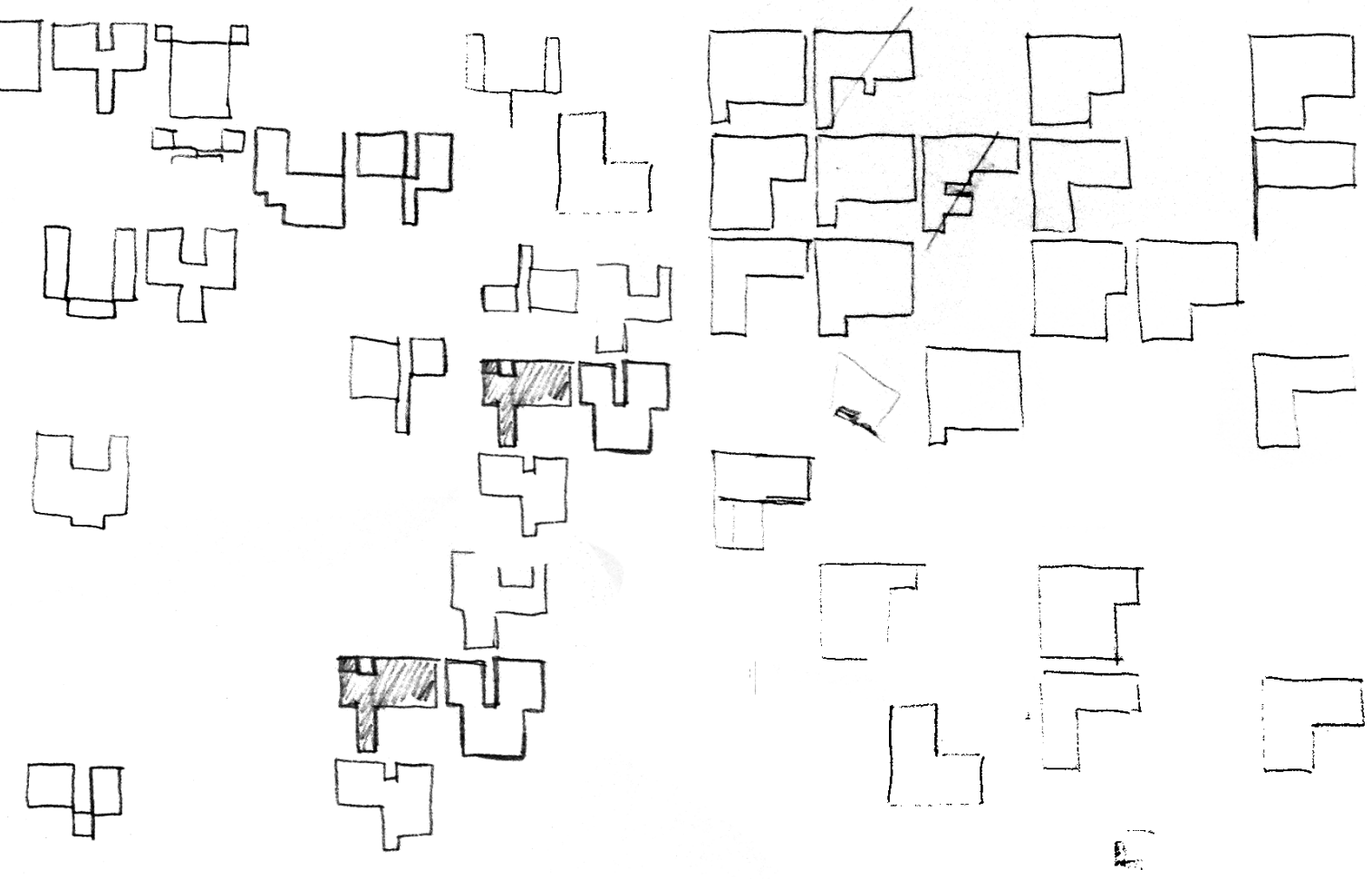
Reverse Design

Carlos Rosa



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01

REVERSE DESIGN: MAIN CONCERNIGS

REVERSE DESIGN AS A METHOD

[1] "Reverse designing", can be defined by the expression: "working backwards", as suggested by Polya (1957). This procedure is characterized by the search and introduction of new ideas from the analysis and deconstruction of existing objects. It seeks to reach the structuring, the procedures and the elements present in the construction of existing graphic objects." (Rosa, 2012)

Reverse Design is an immersive method in which the designer seeks new solutions by analyzing and deconstructing artifacts[1]. (Rosa, 2012) (Fig. 1)

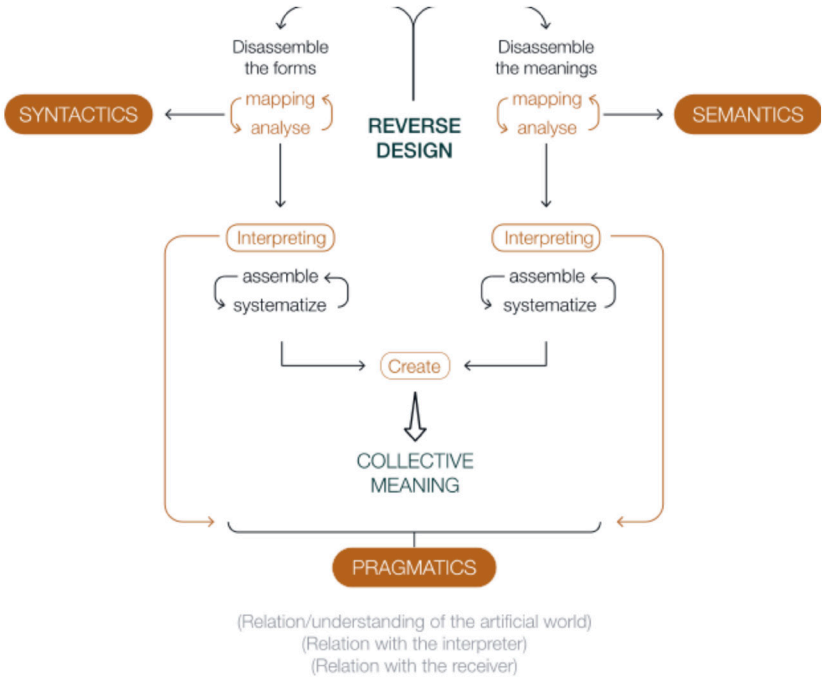

Fig. 01 | Theoretical model for Reverse Design. Author's image.

The approach enables us to comprehend objects by scrutinizing their structure, necessary com-ponents, and processes involved in their creation. One distinctive aspect is its reverse direction, starting from the final product and tracing back to the process itself. This technique relies on the "collect-create-test" triangulation and immersive empirical methods. Reverse Design introduces a methodology that cultivates creativity by employing logical, nearly math-

ematical reasoning, offering a structured avenue for creative expression. It involves deconstructing the intricate layers of information shaping our world and reassembling them into design elements. This method aligns with Donald Schön's (1983) concept of using the project as a methodological tool, emphasizing the interdependence between design practice and research. Promoting a design-focused outlook on the constructed surroundings, this proposition suggests that design systems exhibit a progression in complexity— from the most basic components, like a logo, to the more intricate entities such as a city. This perspective underscores the evolving nature of built environments and material culture. Consequently, this method delves into formal conjectures, encompassing analysis, interpretation, and the crafting of artifacts imbued with inherent collective significance. The "collective" essence materializes through discrete elements capable of amalgamating into interconnected structures, allowing for adaptable arrangements, like modular systems. (Heskett, 2005). (Figs. 2, 3)

