A visual perception analysis of the postmodern editorial page

Análisis de la percepción visual en la página editorial posmoderna

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◈ **Abstract**

The research developed at the Experimental Multimedia Laboratory (EML) of the Autonomous University of San Luis Potosí (UASLP) focuses on understanding how people process and pay attention to the visual information on an editorial page. The study records the eye's behavior in response to a stimulus by recording the visualization process, including the number of fixations, the duration of gaze in areas of interest, and the spatial density of fixations. The analysis is performed using a rotation and eye tracking test employing a device known as Eye Tracking, which provides an exploration pattern and the perceptual work carried out, in addition to a test designed to record the subjects' impressions of the observed material. The primary objective of this analysis is to examine the perceptual activity generated in response to non-linear visual stimuli. To this end, three editorial pages from *Matiz Gráfico del Diseño Internacional* were selected, exhibiting compositional characteristics typical of postmodern design. This analysis provides valuable insights into the perception and processing of textual information from the composition of the editorial page and the typographic attributes present.

Keywords: editorial design, visual perception, Gestalt theory, Eye Tracking, experiment

◈ **Resumen**

La investigación desarrollada en el Laboratorio de Experimentación Multimedia (LEM) de la Universidad Autónoma de San Luis Potosí (UASLP) se centra en comprender cómo las personas procesan y prestan atención a la información visual dispuesta en una página editorial. El estudio registra el comportamiento del ojo ante un estímulo, mediante el registro del proceso de visualización, incluyendo el número de fijaciones, la duración de la mirada en áreas de interés y la densidad espacial de las fijaciones. El análisis se realiza mediante una prueba de rotación y seguimiento ocular utilizando un dispositivo denominado Eye Tracking, *el cual aporta un patrón de exploración y el trabajo perceptual realizado, complementándose con un test para registrar las impresiones de los sujetos con respecto a lo observado. El objetivo principal es analizar la actividad perceptual generada ante los estímulos visuales que manejan una lectura no-lineal, para ello se seleccionaron tres páginas editoriales de la revista* Matiz Gráfico del Diseño Internacional, *cuyas características compositivas se ubican en el diseño posmoderno. Los resultados proporcionan información valiosa sobre la percepción y el procesamiento de la información textual a partir de la composición de la página editorial y de los atributos tipográficos presentes.*

Palabras clave: diseño editorial, percepción visual, teoría Gestalt, Eye Tracking, *experimento*

◆ Introduction

The field of graphic design has undergone a profound transformation in the latter half of the 20th century. In contrast to the simplicity that has become prevalent in the modern era, the adoption of saturated and fragmented designs has been favored, prioritizing expressiveness over simplicity and order. As Meggs (2000) notes, the design and designers of the postmodern style presented a clear challenge to the order and clarity of modern design (p. 432). In this new landscape, design no longer adheres to a hierarchical and linear structure; instead, it comprises interconnected and heterogeneous elements that generate more complex results. From this perspective, Poynor (2003) identifies a series of distinctive characteristics of the new approach to graphic design, including fragmentation, impurity of form, lack of depth, indeterminacy, intertextuality, pluralism, eclecticism, and a return to the vernacular.

Postmodern editorial design is distinguished by rejecting traditional conventions and embracing diverse styles, typefaces, colors, and layouts. In contrast to the rigidity and uniformity of modern design, postmodern design pursues diversity, fragmentation, and intertextuality, thereby engendering novel forms of exploration and reading. Consequently, it is imperative to conduct experimental development to ascertain the efficacy of these processes and identify the elements that contribute to the composition.

In the 1990s in Mexico, the magazine *Matiz Gráfico del Diseño Internacional* became a transgressive editorial proposal, betting on the absence of a traditional editorial structure. Its design was based on intuitive and spontaneous relationships, and the editorial elements ceased to have a conventional hierarchy to find new spatial or visual relationships through the disarticulation of the page. This approach thus imposes the formal and expressive aspects on the primary function of the text, which is to communicate through a structure, an order, and, above all, the legibility of the content. The intuitive arrangement of the editorial elements, dependent on their formal aspect, is intended to facilitate the establishment of new relationships and links in the information. As the term indicates, " deconstructing " aims to dismantle a rationally structured space so that

the elements within it are compelled to establish new relationships with each other (Samara, 2004, p. 122).

It is crucial to examine the consequences of modifying information that, in ordinary circumstances, would be expected to be located at a specific point. This process can result in the generation of a verbal connection that did not previously exist. As Samara (2004) notes, the visual confusion that ensues is noteworthy as the structure and its traditional hierarchies are modified and undergo a change in function.

This article, therefore, focuses on the analysis of the visual perception process to understand how people process and pay attention to visual information. To this end, the eye's reaction to the different visual stimuli that make up the page is recorded and measured. A rotation and eye tracking test were employed, utilizing a specialized device (eye tracking) to record the visualization process. This included the number of fixations, the duration of the gaze in areas of interest, and the spatial density of the fixations. The analysis provides a pattern of exploration and perceptual work, complemented by a questionnaire (test) to record the subjects' impressions of what was observed.

The primary objective of this study is to analyze the perceptual activity generated by the visual stimuli that employ a non-linear reading. To this end, three double-page editorials for the magazine *Matiz* were selected, whose compositional characteristics are in postmodern design. The results provide valuable information on the perception and processing of textual information based on the composition of the editorial page and the typographic attributes present in the design.

