Giovanni Anceschi and the Theory of Schematic Representation. Drawing as a Graphic Language

Andrea Lancia

Abstract

The theme of representation constitutes a specific domain in which the discourse on drawing and that on graphic design engage in dialogue, blurring the boundaries between the two disciplines. In particular, reflection on the graphic language of schematic representation plays a fundamental role in distinguishing between the cognitive value and the configurative value of drawing, depending on the context in which it is applied and the purposes it serves. Starting from this premise, the article offers a reconstruction and analysis of Giovanni Anceschi's research work, developed along a trajectory that begins with his 1966 thesis at the HfG Ulm on the subject of schematization in scientific, encyclopedic, and popular publishing, and culminates in the more complex 1992 text entitled L'oggetto della raffigurazione. The designer's point of view provides a perspective on graphic language that combines the descriptive and analytical stance of the theorist with the operative and functional role of the practitioner. Through a discussion of the foundations laid by the Ulm approach, the taxonomic method employed, and the choice of scientific representation as a theme, the article identifies insights that may contribute to the current debate on methodology and epistemology in graphic design in relation to drawing.

Keywords: graphic language, drawing, graphic design, Giovanni Anceschi, design.

Introduction

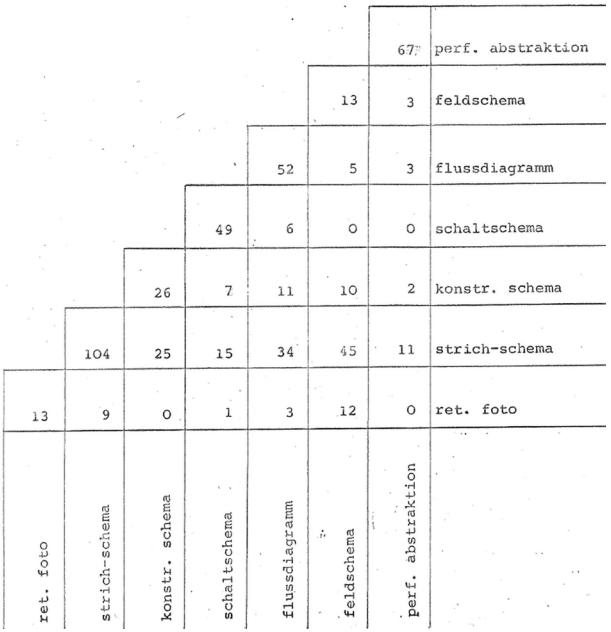
The term 'grafica' and the term 'disegno' seem to belong equally to the history of representation. In the field of that kind of Drawing which, in a well-phrased expression by T. Maldonado [Maldonado2018], we might define as 'con la D maiuscola', it is increasingly common to hear 'grafica' mentioned within discussions of representation [1].
As demonstrated by the intellectual trajectory of Giovanni Anceschi, placing emphasis on this issue can also prove valuable for the field of graphic design. His reflection, in fact, situates itself in a specific liminal zone, where the study of graphic languages becomes a meaningful contribution both to reflections on drawing and to the "foundation of a discipline of graphic design" [Anceschi 1981, p. 3, translated by the author].
In particular, the study of that specific graphic language which is schematic representation proves useful even today for clarifying methodological and epistemological questions concerning the disciplinary status of what is now referred to as communication design. The goal here is to analyze Anceschi's research trajectory on schematic representation. The focus is on the context in which his studies were conceived and developed, the method he employed, and the subject matter he selected and investigated; the intent is to formulate a critical reflection, exploring the potential to revisit and update concepts that are worth questioning once again.
The philological evolution of his work unfolds in three key moments: i. the drafting of his diploma thesis at the HfG Ulm, written in German between 1966 and 1967 [2]; ii. the partial Italian translation of the thesis included in the collection *Progettazione visiva: convenzioni e procedimenti di rappresentazione*, published in 1981; iii. the reworking

presented in his *L'oggetto della raffigurazione* from 1992.
This constitutes a path of integration and refinement: on one hand, from the initial draft to the final publication, the discourse is updated and enriched through engagement with contemporary authors and a more mature historical-theoretical perspective; on the other hand, and for the same reason, it is streamlined in certain sections that suffer from the obsolescence of a dated case study and from a level of depth consistent with that of a diploma thesis.