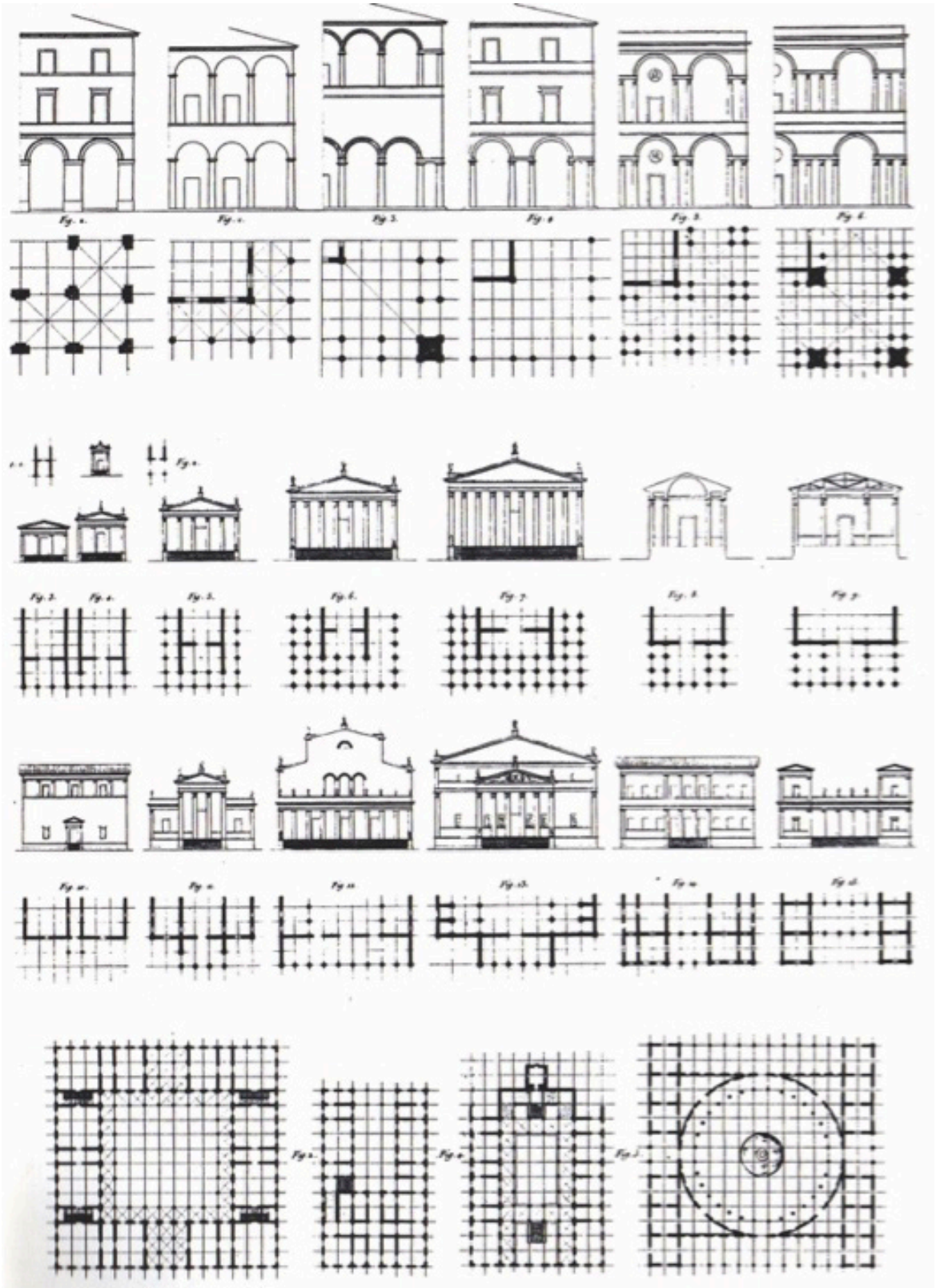

Fig. 02 | Visual system of modular elements in classical architecture. in “Précis des leçons d’architecture”, Durand, 1819 Source: Tzonis, A., Lefaivre, L. & Bilodeau, D. (1984 [1983]) El Clasicismo en Arquitectura. La Poetica Del Orden, Madrid, Hermann Blume.

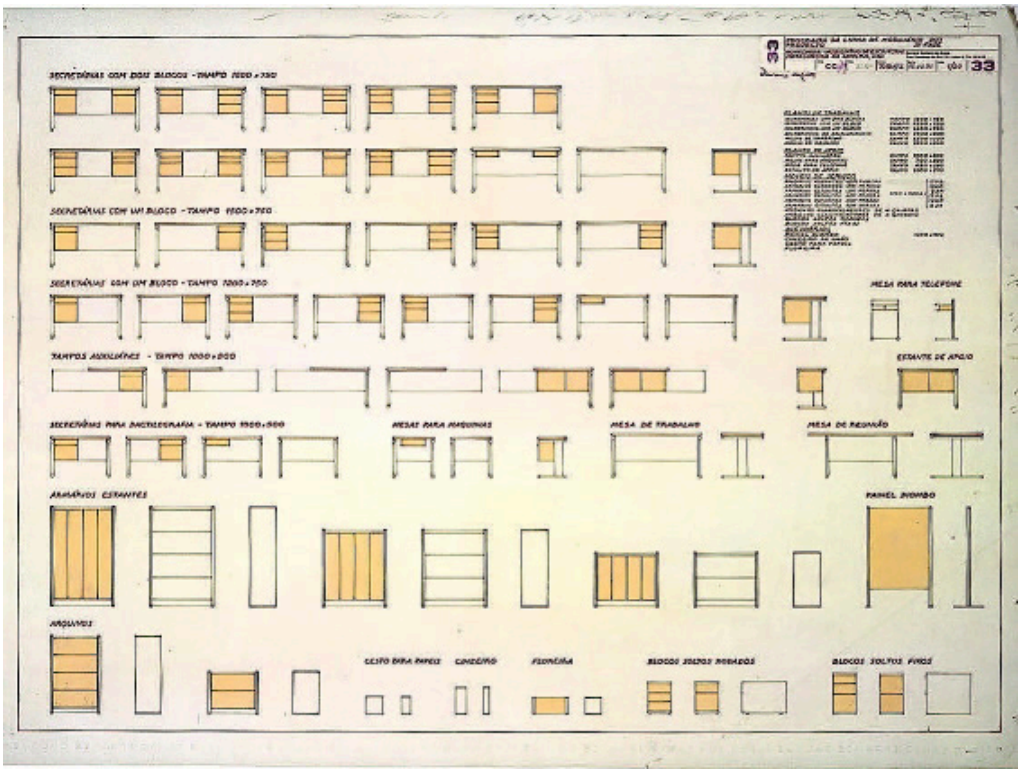

Fig. 03 | Visual system applied to product design for Dfi Forniture, design by Daciano da Costa, 1971

Source: https://www.dacianodacosta.pt/pt/a-obra/detalhe/linha-dfi/270/ (retrieved in 22/02/2022)
Bilodeau, D. (1984 [1983]) El Clasicismo en Arquitectura. La Poetica Del Orden, Madrid, Hermann Blume.

FORMAL GRAMMARS

Bringing together perception, thought, and interpretations is crucial. To comprehend how design artifacts convey meaning or what attributes unite them within universal systems, adopting a phenomenological viewpoint on how signs convey, express, or represent something to an individual is necessary.

By defining design as a language and the actions of designers as the embodiment of that language, it becomes evident that design artifacts function primarily on interpreting minds, rather than solely on a generic “someone.” Therefore, it becomes pivotal to examine the connections design maintains with terms like sign, object, and interpretant. This exploration facilitates an understanding of the process of perception and the attribut ion of meaning within the artificial world. (Fig.4) with the artificial realm are embedded within the definition of the term “design” itself. In order to effectively interpret the constructed world, it’s essential for designers to possess the capability

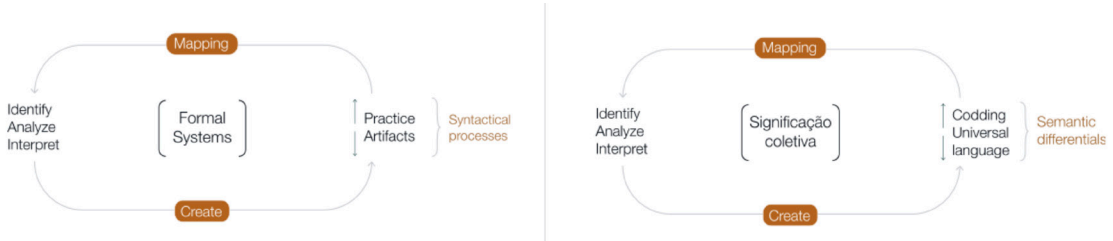

Fig 04 | Conceptual model of the relation of design with the sign and the process of perceiving the artificial world through formal systems and collective meaning. Author’s image.

to scrutinize the material culture enveloping them and effectively translate it into design solutions that augment value. Therefore, we commence with a holistic comprehension of design, encompassing the core concept outlined in Herbert Simon's thesis (1996 [1969]). According to Simon, design comprises a spectrum of disciplines dedicated to both studying and fabricating the artificial world.[2]

The nuances inherent in grasping the interpretation of design and its interconnection with the artificial realm are embedded within the definition of the term "design" itself. In order to effectively interpret the constructed world, it's essential for designers to possess the capability to scrutinize the material culture enveloping them and effectively translate it into design solutions that augment value. Therefore, we commence with a holistic comprehension of design, encompassing the core concept outlined in Herbert Simon's thesis (1996 [1969]). According to Simon, design comprises a spectrum of disciplines dedicated to both studying and fabricating the artificial world.[3]

[2] "Those which are not emitted intentionally and which constitute, so to speak, natural events which we use to recognise something or infer its existence, (...) and the 'artificial' ones which are, on the contrary, established conventionally by human beings in order to communicate with human beings." (1981 [1973], p. 15)

[3] By artifact we mean any object (tangible or intangible) that results from human creation.

