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Memory and Image

The Designer's Mind as an Alembic of Examples

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Memory and Image: The Designer's Mind as an Alembic of Examples

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Abstract: With due interpretative caution and trying not to fall into simplification or cliché, it could be stated that the “rational” mind learns with “pure concepts” based mainly on the understanding of the essence and attributes of their objects of knowledge. The “logical” mind, on the other hand, learns to unravel the theoretical consequences of a formula within an abstract language. On its side, the “creative” mind of the designer acquires and achieves the object of knowledge—creativity—through a deep understanding of already completed designs. This paper aims to delve into the process of analysis of design examples, a process that could somehow resemble Alchemy, in which the alembic could be the pencil. Drawing is the analytical tool that allows the designer to distil the essence of the studied references departing from the overflow of images that arrive to the eye. With the gathering of different successful design examples, the designers build up a repository stocked in their memory that enlarges their creative capacity when facing new challenges.

Keywords: Memory, Design, Image, Examples, Creativity, Drawing, Alchemy

Memory

The pedagogical validity of several models of “multiple intelligences” has been widely studied (Gardner 1983). Neurologists and psychologists have scientifically explained these models that help to understand the way people acquire knowledge according to their different genetically inherited abilities. While some people are born with a higher level of purely rational or abstract intellect and are more gifted for learning based on the rapid comprehension of concepts or ideas, other intelligences are much more pragmatic and allow the acquisition of practical, craft, or factual skills. The same could be said of emotional, logical, interpersonal, or verbal intelligence (Campbell, Campbell, and Dickinson 2004).

With due interpretative caution and trying not to fall into simplification or cliché, it could be stated that the “rational” mind learns with “pure concepts” based mainly on the understanding of the essence and attributes of their objects of knowledge. The “logical” mind, on the other hand, learns to unravel the theoretical consequences of a formula within an abstract language. This could be followed with each one of the profiles described by the specialized literature of gnoseology, logic, or psychology (Hatch and Gardner 1989). The “creative” mind, particularly, acquires and achieves a good part of its knowledge through a deep understanding of visual material and previous experiences stored in memory.

Traditionally, memory has been considered as a passive store of remembrances and information, totally dissociated from intelligence. Memory has usually been related to the idea of repetition, to the notion of routine and, above all, to the perception of the past. Intelligence, on the other hand, has been understood as a distinct and superior faculty, which would turn to memory according to its need to collect certain thoughts. It is logical then that a society like ours, much more concerned with the future than with its past, has denigrated the former in favor of the latter. Consequently, other mental faculties that are theoretically more useful or effective than memory have been prioritized.

Nevertheless, in recent years there have been numerous new studies on the faculty of memory (Roediger, Dudai, and Fitzpatrick 2007). Although coming from different fields, such as

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psychology, neurology, philosophy, or even from studies on creativity, most of them have tried to overcome that old conception. It seems that, far from playing a passive role, memory is intertwined with intelligence itself. It plays a fundamental and active role in the selection and intentional combination of information, memories, and experiences. Thus, memory can be better explained as a sort of organic network of concepts, meanings, and narratives that works in a transversal manner to other faculties of the mind. It facilitates obtaining and processing the necessary information at any given moment. Memory, far from being inert, always operates according to the reality in front of us. Human memory is, by definition, intelligent; and it is also creative.

“Creative memory” is precisely the term that the philosopher José Antonio Marina uses to explain, in a very precise and coherent way, the role it plays in human mental activity. “Memory is not a ballast that we must cast off to go lighter, but the fuel that allows us to fly,” writes the philosopher; “it is not a warehouse, nor a cemetery, nor a destination, but a very rich source of operations and occurrences” (Marina 1993, 118).² In the end, for Marina, memory and intelligence are two parts of the same thing, in such a way that one cannot be understood without the other. Penetrated by intelligence, memory becomes creative. In the different creative activities, in fact, we search, discover, invent, and build from memory.

It is not the purpose of this text to delve further into the confines of memory as a mental faculty; nor is it intended to explain its functioning or to reach a precise definition of it. It might be enough to note that, in one way or another, memory plays a fundamental role in the creative processes of the human mind; and especially in the designer’s visual construction of meaning.

