Design as a performative agent: cultural mediation towards change and social benefit[1]

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ABSTRACT

This article elaborates an approach to the interdisciplinary practices of Design, and also to the impact they can have on the thinking, emotions and attitudes of the people who are immersed in their daily spaces of interaction. Unveiling the benefits that artifacts achieve as a result of such practices, reveals a substance that transcends the universe of products, services, and experiences. In the face of these realities, Design projects the cultivation of behaviors that go beyond the political dimension of the economy, when it commits itself to the construction of values from its powerful social mediation. Aspects such as inclusion; the defense of human rights; respect for cultural diversity; freedom of otherness; preservation of environmental health; orientation and information in interactive spaces; education; and universal benefit, among other factors, are among its interests. However, the ever-changing cultural specificities, atomized in needs, aspirations, desires and lifestyles, tend, at times, not to correspond to the artifactual solutions due to the biased results resulting from traditional design methodologies. Therefore, this research integrates the above theories with the development of assertive tools to typify users, as well as heuristics for the evaluation of processes and results, applied to case studies of different nature. In this way, the role of Design can reach high levels of performativity, especially when it seeks to generate changes towards social benefit and transformation.

Keywords: *Design; performativity; rhetorical; evaluation heuristics; ideological agent; design and education; perception; social conflict; users.*

1 This article is the product of an inter-institutional theoretical and academic reflection, thanks to a team of researchers trained in design disciplines, who have worked on projects that counteract the effects of Latin American contexts.

El diseño como agente performativo: mediación cultural hacia el cambio y el beneficio social

RESUMEN

Este artículo elabora una aproximación a las prácticas interdisciplinares del Diseño, así como al impacto que pueden tener en el pensamiento, las emociones y las actitudes de las personas que están inmersas en sus espacios cotidianos de interacción. Develar los beneficios que los artefactos logran como resultado de tales prácticas, revela una sustancia que trasciende el universo de los productos, servicios y experiencias. Frente a estas realidades, el Diseño proyecta el cultivo de comportamientos que van más allá de la dimensión política de la economía, cuando se compromete con la construcción de valores a partir de su poderosa mediación social. Aspectos como la inclusión; la defensa de los derechos humanos; el respeto a la diversidad cultural; la libertad de la otredad; la preservación de la salud ambiental; la orientación e información en espacios interactivos; la educación; y el beneficio universal, entre otros factores, están entre sus intereses. Sin embargo, las siempre cambiantes especificidades culturales, atomizadas en necesidades, aspiraciones, deseos y estilos de vida, tienden, a veces, a no corresponderse con las soluciones artefactuales debido a los resultados sesgados resultantes de las metodologías tradicionales de diseño. Por lo tanto, esta investigación integra las teorías anteriores con el desarrollo de herramientas asertivas para tipificar usuarios, así como heurísticas para la evaluación de procesos y resultados, aplicadas a estudios de caso de diferente naturaleza. De esta manera, el papel del Diseño puede alcanzar altos niveles de performatividad, especialmente cuando busca generar cambios hacia el beneficio y la transformación social.

Palabras clave: *Diseño; performatividad; retórica; heurística de evaluación; agente ideológico; diseño y educación; percepción; conflicto social; usuarios.*

O design como agente performativo: mediação cultural para a mudança e o benefício social

RESUMO

Este artigo elabora uma abordagem às práticas interdisciplinares do Design, bem como ao impacto que elas podem ter no pensamento, nas emoções e nas atitudes das pessoas que estão imersas nos seus espaços quotidianos de interação. Desvendar os benefícios que os artefactos alcançam como resultado de tais práticas revela uma substância que transcende o universo dos produtos, serviços e experiências. Diante dessas realidades, o Design projeta o cultivo de comportamentos que ultrapassam a dimensão política da economia, quando se engaja na construção de valores através de sua poderosa mediação social. Aspectos como a inclusão; a defesa dos direitos humanos; o respeito à diversidade cultural; a liberdade da alteridade; a preservação da saúde ambiental; a orientação e informação em espaços interativos; a educação; o benefício universal, entre outros fatores, estão entre seus interesses. No entanto, as especificidades culturais em constante mutação, atomizadas em necessidades, aspirações, desejos e estilos de vida, tendem, por vezes, a não corresponder a soluções artefactuais devido aos resultados enviesados resultantes das metodologias tradicionais de design. Assim, esta investigação integra as teorias acima referidas com o desenvolvimento de ferramentas assertivas de tipificação de utilizadores, bem como heurísticas de avaliação de processos e resultados, aplicadas a estudos de caso de natureza diversa. Dessa forma, o papel do Design pode alcançar altos níveis de performatividade, principalmente quando busca gerar mudanças em prol do benefício e da transformação social.

Palavras-chave: *Design; performatividade; retórica; heurística de avaliação; agente ideológico; design e educação; perceção; conflito social; utilizadores.*

Introduction

The challenges that Design for Visual Communication has faced in recent years in the face of social problems have transformed its participation by reformulating the methods that used to be implemented by its professionals. These challenges imply that its persuasive strategies have to appeal to "un conjunto robusto de métodos que es aplicable a una amplia gama de problemas sociales" (JND.org, 2014). Design X, which Norman and Stappers (2015) developed in their research at the School of Design and Innovation at Tongji University, draws on "la evidencia para abordar muchos de los problemas complejos y graves que enfrenta el mundo de hoy". Hence, the need to reveal a deep analysis around the influential factors to the design exercise, in contexts where governmental, non-governmental, academic, or productive sector interest, project all kinds of strategies. The actions that underpin them range from informing, sensitizing and/or persuading, among others, and seek to institute in their recipients, aspects that counteract the risks of vulnerability, on issues such as exclusion, discrimination, and social conflicts. In this, the concept of "performativity", or predeterminations actions, from John Langshaw Austin (1992), Revellino, S., Mouritsen, J. (2015), Escandón, P. (2019), and the Design Thinking concept from Tim Brown (2008), and the criticisms or overcoming of this concept by Ryan Ford (2022), and others perspectives, have generated new practices, thanks to the paths that imply new ways of thinking about design and then exercising it, and where the passage from words to actions becomes essential. The resources that imply this step will be called "Performative", meaning that establishes an obligatory connection between language and actions. That, as a causal dynamic, being implicit in the designed pieces, performativity manages to anticipate an expected change in the attitudes towards those to whom it is directed, in whatever context it is intended to address; as Austin, J.L. (1992), Revellino, S. and Mouritsen, J. (2015), Gutiérrez, L. (2022) et al., Gutiérrez, L. (2023) et al., Escandón, P. (2019), Escandón, P., Mejía, M. (2022) and Giraldo, M. (2024) et al., also suggests. However, for design to achieve such assertiveness, it is suggested first to characterize the value of "cultural mediation" Moles, A. (1990), Margolín, V. (2005) and Betts, M. (2017) that design assumes between people and the environment, from each piece it projects. Human subjectivities and their value systems; political, historical, ideological, and geographical contexts; and studies of user profiles are aspects that must be addressed and systematized with precision in the iterative phases of any Design Project. Above all, if one hopes to cultivate or encourage new attitudes that place the individual in an affirmative role, in interactive terms, in relation to his or her otherness.

