

# Man and Machine: Subject-industry Relationship of Images in Chilean Technical Magazines (1929-1939)

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**Rodrigo Vera Manríquez**

Universidad de Chile

**Bruno Perelli**

Universidad de Chile

This article is part of a research that addresses the history of design in Chile from the historiographic perspective of cultural history. Such research studies the conceptual art-technique binomial, exploring the artistic and industrial publications in Chile between 1929 and 1939. Using the semiological analysis methodology proposed by Roland Barthes, this article delves into the antecedents of the type of relationship between man and machine established by the images contained in this visual material, to understand how the industrial guilds projected this productive binomial. The theoretical framework is made up by combining Ivan Gaskell's concept of visual material, Gilbert Simondon's notion of technical object, and the relationship between design and machine proposed by Wilhem Flusser. As the main conclusion, it is stated that the relationship between man and machine is presented harmoniously and as an ideal of progress, which is expressed both in photographs and illustrations.

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**Rodrigo Vera Manríquez**— Bachelor of Arts with mention in Theory and Art History, Universidad de Chile. Master of Arts with mention in Theory and Art History, Universidad de Chile. He also holds a doctorate in History, Universidad de Chile. Assistant Professor of the Design Department and the History and Heritage Institute of the Faculty of Architecture and Urbanism at Universidad de Chile. His work pertains to the study of modern design practices in the context of the welfare state in Chile. He is the author of *Modernidad, espacio urbano y representación de mundo* (LOM, 2020) and co-author of 'La AEG y la instalación de una visión modernizadora en Chile' (with R. Harris and P. Bascuñán; *Revista 180*, n.º 44). He is the researcher responsible for the Fondecyt Initiation Project 'El binomio conceptual arte y técnica en las publicaciones artísticas e industriales en Chile (1929-1939) como introducción de una idea de diseño moderno' (The Conceptual Binomial Art and Technique in Artistic and Industrial Publications in Chile (1929-1939) as an Introduction to an Idea of Modern Design').

**Bruno Perelli**— Graphic Designer, Universidad Chile. MA in Design, Universidad Adolfo Ibáñez. Assistant Professor of the Design Department at Universidad de Chile. He has explored topics related to the relationship between technique, technology, and design by working in research projects and through artistic creations such as the technological heritage of neon in Chile, the conformation of urban imaginaries, computer vision, and image processing. He lectures courses and workshops related to technology, covering production processes for printing, programming, and digital manufacturing. He is co-author of 'Relevancia de letreros de Neón en el imaginario nocturno Santiaguino' (with J. M. Bravo-Sánchez and R. Dueñas Santander; *Revista Urbano*, Vol. 21, N.º 38) and 'Modernidad, habitar y fotorrealidad: una propuesta de lectura a la obra de Richard Estes' (with R. Vera; *Revista 180*, N.º 41).

## Man and Machine: Subject-industry Relationship of Images in Chilean Technical Magazines (1929-1939)

**Rodrigo Vera Manríquez**

Universidad de Chile  
Design Department; History and Heritage Institute  
Santiago, Chile  
[veramanriquez@uchilefau.cl](mailto:veramanriquez@uchilefau.cl)

**Bruno Perelli**

Universidad de Chile  
Design Department  
Santiago, Chile  
[bperelli@uchilefau.c](mailto:bperelli@uchilefau.c)

### INTRODUCTION: MAGAZINES AND TECHNICAL IMAGES

This article deals with the history of design in Chile from a historiographic perspective of cultural history. It is part of a broader investigation that studies the conceptual binomial art and technique, for which some artistic and industrial publications in Chile between 1929-1939 are explored. It strives to verify the manifestation of this binomial and its impact on the introduction of modern design, understood as a new way of conceiving the projectuality of the surroundings. Therefrom, diverse currents of cultural history are used: microhistory, history of ideas, history of mentalities, and, in this particular case, visual history.<sup>1</sup>

<sup>1</sup> For a deeper insight into historiographic theories of design, see Campi, 2013.

<sup>2</sup> To see the scope of the ideas of Behrens and the AEG in Chile from modern architecture and graphics installation processes, see Vera et al., 2019.