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02

ESSAYS ON REVERSE DESIGN

REVERSE DESIGN PROCESS IN DECONSTRUCTING THE WORK OF RAUL LINO

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Abstract

The current essay aims to understand the culture and design practices through the use of reverse designing as a practical methodology for understanding the formal aspects and coherence in artifacts through the deconstruction and systemization of elements. A discussion will take place on the current methodology as well as its relation to design research. A reverse design exercise and experimentation will also take place, where the deconstruction and systemization of the work of Raul Lino will be approached. In addition to this, a discussion on how the work of the architect already used some aspects of reverse designing will also take place.

CULTURE AND DESIGN PRACTICES THROUGH REVERSE DESIGN

Rosa (2015) defines reverse designing as the creation of new ideas from the analysis and deconstruction of existing artifacts. As stated by the author,

> "reverse designing", i.e., through the analysis and dissection of existing pictogram systems, seeking to discover its structure, procedures and elements present in its construction. This procedure, "reverse designing", came from the concept "reverse engineering", proposed by Polya. This type of reasoning supports an activity similar to 'reverse engineering' i.e. 'working backwards' as proposed by Polya that is defended by Peirce as being the only logical operation that introduces new ideas. (Rosa, 2015).

With this methodology, the main goal is to find coherence within the family of artifacts that are being analyzed, thus creating a systemization or formal system. Through the deconstruction and systemization of existing artifacts, the understanding of context and culture becomes more successful. In the world of design, we increasingly hear about the culture of thinking (science), feeling (arts), and doing (practice and how it shapes the world around us). Nonetheless, the culture of doing brings preponderant value to the practice of design, reverse design falls within this realm, understanding the world around us and shaping the world around us, through the practice of design.

Through the deconstruction and selection of the most important parts of an artifact, the researcher is able to find the commonalities that make it unique, analyze the artifact critically, and use the analysis to create something new. As described by Archer et.al in 1992, “Design, in a certain sense, is research done backwards”.

RESEARCH IN DESIGN

In the past, research and design practice seemed to be divergent themes, from different worlds, rarely crossing. Frayling (1993) theorized that research in art and design could be done through practice. As the author states “where artists, craftspeople and designers are concerned, the world ‘research’ – the r word – sometimes seems to describe an activity which is a long way away from their respective practices. (...) artists, craftspeople, and designers do all the time anyway, artefacts, rather than artyfacts, deeds not words” (Frayling, 1993, p.4). The author explains that there are three ways of researching design. Research into design, research through design, and research for design (Frayling, 1993). The process of reverse designing might fall into many of these categories of research. Research into design, as it deep dives into the history of the artifact, research through design, in its methodology, as the designer uses their practice to analyze, deconstruct and understand the artifact and its family, and research for design, as the process of reverse designing allows for the creation of new artifacts.

REVERSE DESIGN INTO PRACTICE – RAUL LINO

Putting the methodology of reverse designing into practice is the best way to understand its value. For the purpose of this experimentation, an analysis of the work of Raul Lino, a Portuguese architect will take place. Born in 1879, Raul Lino was responsible for over 700 pieces of architecture. In addition to being an architect, he was also an interior designer, graphic designer, author, and artist. Within the large scope of his work, a part of it was highly dedicated to the understanding of the typical Portuguese home. As the author placed it, the Portuguese home is a "cultural manifestation, a perfect plastic expression that reflects the historical time and serves as a frame for the lifestyle of people" (Observador citing Raul Lino, 2015)1.

Even though the artist's work adapts to the lifestyles of people over time, there are certain elements that remain the same, making it so that his work is easily recognizable (Observador, 2015)2. Throughout his work, respect for Portuguese customs and the culture of the time is visible. As was stated by Mascero et. al., "it is evident throughout the architecture projects of Raul Lino different references to Portuguese architecture, bringing back and using different traditional elements, both vernacular and erudite, as the artist created a specific language and a singular work" (2009, p.53).

The interest in looking into the work of Raul Lino started from the notion that the architect is already a reverse designer of sorts. Throughout the large scope of his work, references and allusions to Portuguese history and architecture can be seen. In its essence, the work of the architect is a compilation of the architectural culture of Portugal,

[1].Translated from the original text: "defender a arquitectura como "manifestação cultural, expressão plástica perfeita que reflecte o tempo histórico a que serve de moldura."

[2].Translated from the original text: "Os projetos de arquitetura de Raul Lino evidenciam múltiplas referências à arquitetura portuguesa, resgatando e utilizando elementos tradicionais, vernaculares e eruditos, tendo criado uma linguagem própria e uma obra singular."

ultimately, creating a new language, based on the language of its predecessors. This notion is also interesting from the perspective of the designer (immersed in the analytical process of reverse designing) as it is possible to deconstruct a collection of works, that is reflective of the culture of its environment.

The reverse designing process begins with an exercise of observation. Through initial observation, one can pinpoint some elements of the scope of work that bring visual consistency to the "family" of artifacts. The next portion of the exercise focuses on the transformation of the images into lines. Through this deconstruction, the most important pieces of graphic information can be selected, making it possible to truly understand the form and language of the artifact. Throughout this process, it is possible to find insights regarding the formal consistencies that make possible the systemization of the work of Raul Lino. Figure 1 represents this portion of the exercise, where lines find consistencies and similarities throughout the whole scope of work that is being analyzed.

Figure 1 - Reverse Design Process

The next step in this process consists in specifying the elements that are a part of the scope of the work of Raul Lino. This portion of the exercise allowed for the systemization and understanding of the modular aspects of the work.

Providing the capacity for future designers and architects to create pieces that could fit into this family of artifacts. Understanding the elements that make up this language also allows for a dictionary of sorts to be developed, where a full understanding of the language of the architect and his work can be seen.

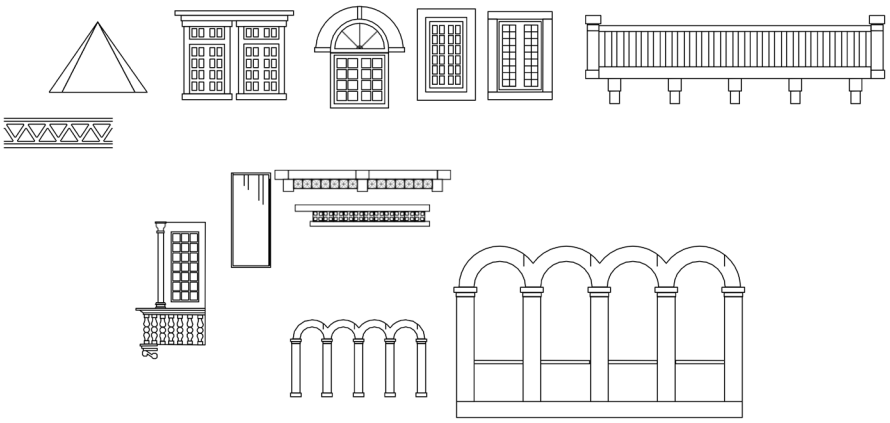

Figure 2 - Modularity Aspects in Reverse Designing

The final portion of the exercise consisted of a formal analysis of shapes present in the work. Identifying lines that are similar throughout the artifacts. In this portion, organic shapes, consistent lines, and elements present in the scope of the work analyzed were examined. This was done by looking closely at elements discovered throughout the first part of the exercise. Figure 3 represents this portion of the exercise, where the designer is able to see in a more direct way how the lines and depictions of the work of Raul Lino are consistent.

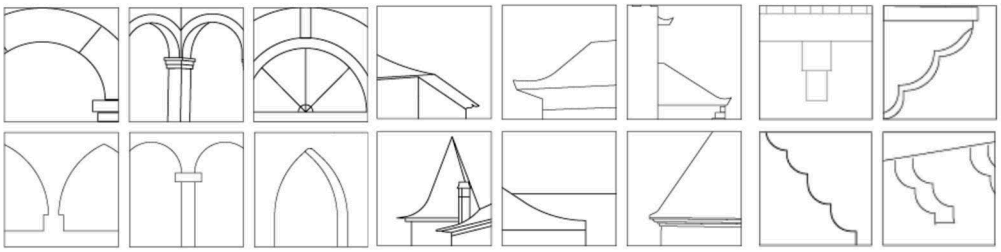

Figure 3 - Consistencies in Form

CONCLUSION

The methodology of reverse designing, starting with the final product, deconstructing and selecting the most pertinent information, and creating a sort of manual for the language of Raul Lino's work, ultimately led to a deeper understanding of the architect's scope of work. In addition to this, the exercise opened doors for the creation of new artifacts within this language. Throughout the process, the designer is able to immerse themselves in the work, which can lead to not only a deeper understanding of the artifact and its history but also the development of new artifacts, rooted in the family of their predecessors. This in itself, led to the understanding of how the architect interpreted and reinterpreted Portuguese architecture and culture as a whole when it comes to how people lived during this time.

