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Art Complete: a New Framework in Industrial Design

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Abstract: This article introduces and examines the concept of Art Complete as an industrial design methodology aimed at harmonizing technological development, cultural identity and human psychophysiological perception. Design is seen as a mediator between the human technology and the environment in the context of globalization. The "factor ecosystem" model which incorporates global, local and individual factors that influence an era's visual languages and serves as the theoretical foundation.Art Complete is a method of arranging the physical space or object that produces a gradient between functionalism and the richness of the form's symbolic meaning. The visual language includes three levels: the inanimate external environment (geometry, ergonomics) , the living external environment (biophilic elements) and the user's inner world (associations and personalization). Their combination influences rational and subconscious perception, reduces stress and strengthens the emotional connection with the object.The concept is supported by examples from the history and practice of design—from the Bauhaus to contemporary interfaces—as well as promising areas: adaptive materials, biomaterials and the circular economy. The proposed language of Art Complete considers both functional (ergonomic and technological) and emotional (symbolic) aspects, striving to achieve a balanced design for sustainable and human-centered environments.The paper clarifies the methodological basis of the approach, introduces a practical framework for its application, and discusses potential contradictions in the economic, cultural, and ethical realms.

Keywords: *Art Complete; industrial design; visual language; factor ecosystem; cultural identity; biophilic design; ergonomics; personalization; inclusivity; sustainable development; circular economy; emotional design; interface and interaction; architectural environment; human-centered design.*

1. Introduction

Modern industrial design is entering a phase of qualitative sophistication, where form and aesthetics are increasingly inseparable from social and environmental contexts. These processes are accompanied not only by the growth of scientific and technological capabilities, but also by a number of sociocultural tensions, the weakening of cultural identity, increasing social divide and escalating conflicts in the global space. Under these conditions, design ceases to be solely a tool for form-making and is becoming a mediator between human, technology and the environment[27]. Consequently the need arises for a holistic visual language capable of not only reflecting change but also structuring the human experience of interaction with the new reality.

In this context, the Art Complete concept is proposed as a method for an integrated approach to the design of the subject-spatial environment. By "Art Complete," we mean a method of form-generation in which the visual language of a product is constructed simultaneously from functional requirements and symbolic values, reducing cognitive load and strengthening the emotional connection between a person and the object. It is assumed that through purposeful environmental design, positive feedback can be generated: aesthetically and psychologically aligned objects stimulate more responsible user behavior which in turn influences the development of technologies and social practices. This idea can be correlated with a factor ecosystem **(see Section 2.1)**, which proposes consideration of global, local, and personal factors in design.

Art Complete is based on the assumption that art, design and technology are interdependent as systems that simultaneously reflect and shape cultural reality. Accordingly, the goal of this visual language is not simply the decorative complexity of form but rather the communication of complex semantic structures through functional objects. Efficiency, cultural variability and psychological comfort are viewed as complementary characteristics rather than competing design parameters[16].

The goal of this work is to formalize the Art Complete approach and clarify its methodological framework for industrial applications. We ask how, from the initial concept to the stages of use and disposal, an object is created that possesses both technological perfection and "soul." In this context, design is seen as a means to maintain harmony both internally and externally and thus sustain the preservation of cultural heritage or the interconnection with nature in the context of the progress of science and technology[15].

The argument of this paper is that Art Complete is a methodological framework to enable the incorporation of functional, cultural and psychological elements in industrial design[28].

2. Understanding the Concept

2.1 Theoretical Framework and Methodology

The history of the formation of artistic and design practices reveals consistent patterns that allow us to view the development of visual languages as a consistent process of human understanding of the surrounding world [1]. Beginning in prehistoric times, visual forms served as a means of capturing observable reality: natural phenomena, mythological stories and social rituals. Early religious images which arose as a reaction to a lack of better understanding of natural processes, gradually transformed from polytheistic interpretations of natural forces to monotheistic models and further to a scientific explanation of the world. At each stage, art and object culture served as a visual register of this evolution of worldview reflecting the level of cognition and the nature of human relationships with reality.

Despite the growth of scientific knowledge a significant portion of human behavior continues to be determined by cognitive and subconscious mechanisms[7]. In various disciplines this phenomenon is described by similar concepts: *Zeitgeist* ("spirit of the age") in philosophy, *herd behavior* in sociology and the *collective unconscious* in the analytical psychology of C. G. Jung. To clarify the mechanism of their action, this paper introduces an analogy with the concept of **terroir** used in agronomy, to denote the totality of natural conditions (climate, soil, microflora etc.) that shape the characteristics of a product (cheese, wine etc.)[32]. In a broader sense terroir can be understood as the totality of objective and cultural circumstances that determine the content of human thought and the forms of its expression.

In this context **Zeitgeist** is interpreted as the mental manifestation of such an "era's terroir" the result of the interaction of natural, technological and sociocultural parameters[8]. Global factors include fundamental laws of nature, astronomical processes, the level of scientific knowledge and its limitations. Local factors are formed on these foundations: geography, climate, biosphere, language, social and cultural norms and many more. These parameters interact with each other, creating a dynamic system, in which cultural phenomena emerge synchronously in different regions. Thus, similar ideas may emerge independently by different authors under the influence of common historical circumstances (e.g. wars, pandemics, industrialization or global exhibitions).

As depicted in **Figure 1(a)** this model views human thinking as the result of a three-level structure of factors:

1). ***Global (objective) factors*** natural and universal laws that determine the basic conditions for the existence of life.

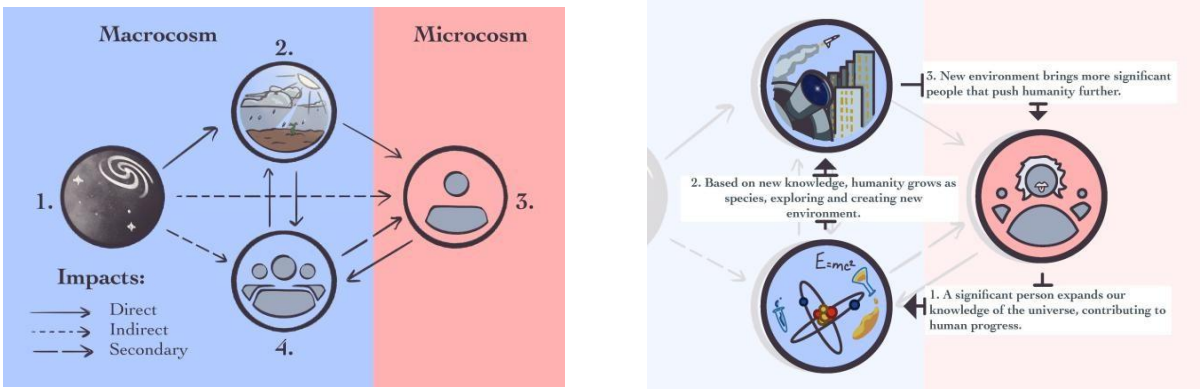
2). ***Local factors*** including:

Local factors primarily determined by the *objective factors* (geography climate resources);

Local factors primarily determined by the *subjective* factors (socio-cultural environment traditions norms collective representations).