Specialized literature recognizes the German architect and designer Peter Behrens (1868-1940) as one of the founders of the discipline of design, mainly because of the relationship he established between art and technique from a conceptual and productive point of view. Behrens expressed the aforementioned in his text *Kunst und Technik*, published in 1910 in an electrotechnical magazine (*Elektrotechnische Zeitschrift*). The latter was evident in his design and architecture projects for the AEG industry, developed between 1907 and 1914.<sup>2</sup> Based on this, the research in which this article is framed maintains, as a hypothesis, that the textual and visual discourses that appeared in the periodical publications on art-architecture and technique-industry published in Chile between 1929 and 1939, introduced the conceptual binomial art and technique, manifesting it as a relationship between aesthetics and serial production, which favored the emergence of modern design in Chile.

A large amount of visual material was found in the review of this archive, as detailed below, that alluded to production processes: industrial landscapes, factory buildings, machines, operators, and images that strengthened the relationship between man and machine as a single productive unit. From the point of view of visual history, and through the semiological

3 For a vision about the perception of the technique in Chile during the thirties, see Vera, 2019.

analysis methodology, the aim is to investigate the iconographic information contained in the three technical-industrial magazines published by the industrial guilds of the period, which constitute the investigation archive, in order to gather background information on the type of relationship between man and machine established by the images included in these magazines, trying to understand how the industrial guilds projected this productive binomial.<sup>3</sup>

The historical economic context in which these magazines and the images that link man to machine appeared is characterized by events that brought great consequences from a productive point of view: the world economic crisis of 1929 and, in the Chilean context, the creation of the *Corporación de Fomento de la Producción* (Corporation for the Promotion of Production, CORFO) in 1939. The first event triggered the aspiration to turn Chile into an industrial economy whose production would cover the domestic market and, ideally, export consumer goods; the second, in turn, inaugurated a large-scale industrial process supervised by the State.

In this framework, the three journals that represent different industrial associations and make up the primary sources of the archive consulted in the general research project, as well as in this article, appear:

- 1) *Anales del Instituto de Ingenieros de Chile* (*Annals of the Chilean Institute of Engineers*; 1929-1939, 120 issues): Monthly publication of this guild institution that dealt with topics related to industrial production, through technical-economic aspects, in favor of the country's development. The images published in the magazine appear as a completely secondary resource, mainly referring to the advertising of industrial materials.
- 2) *Técnica y Cultura* (*Technique and Culture*; 1935-1938, 9 issues): One of the most interesting for this study, since it was the official organ of the 'Wellness Department' of the School of Arts and Crafts, whose purpose was to train qualified labor to carry out industrial processes (Castillo, 2014, 2015). The publication is intended for students and, as its name indicates, it includes humanistic themes in a balanced relationship with technical issues, containing a large number of images that often fulfilled a pedagogical role.
- 3) *Industria* (*Industry*; 1935-1939, 48 issues): Since it belonged to the *Sociedad de Fomento Fabril* (Sofofa), an association of owners of large industries, it represented a liberal stance. Its aim was mainly to defend private participation in the development of the country, although maintaining a good relationship with the State. It stands out for its large amount of images, both on its covers and inside, which is interesting when trying to visually interpret the expression of the ideology of this association of factory owners.

The images that are analyzed within the magazines that make up the archive represent all the photographs or illustrations where the relationship of a human being with an industrial artifact is iconographically expressed.

### **MAN, MACHINE, AND DESIGN**

In general terms, from the first traditional historiographic proposals of design, the topic of machines appears as an issue to be considered. In the journey of authors and theories that he develops in his *Pioneers of modern design*, Pevsner (2011) places the beginning of this discussion in the Victorian England of Ruskin and Morris. “The machine was Morris’ archenemy: ‘As a condition of life, production by machinery is altogether an evil’”<sup>4</sup> (Pevsner, 2011, p. 24). What Morris suggested was that the primacy of the machine over the operator implied the loss of the ‘joy of the maker,’ a concept that refers to his defense of artisanal work.

<sup>4</sup> Trans. Note: English 1977 reprint of Penguin’s second edition of *Pioneers of Modern Design* was used to translate this fragment.