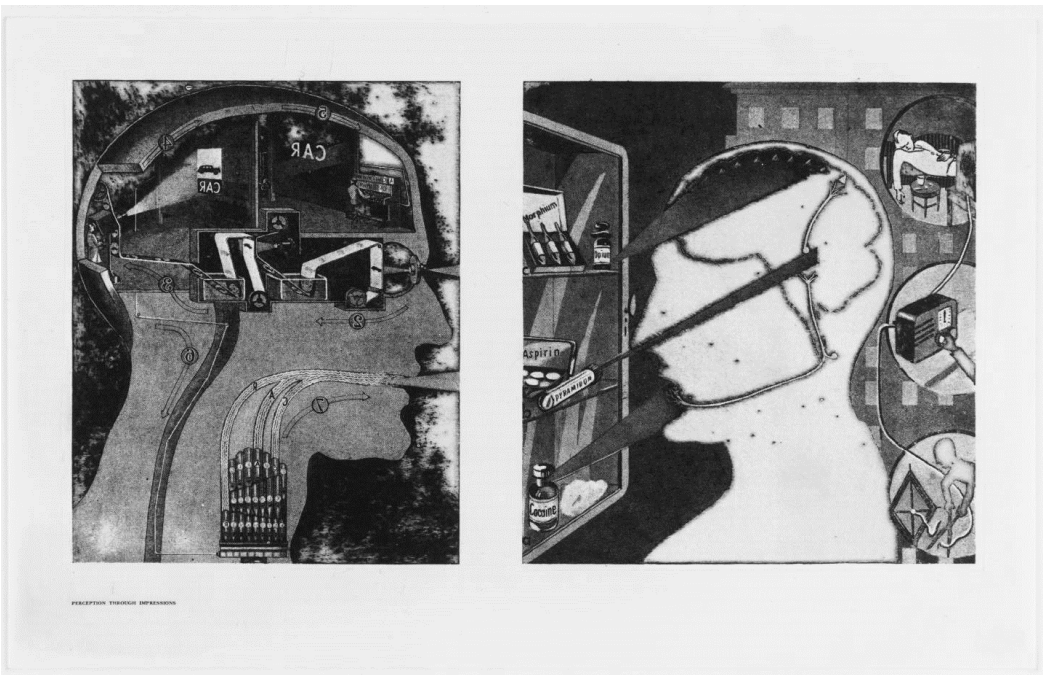


Figure 1: Eduardo Paolozzi, 1970. *Conception through Impression*
Source: *The Eduardo Paolozzi Foundation*

²The quote has been translated by the authors because the book does not have an English translation. The original sentence is: “La memoria no es un lastre que debemos largar para ir más ligeros, sino el combustible que nos permite volar. No es un almacén, ni un cementerio, ni un destino, sino una riquísima fuente de operaciones y ocurrencias.”

Learning through Examples

To carry out a project in the field of design consists in devising and materializing a creative solution that effectively and beautifully resolves a given real situation (Munari 1981). In fact, the designer³ does not create or invent from scratch; “nothing comes from nothing” as Parmenides first stated (Burnet 1908, 2906). The designer’s mind, by means of memory, works from the images, ideas, knowledge, and information that it already contains. Thus, memory, moved by the voluntary search for a creative idea, removes, sifts, combines, and even transforms information it already possesses. It puts that amalgam at the service of the project that the creator is trying to carry out.

Therefore, the more knowledge, information, and images the designer’s head contains, the more creative the designer will be; and thus, the more capacity the designer will have for devising solutions to different design problems. The old conception of the creative genius, who imagines brilliant ideas by magic, seems odd and doubtful. If we analyze the geniuses of recent history, from Pablo Picasso to Le Corbusier, from Wassily Kandinsky to Eileen Gray, it is easy to realize that they all had very powerful memories. They undoubtedly had an enormous knowledge of solutions, previous designs, experiences, and visual baggage stored in their heads. And they also had a vast capacity to merge and process that information.

José Ortega y Gasset pointed out that “when there is scant memory there cannot be much imagination” (Ortega y Gasset 1931, 358)⁴. In short, it seems essential for the designer to possess and train a powerful memory, capable of storing as much information as possible and capable of developing an extraordinary ability to combine it. Only in this way can the ideas be successfully weaved from that network of information present in the designer’s mind.