Content

One of the many aspects to be considered by Design, when anticipating persuasive or performative intentions, is to rethink the contextual approach in which communities are immersed, to interpret the complex systems of signs and rituals with which they communicate. These aspects are significant, in cognitive and emotional terms, since they do not result in decisions about prevention, awareness-raising or "educational behaviors", as raised by Revellino, S., Mouritsen, J. (2015), Escandón, P. (2019), Escandón, P., Mejía, M. (2022) and Norman, D. (2005). If the goal of designers is to know others in depth, to find the best way to address them, the dialogic bridges that would bring them closer could influence them in a more practical and objective way. The decisive use of resources that aspire to performativity, with the aim of addressing social problems, understands this responsibility of designers as a social action that demands methodological rigor in their research.

Strategic convergence of models. The basis for characterizing users

The Design for Visual Communication, standing out for its robust interdisciplinary foundation, with roots in aesthetics, sociology, economics, semiotics, communication, and the instrumentalization of the hard sciences, can face the problems of the contemporary context. Besides, this discipline makes it mandatory to understand the principles that guide the generation of new knowledge, as well as its social appropriation. Given that Design, when articulated with scientific knowledge, endows its practices with concreteness, it should not necessarily become another science, as suggested by the German designer Gui Bonsiepe (1999):

> *Dicho interés fue a menudo malinterpretado como una tentativa de practicar un diseño científico o directamente de querer transformar el diseño en una ciencia [...] explorar el rico potencial de la ciencia, según el razonamiento asumido de que los conocimientos científicos podían enriquecer el proyecto y hacerlo más fundamentado. (Bonsiepe, G. 1999, p.139)*

The mediation between people and the environment, supported by the relationship between art and science for the construction of knowledge, is also found in the notions outlined by the theorist Wagensberg, J. (1998), in his book Ideas for the Impure Imagination. According to this author, the principles of "universality, objectivity, communicability, and intelligibility" are fundamental properties of scientific knowledge, and key guidelines for the construction of affirmative knowledge. Science, having as its purpose to be universal, objective, communicable and intelligible, generates assertive predictions, formulations of general laws and explanations for the phenomena it studies. Hence, the importance of the principle of universality as understood by Wagensberg, J. (1998). This principle emerges as a compass in the debates that confront Design as a discipline capable of sending specific global messages. In his words: "la ciencia pretende ser independiente del espacio y del tiempo, independiente de las mentes que la han forjado y que la aplican, independiente de sus costumbres, tradiciones y creencias" (Wagensberg, J. 1998, p. 7). At first, this principle would seem questionable, applied to the field of Design, since it is strongly related to human subjectivities, with their value systems, with cultural appreciation, and framed historical contexts. If we consider the sciences as an intrinsically human phenomenon, whose effects influence the ways of life of social groups, when it is instrumentalized by Design, it acquires the principle of universality, of which Wagensberg, J. (1998) speaks so much. The conception of Design approached by Bonsiepe, G. (1999), as a debtor of the hard sciences that satisfies human requirements, without necessarily being a science, could grant itself the construction of knowledge thanks to the universality, coming from science, of which Wagenseberg, J. (1998) speaks too. If design seeks the construction of rigorousness, in what way would the instruments coming from these disciplines guarantee the transmission of knowledge and the formation of values?

In relation to this question, the reflections made by Frascara, J. (2000) are called upon, since, according to him, generic messages, which target a large part of the population, produce the opposite effect to the expected one. They only manage to reach a few. According to Frascara, when it is expected to modify the behavior of users, to whom the pieces developed by designers are addressed, it is necessary to consider specifically what each one of them thinks and feels. Hence, it is necessary to appeal to methods originating in other fields of knowledge, which can bring designers' readings of people's needs closer to them in a more precise way. This author argues that the experience shows panoramas on this subject:

> *… al no tratar de relacionarse con motivaciones específicas de diversos grupos de público, carecen de resultados mensurables [...] la maestría en el diseño de comunicación visual, tradicionalmente definida como el conocimiento del lenguaje de la visión, debe extenderse para incluir el conocimiento de los lenguajes, las necesidades, las percepciones y los valores culturales del público al que se dirige. (Frascara, J. 2000, p. 28)*

The characterization and thorough analysis of user profiles, as a starting point for the design.

In Design for Visual Communication, its role as a systematic evaluator focused on problem solving, pursues a univocal impact that evidences the need for what Bonsiepe, G. (1999), Wagensberg, J. (1998), and Frascara, J. (2000) argue is necessary. However, the capacity of science reflects certain limitations since the design can be specific as well as how they operate. However, design is not specific to a single culture, but to many, and the messages it sends, and their quality of interpretation varies, depending on the sensitivity, nature, and experiences of its recipients. The Designer, in the search to transmit knowledge through images, sounds and diverse perceptual stimuli, needs to know more about the particularities of his audience. This, to appropriate the characteristics of segmentation and profiles, as mentioned by Norma Esparza (2016), in her text: Diseño de una metodología para la construcción de conocimiento artístico en proyectos de diseño gráfico. Esparza defends that, although scientific precision is essential, art is also essential, to thinking and to the diverse practices that design assumes. This is because its aesthetic sensibility has been linked to culture for decades. However, it should be clarified that the notion of art, addressed here, is only from its modern conception, as understood by William Morris (1883), to avoid polysemic ambiguities of the term. Morris, quoted by Víctor Margolín (2009), in his article: El Diseñador Ciudadano, views art from a functional conception. This conception goes beyond the work of art, sculpture, painting, and transcends architecture, passing through all objects designed for the home, the administration of cities and communications. In specific terms of William Morris "ampliemos la palabra 'arte', a todos los aspectos de nuestra vida" (Quoted in Margolín, 2009, p. 2). In other words, Morris was referring to the concept of culture, which contains, as he rightly states, 'all aspects of our life'. Since the goal of Design is culture, to approach it, the convergence between science and art is necessary. This concept is understood by Abraham Moles (1990), in his text The Kitsch, as follows:

> *La cultura es aquel ambiente artificial que creó el hombre por medio del cuerpo social [...] la cultura incluye esencialmente todo un inventario de objetos y de servicios que llevan el sello de la sociedad, productos del hombre y en los que se refleja. (Moles, A. 1990, pp. 12-13)*

This is how objects and communications, thanks to the experiences and services they provide, mediate from the artificial space designed for people, as mentioned Margolín, V. (2005). Such mediation is highly persuasive, but how can humans alter or change their behavior based on the world projected by designers? Let us clarify that for Moles, the position of cultural mediator is not occupied by the designers, but by the objects projected by them. And by objects, Moles, A. (1990) refers to communicational strategies and products.

Design and its communications, as ideological agents

In the text by Jonathan Baldwin and Lucienne Roberts (2007): Comunicación Visual de la Teoría a la Práctica, it is argued that design is an "ideological agent", given that from semiotics it makes use of signs in communication, to establish an emotional and identifying link with the people towards whom they are directed. This, in each one of its media strategies, channels the functionality of the values of use and exchange. But how do you get the other to do what you expect from a communicative and persuasive strategy? Baldwin, J., and Roberts, L. (2007) explain that, to address the other, in ideological or political terms, one must first know the other well, in other words, or as Frascara, J. (2000) argues, one must know exactly how the other feels and thinks. The way to choose which signs to use and which not to use, to wait for the expected response, is reached from the classification models of the target audience, which Baldwin, J., and Roberts, L. (2007) calls "ABC" and "VALS". For them, the "ABC" model oversees identifying the demographic variables which, combined with the aspirations, values and lifestyles represented by

the "VALS", complete the psychological and emotional picture of the profiles to which the pieces to be designed are addressed. Thus, they would possess the load of signs adequately chosen, so that the dialogic bridge that is traced between designers and users reaches its objectives. See Figure 1.