3). ***Personal (subjective) factors*** individual interpretations and experiences shaped by local factors.

It is the combination of these factors that shapes a person's individual "terroir" and consequently the nature of their creative activity. As Glenn Alexander Magee notes "...no man can surpass his time since the spirit of his time is also his spirit." **["Zeitgeist" p.262]** Any work is historically relevant because it expresses a specific configuration of factors within this moment.



(a) Foundation of the system **(b) Example of a feedback loop**

Figure 1. Design of the Factor Ecosystem.

Figure 1 illustrates, how creative output emerges from the interaction of global, local and personal factors, rather than from individual intention alone. The feedback loop emphasizes that designed objects are not passive results, but active agents that reshape cultural and environmental conditions.

Creative activity in this system illustrated in **Figure 1(b)** forms a cyclical process. Individual discoveries, scientific, artistic or technological change, social practices; society in turn transforms the environment through new design principles; the resulting environment influences subsequent generations. A closed feedback loop emerges, in which each new factor generates the next[13]. This work proposes to designate this dynamic

interdependence as a factor ecosystem, a model that explains the emergence of new discoveries and serves as the theoretical basis for the concept of Art Complete.

The symbols and structural elements of the visual language in the concept of Art Complete serve more than just decoration: they are carriers of meaning that profoundly impact a person's mental state. They convey cultural, historical and biological codes, evoking an emotional response and associative connection with the surrounding environment. Even ancient architects and designers recognized this connection: Eastern treatises on feng shui described the "art of competently constructing houses and selecting interior furnishings," as a continuous flow of knowledge about the influence of object placement and color combinations on the harmony and health of residents. Modern research confirms that the harmony of color, form and texture in an interior fundamentally changes a person's mental state and health, meaning that the language of images in space proves to be a powerful tool for influencing not only the individual user, but also the public consciousness[18]. Repeated daily in architecture and interior design, such symbols create the "terroir" of an era, a combination of local conditions and ideological factors that sets the backdrop for perception and drives thought patterns.

Art Complete emphasizes the close connection between the "microcosm" and "macrocosm" of perception: each decorative or functional element simultaneously resonates with the user's personal experience and with a broader cultural or natural context. This can be achieved through repeating motifs and fractal structures that connect small details with larger images. Experiments have shown that abstract non-fractal images increase stress by 13% while natural scenes with complex fractal patterns reduce it by 44% emphasizing the profound connection between people and their environment[11,30]. Consequently Art Complete's visual compositions employ similar principles: by combining colors and repeating patterns, they form a holistic language that operates simultaneously on personal and archetypal levels. For example, an object can be roughly "deconstructed" into an external shell, surface animations, like movement and color transitions and an internal layer of human perception.

Once visualized the structure of Art complete could resemble a concentric circle consisting of three layers which are displayed in **Figure 2**:

1). The inanimate outer world;
2). The animate outer world;
3). The internal world.

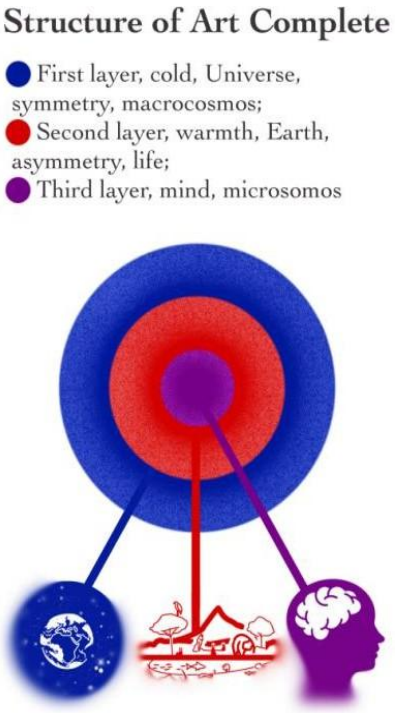


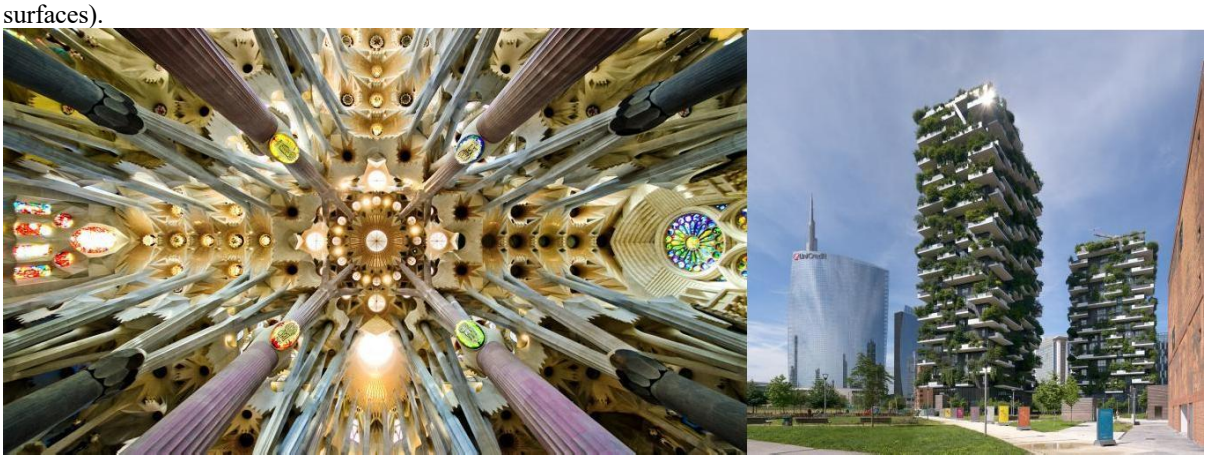
Figure 2. The Layer System of Art Complete. Color choices are symbolically selected to depict the inanimate cold, animate warmth and infinite mind. Yet selection is subjective and is a subject to change.