Within the framework of this foundational discussion, the iconographic ecosystem inside the magazines that make up the archive shows images that install interesting concepts for the development of the conceptual binomial art and technique. One of these topics is the relationship between man and machine, a discussion that has been addressed from the point of view of the philosophy of technique, and that is also to be taken to the field of philosophy of design, which will provide a general framework for the discussion.

Regarding the first realm, it is worth noting the contribution of the French philosopher Gilbert Simondon, who introduces ‘technical objects,’ as a concept, which he places as “mediators between man and nature” (Simondon, 2007, p. 31). Already close to a philosophy of design, in his essay “About the Word *Design*” Flusser (2002) proposes, after elaborating a series of etymological relationships in different languages, to semantically understand the word ‘design,’ inquiring about its meaning inserted in a cultural field. However, Flusser insists on the idea that the word design involves “contexts associated with cunning and deceit” (2002, p. 24) and that it is linked to two other equally significant words that fall into the same category: mechanics and machine. Flusser goes further and establishes an even closer relationship between design and machine: “The words *design*, *machine*, *technology*, *ars* and *art* are closely related to one another, one term being unthinkable without the others, and they all derive from the same existential view of the world.” (Flusser, 2002, p. 25).<sup>5</sup> This stance corresponds to thinking about the cultural intervention of humans on nature through processes that involve an artifice that must be semantically understood. One of those is the idea of the machine.

<sup>5</sup> Trans. Note: English 2017 reprint of Reaktion’s first edition of *The Shape of Things: A Philosophy of Design* was used to translate both fragments.

## METHOD

From the methodological point of view, it is worth explaining that the great matrix of analysis is defined according to the general project: to relocate, taking them from cultural history, the tools that allow the discursive elaboration of the relationship between art and technique in the archive of magazines already defined, contributing with new sources to the construction of new discourses in the historiography of design in Chile.

From this point of view, it is an attempt to investigate, through visual discursive practices, the understanding, in its historical time, of the man-machine binomial, to approximate a historiographic category. Therefore, the methodological approach of the presented proposal consists in resorting to the visual history offered by Ivan Gaskell, which is close to the English language cultural history. This implies, according to Gaskell (2014), proposing the idea of 'visual material' as a source of study. Hence, talking about visual history involves selecting and analyzing the iconographic sources that have appeared in the archive in order to recover the meaning of these images; extracting information that contributes, in this case, to the historical understanding of the relationship between man and machine, contributing to a history of design that is developed from concepts (art-technique, man-machine) and regardless of products and – or – authors.

Gaskell develops three ideas on how to institute the knowledge of visual material applied to the relationship between the present and the past: authorship, canonicity, and interpretation. Regarding this last idea, he points out: "The historian's task, therefore, is to recover the 'period eye': the culturally specific way of seeing peculiar to, say, early sixteenth-century south German limewood sculptors and their clients"<sup>6</sup> (Gaskell, 2014, p. 243). This implies having an interpretation tool that allows the discursive recovery of these images in their context. For this, the semiological method proposed by Roland Barthes (2009) will be applied.

Devised for the analysis of analog press photographs, this method enables the understanding of a structural autonomy in the image that, although it is not isolated – since it shares information with the text (caption or title) – it can be separately analyzed. Hence, the following questions arise from his proposal: "What is the content of the photographic message? What does photography convey?" » (Barthes, 2009, p. 13). The answer is the scene itself, the literal real, the "mechanical analog of the real" (Barthes, 2009, p. 14).

Unlike this continuous message, the drawing or illustration appears as an opposition, carrying the analogical meaning of what it wants to represent, but also a supplementary message: the style of reproduction, that is, a secondary message that refers to the action of a creator who refers

<sup>6</sup> Trans. Note: English 2001 Pennsylvania State University Press second edition of *New Perspectives on Historical Writing* (Peter Burke, ed.) was used to translate this fragment.

to a certain culture. There would be a difference between the description of a photograph and that of a drawing since, in the case of the photograph, the description means a change in structure that makes it inaccurate and incomplete; in the case of the description of the drawing, it is the story of a structure already connoted, filtered by the style of an author.

