery<sup>15</sup>  
City & space: Architecture; City & urbanity; Home; Public space; Scenography & exhibition;  
Space & interior; Work  
Digital design: Games; Interactivity; Web  
Experience & communication: Communication design; Experience design; Information design;  
Play; Storytelling; Usability; User experience  
Fashion:  
Future & research: Future scenarios; Theory & research  
Trends: Holistic approach; Human-centred design; Interdisciplinary approach; Multilateral approach<sup>16</sup>  
Graphic design: Branding & corporate identity; Font & Typefaces; Visual identity  
Industrial design: Furniture; Industry; Light; Medico; Packaging; Product; Transport  
Manufacturing processes: Assembling processes; Cutting; Metal processes; Plastic processes;  
Powder technology; Rapid prototyping; Surface treatment  
Materials: Ceramics; Composites; Glass; Metal; Plastic & rubber; Smart materials; Wood & natural materials  
People & ethics: Care design; Design to improve life; Environment; Ergonomics; Social responsibility & ethics; Sustainability  
Production & process: Manufacturing; Process; Re-design  
Technology: Advanced technology; Traditional technology<sup>17</sup>

### **Results Classifications**<sup>18</sup>

Demand origin: Necessities not satisfied; Association with necessity (user); Association with possibility (producer); Association with market (distributor / purchaser); Direct Demand (by demand); Public problem; Social Problem

Product: Consumer Product; Capital good; Public use good; System-module-line-family; Accessories and complements

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<sup>13</sup> Taken from the data bases of the Denmark era05 pre-congress to be held at Denmark

<sup>14</sup> Adapted by the authors

<sup>15</sup> Added by the authors

<sup>16</sup> Added by the authors

<sup>17</sup> Added by the authors

<sup>18</sup> Typology constructed along the research project, with criteria extracted from the analysed final projects

**Material: Wood; Metal; Plastic; Ceramic; Glass; Textile; New materials**

*Sector : Furniture; Vehicles; Communication; Clothing; Packaging; handicrafts*

*User: Children; Handicapped; Third age, Universal; Specialised*

Context: Home; Field; Industry; City; Commerce; Educative; Sportive Public; Services; Construction

Project: Technology development (implementation); Research Equipment; Medical and Health Equipment; Productive Equipment; Commercial Equipment; Specialise Equipment; Technique Instrumental (tools); Designer Formative (complement); Design processes (methods and techniques); Interaction with other disciplines; Applied research; Theory research; Criteria and guidelines; Discipline Manifesto

Tendencies: Enterprise generator; Future bets; New category; From periphery; Local Identity; Sustainable Development; Alternative technologies; Eco-design; New Boundaries; Design management; Design strategies

### **Some approaches**

*Joining Forces* between the different approaches. We developed a framework to manage the project and the products individually and into a typology to may analysed the common factors, the differences, tendencies and potential areas of development. We expose some conclusions concerning each design program and in general, some proposals to consolidate lines and activities to firmly impulse the design research at the University with the intention to initiate a discussion with our pares.

### **DCG UdeG<sup>19</sup>**

#### **PROJECTS TENDENCIES**

107 projects that involves the work of 140 students with 72 projects about visual identity that means the 67.3% and 35 projects about diverse matters, that equals the 32.7%

**NOTE:** analysis of the communication phenomenon is not treated by any project

#### **POTENTIAL AREAS FOR RESEARCH AND DEVELOPMENT**

*Some projects have a well connected link with other areas and disciplines that may be improved, such as:*

Legal mark protection, authors rights, analysis of Mexican popular object symbolism, some new participation areas (as movie credits), cultural promotion for children, historic documents conservation and didactic material

Feedback of the frequent students participation in projects of visual identity of communities, government institutions and municipalities demands a study of the impact achieve in the State of Jalisco and the theory tools been used, to be completed with a publication with guidelines based on experience recompilation and Case studies.