By incorporating the factor ecosystem into its structure, Art Complete allows a designer to perceive a product or space as a whole new realm of its own, with a general shape, natural comfort and personalized attributes.

The first (external) level includes the ***inanimate outer world***: sections of architecture and urban space, industrial design objects and interiors that have the least interaction with nature. Here the form and composition of elements influence the sense of order or disorder. It defines the shape and geometry of the body—this is the actual "shell" of an inanimate object. Classic examples: the strict rationality of constructivist and minimalist

interiors, where the home was called a "machine for living", create a clear structure of perception. But in an overly "dry" cold design it's easy to lose the emotional connection with the space. Research shows that angular sharp shapes evoke subconscious tension and even fear (increased amygdala activity) while rounded lines are perceived as friendlier and calming[23]. Designers can incorporate this knowledge into external volumes: for example the use of smooth curves or rounded edges in facades and furniture weakens formal rigidity and creates a sense of protection while clear verticals and geometric structures impart status and rationality. Thus on an inanimate level the structure of Art Complete balances between utilitarian clarity and soft ergonomics.

The second animate outer world relies on natural and organic elements: the use of plants, natural materials and forms reminiscent of flora and fauna. Contemporary biophilic design aims to bring nature back into cities and living areas. As experts note the integration of green spaces and natural textures is not only aesthetically pleasing but also genuinely improves human well-being: a biophilic approach reduces stress improves productivity and air quality and the plant species themselves have a beneficial effect on the indoor microclimate and our well-being [12]. Historical and contemporary examples are compelling: from soaring cathedral domes inspired by the curvature of natural forms to "green" facades and living walls in modern buildings. Gaudí in Catalonia, as it can be seen in Figure 3(a), immortalized tree and leaf motifs in the columns and ornamentation of his buildings, and landmark examples like the Bosco Verticale towers in Milan from Figure 3(b) demonstrate a commitment to biophilic ideas. In industrial design this is reflected in objects with rounded "organic" shapes and in interiors in the use of natural stone wood and plant-covered surfaces to create a sense of unity with nature. In industrial design it's about dynamic and tactile aspects: it is born at the moment of interaction (buttons, touch indicators, changing surfaces).



(a) The ceiling of La Sagrada Família by Gaudí (b) Bosco Verticale

Figure 3. (a)Source: Flickr (SBA73, 2011), CC-BY-SA 2.0; (b)Source: Thomas Ledl (2016), CC-BY-SA 4.0

The third (inner) level is a person's internal world: the experiences, memories and subconscious associations that each person brings to their perception of space. This level is emotional and cultural: how the user interprets visible symbols (patterns, color accents, ornaments) against the backdrop of their culture and experience. In particular, the choice of specific colors, patterns and symbols often reflects a personal history. Some collect objects in their interiors that remind them of their native culture or childhood while others prefer shades and textures that evoke a sense of calm or inspiration. Feng shui takes this subjectivity into account: the selection of each interior element is strictly personal and aimed at balancing the energy-informational field of the residents. On a neurological level our brain "filters" visual information through the prism of personal experience, invisible archetypes and symbolic connections. That's why, regardless of stylistic preferences, space must be filled with meaningful images: a small symbol or detail can trigger a chain of associations, inaccessible to rational analysis, yet profoundly impacting the unconscious[3]. Spaces or products at this layer must have a broad choice of customization to allow the individual to form their personal space or object, according to their taste.

As a result, the methodology of Art Complete serves as an important tool, not only for the personal, but also for the social transformation of consciousness through the environment. Researches have shown that architectural spaces literally shape people's thinking: the beauty and harmony of the external environment evoke associative admiration and inspire creativity, while thoughtful urban planning and the "expanded consciousness" of the urban environment change the social behavior of citizens[5]. In this paradigm, Art Complete should be viewed not as a single style or a set of decorative techniques, but rather as a language for combining existing elements. It builds a "grammar" of visual signs, where each line color and shape complements one another and can influence the unconscious. Thus, the repetition of motifs and the fractal organization of space pierces the subconscious, while conscious perception "reads" the embedded narrative from the space. Research on biourbanism emphasizes that a consistent spatial structure (symmetry, repetition, fractality) nourishes our physiology, reduces stress and induces positive emotions [12]. This way, Art Complete offers a design system in which visual language becomes a metaphor for the reality around us: aesthetics is formed as a "meaning machine" and influences the user's subconscious and thinking.

2.2 What is Art Complete?

The historical development of art and design has been accompanied by the formation of a system of stylistic classifications, reflecting the worldview of the respective eras. Style serves as a tool for organizing artistic experience: it allows for the recording of dynamic principles of form-making, their reproduction and transmission within professional practice. Since the spatial environment is anthropogenic, it is a subject to conscious regulation and can influence human behavior and emotional state. The psychology of perception and environmental studies show that spatial parameters, color proportions and the plasticity of form directly influence the user's cognitive and emotional reactions[31,29]. Consequently, the design of a visual language can be considered a tool for creating a comfortable and sustainable experience of interaction with the environment.

This paper proposes the concept of "Art Complete" not as a new style, but as a methodological approach to design, based on the idea of "complete harmony" between form, function and context. Its principle lies in the consistent integration of various stylistic systems creating a continuous transition between them. The goal is not to create a fundamentally new aesthetic, but to establish a "gradient" between existing artistic approaches: from functionally oriented contemporary solutions, to historically rich forms imbued with cultural semantics. Thus, Art Complete strives to establish a balance between the utilitarian and symbolic richness of form[25].

The emergence of this methodology stems from the contradictions of contemporary design practice. On one hand, demands for efficiency, mass production and resource conservation have led to the proliferation of minimalist and standardized solutions. On the other hand, globalization has increased the need for local and individual identity. As a result, many everyday objects acquire a neutral and impersonal character, losing their cultural and emotional expressiveness. Art Complete in this case is an attempt to bridge this gap by integrating technological rationality and cultural richness.

The methodology envisions a harmonious compromise between modern production, technologies and traditional methods of form creation. It focuses on incorporating craft practices, ornamental systems and historical motifs into industrial and household design, without sacrificing functional effectiveness[7]. This preserves the ability to adapt cultural heritage to modern conditions while the physical environment gains an additional semantic layer.