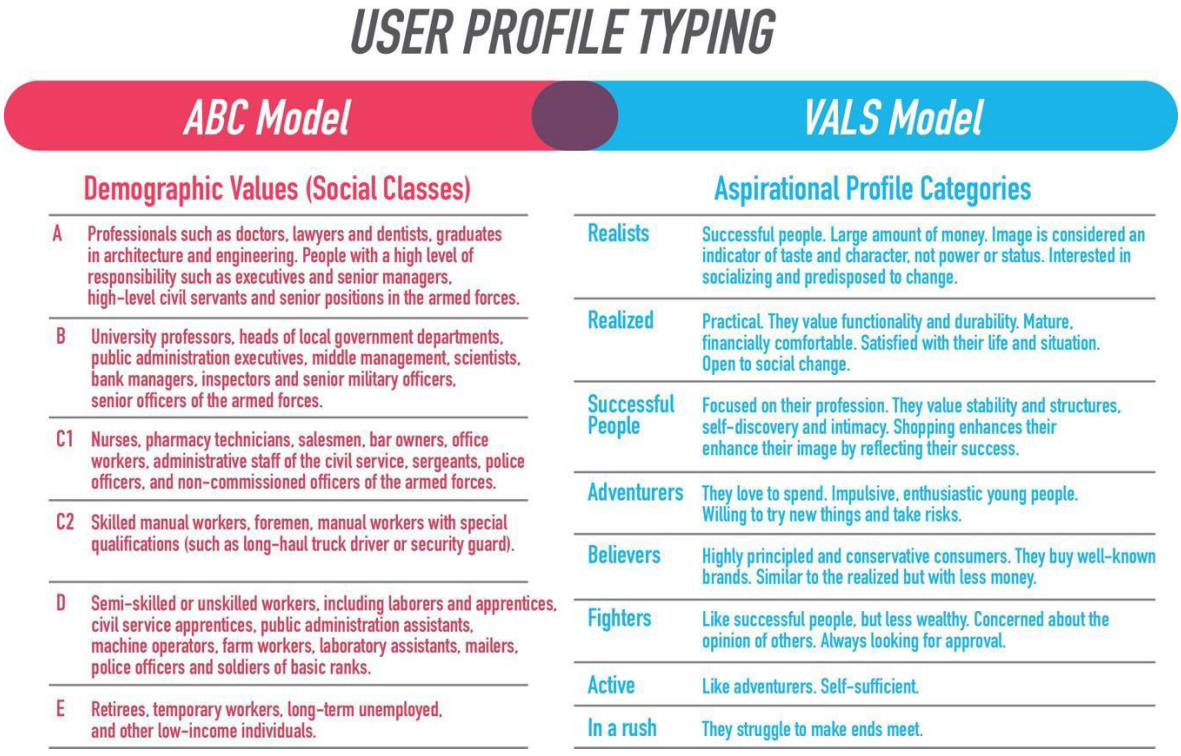

Figure 1. *Own elaboration. Diagram describing the typification or classification models of user profiles, or target audiences. Scheme developed and based on Baldwin, J., and Roberts, L. (2007, pp. 29 and 31).*

In addition to this, it is argued in this reflection that if these two models are complemented with the one proposed by the design theorist Bernhard Bürdek (2002), the strategies would become more robust, methodologically speaking. Whenever it is difficult to know or approach the target audience, being able to access the "Activities, Interests and Opinions" of those users is equivalent to the degree of certainty of what Bürdek calls the "Symbolic Functionality of Communication".

> *Concretamente en este estudio científico reciente sobre las funciones simbólicas se pone de manifiesto que, los instrumentos tradicionales de investigación de mercado que trabajan con características demográficas (edad, sexo, nivel cultural, salario, lugar de residencia, etc.), ya no son válidos para el diseño. Se dificulta la investigación del estilo de vida, ya que éste no indica la pertenencia a una clase determinada en un sentido tradicional, sino la pertenencia a actividades, intereses y opiniones comunes. Se habla de datos, de AIO: Activities, Interests and Opinions. (Bürdek, B. 2002, p. 231)*

From the user typologization models proposed by Baldwin, J., and Roberts, L. (2007) and Bürdek, B. (2002), it is possible to understand how Design operates as an "ideological agent", given that the symbolic load contained in each artifact is based on the rational and emotional profiles of the users for whom they were created. And with this expression, we refer to the mixtification between: "ABC, VALS" and "AIO". This convergent action of classification, deduced in this article, is the appropriate one, so that design, as an ideological and political agent, reaches performativity.

Hence, Betts, M. (2017) in his article Crítica a la Mediación Cultural del Diseño states that:

> *El diseño es uno de estos agentes, que posee la virtud de erigir asociaciones semiológicas en la acción de proyectar usando como receptáculo los criterios de función y forma de los objetos, bajo estrategias (retórica) que persiguen instituirlos y difundirlos. De esta manera, se logra anticipar en tiempo presente las deconstrucciones de esas mismas asociaciones (hermenéutica), que de uno u otro modo condicionarán, a futuro, las actitudes y relaciones de las personas que las adquieran y las asimilen. Esto, para que se reflejen en valores y estilos de vida, más sintéticos que los mismos factores que las engendraron. Una definición del diseño que emerge como una convergencia sistémica entre retórica y hermenéutica. (Betts, M. 2017, pp. 172-173)*

Information design and its influence on cognitive processes

The focus of interest of this reflection, centered on the way in which people receive, interpret and understand complex sign systems, considers the field of Information Design as a decisive factor for the codification of signs. This field, by conveying communicative processes, also has an impact on decision making and human behavior, which can be implemented from the design disciplines.

Visual thinking and decision making

To understand the aspects that Information Design uses, it is necessary to first outline a description of how memory and visual thinking operate in the human mind. For visual thinking to be activated from the images that enter the brain through the senses, it is necessary for memory to selectively store or discard information. To understand its roles, Alan Baddeley (1999), in his text La Memoria Humana, classifies it into three types. "Sensory memory": which registers sensations and recognizes the physical characteristics of stimuli; short-term memory: which stores the information required now; and long-term memory: which preserves knowledge about the world for later use (Baddeley, 1999, p. 140). In a similar sense, Mario Uribe (2015/2016), in his text: Diseño de Información, argues that in relation to the functionality provided by the different types of memory: "todas son importantes en el proceso de aprendizaje; de hecho, sin la memoria, es decir, sin almacenar lo que se aprende, no existe el aprendizaje" (Uribe, M. 2015/2016, p. 36).

To better understand the process of visual thinking, which deals with this area, Alberto Cairo (2011), in his book El Arte Funcional, states that information must pass through three stages before becoming knowledge, or better yet, actions. The information that is perceived about the reality of the environment, Cairo calls unstructured; the records of that reality he calls Data; what has been rationalized by the brain he describes as codification, or intentional structure; and what is related to previous knowledge, as structured. This author indicates that the information received can be transformed into knowledge when the person assimilates the information presented to him, by mixing it with his own memory and previous experiences (Cairo, A. 2011, p. 31). See Figure 2.