1966: The diploma thesis at the HfG Ulm

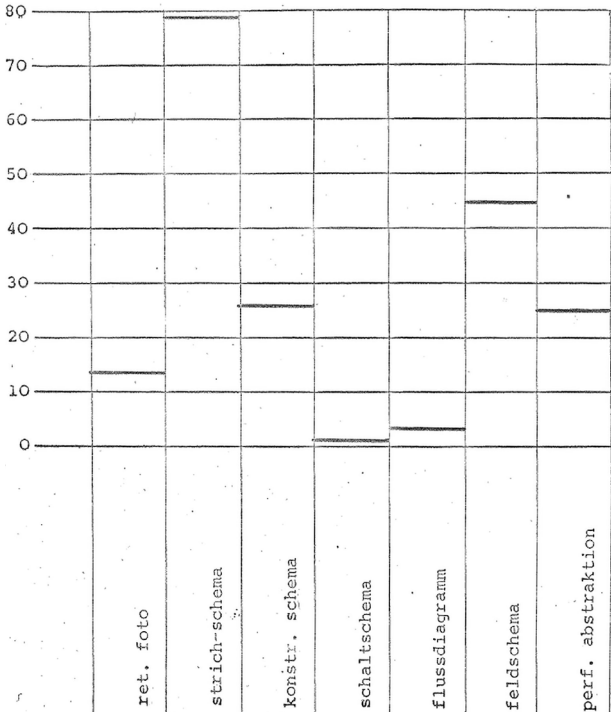
The 1966 thesis was supervised by Abraham Moles, with Tomás Maldonado and Herbert W. Kapitzki as co-advisors [3]. It bears the title *Schematische Darstellungen für didaktische Ausstellungen* (*Rappresentazioni schematiche per le mostre didattiche*) and is divided into two parts: *Schemata* (schemes) and *Ausstellung* (exhibitions). The project begins with a reflection on the stages in which scientists use representations to communicate events, processes, and objects, and then constructs a taxonomy of the forms of schematization employed in popular scientific publishing. This exercise is followed by an analysis of the manipulations enacted by the designer when selecting and producing the most suitable schematic representation; finally, the exhibition is analyzed as a communicative flow, and several types are defined.
This contribution must be contextualized within the design culture of the Ulm School, particularly regarding visual communication and the novel interest given to that subset identified as 'non-persuasive communication'. This definition was formulated by G. Bonsiepe [Bonsiepe 1965, p. 24]: "So far the notes on persuasive communication. Its counterpart, non-persuasive communication is an almost untouched region. The world of sign-systems for traffic and displays on machines, the world of communication for educational purposes, the world of visual representation of scientific facts offer rich opportunities and challenges to the visual designer. Here, communication is not primarily economically motivated as in persuasive communication with its advertisements, billboards and TV spots".
On the other hand, as E. Bistagnino [Bistagnino 2018] explains, the role of drawing disciplines at Ulm, specifically, that particular domain known as Design Drawing, is not irrelevant [4]. Anceschi himself [1981, p. 3, translated by the author] explains that his work "aims to take shape as an interweaving of empirical observations, taxonomical classifications, and conceptual tools applied to the problem of producing functional representations". In this sense, the study of graphic representation methods serves to construct, in disciplinary terms, what we might define as 'operational drawing', a theoretical foundation for the creation of graphic artifacts, in the spirit of the 'operational semiotics' developed by T. Maldonado [Maldonado1959; Maldonado 1974] at Ulm. [5] Rather than 'design drawing', it would be more accurate to speak of 'drawing for design' [6].
The influence of the research being developed at the Ulm School at the time is evident first and foremost in the main theoretical tool Anceschi uses to categorize schematic representations: the levels of iconicity, a framework that A. Moles was working on during those years and which he would formalize a few years later [Moles 1972a]. Moles