Within such a network of information, the knowledge of previous examples is essential. That is to say, the designer’s memory must be nourished to a great extent by the deep knowledge of good examples of design that other successful creators have previously carried out. In fact, designers rarely face completely new problems in their design work. Surely, other designers or creators have been able to solve analogous situations in very satisfactory ways. Therefore, the more projects and examples the designer is familiar with, the more weapons will be at disposal to creatively elaborate personal solutions and ideas.

Miguel A. Alonso del Val explains, in fact, how the mind of creative professionals—such as architects, designers and artists—works in such a way that its development and learning takes place especially by means of examples. As opposed to the mind of the philosopher, who works more comfortably with concepts, or the mind of the scientist, who does it better through experiments and evidence, the designer works, understands, and communicates through examples (Alonso del Val et al. 2012).

For creatives such as designers, architects, or artists, it seems more accurate to express their ideas reflected in already existing references than to explain them in an abstract way. It is more effective for architects to mention Mies van der Rohe’s Barcelona pavilion⁵ than to try to explain in words that a given space is fluid, infinite, and unrestricted in the same building. Or it is more effective among designers to mention the “Sacco”⁶ when trying to express a way of sitting that is halfway between informal, relaxed, semi-erect, and provocative at the same time, than to describe it

³ The discourse in this essay refers to certain mechanisms of the creative mind. In that sense, the ideas presented here are applicable to the work of diverse professionals such as designers, architects, or artists. However, in order not to name the various professions or fields continuously, from this point on, the word designer will be used in a generic way, encompassing all of them.

⁴ The quote has been translated by the authors because the book does not have an English translation. The original sentence is: “cuando se tiene poca memoria no se puede tener mucha imaginación.”

⁵ The Barcelona Pavilion was designed and built by Ludwig Mies van der Rohe and Lilly Reich for the 1929 International Exposition in Barcelona. It was the German Pavilion, and it is considered a masterpiece of Modern Architecture because it represents a new way of conceiving the architectural space.

⁶ The Sacco was designed in 1968 by Piero Gatti, Cesare Paolini and Franco Teodoro for the brand Zanotta. It is considered a masterpiece of Furniture Design because it represents a new way -informal, adaptable, universal- of conceiving the act of seating.

in words. Good examples of architecture and design, thus, are a magnificent support for communicating concepts and experiences for creative professionals.

Considering all this, this article proposes the study of examples as a fundamental mechanism for training designers. Through the conscientious and critical study of examples, the designers expand and strengthen their creative memory. By means of this study, the designer will nourish the memory with possible and interesting solutions that will help to solve complex design problems. The selection and study of cases can be carried out in many ways and under different points of view or interests. Nonetheless, it is worth providing some general notes that reinforce this process, currently quite forgotten by the designers themselves or by the universities in the formation task.

Obviously, a good designer always has an attentive eye, which constantly scans the objects, shapes, or images encountered on a daily basis. It is essential for the designer to continually reflect about the suitability of the designs and images that regularly the eye catches, as well as to pay attention to their details, materials, mechanisms, or shapes. All the more, when we talk about case studies as a learning mechanism, we are always referring to a careful, deep, and critical study, which goes even further than having an attentive look. It is a matter of looking, but also of analyzing, understanding, studying, and even re-drawing the studied examples of recognized quality. In this sense, resorting to the works of the great Masters of Design is always advisable as a source of reference, given that the most current examples tend to reach our hands distorted by the fashions of the moment.

In any case, that same attentive gaze must also be open. Is it possible to talk about the design project from closed or unidirectional positions? Adopting an open and integrating way of looking at things, places the designer in a very favorable position to undertake the task successfully.