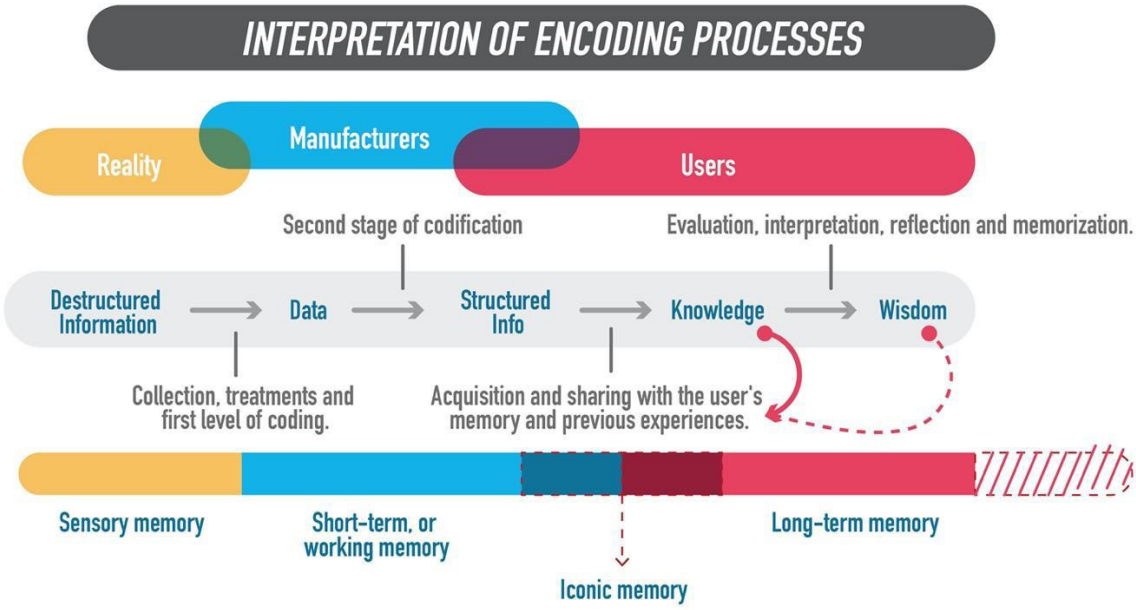

Figure 2. *Own elaboration. Diagram describing the interpretation of the information encoding and decoding processes. Scheme developed and based on Cairo, A. (2011, p. 31).*

In addition, if the information shows the code by which a content becomes a sign, and how it works, it can generate relationships with the knowledge previously stored in the memory. Consequently, this gives value and meaning to what is perceived, which, when converted into mental associations, has an impact on the addresses. The following scheme (Figure 3), allows one to understand the elements that are put into play to know how the contents must be conceived, structured, and presented, so that an effective communicative process takes place. And the importance of involving in the design process the people for whom such contents are created, issued, or prepared. When all these aspects are considered, the efficiency of the processes that seek to influence an evidenced reality is facilitated. In the case of this research, these processes are important to consider when the design is faced with problematic situations of tension, natural catastrophes, exposure to permanent tensions of the civilian population, etc. See Figure 3.

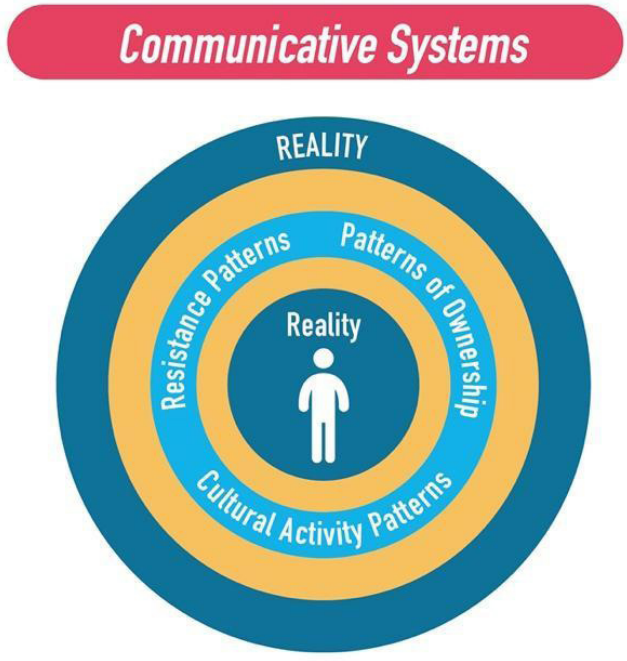

Figure 3. *Own elaboration. Descriptive scheme of the necessary elements to be recognized in a process of creation, co-creation, and approach of communicative materials in particular contexts of reality.*

Therefore, when users are exposed to informative content, these three types of memory must be activated. However, the arguments that try to be transferred from any communicative strategy, are always supported by a scaffolding coming from a previous knowledge (culture), to create meaning in their individual or social situation, and thus generate a rupture (social action). Once he discovers which mode of relationship exists, even if it is not the best, he registers it as a possibility and stores it in the sensory memory. This, although it does not operate immediately, does not require great effort. In any case, to learn a particular behavior, the information presented is immediately and internally contrasted with that already known. Hence the importance of knowing in depth the codes that are natural and every day, and that are veiled in the interaction of the target audience. By highlighting these aspects, the design can speak to them from that same familiarity, so that the public can listen to it (Cairo, A. 2011), (Uribe, M. 2015/2016) See Figure 4.

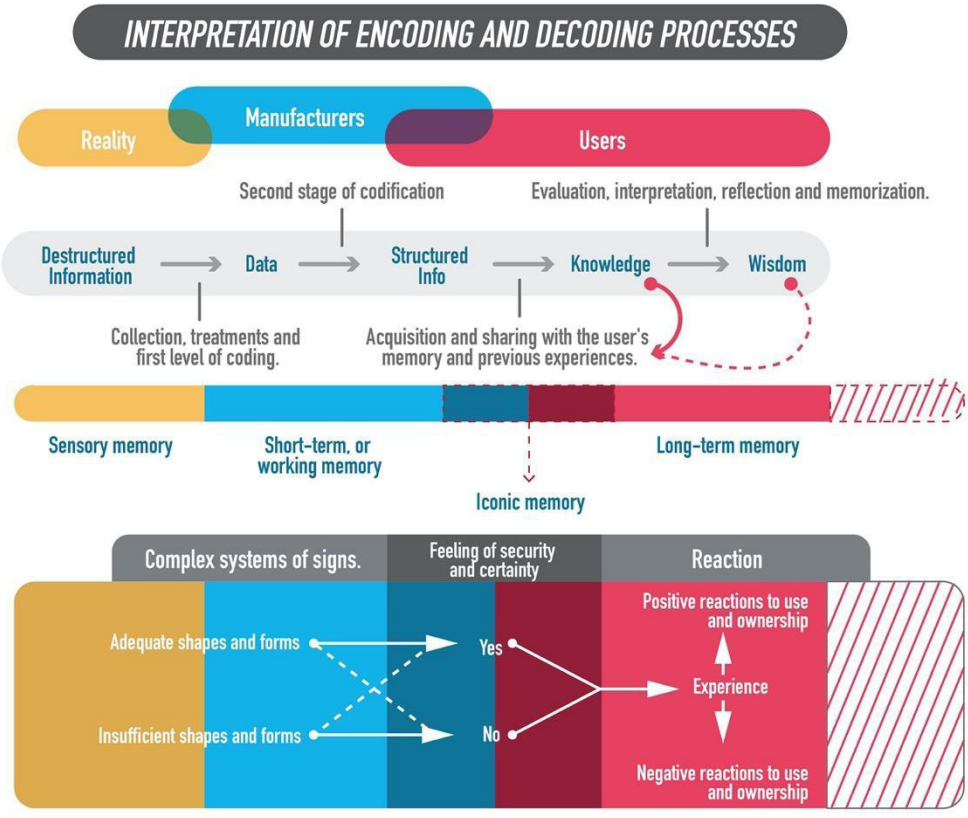

Figure 4. *Own elaboration. Scheme developed and based on Cairo, A. (2011, p. 31). Here we describe the interpretation of the processes of encoding and decoding information, and the way in which information can be interpreted in different situations depending on the context in which it is presented.*