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CULTURE AND DESIGN PRACTICES REVERSE DESIGN

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Abstract

This essay aims to analyze and explore the concepts of Culture and Design practices and approach the reverse design methodology in both theory and practice. The challenge of the exercise is to reinterpret, reflect, imagine, and draw from something that already exists, through an analysis of a group of artifacts, to achieve systems and formal coherence.

CULTURE AND PRACTICES OF DESIGNING

The first step to understanding the contextualization of design in contemporary society is to understand the concept of culture. In a generalized way, many dictionaries present the term “culture” as referring to collective intellectual manifestations, such as philosophical thought, religious beliefs, the arts, and other moral faculties that encompass justice, and economic and political institutions. This overall concept of culture presents social groups’ customs, ideas, attitudes, and practices. Antonio Damasio (2017) highlights the main categories of cultural processes: memory, language, imagination, and reasoning, all of them dependent on the production of images. The author (2017) affirms that all mental faculties intervene in the human cultural process, and focus on the ability to produce images, consciousness, and affection. Raposo (2018), states that just as interpersonal relationships contribute to our learning, interest, and motivation, visual language amplifies the potential for communication, and in turn, creates new ways of understanding and comprehending the world around us. Lipovetsky e Serroy (2010) complement this theorizing that the concept of culture corresponds to the organization and standardization of ideologies, intrinsically linked to a society of consumerism, being this, a cultural phenomenon. The same authors (2010) defend an idea of cultural globalization, influenced by media, the Internet, and the high networking capacity.

Due to current decentralization and technological advances, there is an increase in complexity, as a result, designers today are more required to respond to the social changes and the complex and wicked problems in a connected world, in more systematic and conscious shifting ways (Manzini, 2015).

A system is a determined set of interrelated elements that collaborate and interact with each other, they're independent, but can be combined to form a collective entity. Another characteristic idea of systems is that the interrelated ideas and forms require a set of rules and principles to ensure an orderly and harmonious interaction (Rosa, 2015). The design discipline has evolved from designing objects to services to designing systems and strategies in the past decades. As systems become more interdependent and correlative the complexity increases. Raposo (2018) says that the media contribute to changing the way we create, access, and interpret information, and consequently, open ways for new behavioral models to emerge. In a society based essentially on visual images, animated or static, associated with a rhythm or sound, the meaning of each sign depends on the context style, culture, and narrative in which it is inserted. In the media context, the user interprets the available data according to his culture, which adapts to new codes and contents.

FORMAL COHERENCE AND PATTERN

Many authors describe the form as shape, organized in the service of content. The form has a direct relationship with the emotional issue and belongs to the three-dimensional universe, necessary for the expansion of Identity, such as Architecture (and Environments), objects, and paintings. Bonsiepe (2001) argues that:

> (formal coherence) "is based on the use of identical or similar elements, geometrically described – both in the case of intrafigure coherence (internal) of a product or of interfigure coherence (external) of a group of products, the elements of which form a system."

For example, we can analyze a painting by Van Gogh, David Hockney, Basquiat, and many others, in a coherent formal analysis by identifying the elements of art which are considered the "building blocks" of the work such as light, line, shape, color, or patterns that are identical/similar and form a coherent system. You can see a painting by Van Gogh and recognize the artist because he uses the same "pattern" and visual identity.

A pattern is a tool used to assemble or create something else. Stencils, templates, grids, and guidelines are examples of patterns often used in design practice and projects. For example, constructing an object or a piece of clothing depends on a pattern that acts as a guide and template to transfer the form to the factory. Architecture is also based

on a series of standard drawings and templates that include a plan, elevation, section, and detail, which is then translated into the construction of the form. Although a pattern is a singular unit, the term is commonly used for repetition and multiplicity. With today's world's high complexity, the pattern must also be assumed as a behavioral organization. The definition of a pattern of behaviors exhibits consistency and characterizes uniformity in disorganization. The patterns are on the surfaces of products and can have a more organic graphic representation, geometric, among others, but they must always match the visual identity of the product, object, brand, and so on.

METHOD APPROACH

A group of paintings was analyzed from the perspective of the researcher, applying the method and process of reverse design (Rosa, 2015). Reverse Design emerges as a capacity/capability that is exercised throughout life, from a personal and analytical point of view about the existing material culture. The reverse design method seems to integrate into the three phases of design research introduced by the theorist Frayling (1993) because consists of a first phase of observation and history of the artifact (research into design), a second phase of the practice of deconstruction and systematization of the artifact (research through design), and a third phase of creating a new artifact (research for design). This method was applied to a group of paintings made by the artist David Hockney and consisted of the dissection of possible existing systems in his work of art. The paintings were chosen with the consideration of their varying degrees of similarity. This exercise seeks to observe and discover the paintings' construction by analyzing their structure, procedures, and elements.

DAVID HOCKNEY

Observation:

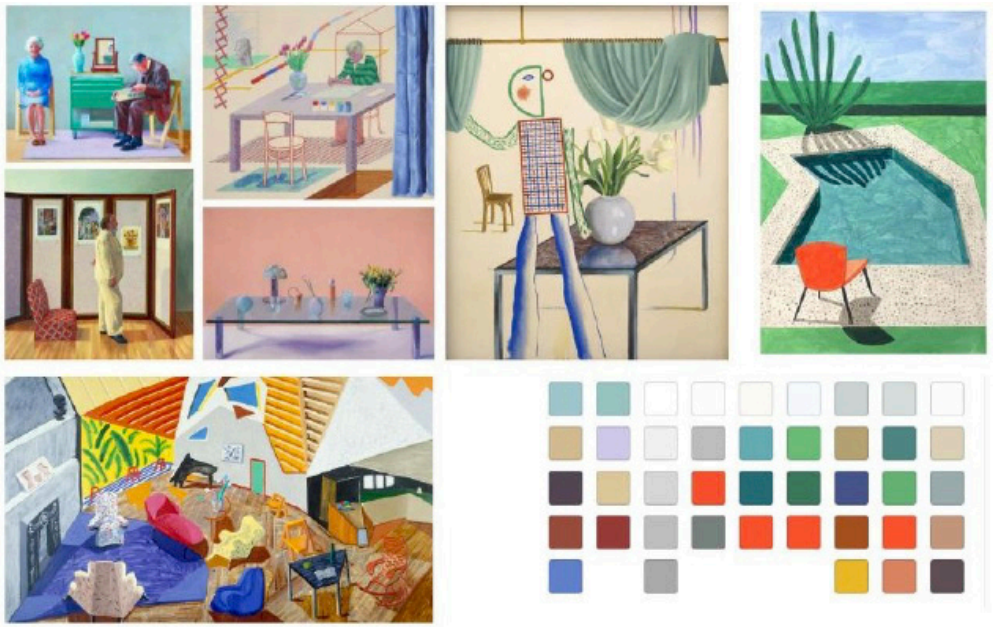

Figure. 1: Mood board of paintings by the artist David Hockney
Source: Image by the author (2023)

Artists deliberately alter their perceptions of their "inner world" and express the result of this synthesis in an artifact, such as sculpture, painting, drawing, and so on. As we can see (Figure. 1), there is a clear series of syntactic and geometric attributes in David Hockney's work and visual consistency. There are a variety of overlapping shots and common elements such as flowerpots, tables, chairs, everyday life objects, and observable reality (Figure. 2). These paintings are made by shifts and contrarian perspectives and spatial distortion in a "reverse perspective", like a Lego construction, these perspectives can generate multiple meanings and functions. We can observe the use of grids to inspire both rebellion and order. A grid is simply a network of uniformly spaced perpendicular and horizontal lines that is a

predetermined ordering structure that artists can disrupt or follow. The form allows both designers and artists to manipulate many rules of ratio and perceptions.