Fig. 1. G. Anceschi, diagram illustrating the distribution of seven categories of schematic representation based on their degree of iconicity [Anceschi 1966]. Fondo Tomás Maldonado, Fondazione Giangiacomo Feltrinelli, Milano.



employs empirical categories, creating a taxonomy of a population of schematic representations that appears to "to precipitate and cluster around specific (12) constellations of essential features of the expressive and graphic language employed" [Anceschi 1992, p. 27, translated by the author].
The role of taxonomy in design research and practice was, moreover, another fundamental trait of the Ulm approach, as Anceschi himself emphasized years later [Anceschi 2009, p. 207, translated by the author]: "But, as Maldonado also states, taxonomy is a scientific gesture which is, in a certain sense, the primary and initial scientific act, as anyone with experience in conducting research and projects knows perfectly well".
Of the twelve levels identified by Moles, Anceschi selects seven and uses them to map a total of 526 illustrations, also allowing for mixed categories composed of two or more levels (fig. 1) [7]. The sample was drawn from three sources: two of encyclopedic nature namely, the seventh volume of *Epoche, Atom und Automation* (1965), dedicated to cybernetics and automation, and *L'Être vivant* (1964), focused on biology; the third source was all the 1957 issues of *Scientific American*, thus closer to the field of popular scientific publishing.
From this intersection of types of schematic representations and scientific disciplines, Anceschi derives findings in which the relationship between what needs to be represented and the graphic schematization language used becomes clear (fig. 2). For example, he writes the following regarding biology: "It is important to emphasize the high value of the category of line-based simplification in relation to science's inherent tendency to describe the objects (organisms, cells, etc.) it studies. Secondly, the strong relevance of the mixed category of line-based simplification and constructive drawing stands out as a sign of the need to show how these objects are structured. The significant role of the mixed categories of line-based simplification and field schematics is tied to the necessity of depicting the forces, movements, fields, etc. associated with these objects" [Anceschi 1966, s. p., par. 1 *Biologie*]
The other fundamental part of the thesis is where the author adopts the point of view not of the viewer, but of the producer of the schematizations [8]. Anceschi essentially attempts to define the Darstellungkonventionen (representation conventions) enacted by the designer. He divides the manipulations into 'necessary' (related to projection methods and color choices) and 'active' (where the producer directs the viewer's attention to certain elements of the representation), the latter further classified into 'comparative' and 'elliptical' based on how emphasis is placed on the selected parts.
He finally links to these latter manipulations what he calls 'additional signs', applied later on another 'level' of the representation, a category significantly expanded in 1992. It is particularly in this phase of the thesis, especially in the section concerning perspective, that Anceschi most directly engages with the world of drawing in relation to the operational intentions of the graphic designer, to the point of nearly overlapping the figure of the designer with that of the draftsman.

Fig. 2. G. Anceschi, diagram illustrating the distribution of seven categories of schematic representation within the field of biology [Anceschi 1966]. Fondo Tomás Maldonado, Fondazione Giangiacomo Feltrinelli, Milano.



1981: The partial Italian translation of the thesis

As previously mentioned, in 1981 Anceschi published a partial Italian translation of his thesis, where a key element is the updated bibliography. Of particular note is the inclusion of J. Bertin's work [Bertin 1967], which represents one of the foundational attempts at an operational semiotics in the field of graphics, whose 'visual variables' have become an essential point of reference for any discussion on 'information design' [9]. However, the most significant theoretical element is the attention paid to the debate on iconicity between T. Maldonado [Maldonado 1974] and U. Eco [Eco 1975] [10], which a few years earlier had revealed a contrast between the conventionalism typical of Eco's Italian semiolinguistic approach and the logical-pragmatic perspective with which Maldonado explored the propositional value of iconic representation. In this reference by Anceschi, who seems, at least in terms of academic training, to side with Maldonado, there is a renewed intent to consider the object of his study "composed not only of normative and cultural codes and conventions, but also of the conceptual operations and technical procedures that contributed to its production" [Anceschi 1981, p. 5, translated by the author].
This is not a literal or didactic translation; many concepts are clarified and/or expanded. One example is the retitling of the two parts of the thesis as 'theory of schematic representation' and 'expository flow'. The title of the book in which the thesis appears *Progettazione visiva: convenzioni e procedimenti di rappresentazione* makes explicit the focus of the text and Anceschi's position, who by 1981 had been working as a graphic designer for over ten years.