Regarding the historical value, Art Complete's primary goal is not to fully return to those forms, but rather a restoration of the semantic richness of designed objects. Within this approach, design practice is viewed as a means of maintaining cultural memory and fostering emotionally meaningful human interaction with the environment. This method assumes that the designer consciously works at the intersection of the artistic and utilitarian, using visual codes that convey not only functional information, but also an emotional subtext. The term "Art Complete" itself reflects a desire for integrity and completeness of the image. Within this concept, the synthesis of the explicit and the implicit becomes central: the outer aesthetic layer of a product (graphics, colors, silhouettes) interacts with the inner content (the user's psycho-physiological response).

2.3 Situating Art Complete Within Contemporary Design Discourse

Themes, raised in this methodology, aren’t novel: Art Complete is often built upon existing models and solutions, using a new framework to bring them together for a general elevation of design, as an influential tool. We need to compare and distinguish, which aspects make Art Complete a unique system within the discourse of design.

PEST analysis, developed by Francis Aguilar, with all of its alternative versions, is another tool to consider external macro-environmental factors[2]. Despite the similarities, those PEST is only for scanning the environment that affects business, while factor ecosystem is aimed at grasping factors of multiple layers and types, including individual, giving us a wider range of things to consider, while designing a product. Another major difference is that with PEST model, users didn’t initially consider understanding the cause-and-effect relationship between these factors, while factor ecosystem carries that as a priority to utilize in design[6]. It facilitates the recognition of constraints and opportunities on different levels: global, local and individual, which in turn guides design decisions that are sensitive to contexts, cultures and psychology. By using this framework, designers will be able to breakdown and categorize the existing designs into similar layers according to the symbolism behind each. It might yet be a subject to many tests and reviews, and extreme need for transparency and control is required. It needs to be stressed that if a future iteration of such framework will indeed cause the intended feedback loop, it requires ethical regulations, as it might be considered as a manipulation of population. Things, like public access to regular reports, transparent development and breakdown must be provided to keep the clear image of intentions behind the design. Such knowledge should be fully and easily accessible to prevent any potential control by people for selfish or even dangerous reasons.

The concept of “affordance”, initially coined by James J. Gibson in the field of psychology, was referring to what an environment provides to an animal, defining how an animal lives in this environment. Later, the term was appropriated by Donald Norman, as a concept within the context of Human-Computer Interaction[21], alluding to the perceivable “action possibilities” of a design, narrowing down the original definition of the term. In 2013, Norman extended the concept, adding “signifiers” that “… communicate where the action should take place.” While this concept, either original or adapted definition of it, is close to the factors within the ecosystem, it cannot

quite envelop the entire meaning behind it: affordances and signifiers are one-sided and do not consider how actor's development within the environment will affect the environment itself.

The points of view of Victor Papanek and Klaus Krippendorff towards industrial design almost entirely align with Art Complete's principles. Victor Papanek in his works criticized commercial approach of designers: how they were not in touch with the society, for which they are designing the products, contributing to consumerism and harming the environment[23]. He developed comprehensive frameworks to change the approach of designers, and while his contributions brought many programs in design for social need, it never formed a fully theorized "social model" as an alternative to "business model"[17].

Unlike Papanek, Krippendorff was concerned about what artifacts are, what semantic value they carry for the user. He was arguing that "a strong commitment to normative submission excludes human agency"[16]. Krippendorff intended to ground design in meaning that, instead of being fixed, would shift depending on users, context and cultures.

While Art Complete also intends to work for the society and be considerate of their unique traits, it is an attempt to unify and push the theoretic development of older concepts further, by providing a new universal tool that goes beyond semantic, social and ecological value. Factor ecosystem, in combination with the three-layered structure, are meant to be flexible tools that can apply to other fields of design in order to break any products, visuals and spaces, down to a symbolic triad, that allows us to enhance each aspect of a design in a more thoughtful way. Art Complete uses its framework to bridge the gap of product semantics of Krippendorff and social model of Papanek, with a wider range of aspects that should be considered, to fully shift the business model of modern design, by bringing together the theory of all other factors and their interactions.

3. Analysis of Art Complete

3.1 Cultural Adaptability and Inclusivity

The Art Complete's visual methodology proposes considering design as a an adaptive cultural translation. Since perception is highly dependent on personal and cultural factors, it is important that visual metaphors be as universal as possible and encompass a wide range of perceptions. This entails two important principles: (1) using neutral or meaningful symbols that are appropriate for different cultural groups; (2) taking user feedback into account, allowing the visual environment to be customized to their needs.

The first principal is well exemplified by the history of the Bauhaus movement. A school of art, founded in 1919 in Weimar, aimed at harmoniously integrating craftsmanship with technical skill, as well as the notion of mass production and making "art for everyone" functional and accessible. After the Bauhaus closed in 1933, many of its graduates emigrated, including to the United States, where they continued to teach and design in the American context – laying the foundations for the "International Style" and modernist architecture of the mid-20th century. In the USSR in the early 1920s, interest in Bauhaus principles was also strong: Soviet architects and propagandists noted "a particular interest on the part of the USSR in the Bauhaus's focus on the mass production of household items and the rational organization of living space" considering this consonant with the goals of industrialization and mass housing. Similarly in Japan, Western-inspired minimalism was interpreted through the prism of the local aesthetics of Zen and wabi-sabi. Zen Buddhism and Shintoism influence Japanese design with the idea of giving value to "emptiness and pure simplicity of shape or form" ("ku", "ma") and wabi-sabi teaches one to "appreciate imperfection and natural materials." Hence, Japanese designers added symbols of their nation in a minimalist shape, such as branches of cherry blossoms, waves or bamboo in an organic and natural manner, giving it profound meaning. Ultimately, even the overall form, despite all the need in globality, requires a local warmth and associative content emphasizing the idea of cultural adaptability [14].