◈ Visual Organization in Design

Design, intrinsically linked to the image, is shaped by the importance attributed to the visual sense. This approach conceptualizes reality and the world as visual experiences, proposing that visualization can only be represented subjectively without adhering to pre-existing objective criteria (Zimmermann, 1998). However, one of the fundamental challenges within the design field lies in the fact that the theory that supports this discipline is based mainly on aesthetics and visual perception, approached from a qualitative perspective. Consequently, many of its principles, laws, and foundations have not been subjected to experimentation and registration from the quantitative point of view.

Gestalt psychology has generated a series of fundamental principles to address the complex phenomenon of perceptual organization, focusing on integrating stimuli into consciousness. According to this theory, the observer articulates, hierarchizes, and orders the perceived material since "the forms of reality are amalgamated and are rarely independent" (Villafañe, 1985, p. 58). The theory posits that forms exhibiting regularity, symmetry, and simplicity, in addition to having an organization

and structure that meet these conditions, are the most fertile for further development (Dondis, 1992).

Technological advances have made it easier to use tools such as eye tracking to perform detailed eye tracking, opening possibilities for conducting experiments designed to test established theories. In recent years, there has been a notable increase in the use of instruments that allow for a more scientific recording of perceptual processes. This phenomenon has led to a re-evaluation in various areas, including design (Blascheck et al., 2014).

◈ Perceptual Organization of Stimuli

Perception refers to our ability to acquire information from the environment based on the data our senses acquire and translate. In the design context, visual perception plays a crucial role in giving meaning to the information captured by the eye and subsequently interpreted by the brain. This process involves establishing a series of isomorphic relationships between the visual field, which represents the visual information captured, and the brain field, where the interpretation and understanding of this information takes place.

The psychologist Irvin Rock (1985), focusing on the field of visual perception and cognitive psychology, identified three main streams of thought that study perception: inference theory (closely related to the empiricist perspective), Gestalt theory (related to the tradition that emphasizes the innate tendencies of the mind), and stimulus theory (related to the tradition that seeks to establish correspondences between physical and sensory variables, sometimes known as the psychophysical approach). In this study, the second stream was chosen because it has played a significant role in art and design.

> The whole units we perceive—for example, a melody or the shape of an object—are not just the result of a process of organization that unifies some elements of the world rather than others. The elements of these units are related to each other to the point of creating a configuration whose properties do not reside in the parts. (Rock, 1985, p. 11)

It is emphasized that perception is not limited to the simple sum of parts; the perceptual process is concerned with the understanding that creates the interrelationship between elements from a single entity, with properties not found in any parts separately. In the context of visual perception, for example, it could be applied to how we recognize lines, colors, or shapes individually and how their interaction creates a whole picture with distinctive features that go beyond those elements alone. Indeed, Rock (1985) emphasizes the importance of understanding perception as an integral process in which the relationship between elements plays a fundamental role in shaping our perceptual

experience. In the case of the editorial page, it functions as a system in which typographic hierarchies are established and perceived as an integral whole.

The perceptual process begins with capturing the salient and global structural features that form the primary basis of perception. Perception operates through experience, generating a corresponding scheme of general forms that applies not only to the individual case at hand but is also extendable to an indefinite number of similar cases. The perceptual form arises from the interaction between the material object, the light-medium that serves as a transmitter of information, and the conditions in the observer's nervous system (Arnheim, 1976).

◈ Gestalt theory and its laws of visual organization

To clarify the structure of the Gestalt organization, various organizational principles have been established that can be classified into two large categories (Cuevas Riaño, 2010): a) the Principles of Grouping and b) the Principles of Differentiation. The former encompass laws aimed at creating optimal conditions for objects within a scene to tend to form meaningful or meaningful groups. These principles include the laws of simplicity, similarity, continuity, proximity, closure, common region, inclusiveness, and articulation without remains. The principles of differentiation refer to norms based on the observer's experience, which helps to discern the significant objects of the scene from those that are not. These principles are directly linked to figure-ground, familiarity, and contrast laws.

The objects we perceive behave as wholes. What is seen in a particular area of the visual field depends mainly on its place and function within the total context; however, the structure of the complex can be altered by local changes. This interaction between the whole and its parts is neither automatic nor universal. A part may or may not be appreciably affected by a change in the total structure, and a change in shape or color may have little effect overall if it is situated, as it were, outside the structural context. These are all aspects of every visual field behaving like a Gestalt (Arnheim, 1976).

The principles of Gestalt organization allow us to understand that, in the creation of an editorial page, organizational schemas are generated where the salient features not only determine the identity of the perceived object but also make it appear as a complete and integrated schema that is captured by the sense of sight. This generates an order of exploration and reading. When the eyes capture an image, they group or subdivide that given shape through an exercise that synthesizes its structure to be as simple, regular, and symmetrical as possible so it can be identified and remembered. Therefore, both the principles of grouping and differentiation come into play in this process.

◈ Experimental Design and Method

In order to study the perceptual processes on the page, an eye-tracking experiment was conducted using an editorial double-page spread characterized by postmodern design as a stimulus.

The process of perception primarily involves the organization of the various pieces of visual information that reach the retina, requiring the grouping of different elements into coherent units to be perceived as objects. An eye-tracking device was used to measure the perceptual cases to be analyzed. This device detects the number of fixations made by the observer, the areas where the subject's attention is focused, the duration of the fixations, and the order in which the visual examination is performed. The recordings were made using Gazepoint software, which calculates the physical elements that stand out in an image based on their constitutive properties related to shape and visual perception organization.

Stimulus

For the experimental development, we selected a sample of three double-edited pages from the magazine *Matiz Gráfico del Diseño Internacional.* These pages, representing the postmodern design movement, are characterized by their different compositions and different levels of attention, which generate different reading orders and visual exploration patterns (see Figures 1 [P1], 2 [P2], and 3 [P3]). These pages served as the visual stimuli for our study.