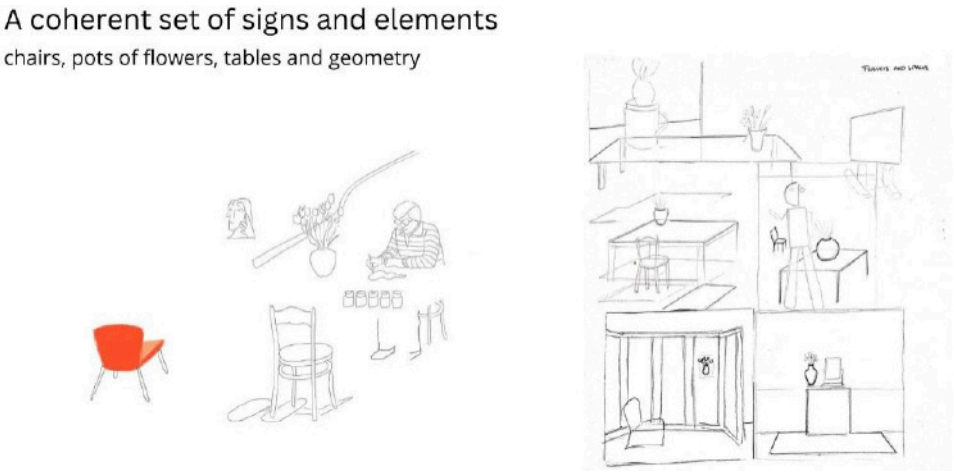

Figure. 2: Analyses of the element's presence in the paintings by the artist David Hockney Source: Image by the author (2023)

Hockney primarily works with photographs, so the grid is employed as a tool to translate the photographic image to the canvas. The grid is an organizational system that uses lines and colors to compose the painting. Colors are also an important aspect of systematization for Hockney, for creating blocks of color in a "grid", although it has not been worked on much in this first approach to reverse design practice. Color is directly linked to the construction of the artist's personality and is essential in the relationship of emotional creation with the spectator. Hockney's has a diverse set of the chromatic universe (Figure. 1), with a prevalence of bright colors. In this specific case, the artist generates lines that are included in the painting as guidelines and orientation to give shape to a concept or idea, always attached to a cultural context. The formal simplification in these figures is related to geometry, more than a free drawing context. It's clear that David Hockney uses a geometrical method and elementary forms to regulate the construction of the painting and seeks to balance and simplify the forms that can be recognized. This can be observed in the systematization process of the work (Figure. 3).

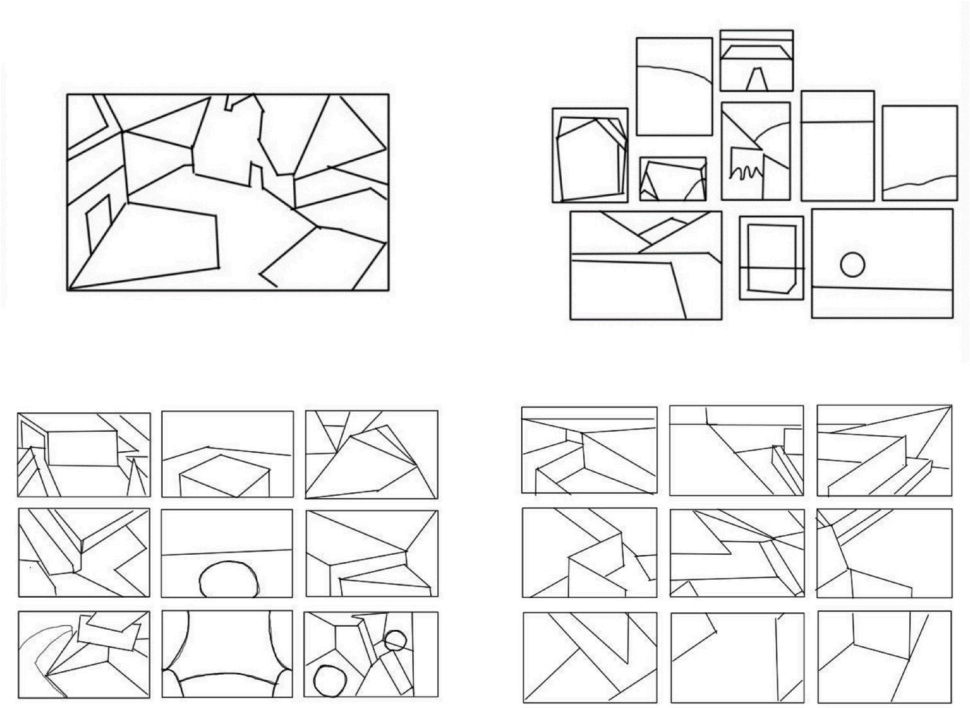

Figure.3: Systematization process of David Hockney's
Source: Image by the author (2023)

Graphic designers correspond to a formal organization of procedures necessary for the change of state of a given set of systems, and apparently, Hockney applies the same strategy/methodologies. Drawing allows us to model the contents and the process of representation, which is the most powerful way, to understand things because we cannot draw something without understanding it first. Hockney's work manipulates perceptions of tangible and imaginary reality, to the extent that it emphasizes the relevant characteristics, ideas, concepts, and other aspects, excluding what is superfluous to him. The creation of a style that persuades the identification and comprehension includes graphics, iconicity (transcription of culture properties), analogies, cultural movements, as well as a diversity of social contexts and events.

We can conclude from the reverse design exercise that there is a formal coherence in David Hockney's work and paintings. The systematic use of objects highly recognizable to the viewer, such as the table, flowerpots, chairs, and so on,

graphic symbols, facilitates the immediate recognition of the author, which becomes easier for people to memorize and remember. Culturally and socially speaking, these symbols and objects have a universal insertion capability. The understanding of these paintings or any kind of artifacts depends however on the knowledge that a person acquires throughout life, through contact, experience, and observation.

The continuous changes of perspective and the multiple "ways of seeing" the same scene generated by lines and geometric shapes allow us a logical and coherent identification of the painter's work that contributes to his visual language and facilitates its recognition among viewers, like a "brand" identity. The viewers of the work can experience both rationally and emotionally, the aesthetic experience we feel watching a piece like this can be used to study human ability in how we can recognize meaningful patterns to reduce the complexity determined by ambiguous information. Working outside or inside of the structural parameters of the grid, artists and designers make a series of aesthetic choices that lead to personal and individual statements.

From the researcher's point of view, many of the new and complex situations we face can only generate new perspectives and new questions from the introduction of innovative methods that allow us to question new principles, the construction of artifacts, why they exist, and why they are built, and only through their deconstruction generate new insights oriented towards future possibilities and probabilities. By rethinking the form of objects, we can build and contribute to the discovery of new paths for design, all this is associated with a literature review that can complement scientifically.

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THE CONSTRUCTION OF THE VISUAL LANGUAGE THROUGH TRANSCULTURAL DISCOURSE AND TIMELESS DESIGN ARTIFACTS

A REVERSE DESIGN APPROACH TO FORM A VISUAL LANGUAGE

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Abstract

The study addresses the need to classify the artifacts from a culture of design to form a visual language through a deep systemic analysis of structures, procedures, and constructive elements. It is critical to understand the emergence of creative approaches and solutions within the design process and how they coherently introduce new ideas through reflection, reconfiguration, and reinterpretation. To deconstruct the process of design and conceptualize immersive agents related to it, the study uses Reverse Design as the methodology. The focus is to explore the design language of the iconic chair, 'India Lounge' or '24/42' as the dimension of the hand and physical entity and reconstruct a visual language through an analytical and conceptual framework from the same. This chair is designed in 1965 at National Institute

of Design, India, by the collaboration of Hans Gugelot from Ulm Scholl of Design, Germany, and Gajanan Upadhyaya from NID, India. Being displayed at the design exhibition, 'Between Chairs' by Bauhaus Lab in 2017, the chair contemplates the vibrant cultural discourse with the significant question of the social responsibility of design. Through a conceptual framework, the study seeks to develop knowledge by investigating the factors associated with the creation of this chair and integrating them to form a visual language.

Keywords: Visual Language, Transcultural Discourse, Timeless Design, Reverse Design, India Lounge, 24/42, Culture, Craft, Language

INTRODUCTION

The study attempts to understand the culture and practices related to the process of design through deep systematic analysis and deconstruction; and introduce the knowledge to reflect, reframe and reinterpret into new ideas. There are ample examples throughout the history of design that suggest that design is a constructive process that initiates new perspectives, novel forms, and unique procedures (Cross, 2007; Alexander, 1964; Gregory, 1973). Therefore, it is critical to understand the structures, processes, and elements present in the construction of the artifacts that broadly represent the culture of design. This coherently establishes the rules and systemic approach in the design identity (Schuller, 2009; Spencer-Brown, 1994; Mirzoeff, 1999). To address the problem, the study inclusively uses Reverse Design as the methodology to deconstruct the process of design and conceptualize immersive agents related to it (Almendra, 2010). Furthermore, it seeks to integrate the patterns of the design elements into a new form of visual language as the outcome of the study.