1992: *L'oggetto della raffigurazione*

The book Anceschi published in 1992, entitled *L'oggetto della raffigurazione*, can be considered the culmination of his research trajectory.
The text is extensive, almost labyrinthine in its linguistic [11] and taxonomic definitions, and also quite diverse in content: it includes a previously unpublished first section, which constitutes the actual development of his thesis, as well as a series of reprinted illustrated essays by the author on related topics [12]. Here again, the work opens with an update on the various attempts that, following Moles' contributions, have furthered the taxonomic exploration of representation methods [13]. Particularly noteworthy is Anceschi's focus on the work of Manfredo Massironi [Massironi 1982] [14]. The writings of both authors share much in terms of topic and intent: for instance, Massironi's classificatory attempt to organize types of drawing in relation to communicative function parallels Anceschi's taxonomic approach; moreover, Anceschi incorporates into his argument the concept of 'hypothetigraphy', coined by Massironi [15].
In *L'oggetto della raffigurazione*, Anceschi returns to the Ulm theme of the cognitive value of images, updating it with insights from the study of writing systems and graphic structures, especially those of Cardona [Cardona 1981]. He frames this as: "To think of drawing as a particular case, or rather as one of the poles of notation, that is, a graphic system consistent with the discipline of computer science and the anthropological theory of writing" [Anceschi 1992, p. 1, translated by the author].
In the same vein, the discourse on 'conditions and procedures of representation' is significantly expanded: the systematization of necessary and active manipulations is far more detailed and enriched with examples, ranging from the technique of collage as the limit of identifying an object of representation, to caricature as a tool of comparative manipulation. However, the main theoretical development lies in the domain of 'additional signs', which Anceschi explores in the chapter on the 'double level', tying it to Genette's paratextual theory [16] [Genette 1987], as a basis for a topological reflection on complex figurative texts. Having introduced this topological dimension, Anceschi focuses on the value of diagrams as 'places of knowledge' [Anceschi 1992, p. 91]. The diagrammatic and abstract nature of schemes, typically viewed as non-figurative, can in fact be 'enriched' by increasing their iconic component [17], or conversely, they can originate from within a figurative representation and be 'stripped down', de-figurativized, returning to a diagrammatic character. The latter case is exemplified by what he calls 'allegorical catachreses' [Anceschi 1992, p. 96], those representations typical of 'ancient schemes' in which the ladder, wheel, river, or tree were used as archetypal figurative devices to schematize complex concepts, structures, processes, or systems, essentially employed in the organization of knowledge [Anceschi 1992, p. 104].
This reflection leads to identifying the diagram as any operation in which the visual articulation of a graphic space attempts to 'fix' the object of representation, ultimately linking the materialization of knowledge to a 'topical device' [Anceschi 1992, p. 103].
This assumption is a direct outcome of Cardona's theorization on graphic systems [Cardona 1981], which entails the inclusion of representation within the world of

writing –and, consequently, the inclusion of writing within the world of image– as part of the revision of the phono-logocentric paradigm. In Italy, this revision had been especially championed in graphic design discourse by Giovanni Lussu [Lussu 1991], and later by Luciano Perondi with his concept of 'sinsemia' [Perondi 2012].
The crucial and concluding moment comes when Anceschi introduces the distinction between Abbildung (representation) and Gestaltung (configuration): "In a certain sense, the adoption or abandonment of iconicity appears to entail a shift in operational status – from representation […] to configuration […]" [Anceschi 1992, p. 111, translated by the author].
However, he cautions that every representation always contains some degree of configuration, suggesting that drawing a clear line between the two is, at the very least, extremely complex [18]. Ultimately, Anceschi affirms the fundamental cognitive value of schematic representations, while distinguishing it from the configurative value they acquire within the design process, value that derives from the operational status in which they are embedded.