Figure 1. *[P1]. Pages 18 and 19 of the magazine* Matiz Gráfico del Diseño Internacional.
Source: Matiz Gráfico del Diseño Internacional, *1998.*

The pages were selected for convenience and have similar elements and organizational structures to ensure comparability. The results obtained during the experimental phase are described and interpreted using Gestalt theory. This interpretation makes use of the fixation graphs

generated by the study (see Figures 4, 5, and 6), which allow for the observation of how visual stimuli are perceived within the composition. These graphs illustrate the saccadic pathways that provide the scan order and the density of fixations in specific regions of the image, thus determining the concentration of fixations on the stimulus. The registry calculates the salient physical elements in an image based on their constituent characteristics, considering both the organization of the page and its visual perception.
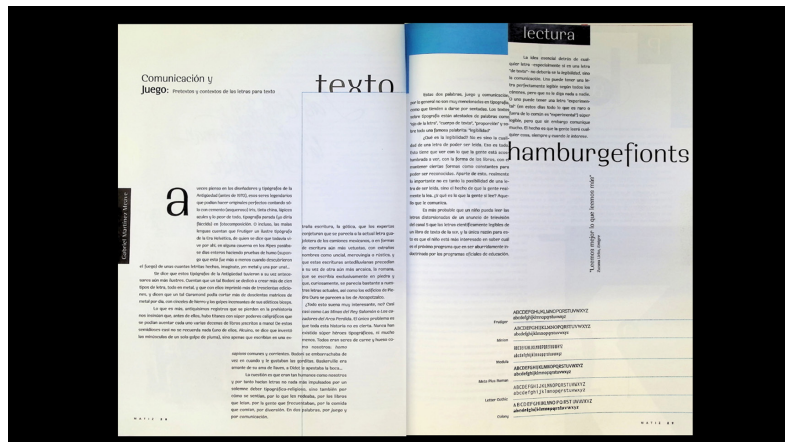

Figure 2. *[P2]. Pages 28 and 29 of the magazine* Matiz Gráfico del Diseño Internacional.
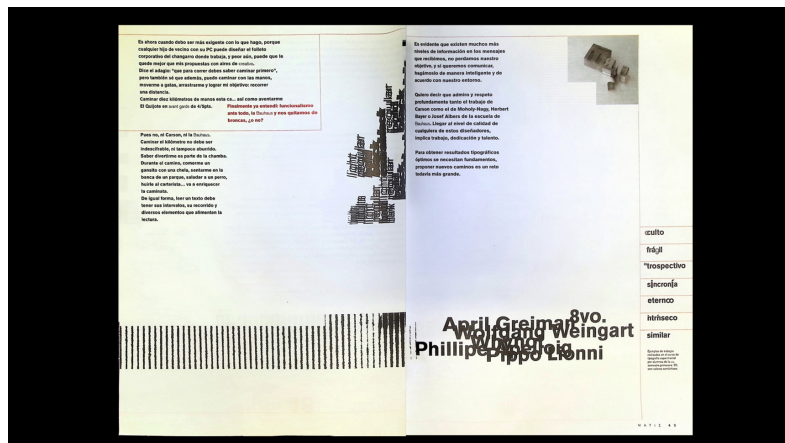*Source:* Matiz Gráfico del Diseño Internacional, *1997.*

Figure 3. *[P3]. Pages 38 and 39 of the magazine* Matiz Gráfico del Diseño Internacional.
Source: Matiz Gráfico del Diseño Internacional, *1997.*

Technical Requirements

Currently, new technologies facilitate the analysis of images and their perceptual properties. At the Experimental Multimedia Laboratory

(EML) of the Autonomous University of San Luis Potosí, studies of visual perception are conducted using specialized hardware and software. These tools allow the design of experiments that test the principles of Gestalt theory.

The double-page spreads used images in JPG format projected on a computer screen. Each stimulus was displayed on a 24-inch DELL monitor, model E2414H, with a resolution of 1600 x 900 pixels at 100 dpi and an sRGB IEC61966-2.1 color profile. In addition, eye-tracking technology recorded eye movements during the visual examinations.

The collected data will be used to analyze the visual organization and recognition processes involved in poster composition. Saccadic trajectories and the number of fixations were recorded to measure how the eye captures visual stimuli in each case analyzed (see Figures 1 [P1], 2 [P2], and 3 [P3]).

The Gazepoint GP3 model, which uses infrared light and a camera to detect eye position on the computer screen, was used for eye tracking in this experiment. The Gazepoint software, which detects eyes through a mathematical algorithm and maps their position on the X and Y axes, was used for data collection and analysis. This software provides the number and duration of fixations, which are essential for determining the spatial density of fixations in areas of interest.

Subject

In a study of visual perception (Qualitative Eye Tracking: Watching Gaze Replays), at least six subjects are necessary to analyze the behavior of the eye with eye tracking (Pernice & Nielsen, 2009); based on these data, it was decided to design the experiment considering ten subjects for each of the tests (P1, P2, P3), students of the Faculty of Habitat of the Autonomous University of San Luis Potosí, who have knowledge of design.

Procedure

The purpose of this research is to determine where on the page the subject fixes his gaze and for how long, as well as the routes of exploration he uses. The experiment begins with a calibration test and a visual acuity analysis for a range of visual acuity between 20/30 and 20/20. The subject must remain in front of the eye tracking device, without moving the head, only the eyes, so that the device can detect him at all times; then a control image is exposed to the subject, which is a white sheet with a dot in the center of the screen, in order to place the beginning of the exploration of all subjects in the center of the image; then the subject is presented with the selected page as a stimulus, with a visual scanning duration of 15 seconds (15000 ms).