This principle can also be found in the interior design of the Azerbaijani guest room designed for the CICA International Center, in which national patterns become an organic part of contemporary aesthetics. It's highlighted through inserts, containing images of oriental carpets, carved elements and ethnic motifs that contrast with the minimalist-style furniture and interior elements. Such an approach acknowledges the material of the carpet's pattern which is one of the major symbols of culture, thus providing the interior space with a unique character of being "homely." Another relevant case is that of the brand named CHELEBI, operating from Baku, which reinterprets Azerbaijani visual culture through contemporary furniture. For instance, Khudafarin series are directly inspired by ancient Khudafarin bridges, transforming traditional structures into contemporary design totems. While many designs within the brand were made authentic to the original inspiration, in some cases, constrained by minimalism, they convey only an abstract feeling of the original source material, losing the reference for international audience, unaware of the history behind the product. CHELEBI refers to their collection as "… draws inspiration from the structural elegance of the historic Khudafarin Bridge. Crafted from solid oak, the set reflects the bridge's strength and balance, reinterpreting its engineering grace through clean lines and thoughtful proportions." This shows the smart reimagination of this ancient structure, but the visual representation of the original was not conveyed, ultimately losing the cultural significance. In section 3.3, we will explore this specific case through the prism of Art Complete and a possible middle ground for this dilemma. The sociocultural impact of such integration is confirmed by research: the combination of cultural elements and modern designs increases the value and recognition of a product in the global market[26]. Art Complete as a methodology strives to create

such hybrids, making industrial products culturally significant and recognizable. With it, designers can integrate local ornaments symbols and craft techniques into a modern industrial product without losing its authenticity.

It is also important to mention the risk of cultural appropriation, while designing products and spaces for audience of a specific background. For avoiding such incidents, it is recommended to involve the members of these cultures, doing deep research, crediting and collaborating with them. This way, communities will become an integral part of the process, creating their product with designers.

The second principle is another significant factor that is a complement of cultural adaptability. Art Complete's focus is on inclusivity in the sense that it considers the characteristics of its users regarding age, physical, and cognitive traits. In most designs, the assumption is that the average user of a particular object will be right-handed; however, this creates a problem for all other users of the population. For example, the typical scissor, pen or kitchen utensil is designed in such a manner that only right-handed persons can utilize them. To overcome this ergonomic bias, modern UX methodologies recommend avoiding rigid assumptions about handedness and allowing users to configure the interface as they see fit[10]. In urban environments inclusivity is demonstrated through special adaptive elements: tactile paving on sidewalks, audible traffic lights and voice navigation at pedestrian crossings ensure safe navigation for visually impaired and blind people. Similarly, clear spatial zoning and standardized routes (uniform sidewalks, ramps signs) reduce confusion and the expenditure of physical and cognitive effort, especially for the elderly and disabled. In all these cases, Art Complete's design takes into account the diverse experiences of users, ensuring that cultural context and ergonomic adaptations are integrated into a unified whole.

(a)Khudafarin Bridge

(b) Khudafarin Dining Set

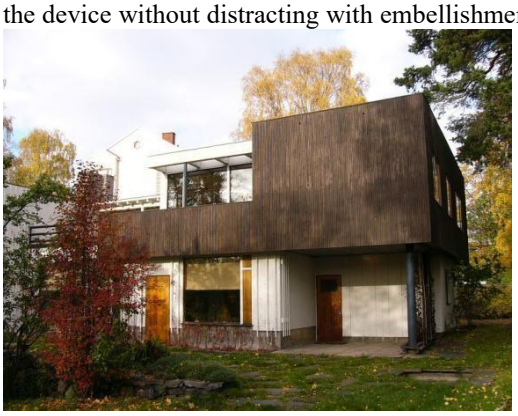
Figure 4. (a) Source: The official website of the President of Azerbaijan, CC BY 4.0; (b)Source: CHELEBI

Finally, adaptability and inclusiveness are also important in digital interfaces. Modern graphics programs and games increasingly offer flexible settings for left-handed users and those with different needs: toolbars and keyboard shortcuts can be rearranged to suit the user's preferences. For example Sony patented a touchscreen gaming controller, surface of which itself allows players to adjust the placement of buttons and thumbsticks to suit

their personal preferences and hand sizes. The patent description explicitly states that the traditional rigid layout of elements can be uncomfortable for different players and therefore there is a need to "allow for different configurations" without releasing new models for different hands. Thus, the trend is for interfaces and devices to go beyond the "right-handed" standard and adapt to the user. Researches in UX come to same results: design shouldn't assume a dominant hand, but rather allow for user customization of elements, becoming ambidextrous by default[9]. This reflects the overall idea of the Art Complete methodology: universal design forms are combined with consideration of cultural diversity and physical characteristics creating products that are equally organically perceived in different societies and by different people. Within it, inclusivity is treated not as a secondary requirement, but as a design parameter embedded at every stage of form development, interaction design and customization.

3.2 Synthesis of Aesthetics and Ergonomics

In many ways the idea of the unity of form and function dates back to the Bauhaus, which advocated the motto "form follows function", a product's appearance should reflect its purpose, prioritizing comfort and efficiency. Scandinavian design of the mid-20th century (Aalto, Jacobsen and others) aimed for the "harmony of form and function", combining minimalism with the warmth of natural materials and a focus on the user. Aalto brought organic lines and natural materials to functionalism, while Jacobsen brought unusual forms with impeccable proportions and strict ergonomics. In the mid-century Dieter Rams at Braun formulated the "less, but better" approach; his technique was distinguished by "disciplined simplification", emphasizing the maximum utility and durability of the product. Rams believed that good design is not so much the object itself as the experience of using it: useful, understandable and unobtrusive. All these examples demonstrate how aesthetics and ergonomics went hand in hand in classical design, a clean laconic form emphasizes the convenience and clarity of the device without distracting with embellishments.



(a)Scandinavian house by Aalto

(b) Dieter Rams: Braun SK4 (1956) and SK55 (1963)

Figure 5. (a)Source: Flickr (Filipe Brandão, 2005), CC BY-NC-SA 2.0; (b)Source: Flickr (Markus Spiering, 2011), CC BY-NC-ND 2.0

Figure 5 gives clear examples, of how Alvar Aalto and Dieter Rams envisioned their designs. They were working on contrasts of natural materials like wood and angular shapes, to create a space where comfort of nature, luxury and modernity coexist.

