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Design in Dialogue: International Collaboration and the Growth of a Community

This publication began with a simple yet ambitious goal: to create a space for discussing design research and building real bridges between creative practice, academic thought and innovation. We also imagined that authors from other schools and countries could contribute knowledge based on their own experiences and realities. With this issue, we feel that we are continuing to move in that direction.

Each of the articles in this edition reflects an enormous amount of work behind the scenes: hours of analysis, writing, revision and debate. Those who have participated—authors and reviewers—have done so with rigour, generosity and affection, and thanks to them, this publication grows in quality year after year. As editors, we are deeply grateful and very proud to be part of this community.

We would like to highlight the continuity of our international collaboration, which on this occasion has taken the form of a joint project with Yasar University (Turkey) and the University of West Attica (Greece). These alliances, built on closeness and academic complicity, remind us that knowledge grows when it is shared and that internationalisation is not only an institutional goal, but also an opportunity to broaden horizons and learn from other contexts.

We hope this issue inspires, challenges and accompanies you. Thank you for being on the other side and for helping Concept continue to grow.

PhD José Antonio González Casares and
PhD María Dolores Gutiérrez Guerrero.
Editors of the journal

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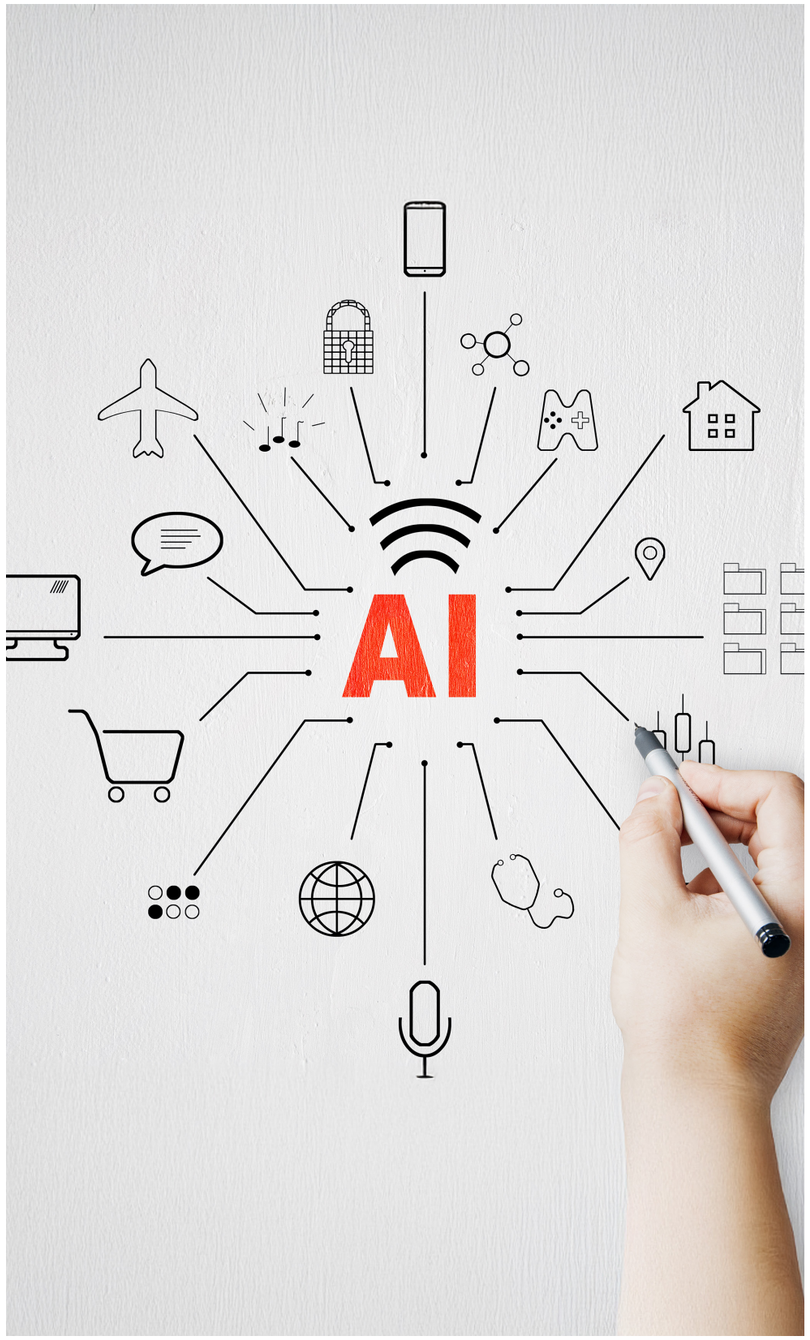

Interior Design

ARTIFICIAL INTELLIGENCE IN THE HABITAT INDUSTRY

STRATEGIC OPPORTUNITIES AND CHALLENGES FOR SMES

Victor Vilar San José(*)

Abstract. Artificial intelligence (AI) is transforming the world and, directly, the habitat industry. This study analyses that impact from a business perspective with a dual purpose: (i) to interpret emerging opportunities and risks —productivity, cost structure and professional profiles— and (ii) to translate them into a roadmap that can be implemented in micro and small businesses (SME) in the sector.

This study proposes a **practical guide for integrating artificial intelligence (AI) tools into the workflows of micro and small enterprises** in the habitat design sector. Through a mixed-method approach, combining qualitative analysis of organizational structures and quantitative assessment of economic impacts, the research examines a representative small-medium enterprise with 10 professionals and identifies key workflow stages—management, ideation, work in progress, presentation, and product development—and suggests tailored AI tools, such as Microsoft Copilot, Power BI, and Rhino with Grasshopper, to enhance efficiency. A progressive implementation roadmap is proposed, based on tools already integrated within existing ecosystems (Microsoft Copilot, Power Platform, Rhinoceros, V-Ray and Adobe Substance 3D), thus enabling gradual adoption without disrupting established workflows.

The integration of AI makes it possible to automate repetitive tasks, enhance technical accuracy and accelerate the production of visual proposals and documentation, delivering tangible benefits in terms of productivity, time reduction, improved responsiveness and greater profitability. Finally, key performance indicators (KPIs) —such as average visual development time, client revision ratio and on-time delivery rate— are suggested to objectively measure the impact of these tools within the real context of a creative SME.

Keywords: AI in habitat-industry SMEs; AI workflow integration in design studios; Automation in furniture/interior design; Productivity KPIs in design practice; Parametric design (Rhino/Grasshopper); PBR rendering for furniture; Copilot and Power BI in creative SMEs; Change management for AI adoption.