Each of the three tests (P1, P2, P3) collects a set of data, such as subject identification number, gender, time, fixation start (Fixstart), fixation duration (Fixduration), fixation position on the X-axis (FixX), fixation position on the Y-axis (FixY). From the visualization data on the pages, material, both visual and numerical, was obtained to analyze and interpret the results. At the end of the experiment, a questionnaire was used to collect data related to the subject's perceptual experience and its recording during the test. In this questionnaire, the subjects were asked the following questions: "Did you notice an order in the structure of the page?" "Is it easy to read?" "Do you think the information is ordered?" "Do you notice different levels of attention on the page?" "Which elements of the page stand out?" this is to consolidate the results obtained with the eye tracking.

◈ Results

For the interpretation of the results, the information is synthesized in a series of tables containing data related to the fixations (Fix) performed by the subjects and the record of the duration of fixations (FixD) in the areas of interest (AOI), as well as the synthesis of the test applied to the subjects after the experiment, which provides qualitative information based on the personal perception of the participants.

Test 1

In the first test (P1), according to the average of the fixations by areas of interest (AOI), it is shown that there is a visual competence between the title of the article (59 fixations), located on the left side, and the Highlighted Words on the right side (61 fixations). The title is at the bottom, and although it does not serve a traditional function, its composition and size make it stand out from the other typographic attributes on the page. Words that are highlighted by attributes such as size and visual weight, as well as by typeface style, become focal points because they generate a high average of fixations as an area of interest, which can be seen in the fixation graph (see Figure 4). This is because the subjects decoded both areas, as they are short texts that can be scanned.

The same is also valid for the area corresponding to the Capitulate (25 fixations) on the left side. This fulfills its function of directing the subject to the beginning of the paragraph; however, the concentration of fixations is because the name of the author of the article is located in it, so the subject is carrying out a process of reading and decoding information.

In relation to the Text Boxes 1 and 2 (48 and 31 fixations), since it is a visual exploration, they concentrate fixations; however, since the subject does not decode the information by reading, they end up being smaller and short, as can be seen in the fixation figure (see Figure 4). The visual record shows whether the subject was simply concentrating

on observing an item or whether he or she was engaged in decoding the text.

The Gestalt theory points out that the pregnancy is located in the red circle (image), which acts as an attractive visual stimulus due to its shape, position, and color; however, in the examination carried out by the subjects, this area is located in a medium area (35 fixations), which indicates that it is a focal point, although it does not contain any information to be decoded since it is a typographic texture that serves only as an ornament.

Finally, it was noted that the Note (6 fix) that appears on the left side has a low level of visual anchorage, even though it is highlighted with a thickness more significant than the body of the typography of Text Box 2 (31 fix); in addition, the inverted meaning of the text does not favor reading, so the eye does not stop at this editorial element.

Table 1. Fixations by subject in areas of interest (AOI) in P1

Test 01											
AOI	Fix u1	Fix u2	Fix u3	Fix u4	Fix u5	Fix u6	Fix u7	Fix u8	Fix u9	Fix u10	AO1_fix_all
Highlighted words	5	5	5	11	7	4	6	2	4	12	61
Title	3	2	3	6	4	8	8	5	9	11	59
Text Box 1	4	6	4	2	5	7	6	8	3	3	48
Image	2	8	7	1	5	2	2	3	4	1	35
Text Box 2	6	4	4	0	9	0	3	2	3	0	31
Capitulate	1	1	5	5	1	3	4	0	2	3	25
Note	1	0	0	1	0	1	2	0	1	0	6

Source: EML, 2024.

In relation to the duration of fixations (FixD) in P1, it stands out that Text Box 1 captured the subjects' gaze for the longest time (65847 ms), followed by the Highlighted Words on the right side (51227 ms), which indicates that they generate visual anchoring. However, the box confronts the subject with decoding through reading, which implies more

time. The same happens with the Capitulate (32316 ms), the Image (28345 ms), and the Title (22912 ms), which are attractive elements and therefore perceived quickly. Text box 2 (22591 ms) has more fixations than the drop cap; however, the duration of fixations is lower, which shows that this element does not generate a strong anchor in the visual study. The Note (18236 ms) has a low number of fixations due to its uncomfortable orientation for reading, which also causes the duration of fixations to be short (see Table 2).

Table 2. Duration of fixations per subject in areas of interest (AOI) in P1

Test 01											
AOI	FixD u1	FixD u2	FixD u3	FixD u4	FixD u5	FixD u6	FixD u7	FixD u8	FixD u9	FixD u10	AO1_fix D_all Ms
Text Box 1	1890	2326	2371	855	1776	2191	50009	1933	1006	1490	65847
Highlighted words	0	3498	1853	4058	2426	1782	31314	263	2005	4028	51227
Capitulate	575	542	2183	3513	313	1402	21768	0	923	1097	32316
Image	887	2810	2716	246	1511	509	16413	1035	1725	493	28345
Title	1133	888	1314	2298	1400	3122	3109	2088	3669	3891	22912
Text Box 2	2909	1856	1298	0	1954	0	13406	528	640	0	22591
Note	378	0	0	263	0	444	16856	0	295	0	18236

Source: EML, 2024.