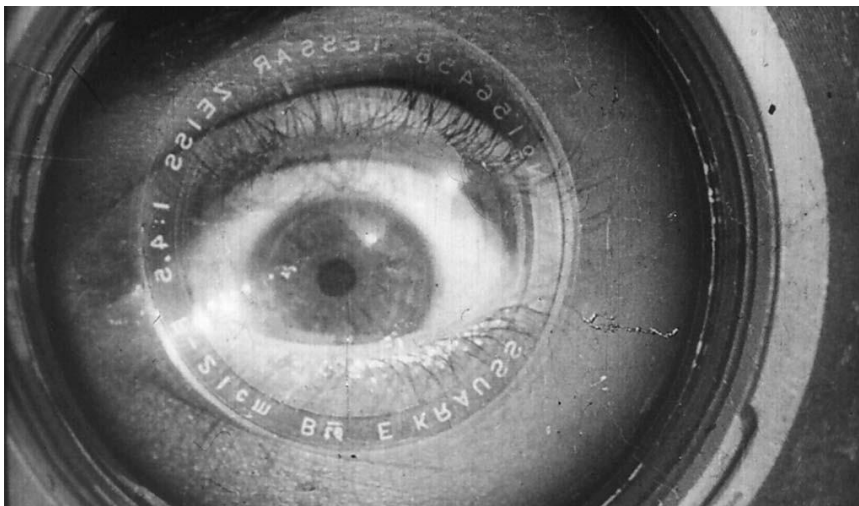


Figure 2: Dziga Vertov, 1929
Source: Final shot of the film "Man with a Movie Camera"

When selecting the examples to be examined, an open eye will lead to widening the spectrum of possibilities and cases as much as possible. This is the only way to understand and apprehend different positions and ways of doing things, and to establish links or relationships between them. Learning through examples does not consist of initially pronouncing a sort of theory or general position that is then confirmed by the samples being studied. This method proposes quite the opposite: the path consists in weaving knowledge, little by little, based on the small certainties or discoveries that emerge from the different designs that are studied. This would lead to building a

more solid structure that reinforces the designer's creative capacity, but that also remains open to new discoveries or changes (Blundell-Jones 2002).⁷

Thus, the great virtue of the system is probably that it favors a direct and critical dialogue with the examples being studied. It empowers the designer to avoid recipes, labels or general theories that explain everything in themselves. In short, it is a matter of undertaking a reflective and critical study of a series of concrete and diverse designs, analyzing each one of them in all their complexity and, at the same time, establishing connections and comparisons between them. This “interplay” (Berman 1988, 5)⁸ moves from the individuality of each case to the possible relationships between the different examples. It allows the designer to gradually induce their qualities, design strategies, mechanisms, or forms. These will now remain as useful tools in the designer's creative memory.

Image as Interface

This specific training mechanism, particular of the creative mind, is based on the acquisition of good design examples. The first interface encountered by the subject's eye within this process is unavoidably the image. In other words, images constitute the immediate way for designers to reach and get new examples or sources of knowledge. Those images are obtained by means of very different approaches, being always partial fragments of the examples that must be somehow filtered and assembled by the designer's critical mind.

When it comes to confronting new images, designers usually turn up to former images they already had previously recorded in their memory. Thus, the way to learn and understand new design examples seems strongly linked to the capacity of mentally reconstruct them by sequentially gathering their images and comparing them with a set of prior known images (Rojas and Marín 2014). Basically, this mechanism consists in relating the particular example, through its various visual manifestations, with the visual repository already present in memory, in such a way that this reference is correctly understood and integrated.

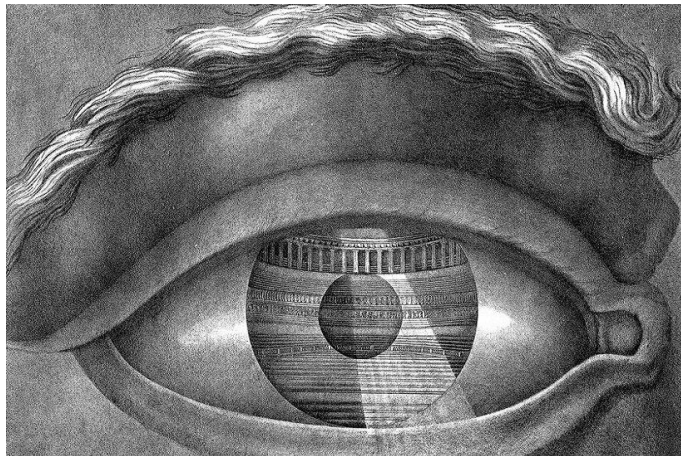


Figure 3: Claude-Nicolas Ledoux, 1804. “Coup d’oeil du Théâtre de Besançon”
Source: Pallasmaa 2007

In short, the mechanism could be also defined as the practice of a certain method which creates new meanings by means of connecting new visual information with already known semantic signs.

⁷ The idea of the construction of knowledge by means of certainties that are obtained through cases, and not from previous great theories, has been explained and tested by the architectural historian Peter Blundell Jones.