Resumen. La inteligencia artificial (IA) está transformando el mundo y, de forma directa, la industria del hábitat. Este trabajo analiza ese impacto desde una perspectiva empresarial con un doble propósito: (i) interpretar las oportunidades y riesgos emergentes —productividad, estructura de costes y perfiles profesionales— y (ii) traducirlos en una hoja de ruta implantable en micro y pequeñas empresas (PYME) del sector.

El trabajo propone una **guía práctica para la integración de herramientas de inteligencia artificial (IA) en los flujos de trabajo de micro y pequeñas empresas** del ámbito del diseño del hábitat. A través de un enfoque mixto, que combina el análisis cualitativo de las estructuras organizativas y la evaluación cuantitativa de los impactos económicos, la investigación examina una pyme representativa con un equipo de 10 profesionales e identifica las principales etapas del flujo de trabajo —gestión, ideación, desarrollo en curso, presentación y desarrollo de producto—, proponiendo herramientas de IA específicas como Microsoft Copilot, Power BI y Rhino con Grasshopper para mejorar la eficiencia. Se plantea una hoja de ruta de implantación progresiva basada en herramientas ya integradas en ecosistemas existentes (Microsoft Copilot, Power Platform, Rhinoceros, V-Ray y Adobe Substance 3D), lo que facilita una adopción gradual sin alterar los flujos de trabajo consolidados.

La integración de la IA permite automatizar tareas repetitivas, mejorar la precisión técnica y acelerar la generación de propuestas visuales y documentación, aportando beneficios tangibles en productividad, reducción de tiempos, capacidad de respuesta y rentabilidad. Finalmente, se sugieren indicadores clave de rendimiento (KPI), como el tiempo medio de desarrollo visual, la ratio de revisiones de cliente y el índice de entregas puntuales, para medir de manera objetiva el impacto de estas herramientas en el contexto real de una pyme creativa.

Palabras clave: IA en PYMES del hábitat; Integración de IA en flujos de trabajo de diseño; Automatización en estudios de diseño; KPIs de productividad en diseño; Diseño paramétrico (Rhino/Grasshopper); Renderizado PBR en mobiliario; Copilot y Power BI en PYMES creativas; Gestión del cambio para adopción de IA.

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1. INTRODUCTION. OBJECTIVES AND HYPOTHESES

The OECD defines the concept of Artificial Intelligence (AI) as "a machine-based system that, for explicit or implicit purposes, infers from the information it receives (input) how to generate results such as predictions, content, recommendations or decisions that can influence physical or virtual environments. Different AI systems vary in their levels of autonomy and adaptability after deployment" (OECD, 2024).

Understood as systems capable of inferring and generating results from data, AI is reshaping business: it optimises processes, speeds up decisions and opens up new capabilities (Contreras, F. & Olaya, J.C., 2025). AI affects over 60% of workers in advanced economies (Georgieva, 2024), and by 2028, investment in this technology is expected to reach $632 billion (Shirer, 2024), requiring businesses to rethink its adoption. However, this requires more than just technology: governance, interdisciplinary collaboration and a culture of continuous learning (Bieliaieva et al., 2024). The European framework (European Parlament, 2024) and recent public strategies in Spain and Andalucía (Junta de Andalucía, 2023; Ministerio para la transformación digital y de la función pública, 2024) have consolidated common ground for its responsible deployment. In the creative field, the evidence is consistent: AI streamlines repetitive tasks and enhances visualisation, but human judgement remains the core of value. The challenge (especially for micro and small businesses) is how to incorporate it with limited resources and without diluting the artisanal stamp.

This work is the result of a professional career in furniture and habitat, complemented by training in Interior Design to understand the relationship between object, space and user. Direct observation at international trade fairs and ongoing dialogue with designers, manufacturers and distributors reveal a common pattern: high interest, but operational disorientation. There is an abundance of specific evidence and aspirational discourse, but a lack of vision, sequence and far-reaching decisions that would allow AI to be integrated without diluting the artisanal identity and personalised service that characterise the sector.

This project is an applied response to a real need of SMEs in the habitat sector: to clarify the why, the what for and the how far of AI adoption. It limits its scope to organisational and process improvement—not aesthetic debates—identifies risks (task displacement, technological dependence, training gaps) and guides decision-making towards verifiable and sustainable benefits.

1.1 OBJECTIVES

The main objective is to analyse and propose the integration of artificial intelligence tools in SMEs in the furniture and interior design sector, using a typical company with a representative structure and workflow as a reference.

With these specific objectives:

- To **describe the organisational structure** and workflow of a creative SME dedicated to furniture and interior design, to identify areas for improvement.
- To **detect repetitive or low-value tasks** that consume time in the design, development and project management process.
- Select the **most appropriate artificial intelligence tools for each stage** of the workflow, prioritising compatibility with the existing software.
- Propose a **plan for the progressive integration of AI** that improves efficiency without radically altering current systems or the organisational structure.
- Estimate the **impact on productivity and profitability** resulting from the application of these technologies, establishing indicators (KPIs) to measure results.
- Reflect on the opportunities and challenges that AI represents for SMEs in the sector, providing a **practical guide applicable to other** similar companies.

1.2. HYPOTHESES

This study is based on the following research hypotheses:

- Artificial intelligence tools can significantly **reduce production times and improve productivity** in design companies.
- The adoption of AI in this type of company **is more effective when it is integrated into the tools already used by work teams.**
- Process optimisation with AI in design SMEs will result in **higher productivity and improved profit margins**.
- **A gradual and well-planned integration of AI can strengthen the competitiveness of creative SMEs** without compromising their identity or the added value of human labour in the creative process.

2. METHODOLOGY

This research adopts a mixed-methods approach combining qualitative and quantitative analysis to provide a pragmatic roadmap for micro and small enterprises:

Qualitative analysis to model the internal organisation of a representative SME (10–25 employees) and to map roles, tasks and cross-departmental collaboration along the end-to-end design workflow.

Quantitative estimation to assess the economic impact of AI adoption, considering subscription costs, time savings in specific tasks, and productivity effects. The analysis

defines a compact KPI framework (e.g., time per project, percentage of tasks automated, error rate in technical documentation) to monitor improvement over time.

Study sample: a real, small furniture/interior design firm with five functional departments (Management, Ideation, Work/3D & Visuals, Presentation, Product Development). Client profiles are characterised to capture different collaboration models (e.g., brand royalties, direct B2B services, factory partnerships).

Evidence gathering through a structured literature review and sector cases, complemented by practitioner insights obtained in international trade fairs and industry interactions during 2025.