(a) OP-1 by Teenage Engineering

(b) Nothing Phone 1 by Nothing Technology Ltd

Figure 6. (a)Source: Flickr (Rasmus Andersson, 2013), CC BY-NC 2.0; (b)Source: Wikimedia Commons

Today, the legacy of such principles can be seen in the design of leading brands. Apple under Jony Ive

emphasized minimalism and extreme intuitiveness: according to Steve Jobs, the most important thing in our design is to make everything intuitively obvious and technology should be "beautiful and white like Braun", packaged simply. Similar techniques have been carried over to electronic interfaces: the clear interfaces of the iPhone and Mac with clean typography have become benchmarks for ease of perception. Teenage Engineering electronics (a synthesis of retro aesthetics and modern capabilities as in the OP-1 and TP-7), with an example, provided in Figure 6(a), continue the tradition of minimalism and tactility: their instruments symbolize a modern interpretation of nostalgia, combining aesthetic simplicity with advanced functionality, engaging the user in the creative process. The Nothing Phone from Figure 6(b) emphasizes transparency as a style and an idea. Its unadorned body with minimalist design and transparent elements, transforms technology into a philosophical object. The principles of Apple, Teenage Engineering and Nothing can be considered to correspond to different "levels" of a general design framework: the former emphasize pure form and convenience (lower levels of form and ergonomics), while the latter emphasize depth of meaning and symbolism (higher levels of context and individualization). Art Complete proposes to develop this idea by adding a third element—the symbolic "soul" of the product. The geometric shell provides the foundation (whether eco-friendly or technological), the ergonomic layer ensures comfort, and visual metaphors convey cultural and emotional meaning. As a result, the product becomes understandable "without words" and simultaneously personalized. Usage scenarios are described not through instructions, but by matching the user's intuition.

3.3 Operationalization of the Framework

It needs to be pointed out that Art Complete is presenting a new framework for designers to work with, that won’t simply give a new solution to some issues we face, but push forward the need to apply new developments from different fields, to enhance the process of designing. Let’s dive deeper into the practical examples behind the application of Art Complete in design.

For the example of how an object can be created from layers of Art Complete’s structure, we will give an example of a custom smartphone in Figure 7. Its "inanimate" outer layer, the body and shape is designed to fit securely in the hand and reflect its intended purpose (e.g. smooth curves for one-handed use, clearly defined edges for connectors) while the symmetrical button allocation would allow to customize their purpose, making them not only versatile, but inclusive to people with different physical characteristics. The "living" layer, the on-screen interface is constructed according to simple geometry: large icons, clear pictograms and touch zones. The software is meant to be highly reactive, giving smooth and efficient actions followed by haptic response. The “inner” layer in the phone would be represented by symmetrical customisable buttons on the sides and apps within the software, imbuing itself across all other layers, bringing everything together into a personal experience. Due to the contracts between geometry and ergonomics these elements are distributed as intuitively as possible: the phone's physical profile allows the user to choose how to handle it and the layout of buttons and icons on the screen corresponds to natural gestures. As a result, even without extensive training, the user easily understands how to launch an app or how to begin using the device. By using this methodology we divided the object into form (material, dimensions), interaction (function placement and sensors) and semantic shell (interface and symbols) to make the smartphone both ergonomic and intuitive. This layered analysis demonstrates how Art Complete can function as a diagnostic and generative tool, allowing designers to evaluate existing products and guide future development.

Nevertheless, we must consider complications that may come with such alterations, deviating from traditional phone designs. Modern smartphones have developed a highly optimized form, that all brands slowly follow, gaining similar designs. However, as we already mentioned, those tend to assume some details for customers, forcing them to adapt to the product. Now, with new a design, new innovations must be made to optimize it for better performance and convenience. In terms of hardware, the camera bump must be reduced, along with the weight distribution, to avoid discomfort while handling the phone. With the right telephoto module such issue can be removed and give greater performance, but this might also increase the price of the product. Fluid and reactive software is easy to make in the vacuum of phone-native apps, however it becomes trickier with alternative apps that a user can download. Every app will need to create a new version that fits the functionality of such software. Its performance also might become a problem of hardware: a good customization needs to have a wide range of possibilities, satisfying even extreme requests. This hints at the need of generative capabilities within the software, capable of adapting to the needs, which can be solved with a high quality chip. With the current shortage on chips, this will further increase the price, making it even less accessible to the populations. The second option is to have a less expensive chip, that will produce more heat while working, which requires a greater cooling system. Some brands are slowly moving in this direction by outsourcing this customization: Nothing is developing Essential Apps, where users can prompt an idea of an app to AI, which will code and design it for them, ready to deploy it into their device. It is still in early stage and faces many bugs and inconsistencies, needing some regulations. But it already shows the future of personal devices: every phone and its software will become custom, fitting the vision of Art Complete.

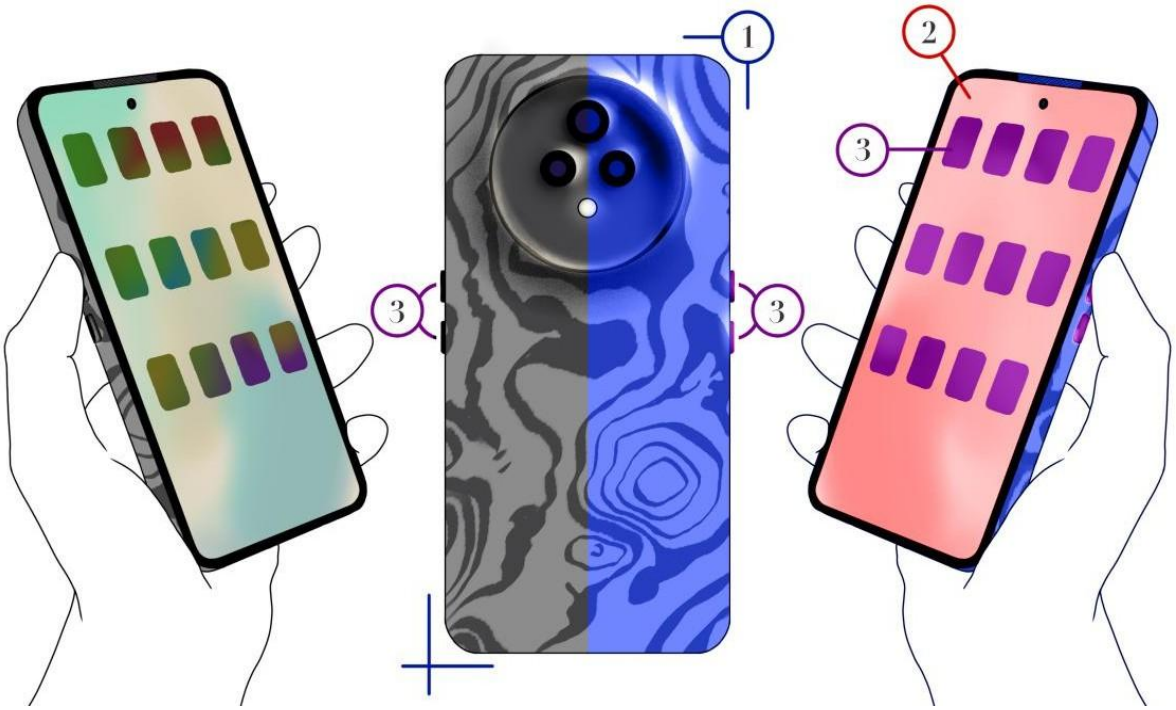


Figure 7. Concept of the phone. 1: Symmetrical, ambidextrous body; 2: Fluid, organic and reactive software; 3: Highly customisable buttons and applications.