⁸ In the “Broad and Open Way”, the preface of the Penguin Edition of his book, the philosopher Marshall Berman (1988) explains that an open and broad approach is essential to tackle a study that intends to understand different visions or fundamentals. He underlines the idea of developing a creative interplay among the different visions or fields analyzed through the study.

Thus, when designers, in their daily work and research, come across new images -fragments of an example- they might establish a sort of mental dialogue: one that connects that new visual material with the already known visual baggage. It is by means of that relational mechanism that the essence of the example studied is assembled. It, alongside its particularities, is stored in the designer's memory as a useful reference becoming part of a sort of mental "atlas" (Warburg 2020).⁹

This essay proposes, among other aims, a redefinition of "design" as an innovative activity whose training is linked to a tradition—that of adding new cultural meanings from the incorporation of previous examples of design by understanding them through the analysis of their images. Therefore, when it comes to training new designers, one of the main purposes of the faculty is to help students to perfectly manage the language of vision.

In fact, these ideas were already part of the discussions among the Bauhaus faculty in the 1920s and 1930s. The well-known schemata by Herbert Bayer, "Ideas about the Extended Field of Vision"¹⁰, showed how we get to understand reality by means of a polyhedral multiple perception of many images (Bayer 1961). If designers can manage a given amalgam of images and combine them meaningfully, they will be able to de-code visual narratives and extract cultural references from them.

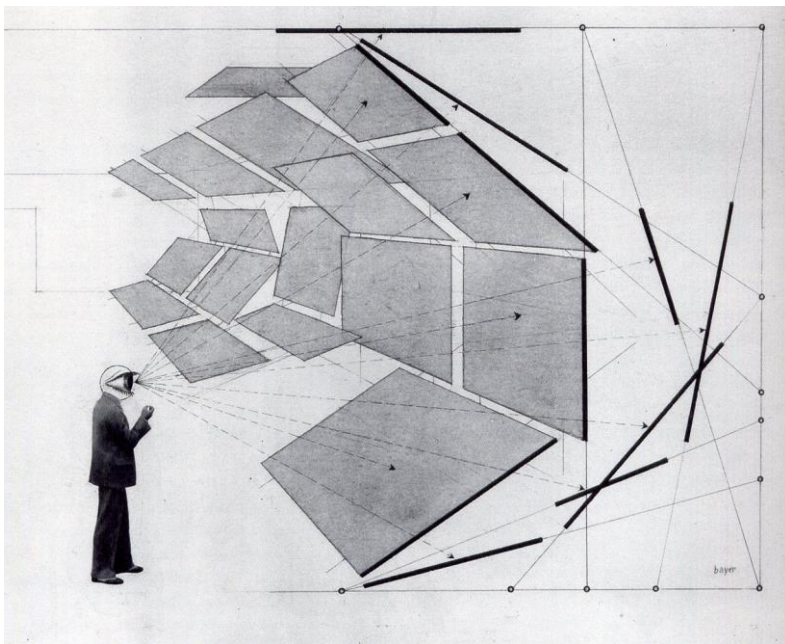


Figure 4: Herbert Bayer, 1930
 Source: *Catalogue of the Werkbund Exhibition, Paris, 1930*

One of the characteristics of current times is the hyper-inflation of images alongside a hyper-deficit of content. We are in an era of "iconic overabundance," as stated by Joan Fontcuberta (Forns 2017, 4), due to the saturation of digital images that reach us almost unwillingly. The profusion of images usually hampers designers (especially those in their early stages of training) from having time enough to properly select and digest the essence that lies underneath each image. The current

⁹ The idea of atlas is mentioned here intentionally generating a parallel with the Mnemosyne Atlas that the historian Aby Warburg produced between 1924 and 1929. The Warburg atlas was a kind of procedure (more physical than mental) to combine, superpose, and generate unexpected analogies or relationships between very diverse images.

¹⁰ Bayer applied the scheme for the first time at the Paris exhibitions of the German Werkbund (Artistic and Industrial Union), which took place in 1930.

reality, with this visual overflow, makes it necessary to develop a critical capacity to decant the essence of things that are hidden behind that curtain of images.