2.1 STUDY SAMPLE AND CLIENT PROFILES

An SME (small and medium-sized enterprise), according to the official definition of the European Commission (2003), is a company that employs fewer than 250 people and also meets one of the following two financial criteria: it has an annual turnover not exceeding €50 million or an annual balance sheet total not exceeding €43 million. This classification includes: micro-enterprises (fewer than 10 employees and up to €2 million in turnover or balance sheet total) and small enterprises (fewer than 50 employees and up to €10 million). This study focuses specifically on micro and small enterprises, which make up approximately 97% of the business network in the furniture sector in Europe (85% micro enterprises and 12% small enterprises), thus clearly representing the predominant structure of the sector. (Eurostat, 2024).

The study focuses on a real micro-enterprise in the furniture/interior design sector, with ~10 professionals and four functional departments. Operations Department (led by the Chief Executive Officer), Design Department (led by the Design Director), 3D & Visuals Department (led by the 3D & Visuals Manager) and Product Development Department (led by the Product Development Manager).

Three client profiles structure the business model:

1. **Furniture Brands**. The studio charges a royalty of 2–4% on the retail price of each unit sold, generally with quarterly payments.
2. **Factories**. which commission products directly from the studio to include them in their own catalogue. The studio collaborates in the technical development and receives a percentage of the sale price of each unit that the factory sells to the brands.
3. **Wholesale**. which act as representatives of the design. They commission products from the studio and, once developed and prototyped, offer them to interested brands.

This configuration supports a flexible, scalable operation and allows extrapolating the findings to similar firms.

3. DEVELOPMENT

3.1 SME DESCRIPTION AND END-TO-END WORKFLOW

The organisational structure and sequence of phases together define how a furniture and interior design SME operates. The phases represent the operational path of the project, while the structure provides the roles, governance and resource allocation; both levels are interlinked through the cross-functional participation of different profiles.

The flow is organised into five main stages, coordinated with the departments involved:

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- **Management**. Project initiation based on a commission or opportunity; definition of objectives, scope, budget and deadlines, as well as the commercial and creative strategy that frames subsequent development.
- **Ideation (IIP – Ideation in Progress).** Generation of conceptual proposals based on inputs from Management: research of references, mood boards and sketches to establish the aesthetic-functional approach of the product or space.
- **Work in Progress (WIP).** Transferring ideas to 3D models; technical phase in which proportions, materials and visual configurations are adjusted using modelling and rendering tools.
- **Presentation (PIP – Presentation in Progress).** Preparation of the proposal for the client: presentations, final renders and visual narrative to facilitate validation prior to technical development.
- **Product development (PD – Product Development).** Once the proposal has been approved, preparation of technical documentation and coordination with manufacturing: plans, dossiers and prototypes until a market-ready product is achieved.

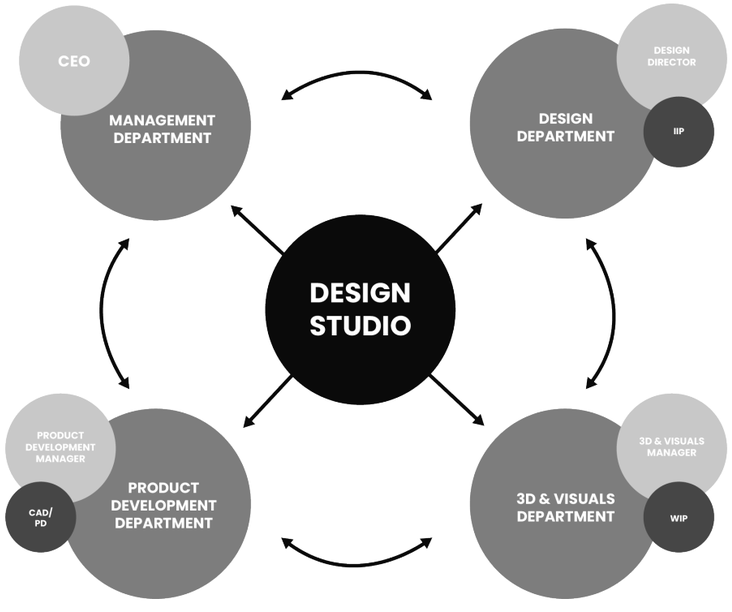
This integrated structure and process system is neither linear nor rigid: it incorporates feedback loops that allow the information generated in advanced phases to adjust decisions in previous stages, optimising both creative quality and technical efficiency and resource allocation.

3.2 AI INTEGRATION BY WORKFLOW STAGE

After studying in detail the organisational structure and phases, a concrete and realistic proposal is put forward to integrate artificial intelligence (AI) into each stage.

The vision that guides the work is clear: AI does not replace human talent; it operates as a cross-cutting lever that makes creative, technical and management teams more efficient, reduces repetitive tasks, improves decision-making and raises quality in less time. This is not a disruptive replacement of the essence of design, but rather a strategic evolution that enhances capabilities and strengthens competitiveness in a demanding global market. The combination of a clear organisational structure and a step-by-step flow also facilitates progressive and specific implementation by area and responsibility.

Figure 1
Departmental distribution of the study.



Note. The study as a hub connected to Operations, Design (IIP), 3D & Visuals (WIP) and Product Development (CAD/PD). Key roles (CEO, Design Director, Product Development Manager, 3D & Visuals Manager) and bidirectional work/feedback flows between the core and each department are indicated. Source: own elaboration (2025).

Management stage (CEO and Office Manager). Key tasks: financial management, sales analysis, commercial relations, strategic vision. Suggested AI applications:

- **Automatic financial analysis:** Power BI connected to ChatGPT transforms PDF/ Excel documents into interactive dashboards that show which products, finishes or regions generate the most sales, facilitating strategic decision-making.
- **Contract review with AI:** Tools such as Evisort or ThoughtRiver analyse international contracts and highlight risky clauses or unusual conditions, reducing manual review time.
- **Strategic content generation:** ChatGPT or Copilot help to draft briefs, manifestos and corporate communications in a clear and coherent manner, tailored to the furniture sector.

Ideation Stage (IIP) (Design Director). Key tasks: product/space ideation, trend detection, conceptual proposals. Suggested AI applications:

- **Reading photographs from trade fairs and visual insights:** Azure AI Vision/Clarifai to extract patterns (colour, materials, shapes) from photos and catalogues.
- **Real-time trends:** Pinterest Trends + Power Automate/Power BI for alerts on aesthetic or functional trends.
- **Generative mood boards:** Freepik / OpenArt / Getimg to accelerate early inspiration.
- **Naming and storytelling:** Copilot / ChatGPT for product name and narrative proposals.

Work in Progress (WIP) stage (3D & Visuals Manager, Design Director, Designers). Key tasks: 3D modelling, rendering, materials, technical supervision. Suggested AI applications:

- **Parametric modelling and automation:** Rhino + Grasshopper + Python scripts to reduce repetitive tasks.
- **Smart rendering:** KeyShot Studio AI/ Lumion Pro (AI upscaling) to optimise lighting and resolution.
- **Generative PBR materials:** Adobe Substance 3D (AI) for realistic textures from photos or prompts.
- **Fast conceptual renders:** mnml.ai/ Freepik.