Art Complete proposes developing these ideas into "emotionally intelligent" products, objects that are subjectively beautiful, comfortable and connected to the user's senses. Firstly adaptive "smart" materials could allow products to adapt to the user: prototypes of coatings and fabrics that change color or texture, based on user or environmental cues, have already emerged. Secondly products should "age" gracefully: for instance by incorporating the developed concept of patina into design we consider traces of use not as defects, but as a piece's history. As one author wrote, patina "extends product longevity, by fostering an emotional connection between the user and the object, transforming it from a disposable item into a cherished artifact". This approach encourages owners to repair and preserve their items. Finally, a deep emotional connection is created through customization and symbolism: the ability to tailor a product's appearance and behavior to your individual needs makes it "entirely yours" which deepens attachment[20]. Thus, Art Complete's "levels" can include adaptability, durability and personalization, something that makes people not just use an item, but develop a deep connection with it.

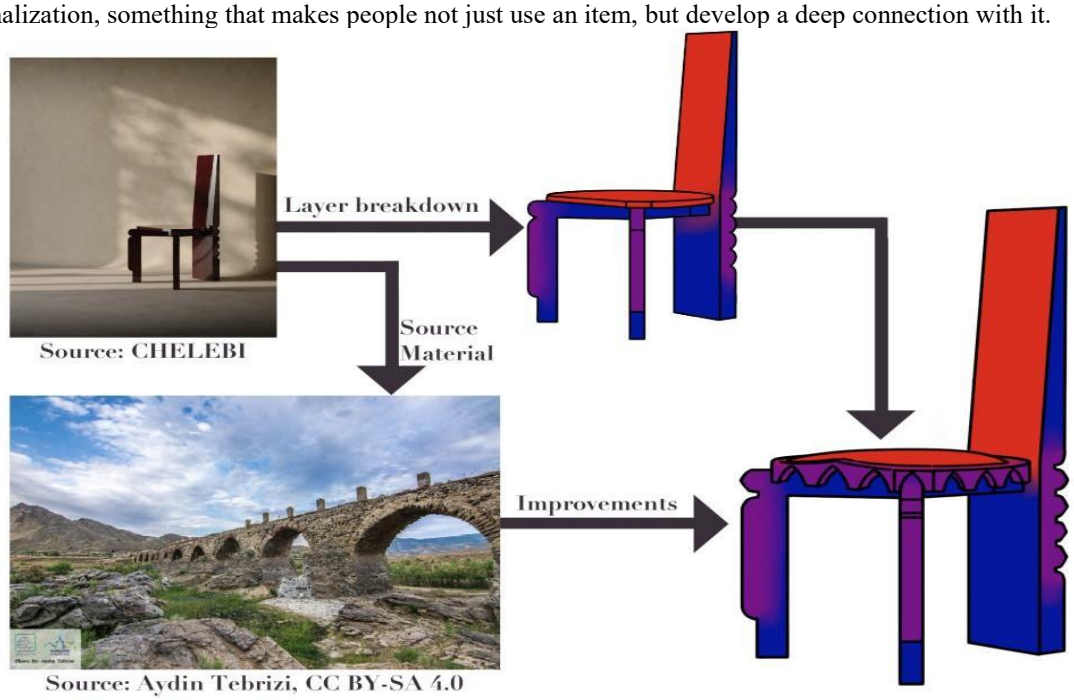


Figure 8. The process of chair modification. The scheme involves the separation of the original chair into three layers, gathering of the source material and the redesign of some nuances within.

Another example is to demonstrate how an existing product can be broken down to the same layers and be modified according to the principles of Art Complete. In Figure 8 we have selected a chair from CHELEBI's Khudafarin collection and broken it down into the three layers. As with any other chair, the structure itself, like legs, are a part of the inanimate layer. The differences in this case are that the back legs and the backrest are merged into a single block of wood and along with two front legs, possesses a repeating semi-circular motifs carved out of them, which hints at the inner layer through the cultural background of the product. The inanimate layer may remain the way it is, as the original follows the principles on its own, fluidly shifting form one layer to another. The seat, or rather, the face of the chair is a straight piece of oak that, despite representing stability and strength, does not welcome the user to sit on it. As something that logically would be an animate layer, that shall provide comfort, this section of the chair contradicts that. The back of the chair is a continuation of the animate layer, which made it slightly bent for comfort, yet maintained the minimalist approach.

If we simplify the imagery of Khudafarin bridges, the most prominent features are the arches, formed both by the pillars and the road on top of it. Such shapes can be easily conveyed through the animate and inner layers. The proposition of adapting this design to the framework of Art Complete starts with the alteration of semicircular motifs into more arrow-shaped carvings with wider gaps between each other. This way, we create a hint at the bridge's silhouette via negative spaces in three different sections of the chair. The second change is the addition of aprons on the edges of the seat. Their shape directly depicts the pillars and arches of the bridge, along with the curvature of the road in the front of the seat itself. This curvature then bends the seat itself, creating a more convenient shape for sitting, supported by the slip seat, that further extends the comfort of the animate layer. The content of the seat could be made of eco-friendly materials that can replace leather, like MuSkin, made entirely of fungus. This is how the layers within the initial design become more befitting to the principle of Art Complete.

However, such advancements might significantly increase already high price of the product, making it even less accessible. If factors like collaborators involved, the accessibility of materials used and the engineering behind the product are regulated correctly, more budget friendly alternatives may be developed. It is also worth noticing that the product isn't flawed by itself: it is merely a good example of how Art Complete can change a product through its prism.

4. Other Applications

The Art Complete methodology is most naturally applied to the industrial design of everyday objects, a field where an object undergoes its entire life cycle: problem formulation, engineering, development, production, operation maintenance and disposal. Unlike the traditional approach, in which form is fixed at the concept stage, such a methodology could redefine the design process itself as a dynamic system, where an object is not created once and for all, but evolves over time. A car provides a clear example as it integrates architecture, ergonomics, interface materials and infrastructure.