The statement by Montaigne that suggests it is better to read a few great books rather than many poor ones is well known (Montaigne 1588). Henry David Thoreau went even further when asserting: “Read the best books first; you will most likely not be able to read them all” (Thoreau 1873, 103). *Mutatis mutandis*, it could be said that it is better to know a few good design examples (thus, few good images) than many poor ones. Those selected good examples could create a meaningful cobweb on which to contrast the new incoming visual information.

This dynamic makes more sense, if possible, if we take into account that visual narratives work in a different way than written ones. Following Marshall McLuhan’s theory, technology has changed society and has also changed design. If the “medium is the message” (McLuhan 1967), designers should perfectly master the medium: the visual language and its codes and techniques to decode visual narratives. It is about properly understanding the clues, the dynamics, and the features of the media that creates those narratives.

This pre-eminence of the medium above the message leads us to consider the “interface effect” explained by Alexander Galloway (2012). As Galloway states, the interface that relates two different realities is even more important than the realities themselves. In fact, that interface can highlight at the same time what is common between the two of them and what is specific to each one. As expressed before, images are the main interface for designers to acquire examples of good design. In consequence, the comprehension of their images is precisely the key translator that allows us to delineate what is particular and universal of each example, when relating it to others.

The more we contrast two realities, the more capacity to understand each one we will reach. That is why, seeking for those comparisons, designers tend to relate new visual findings with previously known images that are at disposal in their memory. It is, thus, the most effective tool to induce the essence—the universal features—of the design example that those new images depict.



Figure 5: Photograph in “The Interface Effect” Cover
Source: Galloway 2012

Drawing and Design

Since the Enlightenment, and throughout the Modern and Contemporary Era, there has been a tendency to increasingly separate the abstract world of “rational ideas” from the tangible world of “sensory or emotional experiences.” This has favored the canonical division of the sciences and techniques on the one hand, and the humanities and the arts on the other. This dichotomy has left drawing as an expression of the humanities; that is, as a subjective manifestation. Romanticism and its exacerbated emphasis on the primacy of personal expression triggered an unclear path for drawing in the world of culture and postmodern thought. This path has led to associate “drawing” to the expressiveness of its “stroke,” an artistic expression of a form on a surface.

However, if we review history and inquire about the creative activity of the human being, it is not difficult to find that the activity of drawing is much more linked to the concept of “figure” than to “stroke.” In other words, Drawing has long been an objective tool for analysis and creative thinking, rather than a mere means of self-expression. In fact, Design and Drawing have been linked since the dawn of culture. Actually, the Italian term “Disegno” was used since the fifteenth century to refer to the drawings with which creatives shaped their projects, proposals, and inventions. Therefore, historically, design and drawing could be considered practically the same concepts that denote the same creative reality.



Figure 6: Neptune by Leonardo Da Vinci (1504)
Source: Royal Collection Trust/© Her Majesty Queen Elizabeth II 2019

The use of hand drawing as a way of acquiring useful knowledge from case studies of design allows designers to reconstruct those examples of design through their formal analysis and synthesis. The use of a discipline as open as graphic expression allows the task to be tackled with both creative freedom and technical rigor. This graphical study deepens the capacity to understand those case studies thoroughly. Form can be explored by means of drawing through three main aspects: perception, representation, and codification of the image, in its expressive and technical components.

If Design is the counterpart to Drawing, then Drawing is tantamount to Thinking. Drawing is a way of thinking about the formalization of Design, that is transforming and shaping ideas into figures and understanding that behind the images are ideas that give them meaning. The fact that our thoughts could be analytic or synthetic implies analogous types of drawings (Gómez Molina 2006). Some drawings are made with the same intention as writing: they are draft and expressive notes

jotted down fast, the synthetic ones; and others focus on the material and technical aspects, the analytical ones. Both enable a systematic approach to the work.

Drawing as a Decrypting Tool

This article intends to emphasize the extraordinary operability of drawing. It makes possible two complementary operations. The first operation provides a progressive linear approach that is developed successively in time following the practical cause-effect reason. This allows, indistinctly, to abstract diagrams from images and to synthesize formal images from conceptual schemes. Drawing here is a tool that transfers operativity to the designer's thoughts and produces this double movement, back and forth, between the universal and the particular.