Presentation Stage (PIP) (CEO, Design Director). Key tasks: preparing presentations, selling the design to the client. Suggested AI applications:

- **Corporate automation:** Copilot in PowerPoint for slides based on reports/documents.
- **Creative presentations:** Plus AI / Decktopus / Gamma for dynamic materials aimed at the target audience.

Product Development Stage (PD) (Product Development Manager). Key tasks: technical drawings, prototypes, coordination with factories. Suggested AI applications:

- **Dimensioning and drawing standards:** Rhino + Grasshopper + Python for automatic dimensions and consistent criteria.
- **Technical validation:** SolidWorks with AI to detect inconsistencies, collisions and assembly errors.
- **Manufacturing documentation:** DraftAid / Autodesk Fusion 360 (AI) for drawings based on 3D models and cloud collaboration with version control.

These applications are a starting point that can be adapted to the size, capabilities and budget of each SME. The key is to think of AI as an intelligent ally: it frees up time, increases precision, enriches creative processes and improves the customer experience, without blurring the studio's identity.

3.2.1 IMPLEMENTATION PROPOSAL

For the defined company model, which combines the Microsoft ecosystem with Rhinoceros and V-Ray as its main design and visualisation tools, a specific AI implementation is proposed to boost efficiency across all stages without radically changing the existing system. The approach focuses on integrating Microsoft Copilot and Power Platform as a transversal core for management, ideation, and presenta-

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tion, complemented technically by parametric automation in Rhinoceros through Grasshopper and Python, along with emerging AI features in V-Ray and Adobe Substance 3D for materials and rendering. This combination aligns with the company's current infrastructure, ensuring compatibility, data governance, and a reduced learning curve by remaining within familiar environments.

The implementation is planned over twelve weeks in progressive phases. First, Copilot and Power BI would centralise indicators and standard contracts. Next, trend analysis and automatic moodboard generation would be added. Then, smart material libraries in Substance and V-Ray assistants would be deployed. Finally, Rhinoceros would incorporate automated drawings and schedules, supported by versioning and notifications via Power Automate. Brief role-based training and a best-practice manual with prompts and procedures would minimise resistance to change and secure operational continuity.

3.3 KPI FRAMEWORK AND MEASUREMENT OF IMPACT

The incorporation of artificial intelligence (AI) into the workflow significantly reduces the time spent on repetitive, low-value tasks. This effect translates into three operational levers: increased productive capacity—the same team can handle more projects in less time; improved margins—by reducing internal hours per project; and scalability—the possibility of growing turnover with or without expanding the workforce, depending on the strategy. In the medium term, adoption behaves like an investment with a return, optimising resources and shortening the response to the market.

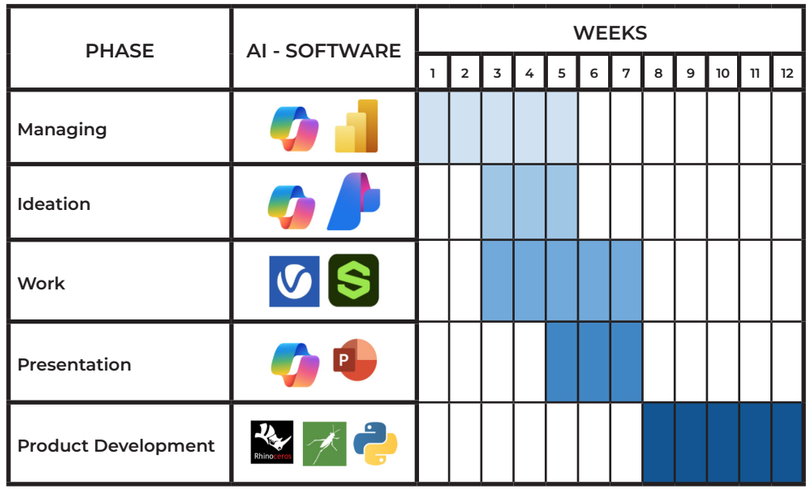
To evaluate the impact accurately, it is essential to measure with objective and comparable indicators between 'with AI' and 'without AI' scenarios, using samples of equivalent projects (scope, complexity, client). The following main KPIs are proposed:

- **KPI 1 · Average visual development time per project** (h/project). Hours from the first 3D modelling to the final render.
- **KPI 2 · Client review ratio** (iterations/project). Average number of rounds until approval. More accurate visualisations should reduce this value.
- **KPI 3 · Delivery punctuality** (% on time). Percentage of projects delivered on or before the agreed date.

Supporting metrics may include the volume of projects delivered per period and customer satisfaction (short post-delivery surveys), always maintaining criteria of homogeneity in the samples.

Together, these KPIs replace hypothetical estimates with applicable and verifiable evidence, allowing each company to contextualise and quantify the effect of AI according to its structure, processes and business model.

Figure 2
Implementation programme.



3.4 OTHER CHALLENGES IN IMPLEMENTATION

Although this paper cannot address all aspects in depth, this section outlines those that will also be important to consider when implementing AI in the company.

3.4.1 DATA ETHICS AND GOVERNANCE

AI adoption requires a governance framework covering the full data lifecycle. In SMEs, this can be lean: assign a governance officer to manage records of algorithmic decisions, bias/performance audits, DPIAs, and data minimisation. Suppliers should provide model cards, contractual safeguards, and incident response procedures.

3.4.2 TRAINING AND CHANGE MANAGEMENT

Implementation is both cultural and technological. A continuous plan is proposed with: a competency matrix by role (management, design, visualisation, technical development); micro-training itineraries (prompts, copilot, CAD/BIM with AI, analytics) and 'office hours' sessions for real questions; stage-controlled pilots (Management, IIP, WIP, PIP, PD) with clear objectives and metrics; internal ambassadors to accompany the rest of the team; and incentive mechanisms (recognition of good practices, protected time for learning) that consolidate habits.

3.4.3 BENCHMARKING AND USE CASES

Documenting baselines (time, cost, satisfaction) and repeating measurements after adoption enables historical comparisons. Lessons from adjacent sectors can be transferred, while an internal repository of cases and snippets accelerates reuse.

3.4.4 TRENDS AND FUTURE

AI is evolving from a tool to infrastructure: native integration into design suites, unified interfaces and scalable licences. In the short term, it already offers 'quick wins' (automatic mood boards, upscaling, rendering/post-production, descriptive analytics). In the medium term, multimodal convergence (text-image-3D), agents that chain tasks, and greater interoperability will promise more automatic and auditable workflows. This scenario requires standardisation of naming, metadata, and file conventions to ensure traceability and collaboration.