Conclusions

From this reconstruction of Anceschi's research, at least three conclusions can be drawn that are worth reintroducing into the current disciplinary and epistemological debate, conclusions which, as mentioned at the outset, concern method, subject matter, and approach.
The first point to highlight is the importance of the taxonomic and classificatory process in Anceschi's concept of research, clearly shaped by the Ulm environment. In addition to Moles's work on levels of iconicity [Moles 1972a], Anceschi seems to draw on *Theorie des Objets* [Moles 1972b], as well as on Moles's earlier attempt to define structural and functional complexity [Moles 1962]. The necessity of cataloguing objects –the objects of representation– according to Moles's method is already evident in the very title Anceschi chose for his 1992 text [19].
The methodology of typological classification finds a particularly fruitful dialogue with representation, both in terms of representational methods used for the classification of knowledge–as historically exemplified by Linnaeus [Linnaeus 1753; Linnaeus 1758]– and, as is the case here, in the classification of the representational methods themselves. In this latter domain, taxonomy plays a fundamental role in bridging theory and practice. This is especially true when the semiotic-pragmatic approach – focused on the user experience [Morris 1938]– is linked with the technical-design perspective centered on the producer's operational viewpoint.
The second point concerns the potential demonstrated by the encounter between drawing and graphic design within the domain of scientific representation. One of the earliest structured research attempts in this direction in Italy was the monographic issue of *Grafica* magazine in 1990, dedicated to the image of scientific knowledge, introduced by a text by Massironi himself [Massironi 1990]. This topic, particularly regarding the idea of seeing the invisible, has continued to be the subject of debate [Zoppè 2014; Cicalò 2020; Menchetelli 2022] [20], and one interesting case is the *SciVis* project [21]. A significant part of any discipline that requires the representation of its objects of study lies in the collaboration between taxonomic analysis, representational methods, and design-based graphic choices. Too often, especially in the STEM fields, this responsibility is left solely to scientists: "a scientist must engage with the visualization and production of graphs and presentations, which play a significant role in various stages of the scientific writing and communication process" [Anzilotti, Napolitani 2014, p. 43]. A recent and notable example of this interdisciplinary potential can be found in biosemiotics, particularly in the analysis of tree diagrams in relation to microbiome studies [Burgio, Raffaetà 2024], and, from a very different perspective, in the field of botanical illustration [Bruni 2014]. Although some space for study already exists, the opportunities offered by areas such as educational publishing [22], and, as we saw with Anceschi, popular scientific publishing, deserve greater theoretical and practical attention.
The final consideration concerns the approach Anceschi inherited from the HfG Ulm, and it reopens the central question from which we began: what role does drawing play in design when it is understood as a graphic language? If Anceschi's analysis of schematic representations has helped clarify this issue, it has certainly done so by distinguishing the cognitive value of representing from the project-based value of configuring. This is a distinctly epistemological point that deserves renewed attention in the contemporary disciplinary debate, as it highlights how the value of drawing shifts depending on the purpose and the disciplinary context in which it operates. In design, its role is undeniably operational.

Notes

[1] For further reading, see the series *Grafica*, edited by Enrico Cicalò, and the monographic issue *Graphichs of the Img Journal*, no. 2, 2020.

[2] Every thesis submitted at the HfG Ulm was divided into a practical and a theoretical part. In this essay, references to Anceschi's thesis concern only the theoretical, research and analysis component. For an overview of students and theses at Ulm, see <https://hfgulmarchiv.de/personen/> (accessed 13 February 2025).

[3] The thesis was written in 1966 but officially discussed in 1967. The year of writing was chosen as the reference point, in line with the other texts by Anceschi analyzed, where the author himself maintains this preference.

[4] For further reading, see the monographic issue on *Design Drawing*, in the scientific journal *Diségno*, n. 11, 2022.

[5] For a detailed account of the semiotic approach at Ulm, in relation to that of Charles W. Morris at the New Bauhaus in Chicago, see Mattozzi [Mattozzi 2024].