On the other hand, the second operation involves a line of action that could be defined as relational. During the design process, drawing is the playing ground where designers unfold their thoughts in a lateral way. This mechanism invokes a parallel phenomenon to that of the design project at hand. It triggers the activation of memory through images in a comparative way to other examples. Drawing here tackles the transition from the idea to the form in an open way, far from the univocal result of linear causality. On the contrary, drawing as a mechanism for Design Thinking facilitates connections between very different ideas and among very different forms. These connections are made possible through the images—interfaces of the diverse examples of design—that are decrypted thanks to the operation of drawing. In this sense, it could be said that it is a complement to memory, capable of translating given images into operative ideas.

In short, drawing is a relational activity that allows decryption of the images that arise to the eye or that are stored in our memory. This activity distils the ideas that lie at their core and entangle them to other related ideas. Drawing also allows us to thread new nodes of meaning to an idea, attaching successive formalizations borrowed from other images. It is an operative way of transforming images and dealing with the information they bring to the designer's eye. Beyond being a tool for geometric control, drawing is a tool that allows formal operations of transformation and connection. In short, drawing decants the way in which the multiple neural connections that make up designers' thoughts are produced during a design process.

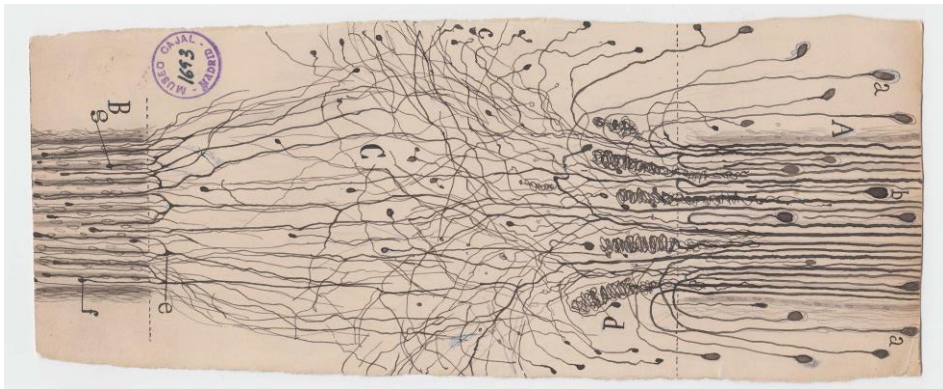


Figure 7: Severed Spinal Nerve. Santiago Ramón y Cajal, 1890

Source: Instituto Cajal, Legado Cajal, Consejo Superior de Investigaciones Científicas (CSIC, Spain)

It could be stated that drawing is an active, operative, and relational thinking activity. As a complement to intelligence, it helps us to think from the specific constraints and requirements of a project, to start from an idea and arrive to a form. As a complement to memory, it enables the relationship of the project that is being developed to other known design examples, and can establish connections among ideas and forms. In the field of drawing, ideas can be measured, compared, and mixed; just as forms can be measured, compared, and mixed. That is why it is so important to train design students in the activity of drawing, because it trains them to look, analyze,

detect, and discriminate the details—accidents—that differentiate two objects of the same species. This mental habit of looking at the whole and the details to understand how things are aids the designer to imagine how the shape of a design object could be.

In our way of perceiving objects in the outside world, we carry out this mental exercise in everything we see, especially if we observe carefully. We are constantly establishing this kind of relationships. Thus, by recognizing everything we see, we can relate to the world as human beings.

If Design were to be the “organization of parts into a coherent whole,” drawing could be the “way to differentiate parts of an organized whole.” The images that are presented before us only last in our memory when they are meaningful, as well as when we understand them deeply and not only as a mere visual experience. And precisely, the most immediate way to fully understand the reality that beats behind an image is to analyze it formally and conceptually. The analysis of a design case study is crucial to feed the mental repository of images and, therefore, serve as an engine for future creativity. Designers need appropriate references in each case, depending on the project being carried out at any given moment of their trajectory.

Through observation, analysis, experimentation, and formal synthesis, designers can follow a learning path through successful cases that serve as models to develop their creative abilities. As the poet Pedro Salinas (2003, 91) states:

The masterpieces of the past unfold before man a plurality of spiritual attitudes, of procedures of objectification, of triumphs over the inanimate, of ways of access to the realization of the work, all generously offered to the newcomer [...] Assuming that freedom is the capacity to choose between this and that, the more these and those are offered to him, the greater the number of available and eligible objects, the more intense will be the awareness of power to the artist, his looseness to choose.