The research concentrates on the design language of the iconic Cahir, India Lounge' or '24/42' as the application of the study and reconstructs a visual language from the same using an analytical and conceptual framework. Hans Gugelot of Ulm Scholl of Design, Germany, and Gajanan Upadhyaya of NID, India, collaborated on this chair in 1965 at the National Institute of Design, India. The chair, which was presented at Bauhaus Lab's design exhibition 'Between Chairs' in 2017, contemplates the dynamic cultural discourse with the critical subject of design's societal responsibility (Bittner, 2018). The study uses a conceptual framework to develop knowledge by looking into the components that went into making this chair and combining them to create a visual language.

BACKGROUND

Over recent years, several general and broad areas of knowledge, including semiotics and phenomenology, grounded theory, reverse engineering and system design, anthropology and sociology, suggest the requirement for Reverse Design in the design process to envision the classification of artifacts through immersive deep investigation. The analytical framework of Reverse Design consists of logical operations (Hoopes, 2014) through a thorough examination of the constructive elements (Polya, 1957) related to the design process. It enables the verification of the procedures and specificities (Rosa, 2015) to introduce new ideas. Reverse Design transforms tacit understanding into explicit knowledge by connecting, integrating, and elaborating diverse clusters and patterns of design elements from an analytical point of view (Almendra, and Ferreira, 2020). It also helps to perceive the overall system of the design culture, deconstructing the elements and understanding how they are connected to each other (Systems Oriented Design, 2021). Finally, the methodological need of Reverse Design has a conceptual connection with Actor-Network Theory (Latour, 2007), a theoretical and methodological approach to social theory in which everything in the social and natural worlds is connected in a network of relationships that is constantly changing. All this evidence prepares the ground for the Reverse Design to be applicable for a formal grammar (Kandinsky, 1926) that would make it possible to transform into a new design language through the systematization of traditional design elements. The study inclusively connects these confirmations to develop knowledge by looking into the design elements associated with the creation of ‘India Lounge’ or ‘24/42’ and incorporating them to reconstruct a visual language.

STATE OF THE ART

The seed of design culture and education in India consists of significant events during the late 1950 and 1960, including prominent figures such as Charles and Ray Eames, Buckminster Fuller, George Nakashima, Louis Kahn, and so on (Eames and Eames, 1997, Gira Sarabhai, 2021). The emergence of 'India Lounge' or '24/42' was one of the notable among them, which was designed by Hans Gugelot, from HfG Ulm, Germany, and Gajanan Upadhyay, from National Institute of Design (NID), India, in 1965. Despite the noticeable cultural and political differences between these two institutes, there were several similarities between the national contexts against which HfG Ulm and NID were set up, including post-war and post-colonial modernity. Both the design schools initially turned to the Bauhaus school of design, architecture, and applied arts to formulate relevant design pedagogies. Later in 2017, the design exhibition, 'Between Chairs', by Bauhaus Lab, establishes the position of the chair, 'India Lounge' or '24/42' between modernism and the transcultural networks involved in its making (Book of the month: Between chairs at Ulm and NID, 2018). For NID, the discourse revolved around a commitment to the indigenous culture of making as well as a desire to be a pioneer in modern Indian industrial design. HfG Ulm, on the other hand, focused the importance of system design as a critical response to mass production and a rapidly expanding mass consuming society. The double naming of the chair by Gugelot and Upadhyay had emphasized both these resemblances and divergences between the context and institutions their makers represented (Design cosmopolitanism: Between chairs exhibition, 2020).

The research is not limited to the motivation behind making of this iconic chair but had found similar remarkable attributes from other furniture designed by Gajanan Upadhyay, who is considered to be 'The Father of Indian Furniture' (Sundar, 2021). Throughout his five-decade career, he has worked with George Nakashima and Hans Gugelot, received training under Poul Kjærholm from the Royal Danish Academy, furnished the Gujarat High Court, and mentored some of India's best furniture designers. His poetic approach to material sensitivity, thickness, structure, and so forth often turned philosophical. Ideas of robustness and anonymity spoke as much of his work as his personality (Furnishing a modern India - Gajanan Upadhyay, 2020). Despite avoiding the political and intellectual debates surrounding the Modernist movement, his designs were strikingly modern in thought and expression. His evocative design philosophy embraces purity and honesty, contemplating timeless artifacts that are distinct in the material economy and absolute in structure (Tanumoybose, 2017).

The study attempts to deconstruct the idea and philosophy behind 'India Lounge' or '24/42' and Gajanan Upadhyay to find patterns, shapes, lines, colors, or any other illustrative potential which can be used to reform a visual language. So, based on the previous research, the study hypothesizes about a visual language, which represents contextual discourse that is functional, simple, and universally robust.

Two research questions are developed further to support the hypothesis.

- What is the craft of a visual language, and how is it possible for a visual language to be a master of its craft?

- What is the culture of a visual language, and how can a visual language's culture be inclusive of cultural diversity?

DEVELOPMENT AND RESEARCH METHODOLOGY

The methodological aspect of the project is built upon the principles of Reverse Design, which belongs to Action Research and Research Through Design (Herriott, 2019). Through the analysis and deconstruction of the existing system behind the design of 'India Lounge' or '24/42' and design philosophy from Gajanan Upadhyay's iconic chairs, the research seeks to discover the structure, techniques and elements present in its design culture and practice. The Research Design and Methodology ('Figure 1') behind the process is composed of three different stages, which are stated accordingly.

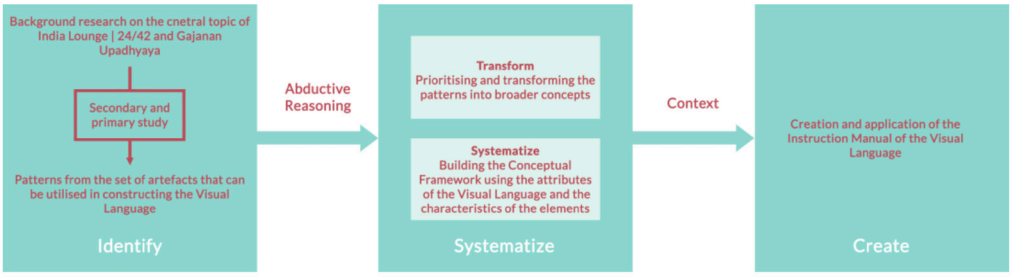


Figure 1: Research Design and Methodology

IDENTIFY

The stage of Identify includes the background research on the central topic. Different secondary and primary sources are being utilized to gather data. It consists of several design elements such as lines, shapes, forms, colors, patterns, textures, typography, facades, etc. As shown in 'Figure 2', Some of the elements identified in this stage are logics of system design, Indian traditional craftsmanship, low-cost Teak wood, local fabrics, high durability, low maintenance, flexibility, natural wood textures, and so on. In addition, the philosophical and conceptual nature of the research enables it to consider abstract keywords such as transcultural discourse, sensitivity towards detail, and timeless design artifacts. Finally, the stage tries to identify different patterns and similarities which can be further utilized in reinterpreting and reforming the visual language.