In addition to the numerical data, a graph was generated that localizes the spatial density of fixations in the different areas of interest (colored figures), in which the behavior of the data recorded by the fixations (dots) and their duration (dot size) can be graphically observed. The image clearly shows the concentration of fixations in the regions of interest studied (see Figure 4).
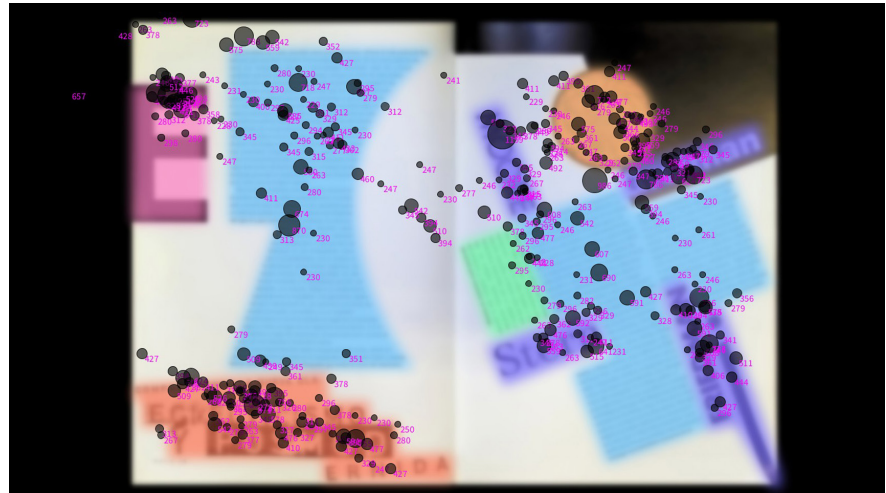
Figure 4. *Fixation graph and duration time by area of interest (AOI) in P1. Source: EML, 2024.*

The test was applied after the experiment was emptied to facilitate a comparison between the information obtained from the numerical data of the tables. This process yielded a series of qualitative data that corroborated the visual behavior of the gaze recorded quantitatively. It can be observed that the subjects perceive the double page as having a disordered structure and information that is difficult to read. They also note the presence of different levels of attention on the page, which implies hierarchies. The elements that stand out, according to the participating subjects, are the red circle, the title, the subtitles, the bold typography, and the large texts.

Additionally, two elements that do not appear in the register also stand out: one corresponds to the arrangement of the text, which is related to its slant, and the other is related to the elements of the counter form (parts of a circle and a triangle, black block), which have a marked weight in the composition. Most participants perceived the double page as disordered and needing a clear reading order. This was attributed to numerous formal elements, which they felt generated visual complexity. Additionally, they highlighted that reading was not ergonomic due to the slant of the text.

Table 3. Table of results, eye tracking test in P1

TEST/P1 -EYE TRACKING IN POSTMODERN EDITORIAL DESIGN										
Questions	Subject									
	1	2	3	4	5	6	7	8	9	10
Did you notice an order in the structure of the page?	Tidy – Messy from 1 to 5									
	4	3	1	4	3	2	4	4	2	4
Is it easy to read?	Single – Very Difficult from 1 to 5									
	3	1	2	3	3	3	4	3	2	4
Do you think the information is ordered?	Tidy – Messy from 1 to 5									
	3	1	2	2	3	1	3	4	2	4
Do you notice different levels of attention on the page?	Yes – No / Others									
	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Which elements of the page stand out?	Bold typography. Red circle and title. Titles and typography. Titles and subtitles. Large texts. The titles and arrangement of texts.					Heavier counter form elements. The red dot, the titles, and the parts with a background figure. Blank spaces and text. Image in red and geometric figures.				
Describe the structural elements of the page.	It is messy in that it should be read first. There are more attractive elements that prevent you from concentrating on the main text. It has a clean structure, is very orderly, and has a good hierarchy. It disturbs the text at 45 degrees.					It is different, but it can be read correctly and with differen levels. Diagonal in motion. In disarray. Modulate. Legible. Spiral. Abstract. Confused, she does not have a fixed point of view.				

Source: EML, 2024.

The quantitative data recorded during the experiment can corroborate some of the aspects that the users observed qualitatively, such as the perception of a disordered structure, the differentiated attention to specific elements, such as Text Box 1, Highlighted Words, and the Capitulate, which concentrated the longer duration of fixations. The difficulty in finding a clear reading order can be attributed to dispersed elements.

Test 2

In the second test (P2), the subjects' fixations were concentrated in Text Box 1 (59 fixations), primarily in the first lines (see Figure 5). This indicates that the subjects were beginning to read the text. In Text Box 2, the fixations were less concentrated (30 fixations) due to the greater number of elements on the left side that came into play for visual exploration (tables, highlighted text).

The Highlighted Words are visual elements that serve as anchors for the eye. The 48 fixations on these elements demonstrate that they attract attention due to their visual weight and color, as well as their content, which is susceptible to decoding by the subject.

The title, which is arranged at the beginning of the left side, concentrates a considerable number of fixations (23 fix) since it is the first element of the page, and a reading process is carried out. The Capitulate (10 fix), situated between the title and Text Box 1, exhibits minimal visual anchorage despite its considerable size and weight. This suggests that it is perceived but not thoroughly decoded. In contrast to Test 1, this double page features text that aligns with a conventional layout. Consequently, the reading order is comparable, although the composition is fragmented.

In Table (17 fix), located on the right side, the shapes attract the attention of the subject, as it is a typography sampler. Its isolated position helps it capture attention since it is separated from the text box and the other component elements of the page. However, it is essential to note that, despite having fixations, some subjects overlooked it.

Finally, it is necessary to mention that the Page Number (3 fix) was not entirely overlooked by some subjects. Despite their position on the page, size, and visual weight, these elements were still visualized, although their fixations were few.