For the field of information design to reach a high degree of objectivity, it must contribute to reducing the cognitive effort of people to decode the signs imbued in the transmission, and thus promote a reaction. The re-action, premeditated by Design, is situated in the first moments of the communicative process, by giving shape to what was intended to be said. To summarize, this area is responsible for transmitting the meanings assigned to the forms, in a clear way, so that they can be registered by the "short-term memory" and be verified with behavior. It is through this path that the adjustment of information passes from "short-term memory" to "long-term memory" (Baddeley, 1999), (Cairo, A. 2011), (Uribe, M. 2015/2016), to incorporate knowledge into knowledge in an automated way. Graphic forms also respond to an ergonomic

dimension, in whose perception thoughts, feelings or experiences already lived are associated. They also contain a symbolic dimension. Because the shapes, susceptible to generating aesthetic pleasure, speak from a plastic dimension, and diminish the cognitive effort of the interpreter. Whenever the greatest amount of content is transferred, graphic forms will represent the vehicle par excellence. Since memory relates to the graphic content, with a minimal effort, because it optimizes the biological resources of association, as pointed out by Uribe, M. (2015/2016). This knowledge is necessary for designers, since the physiological operation of memory, the instruments specified by the exact and social sciences, and aesthetics as a collection of external stimuli, can enhance the resources that reorganize the information to reach the desired effectiveness. Thanks to the convergence of these transdisciplinary resources, Design emerges as a "cultural mediator" Margolin, V. (2005, p. 15), Moles, A. (1990), Betts, M. (2017), that seeks to mitigate negative contextual situations, however heterogeneous they may be. All this, from the fields of information design, as well as design for persuasion. Hence, the importance of structuring new methodologies, models and instruments that allow designers to get closer to the social groups with whom they trace their cultural mediation, to develop univocity, which would become performativity.

Evaluation of performative resources for behavioral change Design evaluation

Performative resources designed for the well-being of people or to trigger behavioral changes, assume real and even measurable impacts. However, concluding the design stages on assumed results or on evaluations focused on aspects that are not necessarily conclusive for the function, reduces the efficiency potential of the proposals, and with it the responsibility of the design with the users. In her doctoral research, Escandón, P. (2019) states that evaluation in Design provides information for decision making. This, because, among its purposes, is to check whether the artifacts adapt and meet the needs of people. Its methods allow to measure the fulfillment of design requirements, to determine its effectiveness or efficiency, both in early and final stages of prototyping. All this, to establish a diagnosis to find timely solutions without wasting resources (Escandón, P. 2019, pp. 30-31).

What is and why do we evaluate design for purpose?

The performative resources that are designed as part of strategies to counteract social problems generally serve the objectives of informing, raising awareness and promoting behavioral changes. Their implementation indirectly implies the measurement of the potential for their content to be perceived as meaningful, understood, and appropriate to the circumstances. "Behavioral changes" by Escandón, P. (2019) are directly related to the users' experience, i.e., they depend on the response to the emotional interaction generated with the design artifacts. It follows that evaluation becomes subjective, since it is focused on experiences, motivation, and expectations; this is the relevance of heuristic evaluations — "principios generales para el diseño de interacción" — as defined by Escandón, P. (2019, p. 38), and Escandón, P., Mejía, M. (2022). According to these authors, such evaluations can determine "cómo un artefacto o sistema puede cambiar el comportamiento de las personas, si se fundamenta en una comprensión detallada del contexto y las características cognitivas, culturales y emocionales de los individuos" (Escandón, P. 2019, p. 41).

Criteria for the design of evaluation heuristics focused on behavioral changes in the face of social problems.

Measuring performative resources that invite social action requires having decanted evaluation criteria derived from design principles and theories that study it. Usability heuristics are proposed to evaluate interfaces and user experience, as well as design evaluation heuristics for behavior change; as argued by Nielsen, J. (1995), Nielsen, J., Budiu, R. (2013), Nielsen, J., Molich, R. (1990), Escandón, P. (2019) and

Escandón, P., Mejía, M. (2022). Although their main use is in digital interfaces, these usability heuristics have set the tone for other persuasive resources, with which the user interacts actively or passively. On the other hand, the evaluation for "behavioral changes" of Mejía, M., Chu, S. (2014) cited by Escandón, P. (2019, pp. 68-69), based on "Rhetorical ability" is supported by three other concepts "Logos (Reason); Pathos (Emotion); and Ethos (Credibility)". For Logos, the validation criteria should measure the rational elements or strategies that induce rational/logical thinking or facilitate cognitive processing (Mejía, M., Chu, S. 2014) (Escandón, P. 2019). The Pathos, those that allow recognizing if the design result leads the public to feel the appropriate emotions, anger, calm, kindness, hostility, fear, confidence, shame, compassion, indignation, among others. And Ethos, credibility in the one who issues the message, criteria that allow measuring the neutrality and relevance of the form and content in the social group to whom it is presented by Mejía, M., Chu, S. (2014), analyzed by (Escandón, P. 2019, p. 26, and pp. 68-69).

Other principles that contribute to the role of persuasion, with the purpose of promoting behavioral changes, is the emotional design postulated by Donald Norman (in Jimenez, S. Pohlmeyer, A., Desmet P. (2016). Since design pursues emotional responses of people to designed products, Norman, D. (2005, p. 5) divide and classifies them into "Reflective design (self-image, personal, satisfaction, memories), Visceral Design (Appearance) and Behavioural Design (pleasure and effectiveness of use)" cited by Jimenez, S. et al. (2016, p. 43). These responses, in turn, establish relationships with three levels of information processing within the brain, and it matters that the design stimulates them. Peter Desmet and Paul Hekkert (2007),, analyzed by Jimenez, S. et al. (2016), also propose a conceptual "Framework for Product Experience" (p. 33) which applies to all affective responses that might be experienced in the interaction of humans with products. The context between users and products, from this framework, includes what these authors call: "Aesthetic Experience, Emotional Experience and Experience of Meaning" (Idem). Aesthetics represent the response of the senses to the product. Meaning is the sense assigned from the user to the product. And, Emotional evokes the feelings that emanate from the relationship with the products. The following section will present several cases in which design theory and praxis are assertively articulated, to describe their applicability (Idem).

Specific cases where Design implements performative aspects, in the search for the generation of new behaviors.

Within the framework of contemporary design practices that seek to achieve a significant social impact, the case of the project developed with the indigenous community "AWÁ in Nariño", Colombia, stands out as concrete evidence of the transforming power of Information Design. This academic exercise demonstrates how Design, when applied with a culturally sensitive and contextualized approach, can directly influence behavioral change, promoting sustainable and environmentally friendly practices. The intervention, which sought to facilitate the proper management of solid waste without altering the cosmogony and traditional routines of the community, underscored the capacity of Design to generate lasting and positive changes, while respecting and strengthening local cultural values.

AWÁ Community Context

The AWÁ indigenous community lives around the La Planada, La Nutria and Río Ñambí nature reserves located in the department of Nariño, Colombia. These reserves, established in the 1990's, have been a vital refuge for local biodiversity and an example of environmental conservation in the region. The AWÁ, organized in resguardos, has been supported by the World Wildlife Fund (WWF) for various logistical and training issues since the creation of these reserves.