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<sup>19</sup> Graphic Design Communication degree program of Universidad de Guadalajara

## **DI UdeG<sup>20</sup>**

### **PROJECTS TENDENCIES**

- (69) Equipment (20) medical, industrial, agriculture, research, transformation processes, tools
- (30) Furniture: House, Commercial, urban, education, services, specialised
- (15) Product development (3), clothing (2), packaging (3), childhood amusement (6), electro domestic (1)
- (14) Disciplinary formation: specialization, theory, design process, intellectual protection, disciplinary interrelation
- (13) Transport: service, urban public, work, sportive, aquatic, production, accessories
- (7) Work stations: industrial, service, commercial, intellectual
- (6) Spatial: temporal space, house construction, house accessories
- (5) DCG: signs, typography, identity, interface informatics, promotional

### *POTENTIAL AREAS FOR RESEARCH AND DEVELOPMENT*

Theory research: Disciplinary own language, interdisciplinary Role, Disciplinary theory support  
Areas to be develop: intellectual protection, Criteria, guidelines, methodology  
Ecological goals: Alternative Technology, renewable energy  
Technological innovation: technological transference, technological development  
Research impulse (ergonomics): Implementation of research results; Specialised techniques implementation (object)  
Business Generation

## **Design-Iteso<sup>21</sup>**

### **PROJECTS TENDENCIES**

- (40) Communication: editorial, multimedia, visual identity, illustration, Web, campaign, animation, mark, poster, label
- (16) Product development: shoes, jewelry, furniture, clothing, transport
- 6) Environment: commercial spot and store, museum, Scenography
- (19) Boundaries: packaging (2), didactic material (8), integral development (4), urban space (1), signs (4)

**STRONG AREAS:** with the possibility to achieve a publication with the results of the projects concerned with didactic material and the strong interest shown for non favoured social groups (handicaps specially)

### *POTENTIAL AREAS FOR RESEARCH AND DEVELOPMENT*

Didactic Material: for children, handicaps and specialised  
Business Generation: design, plastic moulding, publicity spaces, home services  
Ecological goals: garbage re-use, urban organic agriculture,  
Minority groups: Physically and socially less favoured groups and communities  
Institutional relationship: public interest campaign, municipality visual identity  
Disciplinar guide, intervention methods, social connection, tradition rescue, association with other areas (medical)

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<sup>20</sup> Industrial Design degree program of Universidad de Guadalajara

<sup>21</sup> Instituto Tecnológico y de Estudios Superiores de Occidente

New routes: Alternative Language, Blind sexual development, child psychological therapy, amusement for child hospitalisation, orientation and signs for blind people

### **UdeG Degree programs**

If we compare tendencies is it possible to detect some areas to be strengthen and fortified to get deeper in the dominion of the areas and their processes, such as: DI UdeG with a strong participation on technology based projects to develop specialized equipment; DCG UdeG should try to diversified the project's orientation to impulse the phenomenon of visual communication and integral programs to achieve results over the visual identity recurrent theme; but also try to extract the knowledge from the experience reached.

### **Conclusions**

The actual paper includes the analysed performed to 3 degree program from 2 institutions, but by the time the paper is it presented at the "Joining Forces" Congress we may include another 2 programs which analysis face have been already concluded but the results have to be organized in the meantime.

Another face of the project in the future should include the analysis of the projects institutions, even national and international ones; and to interlink the results with the design interest of the City (and the country also), with the international design research projects, to explore new areas and to compare tendencies and possibilities.

The typology framework that has been built are still in construction and could be an interesting design research subject to be followed as an inter-institutional project.

Along the research was possible to detect important lines to be follow in the future as research projects considering its classification from design epistemology, phenomenology and praxiología, such as:

- Boundaries and search zones
- Projects to be amplified their scope and reach
- Developments to be continued
- Influences to be followed
- Strategies, methods and models
- Criteria and alignments for product development

Many of the cases studied, after accomplishing it main goal of concluding the degree requirements and functions as a "final product", could be considered as a starting point to generate research and development projects. Maybe some questions are still on the air and it is needed to build some bridges between degree studies and postgraduate studies to align efforts and consolidate a design research program to benefit the discipline transcendence.

Some questions around:

**How much the final work at degree studies could be considered as a design research project?**

Happens, quite common, that the information collected for the project development is assumed as a research matter...

**Could be final work a good base for a design research project?**

The methodology followed to develop the final project should have certain characteristics to prepare the continuation of the project as a design research one...

**Under what conditions the final work may be guided to reach further and deeper search and research?**

Tutor role represents the link with a research centre; a research team and a postgraduate studies program. The figure of research assistance may impulse the introduction of more design researchers.