3.4.5 TACTICAL OBSOLESCENCE, LASTING PRINCIPLES

Given the pace of innovation, the tool catalogue is volatile. The strategy must be based on stable principles: **efficiency and simplification of workflow; automation of repetitive tasks; preference for versatile and well-integrated tools; maintaining AI as a creative and organisational collaborator**, not a substitute. On the technical side, opting for modular architectures, open APIs and standard exports reduces lock-in and facilitates component replacement. Evaluating the total cost of ownership (licences, training, integration time, risks) avoids short-sighted decisions.

3.4.6 SECURITY, COMPLIANCE AND QUALITY

In addition to the General Data Protection Regulation, it is advisable to define internal policies for version control, data retention and environment segregation (testing/production), as well as lists of sensitive data that is not authorised for training or prompting models. Quality is maintained with stage-by-stage checklists, acceptance criteria and human-AI cross-checks, avoiding hallucinations and ensuring documentary consistency.

3.4.7 METRICS-BASED OPERATION

Adoption must be measurable: select a limited set of KPIs (average time per task, review ratio, delivery punctuality, internal cost per project, customer satisfaction) and review them on a monthly/quarterly basis. The results feed into a continuous improvement loop (learning, tool adjustment, new automations), maximising return and minimising friction.

3.4.8 SUMMARY

These considerations are not peripheral: they form the backbone of secure, traceable and sustainable AI adoption that preserves creative identity while boosting competitiveness. By

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combining governance, training, comparative evidence, technological vision and enduring design principles, SMEs can adapt and scale their model with confidence in a rapidly evolving environment.

4. CONCLUSIONS

The study confirms that AI is an effective lever for optimising processes in SMEs involved in furniture and interior design, but its adoption raises strategic and economic decisions that transcend the purely technical. The current ecosystem is driven by specialised start-ups (imaging, analysis, automation, creative assistance), which generates a broad and useful but fragmented catalogue with cumulative subscription costs. At the same time, large providers (Adobe, Autodesk, Chaos, Nvidia) are moving forward with partial features and seem to be observing the market: a scenario compatible with a future acquisition and integration strategy. If this happens, AI could be incorporated natively into the usual suites (Photoshop, AutoCAD/Revit, V-Ray), simplifying the learning curve; however, the question remains about the impact on prices and the risk of a competitive gap between those who can afford 'AI' licences and those who cannot. The best scenario for SMEs would be a democratisation of these capabilities (staggered plans or standard inclusion), accompanied by policies that facilitate adoption and prevent inequalities.

Rather than the fear of job displacement, the concern is that companies will be unable to afford integration and will be excluded from productivity gains. Hence the need to combine innovation with data governance, training and total cost of ownership criteria.

4.1 HYPOTHESIS EVALUATION

- **Hypothesis 1**. The integration of artificial intelligence reduces the time spent on repetitive, low-value tasks. **Confirmed**.
- **Hypothesis 2**. The adoption of AI is more effective when it is integrated into tools already used by the company. **Confirmed**.
- **Hypothesis 3**. Reducing operating times translates into a positive economic impact. **Partially confirmed.**
- **Hypothesis 4**. Progressive integration of AI strengthens the competitiveness of SMEs without compromising creative value. **Confirmed.**

4.2 OBJECTIVE EVALUATION

Describe the organisational structure and workflow of an SME in the sector. Achieved.

- Identify repetitive or low-value tasks. **Achieved**.
- Select the most appropriate and compatible AI tools. Achieved. - Propose a plan for the progressive integration of AI. **Achieved**.
- Estimate the impact on productivity and profitability using KPIs. Achieved. - Reflect on opportunities and challenges. **Achieved**.

4.3 FINAL RECOMMENDATION

Adopt AI gradually and in a controlled manner, integrated into the existing stack, with operational KPIs and ongoing training; monitor market developments (consolidation and prices) and promote measures that guarantee access to key capabilities. Under these conditions, adoption is viable, advisable and consistent with preserving the studio's creative identity.

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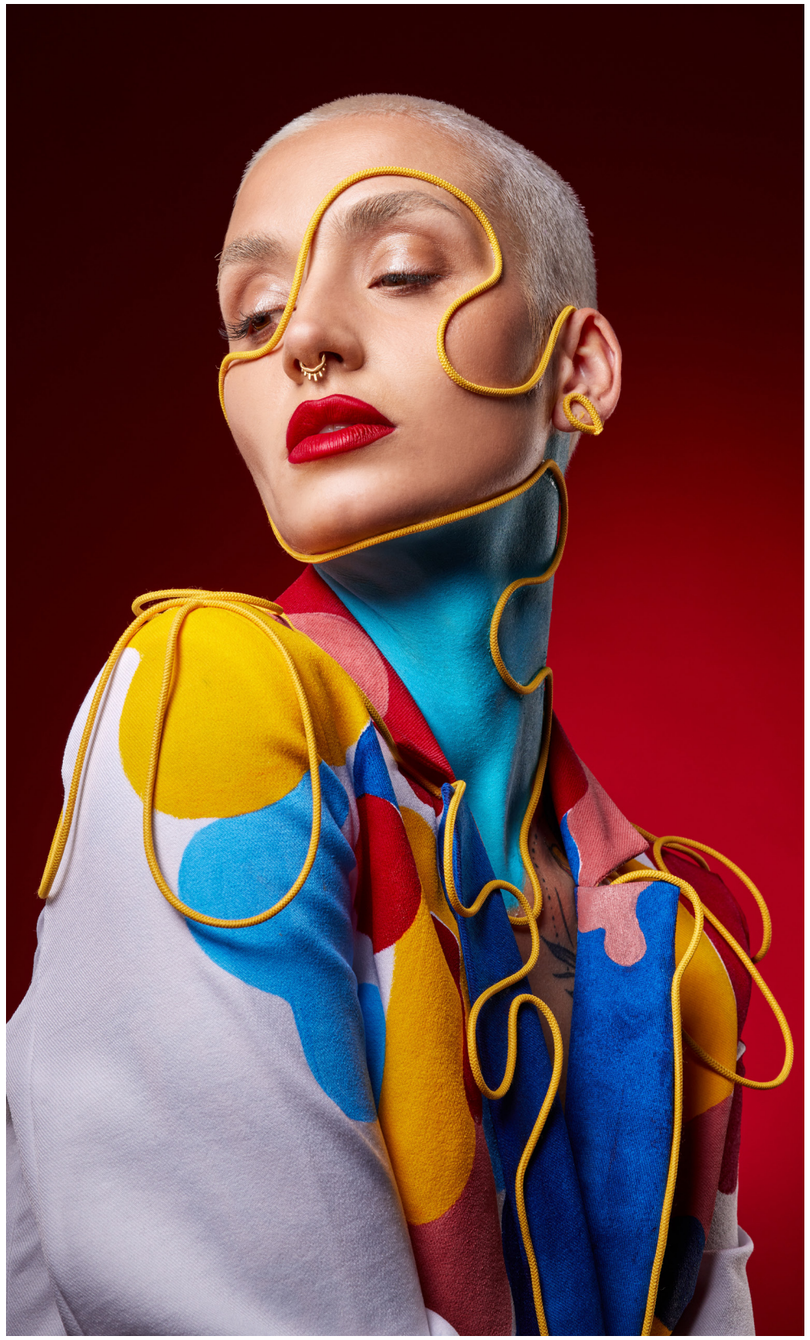