Table 4. Fixations by subject in areas of interest in P2

Test 02											
AOI	Fix u1	Fix u2	Fix u3	Fix u4	Fix u5	Fix u6	Fix u7	Fix u8	Fix u9	Fix u10	AO1_ fix_all
Text Box 1	8	10	4	8	7	2	5	1	8	6	59
Highlighted words	7	3	4	2	4	5	4	7	8	4	48
Text Box 2	1	0	4	8	6	4	1	1	1	5	30
Title	3	6	2	1	2	2	1	1	1	4	23
Table	5	0	0	0	3	2	3	2	0	2	17
Capitulate	1	0	0	2	0	3	0	1	1	1	10

Source: EML, 2024.

In relation to the duration of the fixations (FixD) of P2, Text Box 1(27763 ms) captured the subjects' gaze for the longest time (see Figure 5) since it has fixations at the beginning of the text, which indicates that the subject was beginning to read the text; secondly, the Highlighted Words (15617 ms) also generate a high visual anchorage due to their size and weight; and the title (11778 ms), due to its location within the page and because it is an isolated element, which is additionally read, also concentrates the time of the fixations. In the case of Text Box 2 (11024 ms), an exploration is indicated but not a reading process; therefore, the duration of the fixations is short. The Table (7552ms) is a typeface sampler, so it is quickly explored and has a low concentration of fixations with a short duration time. Finally, the Capitulate (4451), as it concentrates a few fixations, has a shorter average duration because it is surrounded by elements that generate greater attention.

Table 5. Duration of fixations per subject in areas of interest in P2.

Test 03											
AOI	Fix u1	Fix u2	Fix u3	Fix u4	Fix u5	Fix u6	Fix u7	Fix u8	Fix u9	Fix u10	AO1_ fix_all
Texture	6	10	12	12	3	8	15	10	8	8	92
Text Box 1	5	2	2	6	4	6	2	4	5	4	40
Table	5	2	4	2	4	4	1	7	4	2	35
Text Box 3	3	2	1	0	4	4	1	4	2	4	25
Notes	0	6	0	0	1	4	2	2	4	3	22
Image	2	1	2	2	1	2	4	4	0	0	19
Text Box 2	3	0	0	1	2	1	1	1	1	1	11
Page number	0	1	2	0	0	0	0	0	0	0	3

Source: EML, 2024.

The following graph depicts the spatial density of fixations in the different areas of interest in P2. It illustrates the distribution of data with respect to the concentrations of fixations in the aforementioned areas (title, text boxes 1, 2, capitulate, highlighted words, and Table).
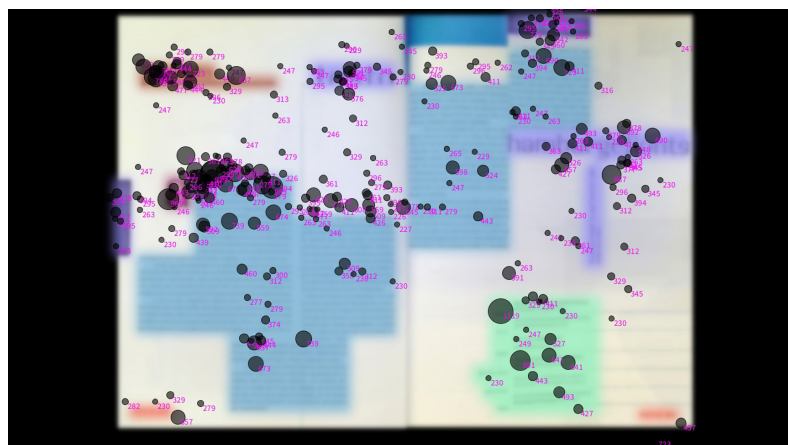

Figure 5. *Fixation graph and duration time by area of interest (AOI) in P2. Source: EML, 2024.*

The data collected for P2 indicates that the subjects perceive the double-page layout with an acceptable level of structural order, moderately ordered information, and an admissible degree of ease of reading. This is achieved through the visual hierarchies that occur through the different levels of attention present on the page. The participants in the experiment consider that the elements that stand out are the drop cap, the titles, and the highlighted words. It is crucial to highlight that the subjects identified the presence of a visually appealing attribute, which is evident in the fragmentation of the text at the compositional level. This results in the perception of an unstructured page due to the high degree of rupture and mismatch that occurs between the text boxes and the level of contrast between the page's component elements (see Table 6).

Table 6. Results table, eye tracking test in P2

/P2 TEST -EYE TRACKING IN POSTMODERN EDITORIAL DESIGN										
Questions	Subject									
	1	2	3	4	5	6	7	8	9	10
Did you notice an order in the structure of the page?	Tidy – Messy from 1 to 5									
	3	3	2	4	5	4	1	1	2	3
Is it easy to read?	Single – Very Difficult from 1 to 5									
	5	3	3	3	4	3	4	1	3	1
Do you think the information is ordered?	Tidy – Messy from 1 to 5									
	2	3	3	2	5	4	3	1	2	3
Do you notice different levels of attention on the page?	Yes – No / Others									
	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Which elements of the page stand out?	The letter "A" and some blacker titles. Large titles. The largest words in the texts. Titles should be in bold, and text should be placed in cut manner. The capital letter.					Large sizes and arrangements. Titles and subtitles. Subtitles. The letter "A" and a few big words. The titular letters and the titles.				

Describe the structural elements of the page.	Only the first page is tidy and well-structured; the second is in disarray. Poorly proportioned. Some texts stand out more than others and are easily distracting. Disastrous but legible. Very messy, as if it had been scanned badly.	Well structured. The letters are either very large or small and that makes it look disorganized. It has a grid in paragraphs. It is orderly, but it is lost in the text.