In recent decades, the area has seen a large increase in the arrival of researchers, explorers and tourists, and a greater exchange of goods and services with the nearby farming communities and municipalities. This increased flow has brought with it an increase in the generation of solid wastes, including those from processed and packaged food, personal consumption products, tools, and technological and toxic materials. The accumulation of this waste has created a major challenge for the AWÁ community in terms of collection, final disposal, and recycling, putting at risk the ecological balance of the area and the sustainability of its relationship with the natural environment. To mitigate the problem, WWF advised the community on a plan for separation at source and disposal in specific locations, to preserve the ecological balance and maintain a harmonious coexistence with the environment.

The role of Information Design and Perfomativity

The academic exercise developed in 2018 within the 8th semester Information Design Workshop subject of the Graphic Communication Design program at the Universidad Autónoma de Occidente in Cali, Colombia, aimed for students to assume a critical stance towards the process of appropriation of information and its use by the AWÁ indigenous community. The purpose was to find mechanisms that could be integrated into the community's behavioral routines without radically altering their cultural aspects but facilitating the proper management of solid waste. To achieve this, the students carried out contextualization exercises through video calls and discussions with members of the AWÁ community. These interactions allowed them to share and understand fundamental aspects of the AWÁ cosmogony, their behavioral routines, and the dominant elements of their culture. This culturally sensitive approach was crucial to ensure that the design interventions respected and aligned with the existing values and practices of the community.

From this contextualization, students tracked, structured, and codified the information collected, to adapt and present it in accessible and effective formats for the community. Instructions, signage and demarcation of specific guidelines and locations for waste collection were developed in both physical and digital media. The latter took advantage of the information channels provided by government programs, which had facilitated access to devices and connectivity in the region. The result was the design of a complete information ecosystem, aimed at enabling the AWÁ community to become familiar with, identify, and effectively relate to the different components of the solid waste management chain. This ecosystem not only sought to educate, but also to organically integrate the new waste management practices into the community's daily routines, without compromising their cultural values.

Impact on the Community.

The AWÁ community received the information design project with great acceptance, which valued respect for their culture and the careful integration of the new practices into their daily routines. Following the presentation of the project, the community decided to take control over the implementation of the process, determining the pace and way these new practices would be incorporated into their daily lives. The visual and instructional elements designed by the students played a crucial role in ensuring that the information was clear and accessible, overcoming language and cultural barriers. The community showed a positive disposition towards the proposed changes, and although implementation was left to their discretion, members began to progressively adopt the suggested new practices for proper solid waste management.
This project underscored the importance of a design approach that deeply respects the cultural context in which it is applied. Previous contextualization exercises and a deep understanding of the cosmogony and daily practices of the community were essential for the design to have a real and positive impact. Through this exercise, students learned that information design, when applied with cultural sensitivity and genuine respect for local practices, can be a powerful tool for driving sustainable change. It is clarified

that the results of this academic exercise carried out between students and teachers can be seen in the Behance WebApp, as the result of a collaborative work, corresponding to the subject: Workshop V Information Design of the Panel of Trends of the Professors of the Universidad Autónoma de Occidente, by Mario Fernando Uribe y Lucas López Escobar. One of the design products derived from this project is the Information System "NaturApp. Intervención Social en una Comunidad Indígena", developed by students or owners: Ximena Arias, Natalia Gómez, Laura Chicaiza and Sergei Mora; retrieved from:

https://www.behance.net/gallery/66004291/Naturapp-intervencion-social-en-una-comunidad-indigena

Another outstanding result was the "PianApp", developed by the students: Juan José Londoño Pérez, Juan Felipe Robles López, Laura María Sánchez Rivas, Daniela Gómez, Santiago Penagos, Laura Cruz Marín y Carlos Montoya; retrieved from:

https://www.behance.net/gallery/65995485/Pian-App

This context-focused approach and direct collaboration with the community were crucial in working with the AWÁ community and were instrumental in another project developed in an urban setting, which also used information design to address the challenges of a public space with a diverse population.

Project context of Meléndez River

The following case, focused on the Meléndez River linear Park in Cali, illustrates how principles applied in rural contexts can be successfully transferred to urban environments, adapting to the particularities of each setting to promote behavioral changes and improve interaction with the environment. To improve pedestrian mobility and user experience in Cali's parks, a pilot information design project was proposed to the Mayor's Office focusing on the Meléndez River linear Park in the El Ingenio neighborhood, south of the city. This park, known for its natural environment and its role as a recreational space for the community, was selected to implement an information system that would facilitate accessibility and orient users to the services available.

The Meléndez River linear park, with its network of pedestrian routes, rest areas and other services, presented challenges in terms of visitor orientation and the promotion of respectful behavior with the environment. Given this, the project was approached as an opportunity to develop a semiotic platform that would not only improve orientation within the park, but also promote principles of reciprocity, respect, and conservation of the natural environment.

Objectives and project development

The main objective of the project was to develop a semiotic platform that could influence a change in the behavior of the users of the Meléndez River linear park, promoting principles of reciprocity, respect, and conservation of the environment. This graphic information system sought to facilitate orientation and accessibility within the park, adapting to the diversity of its user population, which ranges from athletes and families to occasional visitors and tourists. To ensure that the information system responded effectively to the needs of users, they became deeply involved with the park. Students conducted systematic site visits, observing and documenting patterns of behavior and use of the space. In addition, on-the-street interviews were conducted with park users, providing a more detailed understanding of their expectations, needs, and challenges in interacting with the environment.

During the executive phase, prototypes of the proposed graphic materials were designed and tested to ensure that they were clear and accessible to the park's diverse user population. This testing was crucial to ensure that the contents were not only understandable, but also effective in guiding user behavior towards more respectful and environmentally conscious practices. It is important to note that the project was conceived as a pilot, with the final implementation in the hands of the parks manager and the Cali Mayor's Office. Although it was not implemented, the project was fundamental in sensitizing the public administration on the importance of design in the construction of public policies and its capacity to influence behavioral change silently but effectively in the citizenry.

Project impact and findings

The development of the pilot project in the Meléndez River linear park left an important mark on the public administration's perception of the value of design in the construction of urban policies. Using a participatory approach with systematic site visits and direct interviews with users, the students designed a graphic information system aligned with the needs and expectations of the park's user population. The testing of the proposed materials during the executive phase ensured that the contents were accessible and effective, promoting behaviors of respect and conservation of the environment. This exercise not only highlighted the potential of information design to improve the user experience in public spaces, but also underscored its ability to influence behavior in a subtle but significant way. Ultimately, the project contributed to raising public awareness of the importance of integrating design into the planning of urban spaces, highlighting how these interventions can be fundamental to the creation of more accessible, inclusive, and sustainable environments. The most significant results of this work, directed by Prof. Mario Fernando Uribe y Lucas López were threefold:

The proposal called "CaliPark", was developed by the students: Melissa Campo, Valentina Ramírez and Alexandra Vidal; retrieved from:

https://www.behance.net/gallery/72868263/Proyecto-de-senalizacion-para-parques-de-cali

The project "Manual Pictográfico para el Sistema de Parques de Santiago de Cali", was developed by the students: Juan Felipe Salazar Ciro, Sebastián Duque Neira, Sebastián Velasco B; retrieved from:

https://www.behance.net/gallery/72993625/Manual-Pictografico-para-el-sistema-de-parques-de-Cali

The project "Ve de Verde: Parques de Cali: SEÑALÉTICA BIOPARQUE RÍO MELÉNDEZ", was developed by the students: Daniela Hernández, José Alejandro Castaño y María José Tierradentro; retrieved from:

https://www.behance.net/gallery/72810303/Ve-de-Verde

Instrumental evidence applied to the cases.