However, Barthes (2009) raises the idea of a photographic paradox: the coexistence of two messages, the aforementioned photographic analog and the code that arises through treatment, the rhetoric of photography. It is here where the idea of a necessary decipherment of the connotation procedures of the photographic image appears: “the imposition of a second meaning to the photographic message itself” (Barthes, 2009, p. 16). In this case, it would be translated as what the photograph seeks to represent: for example, the man who is the master of the machine, the man who is the servant of the machine, etc. Due to the analysis to be developed, the connotation procedures, typical of the image that Barthes establishes as techniques, will not be described here: trick effects, pose, objects, photogenia, aestheticism, and syntax (Barthes, 2009), because a study like that escapes the objectives of the text and the length of the article. Captions will be considered as Barthes does, that is, differentiated from the techniques of the images and giving the image a second meaning. The examination will be aimed at identifying categories and proposing interpretations that help conclude which was the possible relationship between man and machine. In this sense, we acknowledge, following Barthes (2009), the categories of photography and illustration.

### **PHOTOGRAPHS**

These images are located within the great universe of industrial photography, where it is worth mentioning one of the most relevant exponents of this type of record. He is Charles Sheeler, founder of Precisionism, a pictorial and photographic trend born in the 1920s in the United States. This trend had industry and material progress as its main subjects and sought, through painting and photography, a reading of an epoch of industrial development in the US. As Corwin explains:

Sheeler was particularly interested in finding visual models of efficiency. ‘I speak in the tongue of my times,’ Sheeler noted in a 1938 article, ‘the mechanical, the industrial. Anything that works efficiently is beautiful. Barns and machinery are thus beautiful.’ (2003, p. 154)

Although some aspects relate him to Italian Futurism, the particularities of his work root him in the productive context of the United States, at the same

time when photographs that related man to the machine were circulating in Chile. According to McMullen,

The Precisionists chose to depict the 20th century's new dependence on technology and the machine in a way that celebrated the efficiency and promise of industrial work: the style created clearly defined, even idealized images of industrial subject matter including factories, machinery, and the people who operated them. (2006, p. 27)

Regarding the relationship of man with the machine and the development of Sheeler's photographic work for the Ford industrial plants, Rawlinson states that:

The photographs do not celebrate the plant's workers, or narrate the act of creation from coal to car, nor do the images eulogize Ford, and nowhere, ever, do we see a complete car. In the main, we never see the whole of anything in the photographs, only fragments that imply the binding whole through constellational form. (2008, p. 133)

Most of the photographs used to achieve the research purpose are reproduced in *Técnica y Cultura* (Figures 1, 2, 3, 4, 5, and 6). Only one photograph belongs to the *Anales del Instituto de Ingenieros* (Figure 7).

Figure 2 (*Técnica y Cultura* N° 6, July 1937) is accompanied by a descriptive caption of the machine: "Modern 6,600-volt synchronous motor with a power of 500 HP." Figure 3 is duplicated in issues 4 (July 1936) and 8 (May 1938) of *Técnica y Cultura*, with different captions; however, both allude to the fact that it is a "powerful electromotive force generator for German industry." Figure 4 (*Técnica y Cultura* N° 8, May 1938) has a more extensive caption, whose main information states: "The electricity generator has become the hidden God that moves the machinery of thousands of industries." Figures 5 and 6 belong to the same issue (*Técnica y Cultura*, July 9, 1938). Issue 5 appears without a caption and issue 6 details that it is a cable machine manufactured by Siemens, the German industry. Figure 7, the only advertising photograph, promotes the Swiss turbine brand, Escher Wyss. This photograph has the peculiarity of being duplicated in other issues as an illustration.

All these photographs are foreign and their information details that they are European machines. It is not mentioned if they belonged to any image bank or archive. Almost all show workers in full production without posing and with an intention of anonymity on the part of the photographer. As a common characteristic, workers act 'serving the machine,' either through maintenance or by checking the operation when a device that is already working is portrayed.

## ILLUSTRATIONS

Drawings related to the central theme of this research are published in the three magazines. In the case of *Técnica y Cultura* and *Industria*, there is no reference to authors, but, due to their characteristics and their relationship with the contents of the publications, it can be deduced that they are images made exclusively for said issues.