[6] Perhaps for this reason, Anceschi's work is increasingly cited in image analysis [Menchetelli, 2024] and semiotic discourse [Manchia, Zingale 2024], as well as in contributions on visual culture. The same attention does not appear in design literature. A recent exception is the use of Anceschi's reflections in discussions about designer door handles [Bagnato, Maiorano 2022].

[7] It is worth noting that, later, Anceschi [Anceschi 1992] writes that the illustrations are 256, likely a typographical error.

[8] Anceschi explores the graphic languages of scientific representation by identifying illustration as a 'staging' conducted by the 'director', a figure he alternately calls designer, draftsman, schematizer, graphic designer, or illustrator.

[9] In addition to Bertin, Anceschi surveys several texts relevant for collecting paradigmatic cases, such as A. Lockwood [Lockwood 1969], E. A. Hamilton [Hamilton 1970], W. Herdeg [Herdeg 1974a; Herdeg 1974b].

[10] For contributions that addressed and updated this debate, see O. Calabrese [Calabrese 1985], U. Eco [Eco 1997], T. Maldonado [Maldonado 1992], G. Anceschi [Anceschi 2009].

[11] Anceschi frequently uses rhetorical or linguistic devices to condense complex reflections, often as wordplays, such as '*rilevativo\rivelativo*', the opposition between '*rappresentazione\rappresentanza*', or the distinction between '*fenomenologico-descrittivo*' and '*ontologico-funzionale*' drawing, as well as the notion of '*catacresi allegoriche*'.

[12] This work by Anceschi not only significantly expands the ideas initiated at Ulm, but also cites and reprints a series of his essays written throughout the 1980s. These help reconstruct the intersection of themes and insights that culminate in the unpublished section of the book. Among others, Anceschi wrote for *Grafica* and *LineaGrafica*, key journals in the discourse on graphic design at the time; for *Il Piccolo Hans*, a journal of psychology and psychoanalysis; collaborated with *Scienza 84*, a major outlet for Italian science communication in that period, and also contributed to *Quaderni Di*, a journal on drawing.

[13] References are made in particular to S. H. Eshes [Eshes 1977] as well as the empirical communication studies by D. Zillmann [Zillmann 1965] and R. Lindekens [Lindekens 1976].

[14] During those years, the two collaborated in the journal *Grafica. Rivista di Teoria, Storia* e *Metodologia*, where Massironi wrote three articles on representation: the first on the concept of 'context' [Massironi 1986], the second on writing [Massironi 1988], and the third on the representation of the unseen in science [Massironi 1990]. Anceschi was the editor of the journal from 1985 to 1989 [Lancia 2023].

[15] *Ipotetigrafia* refers to "that graphic product which contributes to visually shaping hypotheses formulated to explain the behavior or functioning of natural conditions, intuitively or experimentally observed, and which it serves to model" [Massironi 1982, p. 126, translated by the author].

[16] This concept derives from structuralist literary semiotics, referring to the value of graphic or textual elements that surround a text, both narratologically and commercially.

[17] For an update on this topic in relation to infographics, see V. Burgio [Burgio 2021].

[18] The author seems to attribute to graphic design a particular quality that is less apparent in product design, a quality resembling the concept of 'surface transparency' introduced by Omar Calabrese in his analysis of graphic texts [Calabrese 1981]. Calabrese emphasizes the different levels of detachment between the 'model' and the final artifact in the two design fields. On the complex and not merely terminological distinction between '*figurare*' and '*configurare*', see R. Riccini [Riccini 2022].

[19] A similar path, though with a different approach, was attempted by Renato De Fusco in Semiotica per il design [De Fusco 2005].

[20] See the issue Scrittura e immagini nel dominio della scienza of Progetto Grafico, n. 25, 2014. For an international perspective, see among others G. R. Bertoline [Bertoline 1998], K. Suzuki [Suzuki 2002], and W. J. T. Mitchell [Mitchell 2015].

[21] For further information, see <https://www.scivis.it/> (accessed 12 February 2025).

[22] For further reading on graphic design for educational publishing, see *Progetto Grafico*, n. 20, 2010.

Author

Andrea Lancia, Department of Design Cultures, Università Iuav di Venezia, *alancia@iuav.it*

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