Fashion Design

DESIGN AND NEW TECHNOLOGIES

ANALYSIS OF THE USE OF ARTIFICIAL INTELLIGENCE IN THE PHOTOGRAPHY OF FASHION BRAND WEBSITES. CASE STUDY: 2024-2025

Marielle Perri Molina(*)

Abstract. The integration of Artificial Intelligence (AI) in this field has revolutionized creative and productive processes, allowing the generation of digital images, advanced editing and optimization of advertising campaigns without the need for traditional physical processes. The main objective of this study is to analyze how AI has optimized visual creation in fashion, improving process efficiency and reducing costs, without compromising creativity and brand identity. In addition, it explores the use of emerging technologies such as Generative Adversarial Networks (GANs), DALL-E and MidJourney, which have enabled the creation of hyper-realistic images, as well as the emergence of digital models and virtual environments for fashion shows and advertising campaigns. A qualitative analysis was used, examining different market segments: luxury fashion, fast fashion, and sustainable fashion. The use of AI in supply chain optimization, trend prediction, and user experience personalization was also analyzed. The results show that brands committed to sustainability and digital innovation are those that most integrate artificial intelligence into their visual processes. This is reflected in the adoption of digital avatars, virtual fitting rooms, and the reduction of environmental impacts through the minimization of physical production. The conclusions highlight that AI has already established itself as a virtual tool as it facilitates creative processes in fashion. Despite the ethical and creative challenges, it poses, its use continues to grow, driving a more technological and sustainable fashion model that radically transforms the sector and poses a future where the digital and the physical come together.

Keywords: Artificial intelligence, fashion photography, digital fashion, sustainability, digital models, virtual fashion shows, Generative Adversarial Networks (GANs).

Resumen. La integración de la Inteligencia Artificial (IA) en este campo ha revolucionado los procesos creativos y productivos, permitiendo la generación de imágenes digitales, la edición avanzada y la optimización de campañas publicitarias sin necesidad de procesos físicos tradicionales. El objetivo principal de este estudio es analizar cómo la IA ha optimizado la creación visual en moda, mejorando la eficiencia de los procesos y reduciendo costes, sin comprometer la creatividad ni la identidad de marca. Además, explora el uso de tecnologías emergentes como las Redes Generativas Antagónicas (GAN), DALL-E y MidJourney, que han permitido la creación de imágenes hiperrealistas, así como la aparición de modelos digitales y entornos virtuales para desfiles de moda y campañas publicitarias. Se utilizó un análisis cualitativo que examinó diferentes segmentos del mercado: moda de lujo, moda rápida y moda sostenible. También se analizó el uso de la IA en la optimización de la cadena de suministro, la predicción de tendencias y la personalización de la experiencia de usuario. Los resultados muestran que las marcas comprometidas con la sostenibilidad y la innovación digital son las que más integran la inteligencia artificial en sus procesos visuales. Esto se refleja en la adopción de avatares digitales, probadores virtuales y la reducción del impacto ambiental mediante la minimización de la producción física. Las conclusiones destacan que la IA ya se ha consolidado como una herramienta virtual que facilita los procesos creativos en la moda. A pesar de los desafíos éticos y creativos que plantea, su uso continúa creciendo, impulsando un modelo de moda más tecnológico y sostenible que transforma radicalmente el sector y plantea un futuro donde lo digital y lo físico se fusionan.

Palabras clave: Inteligencia artificial, fotografía de moda, moda digital, sostenibilidad, modelos digitales, desfiles virtuales, Redes Generativas Antagónicas (GAN).

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1. INTRODUCTION. OBJECTIVES AND HYPHOTESES

The integration of Artificial Intelligence (AI) in the fashion industry is reshaping how visual content is produced, especially in fashion photography. This technological shift offers brands and designers new ways to optimize production costs, reduce environmental impact, and engage digitally active consumers (Blaazer, 2024). AI tools allow for virtual fashion shows, AI-generated models, and digital photo shoots, which increase efficiency and accessibility in the creative process (Vogue Business, 2024; The Fabricant, 2023).

However, these innovations also raise critical questions about the preservation of human creativity and artisanal identity in fashion (El Confidencial, 2023). As the industry moves toward hybrid models that merge physical and digital elements, designers must find a balance between automation and artistic authenticity (González, 2025; Universitas, 2024). This research explores how AI can be implemented in fashion photography to enhance efficiency while maintaining the brand's creative identity.

1.1 OBJECTIVES

- **Objective 1:** To determine the target audience of fashion brands that use Artificial Intelligence.
- **Objective 2:** To examine the relationship between AI use and sustainable practices in fashion.
- **Objective 3:** To analyze the role of AI in optimizing the visual production process in fashion campaigns.
- **Objective 4:** To explore how AI contributes to reducing costs and environmental impact in the fashion industry.

1.2 HYPOTHESES

- **H.1.** Artificial intelligence is generally applied to brands targeting digitally active audiences.
- **H.2.** The use of artificial intelligence is not common in brands targeting older adults exclusively.
- **H.3.** Brands with a sustainable focus are, in many cases, those that most frequently use artificial intelligence to optimize their processes.
- **H.4.** The use of AI is not primarily limited to women's brands.
- **H.5.** The active implementation of artificial intelligence is not exclusive to Korean brands.

Figure 1
AI Collection "Deep".

Note. By The Fabricant, 2017.

2. METHODOLOGY

This research was conducted using a generally quantitative approach, which is based on the collection and analysis of numerical data in order to generalize results from representative samples (Creswell & Creswell, 2018). In this research, the quantitative approach is justified by analyzing the proportion of brands that do or do not use artificial intelligence, allowing for an objective and measurable view of the current situation in the fashion industry.

- **Difficulties encountered:** Time constraints in brand analysis due to data availability.
- **Adjustments made:** Reduction of the initial sample and selection of brands with clearly documented use of AI, which allowed us to maintain the quality and relevance of the analysis.