The illustrations reproduced in the *Anales del Instituto de Ingenieros* (Figures 8 and 13) are advertising images. In the case of illustrations, *Industria* magazine stands out; here, a standardized visual and editorial communication system is shaped, which is managed by a process of technical reproduction. At the same time, the illustrations express a linkage between the operator and the machine that becomes an identity element of the magazine when found on the cover.

As for the execution, the construction of human figures and machines employing synthetic lines or silhouettes made up of planes that contrast with the background is a common element of the illustrations. In this synthesis of visual resources, no attention is paid to the individuality of the worker and, only in some cases, certain features are hinted at.

## ADVANCEMENT OF A JOINT ANALYSIS OF THE IMAGES

When reviewing the images in search of a binding categorization between the photographs and the illustrations, one of the main aspects that appears as a common element is that they show a relationship between a subject and an external object, which has the common purpose of productivity. Following Flusser, this leads to think of the machine as the extension of the limbs and capacities of the human being: “To take one example: The lever is a simple machine. Its design copies the human arm; it is an artificial arm”<sup>7</sup> (2002, p. 26). Building from this logic, a criterion of proportion between man and machine can be established, which leads to proposing a relationship of scale between them, despite the category of the image.

In a progressive account, Figure 1 shows the hands of an operator at work. In a similarly sized relationship, an illustration representing a worker operating a lathe appears on the covers of the twelve issues published in 1939 by the magazine *Industria* (Figure 9). In both images, there is an intimate relationship focused on a smaller-scale production process, which may even be part of a workshop space rather than a factory. Then, two men in a close-up inside a factory building pour a liquid mixture typical of metallurgical processes. These illustrations appeared on the cover of *Industria* during 1938 (Figure 11). The same applies to the next image, but with the presence of a larger production device corresponding to the 1936 covers of the same

<sup>7</sup> Trans. Note: English 2017 reprint of Reaktion's first edition of *The Shape of Things: A Philosophy of Design* was used for translation.

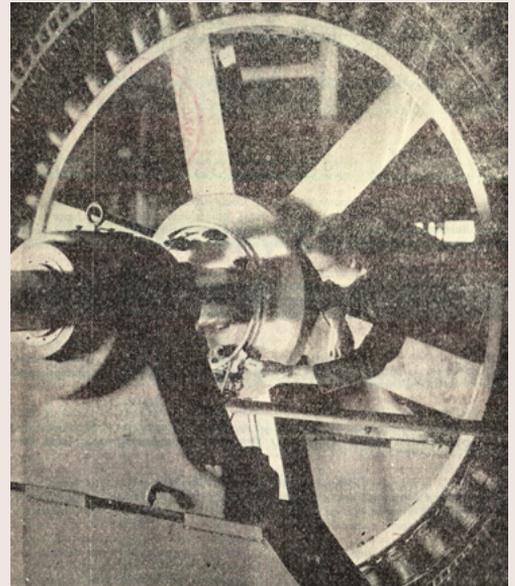
magazine (Figure 12). Although these are different productive activities, the man-machine scale proportion of the photographs is relatively similar to that of the illustrations.

The scale progression continues with three photographs taken from *Técnica y Cultura*, in which the size of the mechanical parts significantly exceeds the proportion of the operator. Although the position of the worker differs in the three photographs (apparently in repair or adjustment tasks in Figures 2 and 4), the common element is to conceive of man as a guarantor of the production process by executing an action in which he is a subordinate to the machine.

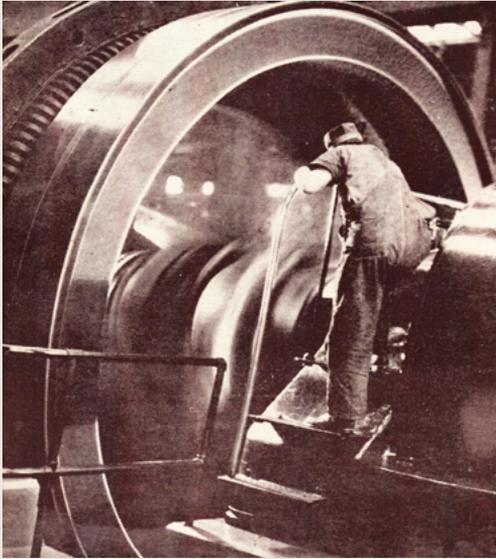
Figures 7, 8, 10, and 13 share a peculiarity: besides the fact that the first two correspond to a photograph and an illustration of the same image that promoted existing turbines in Chile (installed by the 'Compañía Hidro Eléctrica Volcán'), in all them, the appearance of an operator serves to indicate a proportion that allows to conceive the scale of the machine inserted in an industrial building.