The work developed with the AWÁ community applied several of the design evaluation described above: 1) Speak the language of the user and minimize memory load (Lin, H. X., Choong, Y. Y., & Salvendy, G. 1997) (Uribe, M. 2015/2016) (Cairo, A., 2011): the students contextualized the information and adapted it to be accessible to the AWÁ community. This reflects the importance of presenting information in a format that users can easily understand, respecting their language and cognitive capacity. 2) Consistent

interface and feedback: the design of the information ecosystem, with clear signage and guidelines, provides a consistent user experience, where each component of the system relates to the others in a logical and predictable way. 3) Interacting with the community and receiving their feedback during the process also provided an essential form of feedback to adjust the design.

As for the "Heurísticas de Evaluación" (Nielsen, J. 1995), (Nielsen, J., Molich, R. 1990), of designing for "behavior change" (Escandón, P. 2019), (Escandón, P., Mejía, M. 2022) from the rhetorical approach, according to Logos (reason), the design was based on rational data, structuring and codifying the information to make it clear and logical, facilitating the cognitive process of the community. From Pathos (emotion), the culturally sensitive approach demonstrated consideration for the interests of the AWÁ community, ensuring that the design interventions were not only understandable, but also respectful of their emotional and cultural values. And according to Ethos (credibility), the community trusted the project because of the respect shown for their culture and the careful integration of new practices. This is related to the credibility and neutrality that the design must have to be accepted by the social group to which it is addressed.

From the perspective of "Emotional Design": Norman, D. (2005), "Persuasion and Ideological agents": Baldwin, J., Roberts, L. (2007), Bürdek, B. (2002), "Behavioral Change": Escandón, P., Mejía, M. (2022), Escandón, P. (2019), and "Performativity": Austin (1992), Revellino, S., Mouritsen, J. (2015), the project fostered a positive emotional response from the AWÁ community by ensuring that the interventions did not disrupt their culture. By applying a reflective and behavioral approach, the students succeeded in having the new waste management practices adopted naturally and organically, integrating them into the community's daily life. In this way, the work with the AWÁ community not only aligned with the heuristic principles of usability and behavioral change, but also incorporated an emotional and culturally respectful design approach, which was key to its success and acceptance.

The pilot project developed in the Meléndez River linear park also applied heuristic design evaluation criteria. From the design approach: 1) Speak the user's language and minimize memory load (Lin, H. X., Choong, Y. Y., & Salvendy, G. 1997) (Uribe, M. 2015/2016) (Cairo, A., 2011): the project focused on creating clear and accessible graphic materials for the park's diverse user population. This reflects the importance of designing an interface that speaks the user's "language" and is easy to understand, reducing the cognitive load when interacting with park signage. 2) Consistent interface and feedback: prototype graphic materials were tested to ensure their effectiveness and consistency. This testing and fine-tuning process is crucial to ensure that the information system functions consistently and that users receive clear feedback on how to move and behave in the park.

The rhetorical approach evidenced how for Logos (Reason), the design was based on systematic observation and documentation of the behavioral patterns of park users. This ensures that the proposed solutions are logical and aligned with the real needs of the users, facilitating rational and evidence-based behavior change. According to Pathos (Emotion), the information system was oriented to promote respectful and environmentally conscious behaviors, appealing to users' emotions by connecting their behavior with park conservation, generating an affirmative emotional response towards the conservation of the natural environment. From Ethos (Credibility), the project gained credibility by involving users through interviews and direct observations. The public administration valued the approach based on a deep understanding of the users' needs, which reinforces the relevance and neutrality of the design in an urban context.

Finally, an evaluation based on emotional design and persuasion shows that the project sought not only to guide users, but also to influence their behavior in a reflexive and behavioral way. By integrating principles

of reciprocity and respect for the environment, it appealed to the emotional side of the user, encouraging behaviors that go beyond simple interaction with the signage. The project at the Meléndez River linear park effectively applies usability and behavioral change heuristics, as well as emotional design principles, to create an information system that not only guides users, but also promotes more sustainable behaviors that respect the natural environment.

Discussion about the future between academia and social culture

Design has been strengthening its theories, methods, and practices for more than a century, making a significant impact on society. But the convergence between the instruments derived from the exact and social sciences and other disciplines is not something new. This was achieved thanks to the research contributions of professionals and teachers, who were able to connect, optimize and propose alternative solutions to social problems through actions to build the future. As García and Jiménez (2019) argue, the Bauhaus, in 1919, initiated the foundation from the academy for the design disciplines. As a methodological background, which migrated from Germany and other countries to Latin America, this convergence gave its students the possibility and responsibility to imagine, shape and weave the future. Throughout its different phases of development, this school provided the theoretical foundation necessary for the constructive act to become a biological phenomenon, and not an aesthetic phenomenon. All this, so that it would not only be an affective manifestation of the individual, but a fully collective and social act.

In the contemporary context, the academy must act as an agent of change, distancing itself from the interwar situations of the Bauhaus, to respond assertively to current contexts. A clear example of this transformation is found in the case study with the AWÁ indigenous community, where meaningful encounters were established between students and community members. The students developed instructions, signage and demarcation of guidelines and specific places for waste collection, both in physical and digital media, respecting and preserving the cultural aspects of the community. This case, among others, highlights the importance of interdisciplinary "collaborative work". This concept is defined and implemented in different contexts by Gratton, L. Erickson, T.J. (2007), involves the community, and potentially also, it can help to actively participate in the teaching and learning social process. From the implementation of "Co-Creation" methods, concept addressed by Roser, T., De Fillippi, R. and Samson, A. (2013) in various research, point to the facts that these practices show how design can demonstrate the increase of affirmative human behaviors and value in the cultural and social sector. Co-creation tools emerging in contemporary design contexts lead designers to work in a participatory and collaborative way, enhancing creativity through shared experiences among participants.

The information design project with the AWÁ community was received with great acceptance, valuing the respect for their culture and the careful integration of new practices into their daily routines. The visual and instructional elements designed by the students were crucial to ensure that the information was clear and accessible, overcoming linguistic and cultural barriers. In summary, it is essential to recognize the value of academic institutions that seek to build a country through design focused on information, persuasion, and performativity, generating attitudinal changes for the benefit of otherness. We invite you to continue working to create design scenarios where thinking and practices are integrated into government projects, seeing any challenge as an opportunity.

Conclusions

With the advent of design methods focused on the typification of user profiles, interaction, participation and collaboration of knowledge and experiences, design research is reliably approaching human needs

to achieve high degrees of performativity. The rigorous characterization of human requirements, as a function of the creation of strategies to counteract social problems, will pave the way for new design challenges. Thanks to this, the disciplines focused on visual communication and related disciplines can face today, and in a neat way, heterogeneous problems that address the psychology of human behavior and cognition, in social, ideological, political, and economic frameworks of any nature. Thus, designers will be able to test their professional practice, beyond the market economy, in scenarios where urban, rural and/or native cultures are always present. But to do so, they must continue to appropriate theories from other disciplines that study human behavior in depth, to improve evaluation criteria that allow them to improve the performative resources with which they intend to influence people. While the academy is motivated to meet high quality standards, according to each country's criteria, teachers, researchers, and students at design schools should work more closely with ONG's, governmental, non-governmental, productive and emerging social groups. Latin American design has in its hands the opportunity to strengthen its own communities —more outside than inside the classroom— through a more committed and participatory approach. A look that stands out for a critical capacity, focused on projection, where designers operate as transforming agents of, for and with people, because humanity requires it and needs it.

Bibliographical references

Austin, J. L. (1992). Cómo hacer cosas con palabras. España: Paidós.