Source: EML, 2024.

In the second test, users' perceptions are related to the data on the duration of fixations regarding different elements of the page. Consequently, when the double page is indicated with an acceptable level of structural order, this perception is related to the duration of the fixations in text box 1, the title, and the capitular, which are elements that are grouped on the left page. Conversely, there are elements that stand out, such as highlighted words, which concentrate a high duration and number of fixations because they are a focal point by size and position. Finally, in the case of the capitular, it is mentioned in the test as an outstanding element, although the number of fixations in this area is few, and its duration is short.

Test 3

In the third test (P3), the most significant number of fixations was observed in the area occupied by the Texture (92 fixations). This is because the textures are elements with a more visual than textual character. As a result, the letter becomes a complex composition that functions as an image (see Figure 6). Thus, the meaning of the text is transformed through repetition and splicing.
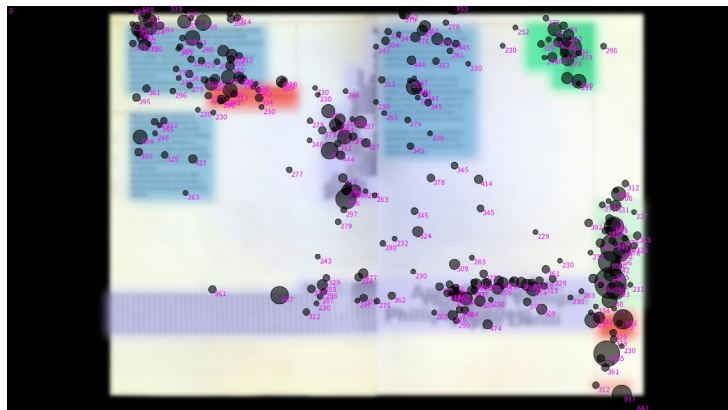

Figure 6. *Fixation graph and duration time by area of interest (AOI) in P3.*
Source: EML, 2024.

Text Box 1 (40 fixations), situated in the upper left, illustrates a reading process, thereby concentrating a more significant number of fixations than Text Box 2 (11 fix). Text Box 3 (25 fixations), located on the right page, demonstrates a notable concentration of fixations, indicating that a text decoding activity is occurring.

Conversely, the image (19 fix), located in the upper right, serves as an anchoring element due to its concentration of fixations, which is a result of its position and weight within the composition of the editorial page. The graph indicates that a decoding process was carried out by the subjects.

The Table (35 fixations) located at the bottom right of the page displays a series of keywords related to the content of the article. These keywords were read by the subjects, as evidenced by the significant number of fixations and their duration (see Figure 6). According to the graph, the subjects spent the most time in this area, as they began to read each of the words that appear there.

In addition, the Notes (22 fixations) serve the purpose of emphasizing elements within the editorial design. These notes become highlight points within the page, either by color or by their position. However, despite the subjects' awareness of these notes, they did not delve into their reading because they acquired their character as additional information.

Finally, the Page Number (3 fixations) was almost overlooked. Only two subjects made fixations on this element. The participants in the experiment did not direct sufficient attention to the location and weight of the elements in question.

Table 7. Fixations by subject in areas of interest in P3

Test 02											
AOI	FixD u1	FixD u2	FixD u3	FixD u4	FixD u5	FixD u6	FixD u7	FixD u8	FixD u9	FixD u10	AO1_fixD_all Ms
Text Box 1	5242	5650	658	3561	3810	821	1836	439	3007	2739	27763
Highlighted words	2631	871	1387	887	0	2530	1070	3121	3120	0	15617
Title	1346	2942	724	739	806	723	588	1019	525	2366	11778
Text Box 2	0	0	1184	3401	2809	1265	230	229	226	1680	11024
Table	3094	0	0	0	1104	856	1150	477	0	871	7552
Capitulate	477	0	0	838	0	1855	0	443	296	542	4451

Source: EML, 2024.

Regarding the duration of fixations (FixD) in P3, it was determined that the area corresponding to the Texture (32206 ms) exhibited the highest percentage of accumulated time, while the area designated as Table (18353 ms) ranked second. The average time is related to the number of fixations. However, the fixations with the longest duration (see Figure 6), even if they are shorter, are in the Table, as it contains isolated words related to the content of the text and are read by the subjects. In contrast, the textures have a decorative character and more visual appeal. The text box with the longest duration of fixations is Text Box 1 (16892 ms), the first text box. This is because the initial lines begin to be read at this point. Text box 3 (10516 ms) also has a relatively long duration of fixations. Conversely, the notes (8177 ms) and the image (7943 ms) exhibit a similar number of fixations and average duration, as they are elements that do not attract the eye and are, therefore, easily overlooked. Conversely, Text Box 2 (3612 ms) and Page Number (1890 ms) are similarly overlooked by the eye, though the subjects explore them.

Table 8. Duration of fixations per subject in areas of interest in P3

AOI	FixD u1	FixD u2	FixD u3	FixD u4	FixD u5	FixD u6	FixD u7	FixD u8	FixD u9	FixD u10	AO1_fi xD_all
					Test 03						
Texture	1885	4206	4318	5323	1051	3318	3318	3697	2593	2497	32206
Table	5423	612	1660	542	3127	1709	1709	1764	1281	526	18354
Text Box 1	2581	644	1021	2530	1479	1873	1873	1244	1973	1674	16892
Text Box 3	987	723	247	0	1725	1725	1725	1200	624	1560	10516
Notes	0	24482	0	0	263	1396	1396	509	1429	720	8177
Image	1383	1021	706	657	395	1249	1294	1283	0	0	7943
Text Box 2	970	0	0	246	557	329	329	688	230	263	3612
Page number	0	312	1578	0	0	0	0	0	0	0	1809

Source: EML, 2024.