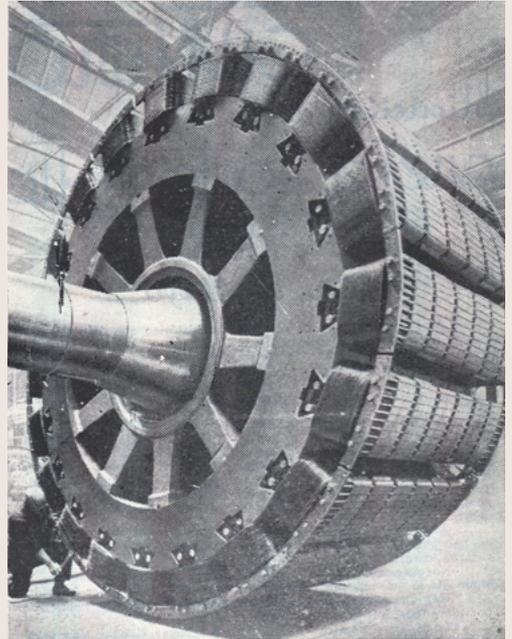
**Figure 4:** Photograph that appeared in the index of *Técnica y Cultura* N° 4. Unknown author. Source: *Técnica y Cultura* N° 4, July 1935, n.p.



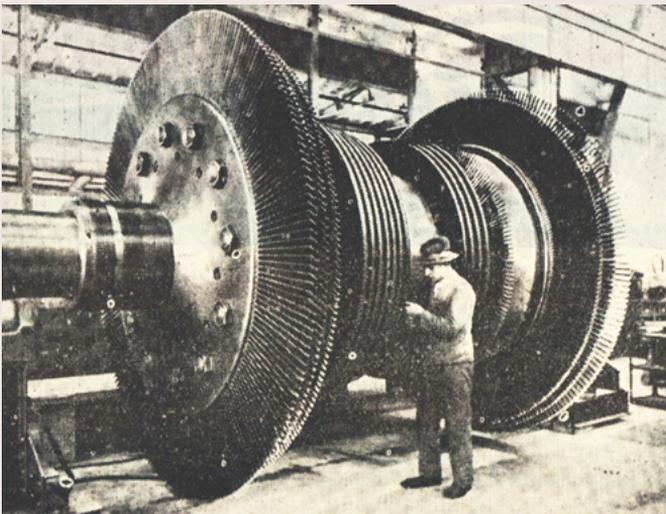
**Figure 2:** Modern 6,600-volt synchronous motor with a power of 500 HP. Unknown author. Source: *Técnica y Cultura* N° 6, July 1937, p. 2.



**Figure 3:** Powerful electromotive force generator from German industry. Unknown author. Source: *Técnica y Cultura* N° 4, July 1936, p. 6.



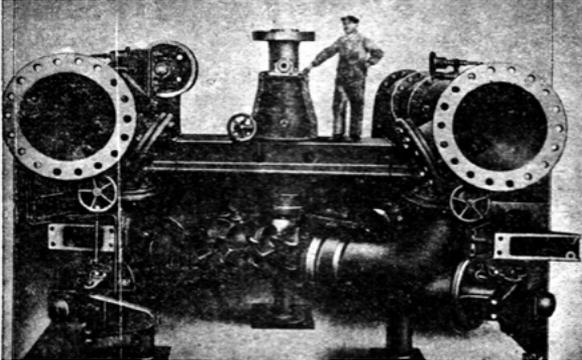
**Figure 4:** The electricity generator has become the hidden God that moves the machinery of thousands of industries. Unknown author. Source: *Técnica y Cultura* N° 8, May 1938, p. 2.