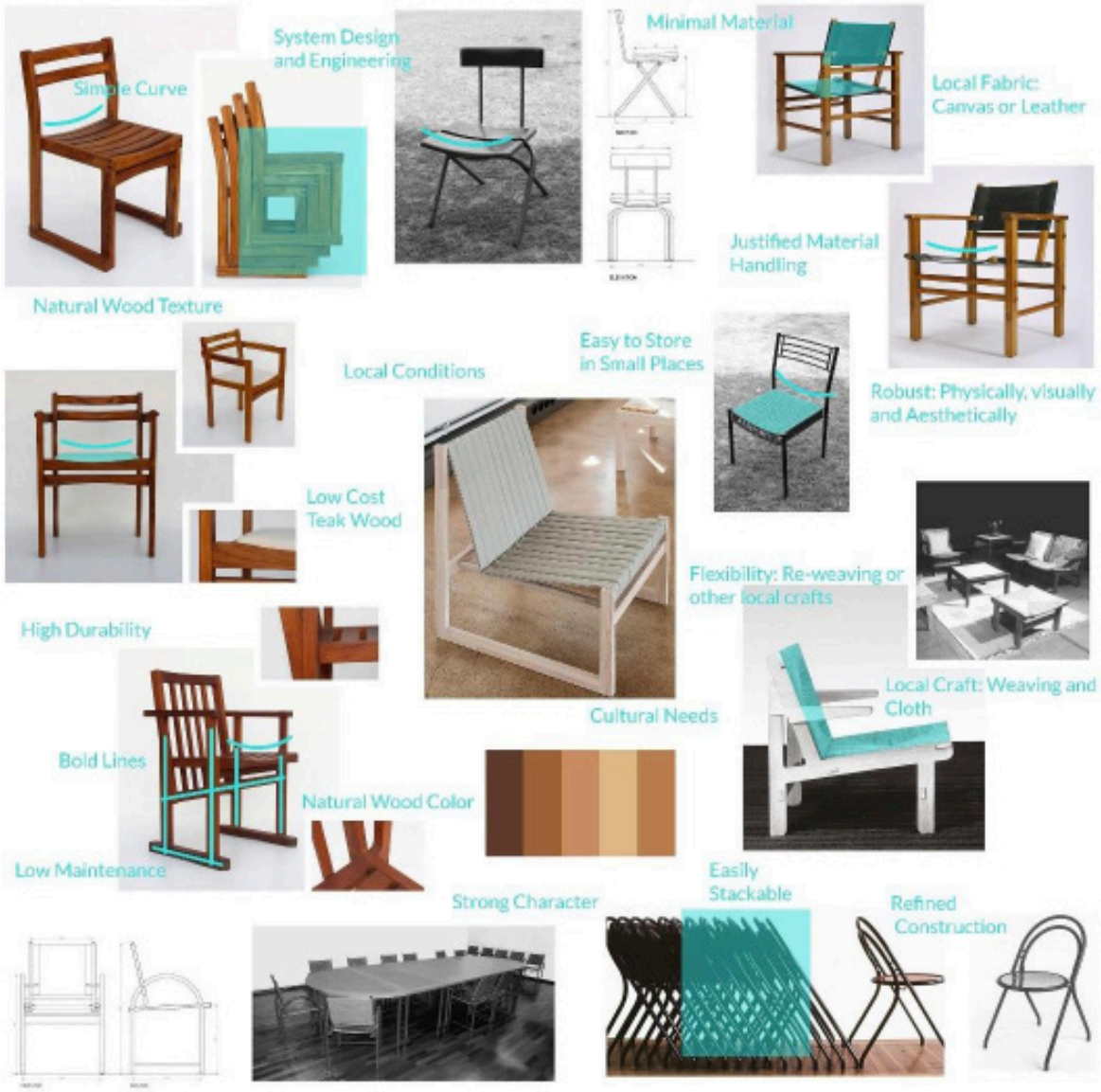


Figure 1: Research Design and Methodology

SYSTEMATIZE

The stage of Systematize has two substages, Transform and Systematize.

Transform

The patterns found in the previous stage are connected and categorized into two broader Keywords, such as ‘Timeless Design’ and ‘Transcultural Design Discourse’. According to ‘Figure 3’, this component of the stage understands the different aspects related to the two broader Keywords. It attempts to transform different attributes into a Conceptual Framework.

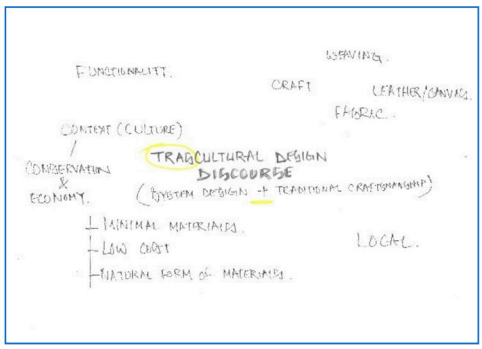


Figure 3: Keywords Attributes

Systematize

This component of Systematize stage creates the Conceptual Framework ('Figure 4') for the Visual Language, which includes the attributes of the visual language along with the characteristics of each of the elements related to it.
With the support of the Conceptual Framework, the study addresses the attributes of the visual language, which are as below,

- Functional: Contextual and Easy to Communicate
- Flexible: Open to Integration
- Optimization of Elements: Clean and Minimal
- Simple: Universal and Adequate
- Strong Character: Robust and Bold

In addition, the study reveals a link between the craft of visual language and the ability to communicate with it. It suggests the most critical element of the proposed visual language, functionality through communication. The previous keyword, 'Timeless Design' is associated with it, where the focus is on the functionality over form. Each of the elements of the visual language, including lines, shapes, colors, space, textures etc. are perfectly scaled and proportioned to support the functionality. On the other hand, the culture represents the aesthetics and style of the visual language, which can be achieved through the properties of the different elements of the same, for example, bold and iconic in lines, naturals, classy and neutrals in colors, relatable and universal in typography, and so on. The proposed visual language reflects flexibility in culture, which is open to integration according to the need of the craft, previously stated as universal and simple to
communicate. This aspect is derived from the keyword, 'Transcultural Design Discourse'.

CREATE

This stage helps to create the Instruction Manual, which can coherently support to apply the visual language in a step-by-step approach.

Instruction Manual

Step 1: Intent

What exactly do you want to say? Illustrate your idea that needs to be communicated through keywords or basic sketches.

#Note
This step of the instruction manual is intentionally included to understand the key idea behind the outcome of the visual language. As previously mentioned in the Conceptual Framework, this step consists of the critical attribute of functionality. Therefore, this step further helps to realize the context that needs to be communicated through the visual language.

Step 2: Content

What are the shapes and forms which you are going to use? Demonstrate your idea through keywords and sketches.

#Note
This step of the instruction manual is designed to reflect the key ideas through basic geometric shapes related to the Intent. This step considers the need to optimize the visual elements with simplicity and minimalism. At the same time,

it allows the user to experiment with the geometric shapes and develop new concepts that can be incorporated further.

Step 3: Components

Follow the list below to illustrate your content. Each of the attributes of the visual language in the list will lead you to the aesthetic of your content.

Lines	**Colors**	**Forms**	**Space**
Bold	Natural	Functional	Grids
Iconic	Classy	Communicable	Visual
	Neutrals		Scale

Shapes	**Values**	**Texture**	**Typography**
Meaningful	Retro	Classic	Relatable
Depth	Pastels	Patterns	Universal
		Iconic	
		Traditional	

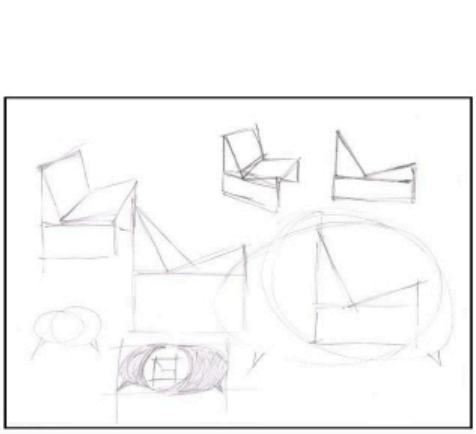
#Note
This step of the instruction manual describes the characteristics of the visual presence of the content. The list is designed to give the user a basic understanding of the visual language, which can be utilized in their own content. The step motivates the user to follow the Conceptual Framework, which is universal and adequate. At the same time, different attributes lead the user towards a robust and strong visual appearance.

Step 4: Creation

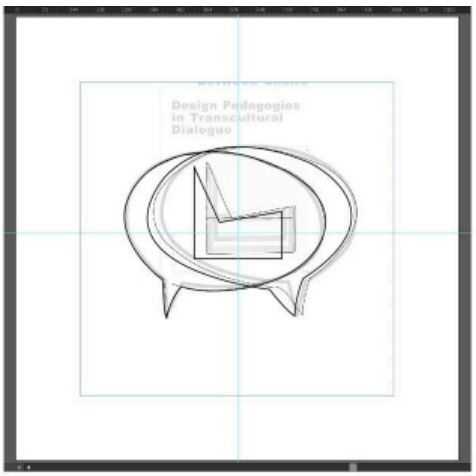
Compile your components to reflect your creation. You can use the attributes such as Space from the previous list in this step.

#Note
This step of the instruction manual assists the user in connecting various attributes of the visual presence and making them presentable to the world.

As the application of the Instruction Manual, the topic has been selected on the redesigning the book cover of 'Between Chairs: Design Pedagogies in Transcultural Dialogue', Bauhaus Lab, 2017 ('Figure 5', 'Figure 6' and 'Figure 7').