Alchemy

The discursive thread of this paper, which began by emphasizing the value of memory as an essential mental faculty in the creative field, ends in its last paragraphs by vindicating the value of drawing in the training of designers. The connection between both poles of the discourse, memory and drawing, which is ultimately the aim of this article, can be traced in one direction—the one followed in the text—or in the opposite.

To conclude, it is worthwhile summarizing the ideas presented by briefly following the opposite itinerary. Drawing is perhaps the best tool available for designers to critically face the overload of digital images that, nowadays, reach their retina from so many and diverse media. Through drawing, designers can scrutinize, analyze, decompose, and recompose images and visual information. They are able, by re-drawing or re-interpreting those images, to compare and mix them to correctly distil the essence behind them, or even to create new meanings through them.

From this treatment, almost artisanal, of the image through drawing, the designer can correctly undertake the study and analysis of good examples. Design projects, architecture projects, or works of art are very complex realities that usually come to our eyes through images; images that, although they used to be printed, are now mostly digital. Thus, through drawing as a tool, designers recompose them on paper, to distil in their head the essence of the analyzed example.

The deep understanding of those examples, little by little, nourishes memory. This vast faculty of the human mind, which is creative and intelligent, comes into operation when creatives undertake their projects and works. After all, the stronger the memory, the more images it has correctly digested, the more examples swarming in its confines, and the more creative the designer will be. And it follows, moreover, that the more digital our world becomes, paradoxically, the more relevant it is to train designers in an activity as alchemical as drawing.

For a designer, the process here described could very well be compared to the procedure developed by the Hispanomuslim scientists in the Middle Ages: Alchemy.¹¹ One could say that designers must choose particular related references as if they were suitable substances for a later process. As in a laboratory, the references that they use could act as chemical reagents that change molecular structures and ionic bonds in their formation of new compounds. Drawing may act as the alembic¹² that conducts the essences and distils them. That is to say, the mind of a designer would be the vessel where new products are formed, having unique properties distinct from those of the starting elements. This is the science of the alchemist—based on knowledge acquired with effort, inductively, and not without a certain mystique. It is no coincidence that in a creative process, the references are intertwined in convoluted yet coherent operations.

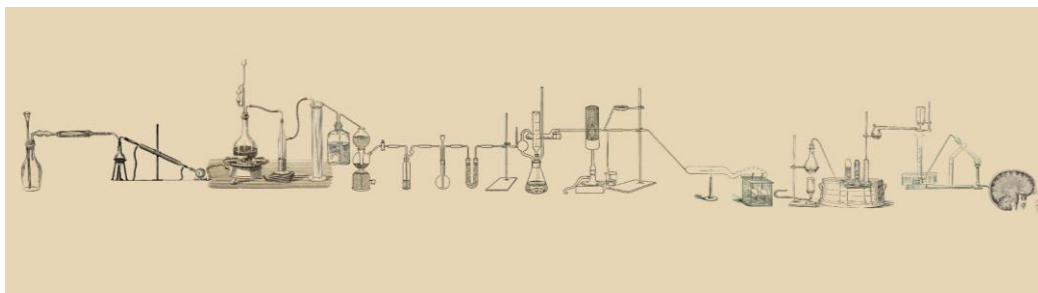


Figure 8: The Alchemical Process. Engraved Compositions, n.d.
Source: https://cdn.pixabay.com/photo/2014/11/01/17/42/lab-512503_1280.jpg

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¹¹ Alchemy (from the Arabic [al-khīmiyā]): in the history of science, alchemy is an ancient protoscientific practice and a philosophical discipline that combines elements of chemistry, metallurgy, physics, medicine, astrology, semiotics, mysticism, spiritualism, and art. Alchemy was practiced in Mesopotamia, Ancient Egypt, Persia, India, and China; in Ancient Greece and the Roman Empire; in the Islamic Empire; and later in Europe until the eighteenth century, in a complex network of schools and philosophical systems spanning over a period of at least 2,500 years.

¹² Alembic (from the Hispano Arabic alambíq) describes the alchemical apparatus used to distil or separate from more fixed substances, through the application of heat, other volatile substances. Essentially, it consists of a flask for holding liquid and a connected tube that loops into another vessel where the distillate comes out.

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