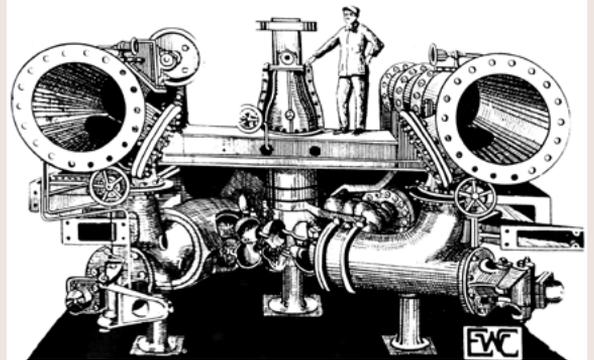
**Figure 5:** Image included as the closing of the poem "Disputa entre el hombre y la máquina", by E. Palavicini. Unknown author. Source: *Técnica y Cultura* N° 9, July 1938, p. 25.



**Figure 6:** Stranding machine made by the German industry Siemens. Unknown author. Source: *Técnica y Cultura* N° 9, July 1938, p. 26.



**Figure 7:** Photograph advertising Escher and Wyss turbines. Unknown author. Source: *Anales del Instituto de Ingenieros de Chile*, year 29, N° 4, January 1929.



**Figure 8:** Illustration advertising Escher and Wyss turbines. Unknown author. Source: *Anales del Instituto de Ingenieros de Chile*, year 30, N° 4, January 1930.



**Figure 9:** *Industria* Cover illustration detail, 1939 issues. Unknown author. Source: *Industria*, 1939.



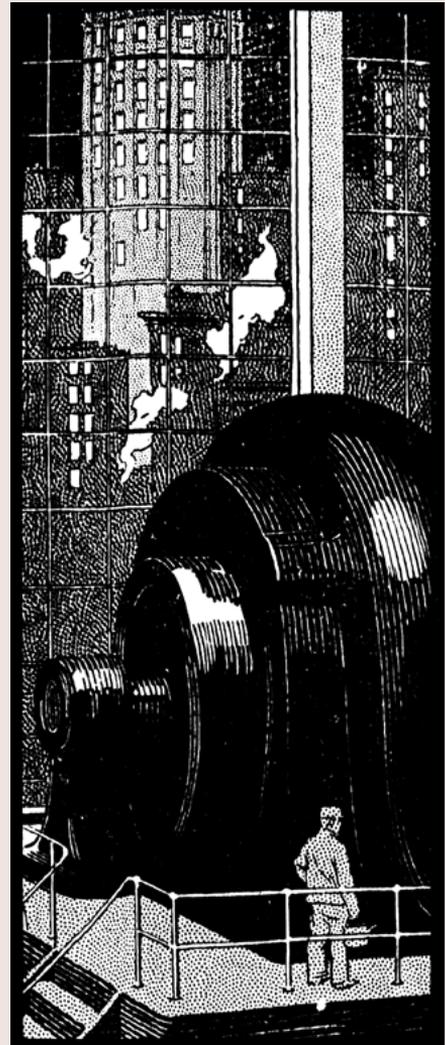
**Figure 10:** *Industria* N° 1 Cover, 1935. Unknown author. Source: *Industria* No. 1, January 1935.



**Figure 11:** *Industria* N° 1 Cover, 1938. Unknown author. Source: *Industria* N° 1, January 1938.



**Figure 12:** Cover illustration detail of *Industria* N° 1, 1936. Unknown author. Source: *Industria* N° 1, January 1936.



**Figure 13:** Andes Copper Mining Company advertising. Unknown author. Source: *Anales del Instituto de Ingenieros de Chile*, year 30, N° 1, January 1930.

## CONCLUSIONS

Looking at the images that appeared in the technical and industrial magazines of the thirties, it is possible to understand the discussion regarding the relationship between man and machine as an expression of the time that raises concepts with which it is possible to articulate a snapshot that contributes to the configuration of the vision of the industrial guilds, in a discussion that was fundamental in the origins of design and its historiography.