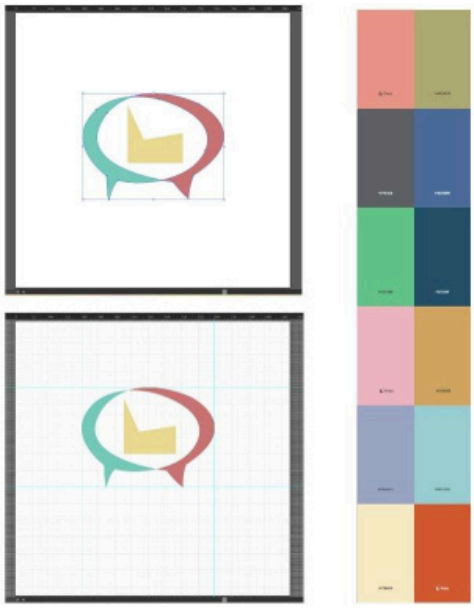


Step 1: Intent
Main Keyword: Discourse, Transcultural, Communication

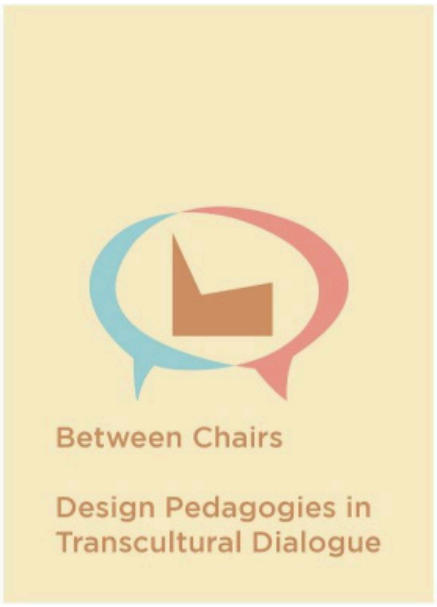


Step 2: Content
Basic geometric shapes derived from the keywords

Figure 5: Step 1 and Step 2 following the Instruction Manual

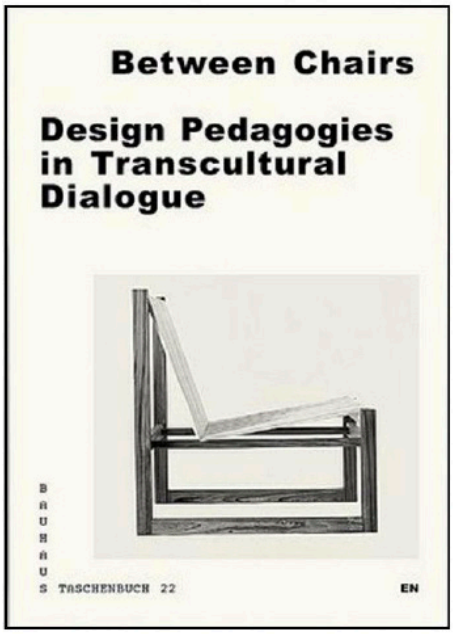


Step 3: Components
Applying different attributes of the visual language such as meaningful shapes, grids for space, color palette and so on.

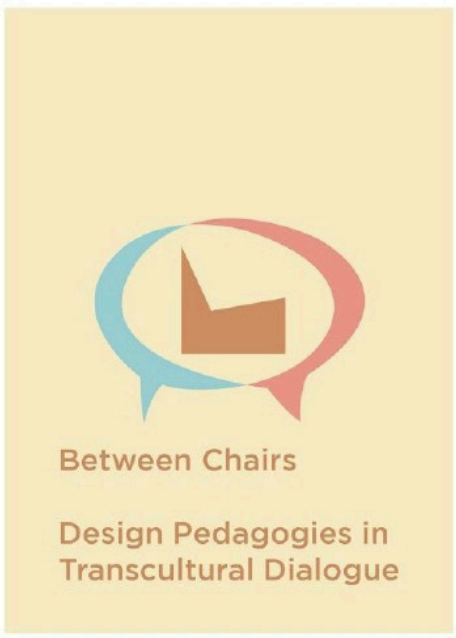


Step 4: Creation
Compiling all the components to take further decisions such as the position of the visual on the book cover, background color (Natural Indian Teak Wood Color), fonts (Gotham) etc.

Figure 6: Step 3 and Step 4 following the Instruction Manual



Old Book Cover



New Book Cover

Figure 7: Old Book Cover and proposed New Book Cover

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03 EPILOGUE

EVERYTHING HAS TO HAVE FORM TO BE SEEN, BUT IT WILL HAVE TO MAKE SENSE TO BE UNDERSTOOD

Carlos Rosa

The importance of design permeates our daily existence, impacting the products we use and the environments we inhabit. However, conventional design approaches often overlook the diverse array of people and cultures interacting with and interpreting these designs. Reverse Design emerges as an innovative solution, offering a framework to foster the creation of design systems that possess consistency in both form and meaning, ensuring accessibility to individuals from various backgrounds.

This method facilitates the analysis, systematization, and crafting of artifacts in the realms of visual, three-dimensional, and spatial domains. It operates under the premise that complex information finds effective interpretation through relative and visual terms. Visual representation can unveil meanings that might otherwise be lost in the intricacies of the artificial world.[1]

At its core, Reverse Design method operates through iterative cognitive cycles, progressively evolving through adjustments. These cycles hinge on encoding and decoding processes, predominantly facilitated by constructing graphic simulation models. The aim is to amalgamate resulting visual elements into a coherent systemic whole, infused with syntactic, semantic, and pragmatic significance. This aligns with Krippendorff's assertion that while form is necessary for

[1]We use the term "artificial world" in the sense given to it by Simon[1] in his seminal work The Sciences of the Artificial, where the author presents his view of the artificial world; this world can be described as a set of artefacts, that is, any object created by humans to satisfy their needs. Simon argues that the development of artefacts is always the result of some design; therefore, understanding the world of artefacts (the artificial world) requires an understanding of design activity.

visibility, true understanding necessitates coherence (Krippendorff, 1989, p.14).

Encouraging alignment and coherence within design systems, I advocate for the use of formalistic techniques rooted in geometry and standardization. These tools not only aid students, researchers, and designers but also enable the systematization of specific design perspectives, contributing significantly to the scientific progress within the Design discipline. This proficiency involves dissecting artifacts—regardless of their dimensionality, isolation, or tangibility—to identify their fundamental components, expound on their inception processes, and synthesize acquired knowledge, ensuring effective dissemination of insights to others.

Hence, the creation of this theoretical model and its goals within pedagogy and practice aims to cultivate analytical prowess concerning material culture and its constituting artifacts. The use of this theoretical model intends to incite, nurture, and enrich analytical perspectives towards the artificial world, ultimately enabling critical examination of artifacts from a design standpoint.[2] (Fig. 1)

[2]A useful analogy to explain this process is to understand it as taking apart a Lego model, understanding its construction, and ending up creating the instruction manual.

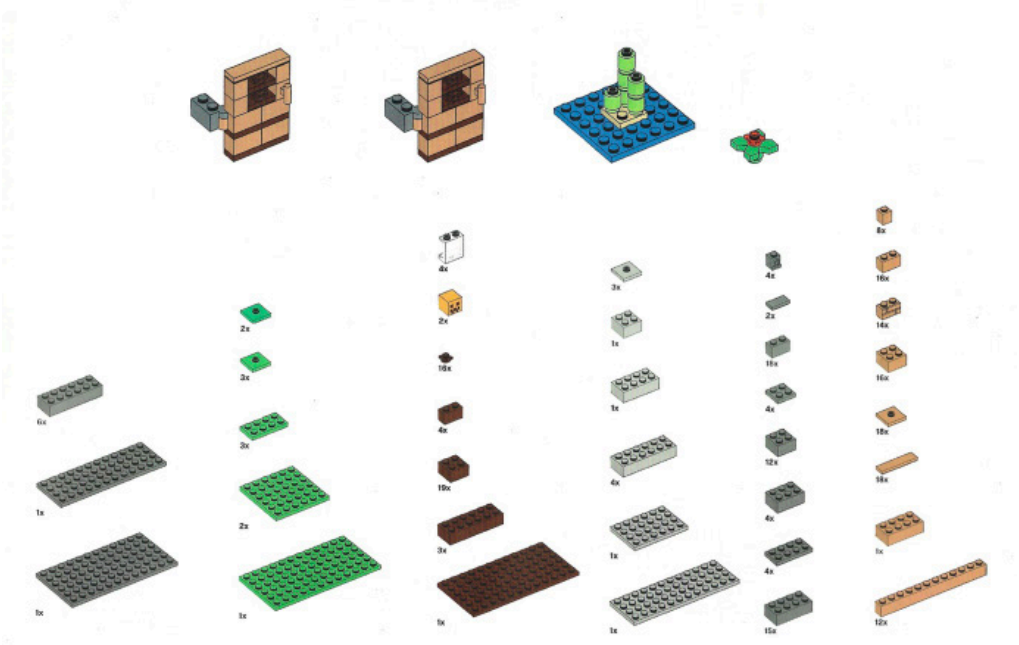

Fig 01 | LEGO instructions, example of a visual grammar with key components and process description to assemble an object.

Thus, the creation of this theoretical model and its objectives in the fields of pedagogy and practice have been developed in order to stimulate analytical capacity about material culture and the artifacts that constitute it. The use of the theoretical model proposes to trigger, encourage, and develop the analytical perspective towards the artificial world around us and, in short, to achieve the central outcome of being able to critically examine artifacts from a design perspective.