The car's exterior belongs to the "inanimate external world", a level, where safety, aerodynamics and production logic are prioritized. Geometry dominates here: clear lines, contrasting light signatures and legible panel structure. Engineering rigor makes the object comprehensible from a distance, the driver perceives its dimensions, direction of travel and speed even before consciously analyzing it. The second "living" layer is revealed through interaction: door handles, seating position, tactility of surfaces, thermal comfort and acoustic environment. Here, rounding elasticity of materials and micro-movements of interfaces become important. Finally, the inner layer creates a personal space: a digital instrument panel, lighting, seat configuration and user profiles. The contrast between the geometric rigor of the shell and the adaptive ergonomics of the interior can create an intuitive perception of the object: the external world communicates rules, the internal world conveys meaning. This multi-layered design helps the driver instantly navigate and fosters a deeper connection with the car.

Such logic is gradually emerging in biomimetics research and can become a good material for designers to use in the animate layer. Architect and researcher, Neri Oxman, proposed the concept of "material ecology", in which material form and production method are considered as a unified system and objects can be designed, as if they were "grown", rather than assembled[22]. Her laboratory's projects utilize computational modeling, synthetic biology and digital fabrication to create structures from biopolymers such as chitosan, one of the most common natural polymers. Silk Pavilion installation, produced by Oxman, demonstrates the principal of biofabrication, where form is created through the interaction of computational modeling, a robotic framework and the behaviour of living organisms: approximately 17000 silkworms formed the outer shell of a structure made of a natural silk. Such developments demonstrate the idea that an object is not simply manufactured, but becomes part of a natural cycle. If this logic is transferred to industrial design, an object can cease to be a static artifact and become a phase of a process from growth to metamorphosis or natural decay.

Figure 7. Silk Pavillion. Source: Mediated Matter Group (Neri Oxman, 2013),

This approach is directly related to the circular economy. Companies, like Fairphone build smartphones from modular components that can be replaced by the user extending the lifespan of the device, while large furniture manufacturers, like IKEA are implementing product buybacks and recycling, shifting production from a linear to a circular model. Within the potential of Art Complete methodology, such practices could acquire an aesthetic dimension: the aging of a material would no longer be considered a defect, but would become part of the visual language. Patina, traces of repairs and modifications would become carriers of an object's history, similar to how layers of time are valued in architecture[19].

The need for such an approach is most acute in extreme conditions, for example in the design of space environments. Studies of long-term isolation, including the MARS-500 experiment, have shown that not only technology and nutrition, but also psychological stability are key factors for crew survival. In confined environments, astronauts experience stress, monotony and sensory deprivation, while artistically designed virtual spaces can reduce fatigue and anxiety[24]. Even observing Earth from space evokes a powerful emotional transformation in people, known as the overview effect[33]. Engineering challenges include radiation, micrometeorites, autonomy and limited resources, requiring the environment to be strictly functional. Art Complete, in this case, proposes using visual language as a bridge to home: adding earthly motifs (color, pattern) and associative graphics capable of neutralizing the feeling of alienation. As a result, the habitable space is transformed from a cold life-support machine into a psychologically supportive environment.

Thus industrial design, biomaterials, ecology and space architecture converge on a single point: the need to design not just form, but the relationship between people, technology and the environment. Potentially, Art Complete could serve as a framework, within which an object is designed simultaneously, as a mechanism, as part of an ecosystem and as a vehicle for human experience.

5. Conclusions

The discussed concept allows us to interpret Art Complete not as a utopian artistic manifesto, but as an attempt at a structured response to the increasingly complex demands of the future environment. As technology increasingly permeates everyday life, industrial design becomes the mediator through which abstract technological processes take material form and become part of human experience. In this sense the methodology can act as a principle of coordinating a way to maintain the connection between technology, culture and human psychophysiology in the face of accelerating change.

The expected success of future design is increasingly determined less by efficiency or visual novelty and more by the balance of three interrelated components: function, emotion and ethics. Function encompasses the ergonomics engineering, reliability and technological legibility of an object; emotion represents symbolism,

cultural identity and psychological perception; and ethics include sustainability, inclusiveness and responsibility for the life cycle of an object. Art Complete can be viewed as a means to unite these levels into a single system, where an object ceases to be a neutral tool and becomes a meaningful element of the environment.

The prospects of this approach are directly linked to changes in educational and industrial structures. Designer studies must shift from narrow specialization to an interdisciplinary model, incorporating the fundamentals of the psychology of perception, materials science, ecology and systems thinking. Business models in turn must gradually shift from a focus on sales volume to a focus on the long-term value of a product, its life cycle and possible effects of a product on global and local scales. Ultimately, such a transformation could restore lost meaning to objects and a human dimension to habitats, whether they are being developed in an apartment, industrial infrastructure or future extraterrestrial settlements.

At the same time it is important to recognize the limitations and risks of such an approach. A universal visual language risks being overly complex for mass production or conversely being simplified into a decorative formula. Attempts to combine cultural specificity and global standards can lead to superficial stylization, unless supported by a deep context. To avoid the risk of cultural appropriation, designers must work hand in hand with the communities and users, allow them be involved in the proccess. This will not only create a culturally appreciated product, but also make it more significant and appealing for the people.

Moreover, the integration of personalization, biophilic and sustainable materials inevitably increases design costs and requires interdisciplinary expertise, making implementation slow and economically uneven. It might signify, that Art Complete products might be unaffordable for many at first, but as it happens in the market, with technological advancements and reproductions, it might gradually become accessible to more people, if it won't stay in the high-class market for the sake of profit.

And lastly, the potential of Art Complete to intentionally affect a human mind is dangerous, if practiced by wrong groups, as it may become a manipulation, raising ethical concerns. So before such things happen, laws and concrete rules must be established to restrain anyone from committing such acts.

Overall, our work demonstrates that design is capable of integrating art, science, and humanism. Art Complete is not yet a concluded system, but a proposal of ideas that, in our opinion, is worth developing and requires long-term testing through practice and criticism: it intends to restore the soul to objects and can help create environments, where people feel more whole and prosperous.

Authorship Contribution

Conceptualization R.G.; visualization R.G.; writing original draft R.G.;

Data Availability Statement

The original contributions presented in the study are included in the article; further inquiries can be directed to the corresponding author upon reasonable request.

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