The contribution of authors such as Flusser, as explained at the beginning of this article, is useful to relate the ideas that give structure to the study proposal. According to this author, the concept of machine is closely related to the idea of design and it is necessary to understand both concepts from a semantic point of view. To achieve this, an analysis was developed that categorized the images by a visual code, to then propose a progressive linkage, striving to understand the different expressions of this binomial.

In the first place, it can be asserted that in the three industrial magazines analyzed, the image had an important communication potential that shared codes with the textual information. Within the visual ecosystem, many of them referred to the relationship of man with the machine as a modern and optimistic sensibility, without any negative connotation. Just as in the same period, Sheeler's work pointed out the importance of the machine at the artistic level, the circulation of these images in Chilean magazines contributed to configure an epochal sensibility that was a common and recurrent rhetoric in the visual expression of the industrial guilds. Added to the other images that alluded only to machines or industrial landscapes, the images of the man-machine binomial contributed to creating a benevolent conception of technique, installing in these media a mechanistic aesthetic that was very much in tune with some texts that appeared in these magazines such as: 'Hacia una nueva estética' (Towards a New Aesthetic), by José Perotti (*Técnica y Cultura* N° 1, July 1935) or the poems 'Disputa entre el hombre y la máquina' (Dispute between Man and Machine) by E. Palavicini, and 'Mecánica' (Mechanics) by Juan Marín (both in *Técnica y Cultura* N° 9, July 1938), true literary panegyrics in favor of the machine as an object of devotion.<sup>8</sup> Thus, a harmonious relationship between art and technique began to be installed, which was also possible to recognize in the most intimate visual representation of a man with the machine.

The magazine *Técnica y Cultura* used foreign photographs with a pedagogical role detailing, in a technical lexicon, the characteristics of the machine without any reference to the operator. However, the analysis of the image shows that the inclusion of the worker is necessary for the correct operation of the device. The image expressed something that the text did not refer-

<sup>8</sup> Juan Marín (1900-1963) was a Chilean physician, sailor, aviator, and poet whose work manifested the influence of futurism and idolatry of technique, especially in his work *Looping* (1929), described as "a book that praises time, dynamic rhythm, and technique" (Memoria Chilena, 2018).

ence. The appearance of the man in relation to the machine is presented as the necessary workforce for a production process. In a condition of anonymity and without defined individuality, the operator becomes another cog in the manufacturing process, or a visual resource converted into a scale reference to show the size of the machine. The relationship established contributes to this with the captions that allude to metaphors that give the machine a superhuman power.

It should also be noted that especially in the case of *Industria* magazine, the images of man and machine become part of its visual identity: in four of the five years analyzed, all the covers referred to this relationship. They corresponded to illustrations and, therefore, to a visual expression mediated by the author's style, always intending to enhance factory production as an expression of the desired industrialization project. There was a conscious editorial decision to express, through the unity between the machine and the operator, the interests of the magazine and, therefore, of the industrialists' guilds. It was not the autonomous machine, but the unity of it and its fully functioning operator(s). But, particularly in the case of *Industria*, it cannot be proposed that in this recurrence of productive images there is a vindication of the figure of the worker.

In the case of images inserted in an industrial space, the productive area shows the infrastructure, but the relationship of the operator with the machine indicates the complementary relationship necessary for production: the man assists, the machine works. They are rhetoric to be added to a spirit of time whose manufacturing processes represented the economic aspiration of a model of industrial capitalism, in which Chile was trying to insert itself. In this context, the intention was to install the machine and the industry as the ideal of progress. Hence, the vast majority of the photographs are of foreign origin, and the images anticipate a visual material that began to take shape with the creation of the Corporación de Fomento de la Producción (CORFO) in 1939. Parallel to post-CORFO industrial development, photographic records of the manufacturing processes of national industries began to appear, as in the case of the work of photographer Luis Ladrón de Guevara (Booth & Errázuriz, 2008).

Since this is a particular case inserted in a larger discussion, the relationship between man and machine displayed here does not exclude other analysis that investigate the conceptual art-technique binomial, nor a theoretical development that incorporates more specific authors who work or have worked on the problem of technique from a philosophical point of view. The results exposed in this article are intended to be both, a contribution of methodology and of content for the history of design in Chile. ▣

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