INFORMATION ANALYSIS MATRIX

- Country
- Brand
- Does it use AI?
- What do you use AI for? Analyzing customer data / smart mirrors / website chatbots / augmented reality for virtual try-ons / social media analytics to analyze trends?
- Is it a feminine, mixed or masculine brand?
- Is it a brand aimed at older adults?
- What audience do you have: upper, middle or lower class?
- Is it a sustainable brand?

3. RESULTS

Figure 2
Brands using AI.

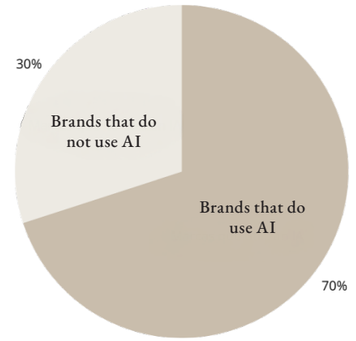

Figure 3
AI used by fashion brands.

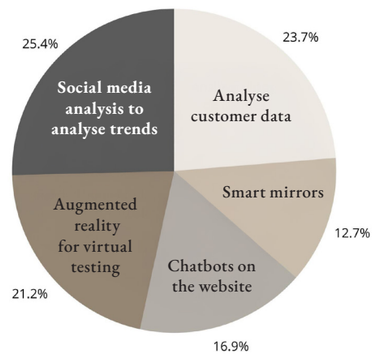

Figure 4
Brands targeting women that use AI.

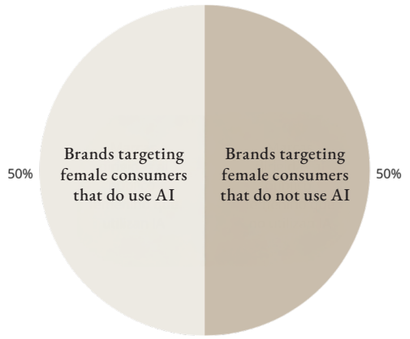

Figure 5
Brands targeting older adults that use AI.

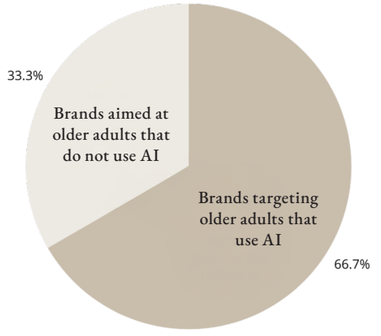

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Figure 6
Brands according to their audience.

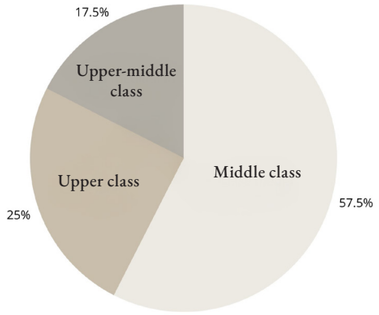


Figure 7
Sustainable brands in the analysis.

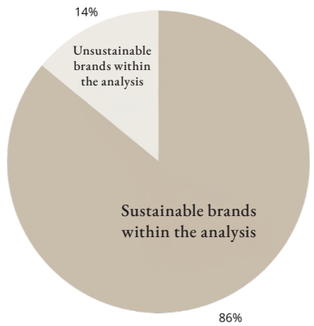
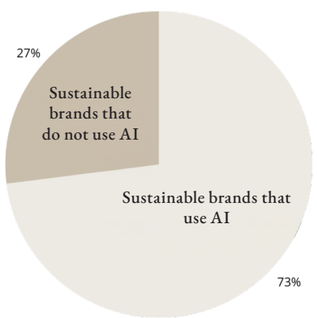


Figure 8
Sustainable brands using AI



4. CONCLUSIONS

- **H.1. Confirmed**. Artificial intelligence is generally applied to brands targeting digitally active audiences. Research shows that the brands that implement AI the most are those that work with younger audiences accustomed to the online environment, such as social media users, fast-fashion consumers, or digital experience customers. These brands use AI to create personalized visual content, streamline campaigns, and improve engagement on virtual platforms.
- **H.2. Partially confirmed**. The use of artificial intelligence is not common in brands targeting older adults exclusively. While some luxury brands with intergenerational audiences have begun to adopt digital technologies, in general, brands focused on an older audience have not yet significantly integrated AI, possibly due to their audience's preferences or a lack of technological investment.
- **H.3. Confirmed**. Brands with a sustainable focus are, in many cases, those that most frequently use artificial intelligence to optimize their processes. They use AI to reduce the use of physical resources (models, transportation, samples) and lessen the environmental impact of their campaigns. AI allows for the creation of digital images and runway shows without the need for traditional production, supporting a more conscious fashion model.
- **H.4. Not confirmed.** The use of AI is not primarily limited to women's brands. Research shows that both women's and mixed-gender and men's brands are adopting AI-based tools. The adoption criterion appears to be more closely linked to the brand's technological positioning and digital strategy than to the gender of the target audience.
- **H.5. Not confirmed**. The active implementation of artificial intelligence is not exclusive to Korean brands. Although South Korea has a strong technological presence in the sector, other regions such as Europe, the United States, and China also show a high level of adoption. Global brands such as Gucci, Nike, and Burberry use AI for similar or even more advanced purposes.

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Graphic Design

GRAPHIC DESIGN AND RELIGION

ANALYSIS OF HOLY WEEK POSTERS. CASE STUDIES: SPANISH CAPITALS, 2024

Clara Martínez Martínez[*]

Abstract. The main objective of this study is to analyse the graphic design of Holy Week posters from all Spanish provinces in 2024, as well as to examine how the religious, identity and cultural values of each territory are visually represented. To this end, research was conducted based on content analysis methodology, applying a quantitative approach that took the form of an observation sheet designed and applied to a corpus of 52 posters. The criteria for selecting this sample were the year 2024, as this was the most recent, and posters from all provincial capitals in Spain. The results show a strong presence of traditional elements, with a predominance of central religious figures, symmetrical compositions and dark and solemn colour ranges. However, a progressive introduction of contemporary resources is also detected, especially in the typographic treatment and iconographic simplification. There are notable differences between autonomous communities, with Andalusia and Castile and León tending most towards pictorial realism, while other regions experiment with more graphic or minimalist styles.

Keywords: poster; graphic design; visual analysis; Holy Week; cultural identities; tradition.