Baddeley, A. D. (1999). Essentials of Human Memory. UK: PsychologyPress.

Baldwin, J. Roberts, L. (2007). Comunicación Visual de la Teoría a la Práctica. España: Parramón.

Betts, M. (2017). Crítica a la Mediación Cultural del Diseño. Recuperado el: 12 de noviembre de 2019, de: http://kepes.ucaldas.edu.co/downloads/Revista16_7.pdf

Revista KEPES Año 14 No. 16, 2017, págs. 147-173 ISSN: 1794-7111(Impreso) ISSN: 2462-8115 (Web) DOI: 10.17151/kepes.2017.14.16.7

Bonsiepe, G. (1999). Del Objeto a la Interfase. Buenos Aires: Infinito.

Brown, T. (2008). Design Thinking. (2008). Harvard Business Review. V. 86. 84-92. Retrieved from: https://readings.design/PDF/Tim%20Brown,%20Design%20Thinking.pdf

Bürdek, B. (2002). Historia, teoría y práctica del diseño industrial. España: Gustavo Gili.

Cairo, A. (2011). El arte funcional: infografía y visualización de información. Madrid: Alamut.

Desmet, P., Hekkert, P. (2007). Framework of Product Experience. International Journal of Design. 1. 57-66.

Escandón, P. and Mejía, M. (2022). Decision-making using heuristic evaluation in design for behaviour change. J. Design Research, Vol. 20, No. 3, pp.209–229.

Escandón, P. (2019). Evaluación Heurística Aplicada a la toma de decisiones en Diseño para el Cambio de Comportamiento (Tesis doctoral). Universidad de Caldas, Manizales, Colombia.

Esparza, N. (2016). Diseño de una metodología para la construcción del conocimiento en proyectos de Diseño Gráfico. Tesis Doctoral, Universidad de Sevilla. Recuperado el: 12 de noviembre de 2019, de: https://idus.us.es/xmlui/bitstream/handle/11441/52259/METODOLOGÍA%20PARA%20LA%20CONSTRUCCIÓN%20DEL%20CONOCIMIENTO%20ARTISTICO%20FINAL.pdf?sequence=1&isAllowed=y

Ford, R. (2022). Design is not a formula, it's an odyssey: replacing the Double Diamond. Double-Diamond and Design Thinking are inaccurate. There's a better way to think about process. UX Collective. Retrieved from: https://uxdesign.cc/design-is-not-a-process-its-an-odyssey-replacing-double-diamond-d6bc06965238

Frascara, J. (2000). Diseño Gráfico para la gente. Buenos Aires: Infinito.

Gratton, L. Erickson, T.J. (2007). Eight Ways to Build Collaborative Teams. Even the largest and most complex teams can work together effectively if the right conditions are in place. Harvard Business

Review. Retrieved from: https://hbr.org/2007/11/eight-ways-to-build-collaborative-teams

Gutiérrez, L.E.; Samper, J.J.; Jabba, D.; Nieto, W.; Guerrero, C.A.; Betts, M.M.; López-Ospina, H.A. (2023). Combined Framework of Multicriteria Methods to Identify Quality Attributes in Augmented Reality Applications. Mathematics 2023, 11, 39. [Google Scholar] [CrossRef]
https://www.mdpi.com/2227-7390/11/13/2834
Gutierrez, L.E.; Betts, M.M.; Wightman, P.; Salazar, A.; Jabba, D.; Nieto, W. (2022). Characterization of Quality Attributes to Evaluate the User Experience in Augmented Reality. IEEE Access 2022, 10, 112639–112656. [Google Scholar] [CrossRef]
https://ieeexplore.ieee.org/document/9928275
García, J., Jiménez, I. (2019). ¡Jóvenes, venid a la Bauhaus! Pensar la Publicidad: Revista Internacional de Investigaciones Publicitarias, 13 (2019), 11-13.
Giraldo, M.; Rodríguez, O.; Del Guidice, O.-N.; Betts, M.-M. Facilitators and Hinderers for Designing Augmented Reality for Ecotourism SME's Experiences: A Service Design Approach. Heliyon 2024, 10, 17. [Google Scholar] [CrossRef]
https://doi.org/10.1016/j.heliyon.2024.e24124
Jiménez Jaramillo, S., Pohlmeyer, A., & Desmet, P. (2016). Diseño positivo: Guía de referencia. Bogotá: Ediciones Uniandes.
Jnd.org. (2014) Design X: A Future Path for Design. Recuperado el 15 octubre, 2019, de: https://jnd.org/designx_a_future_path_for_design/
Lin, H. X., Choong, Y. Y., & Salvendy, G. (1997). A proposed index of usability: A method for comparing the relative usability of different software systems. Behaviour & Information Technology, 16(4–5), 267–277. https://doi.org/10.1080/014492997119833
Margolín, V. (2005). Las políticas de lo Artificial. México: Editorial Designio.
Margolín, V. (2009). El Diseñador Ciudadano. Retrieved july 6, 2020 from Foroalfa: http://foroalfa.org/articulos/el-disenador-ciudadano
Mejía, M., & Chu, S. (2014). «Rhetorical ability»: Reason, emotion, and character as heuristics for evaluation of efficacy in design. Conference: 9th International Conference Design & Emotion 2014. At: Bogotá, Colombia.
https://www.researchgate.net/publication/276293542_Rhetorical_ability_reason_emotion_and_character_as_heuristics_for_evaluation_of_efficacy_in_design
Moles, A. (1990). El Kitsch, el Arte de la Felicidad. Buenos Aires: Paidós.
Nielsen, J., & Molich, R. (1990, March). Heuristic evaluation of user interfaces. In Proceedings of the SIGCHI conference on Human factors in computing systems (pp. 249-256). ACM.
Nielsen, J. (1995). 10 Usability Heuristics for User Interface Design. Nielsen Norman Group. Retrieved February 8, 2014, Retrieved: september 1-2024, from: http://www.nngroup.com/articles/ten-usability-heuristics/
Nielsen, J., Budiu, R. (2013). Mobile Usability. New Riders Press. ISBN-13: 978-0-321-88448-0 ISBN-10: 0-321-88448-5. 9 87654321.
Norman, D. A., & Stappers, P. J. (2015). DesignX: complex sociotechnical systems. She Ji: The Journal of Design, Economics, and Innovation, 83-106. https://doi.org/10.1016/j.sheji.2016.01.002
Norman, D. (2005). El Diseño Emocional. Barcelona: Paidós.
Pettersson, R. (2002). Information Design. John Benjamins. https://doi.org/10.1075/ddcs.3
Revellino, S., Mouritsen, J. (2015). Accounting as an engine: The performativity of calculative practices and the dynamics of innovation. Management Accounting Research, Volume 28. Pages 31-49. ISSN 1044-5005.
https://doi.org/10.1016/j.mar.2015.04.005
Retrieved from: https://www.sciencedirect.com/science/article/abs/pii/S1044500515000232?via%3Dihub

Roser, T., De Fillippi, R. and Samson, A. (2013). Managing your co-creation mix: co-creation ventures in distinctive contexts. European Business Review. Vol. 25 No. 1, pp. 20-41. https://doi.org/10.1108/09555341311287727

Uribe, M. (2015/2016). Diseño de información. Editorial Universidad Autónoma de Occidente. https://editorial.uao.edu.co/gpd-diseno-de-informacion-9789588713939.html

Wagensberg, J. (1998). Ideas para la imaginación impura: 53 reflexiones en su propia sustancia. España: Tusquet.