The graph below illustrates the spatial density of fixations in the different areas of interest in P3. The visual record depicts the behavior of the data with respect to the concentrations of fixations in the aforementioned areas (text boxes, Table, notes, image, Texture, and page number).

For the test corresponding to P3, the subjects perceive that the structure of the page is disordered, making it difficult to read the information. They identify the existence of levels of attention in the components of the editorial double page. They highlight letters of the lower right (Texture), text blocks, images, red letters, and texts on top of each other as outstanding elements. Furthermore, they identify compositional elements that contribute to the disruption of the sequence, such as the presence of empty space and a composition centered at the ends of the page. This results in a considerable separation of elements, which impairs the subjects' ability to maintain a coherent order of reading.

Table 9. Results table, eye tracking test in P3

TEST /P3 -EYE TRACKING IN POSTMODERN EDITORIAL DESIGN										
Questions	Subject									
	1	2	3	4	5	6	7	8	9	10
Did you notice an order in the structure of the page?	Tidy – Messy from 1 to 5									
	4	4	3	4	2	3	2	3	2	3
Is it easy to read?	Single – Very Difficult from 1 to 5									
	4	4	2	2	3	3	2	4	1	4
Do you think the information is ordered?	Tidy – Messy from 1 to 5									
	4	4	4	4	3	4	2	3	2	4
Do you notice different levels of attention on the page?	Yes – No / Others									
	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Which elements of the page stand out?	The text is on the top left, and the letters are on the bottom right. Large and capital letters and images. Letters and symbols. Barcode, red letters, and word section on the right sideof the page. The first two paragraphs and the larger letters contrast.					A text that is on top of another and the texts that are framed. The images. The elements are arranged in paragraphs and justified. The opaquest blocks of text and images on the page. Text and typographies				

Describe the structural elements of the page.	Messy and somewhat conceptual Messy and dynamic There was a lot of white space and a lot of separation between the elements on the two pages. Somewhat disorganized, the blank spaces make you lose the reading order.	The way of understanding some elements is distorted. Messy and positioned in the corners. It is neat, but very separate. Orderly, but with very separate information, it has empty spaces near the center.

Source: EML, 2024.

With respect to the relationship between the qualitative data on the duration of fixations on different components of the page and the qualitative data derived from the users' observations on the disordered structure, attention levels, and compositional aspects that affect the reading experience in this test, it is appropriate to comment on the following: The reason why users perceive difficulties in reading information can be attributed to the clutter when perceiving the elements of the page. For instance, there is a high duration of fixations in the elements that comprise Texture, Text Box 1, Table, and Text Box 3. However, these elements are not grouped together or have a continuous relationship in reading. Finally, users mention aspects of the page composition that contribute to the loss of sequence. These include the empty space that predominates in the center of the composition and striking elements at the edges of the page.

◆ Conclusions

The tests conducted revealed a complex dynamic in visual competence between the different typographic and visual elements in P1, P2, and P3. The characteristics of the editorial elements and their location significantly influenced the subjects' perception, observation, and decoding of these elements. Firstly, it is necessary to dismantle preconceived structures or, alternatively, to utilize them as a foundation upon which new methods of establishing visual and verbal connections between images and text within the editorial page can be developed. This is achieved by disrupting the anticipated order of reading.

Verbal or conceptual cues embedded within the content can also be employed to break down a lattice structure. If visual language is imbued with a voice, it can facilitate the alteration of a text's structure. This can be achieved by relocating certain words away from paragraphs or by compelling specific modules or columns to establish relationships in which the natural logic of writing creates a novel visual order. (Samara, 2004, p. 124)

The editorial elements on the postmodern page function in a distinct manner, as the conventional structures of the composition of the text are not employed. Instead, reading order is not followed from left to right or from top to bottom, but rather, there is a disruption in the sequence of the text, utilizing typographic and spatial attributes that imbue the page with expression and dynamism at the expense of the reading experience. "Deconstruction does not seek to reinstate established concepts or even to create new ones; rather, it is a matter of modifying the order of the text in order to obtain a new, adaptable reading" (Sesma, 2004, p. 186).

The experiment demonstrated that certain elements within the page, despite not receiving a significant number of fixations, are perceived by subjects as prominent elements within the editorial composition. This becomes evident when the value and weight of these elements within the composition are highlighted.

The decoding process carried out by the subjects is illustrated in Figures 4, 5, and 6, which graphically schematize the fixations and their duration. The areas of concentration are represented by points, with the radius of each point increasing as more time is spent at that point. The largest radii correspond to areas that involve the most decoding by the subjects, which are typically words or lines of text that the subjects stop to read.

From the priori analysis, it can be concluded that the subject has a general exploration of the page, in which he recognizes stimuli that he keeps in the memory and only stops at what he needs to decode. This process indicates that seeing and reading are two distinct processes. The result is a structure contingent upon the composition's optical tensions and its relationship to the informational hierarchy within the space (Samara, 2004, p. 125).

From the perspective of Gestalt psychology, it can be posited that "our perception is shaped by the likelihood of the stimulation received, resulting in a psychological structure that reflects the physical structure" (Gregory, 1995, p. 489). The form is not perceived in isolation; rather, it is perceived as an organized whole, as a totality. This totality is not independent or alien to the context in which it is located. It is linked to the knowledge and experience that a subject possesses, as well as to the subject's ability to perceive and decode external stimuli (Cuevas Riaño, 2010).

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