Resumen. El objetivo principal de este estudio es analizar el diseño gráfico de los carteles de Semana Santa de todas las provincias españolas en 2024, así como examinar cómo se representan visualmente los valores religiosos, identitarios y culturales de cada región. Para ello, se llevó a cabo una investigación mediante análisis de contenido y un enfoque cuantitativo, implementado a través de una ficha de observación diseñada y aplicada a un corpus de 52 carteles. Los criterios de selección de la muestra fueron el año 2024, por ser el más reciente, y la inclusión de carteles de todas las capitales de provincia de España. Los resultados muestran una fuerte presencia de elementos tradicionales, con predominio de figuras religiosas centrales, composiciones simétricas y paletas de colores oscuros y solemnes. Sin embargo, también se detecta una progresiva introducción de recursos contemporáneos, especialmente en el tratamiento tipográfico y la simplificación iconográfica. Se observan diferencias notables entre las comunidades autónomas: Andalucía y Castilla y León muestran la mayor tendencia hacia el realismo pictórico, mientras que otras regiones experimentan con estilos más gráficos o minimalistas.

Palabras clave: cartel; diseño gráfico; análisis visual; Semana Santa; identidades culturales; tradición.

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1. INTRODUCTION. OBJECTIVES AND HYPOTHESES

This project stems from an interest in studying the blend of graphic design and religion, focusing on designs linked to Holy Week in Spain: the cofrade poster. As an element of representation, it is a fundamental tool for understanding how faith, local identity and tradition are communicated visually.

The current state of affairs reveals that, although there is research focused on religious iconography or the history of posters, studies that analyse religious brotherhood posters from a graphic and contemporary perspective are scarce. Therefore, this work aims to provide a critical look at this visual production, with an academic and up-to-date approach.

Advertising posters have historically been a fundamental tool in visual communication, evolving from inscriptions on stone in ancient times to become an artistic and persuasive medium in the contemporary era. The invention of the printing press in the 15th century and the development of lithography in the 19th century marked key milestones in their expansion (Godoy, 2008). Throughout the 20th century, the poster incorporated influences from the artistic avant-garde, establishing itself as an expressive medium that combines art, design and communication strategy (Satué, 1999). In Spain, posters have reflected the country's cultural and political identity, being used both in propaganda and in traditional festivities.

In this context, the cofrade poster—linked to Holy Week—represents a unique manifestation of this evolution. According to Sánchez Gúzman (1982), as early as the Middle Ages, the Church used handwritten or woodcut announcements for fundraising and convocation purposes. In Spain, the use of this type of poster has been documented since the 17th century, initially produced by the brotherhoods themselves. Over time, this practice has become professionalised, incorporating artists and designers through competitions. Thus, the religious brotherhood poster has gone from being a simple informational tool to a key piece of religious and cultural communication, maintaining its relevance in both physical and digital environments.

1.1 OBJECTIVES

1. To analyse the composition of the elements and techniques used in Holy Week posters in 2024.
2. To observe how the religious brotherhood poster adapts to changing times.
3. To examine the presence of cultural elements specific to each city.
4. To determine the graphic differences between the religious brotherhood elements in different regions of Spain.
5. Provide an analytical model for religious brotherhood posters.
6. Investigate the origin and evolution of religious brotherhood posters.

1.2 HYPOTHESES

- H.1. There are differences between the posters of the different regions of Spain.
- H.2. Due to new technologies, the Holy Week poster has evolved, however, traditional elements are still present.
- H.3. Photography predominates over illustration in today's posters.
- H.4. There is a tendency toward conceptual representation at the expense of realism.
- H.5. There is an attempt to spark the interest of younger generations, and this is evident in the graphic language.
- H.6. In addition to religious figures, elements specific to the city, such as monuments and landscapes, appear.

2. METHODOLOGY

This research is based on quantitative content analysis, a widely used method in studies that allows for the systematic examination of the characteristics of a set of visual elements, in this case, the Holy Week posters of the Spanish provinces in 2024.

Krippendorff (2004) defines content analysis as a research technique that allows replicable and valid inferences to be made from data within its context. In the quantitative approach, this method focuses on measuring observable elements, such as the frequency of appearance of certain colours, fonts, compositions or symbols in the posters analysed. Its rigorous and systematic structure makes it an objective and reliable tool for identifying visual patterns and trends within a large set of images.

In relation to this technique, Hernández Sampieri (2020) adds that quantitative analysis is an approach based on the collection of numerical data and its subsequent statistical analysis to identify trends and correlations. This approach reduces researcher subjectivity by providing measurable and replicable results. In the context of this research, the use of quantifiable data facilitates the establishment of relationships between the visual characteristics of the posters and their communicative impact.

The choice of quantitative content analysis responds to the need to identify patterns and variations in the design of Holy Week posters, allowing for an objective evaluation of the hypotheses proposed in this research. This method makes it possible to analyse whether there are significant differences between the different regions of Spain in terms of visual composition, symbolism and graphic resources used.

Furthermore, given that one of the hypotheses maintains that, despite technological developments, posters continue to retain traditional elements, quantitative analysis facilitates the measurement of the presence of these elements in comparison with more contemporary resources. Similarly, when evaluating whether photography predominates over illustration and whether there is a trend towards conceptual representation over realism, this approach allows for the accurate quantification of these characteristics within a broad sample of posters.

Another key aspect of this research is to analyse whether the graphic language of the posters is aimed at capturing the attention of a younger audience. Through quantitative analysis, the presence of modern graphic elements, striking colour palettes and innovative typographies can be measured. Finally, the hypothesis that the posters include elements representative of each city, such as monuments or urban landscapes, can also be validated by quantifying these elements in the different posters analysed.

In short, quantitative content analysis provides the appropriate structure for objectively comparing the different graphic aspects of the posters, ensuring that the results obtained are replicable, measurable, and statistically significant. This methodology not only allows the conclusions of this study to be based on verifiable data, but also provides a useful analytical framework for future research on graphic design and visual communication.

Below is the used analysis sheet matrix:

IDENTIFICATION CODE: 01

CITY:

ARTIST:

TECHNIQUE

PAINTING AND ILLUSTRATION TECHNIQUES:

– Watercolor
– Oil
– Acrylic
– Ink
– Mixed
– Sculpture

GRAPHIC AND DIGITAL TECHNIQUES:

– Airbrush
– Collage
– Digital illustration
– Color photograph
– Photomontage
– Artificial intelligence (AI)

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STYLE AND REPRESENTATION

ARTISTIC STYLE:

- Baroque
- Classicism
- Art Nouveau
- Art Deco
- Expressionism
- Abstract Expressionism
- Cubism
- Surrealism
- Constructivism
- Pop Art
- High-tech
- Graffiti
- New wave graphic design

TYPE OF REPRESENTATION:

- Realistic
- Conceptual
- Mixed

VISUAL COMPOSITION

COMPOSITION:

- Symmetrical
- Rule of thirds
- Golden ratio
- Law of the gaze
- Odd numbers
- Guide lines
- Diagonals
- Patterns
- Natural landmark

TYPES OF PLANS:

- Panorama
- General
- American
- Figure
- Half
- Medio close-up
- Close-up

TYPEFACES:

- SERIF
  Incised/lapidary
  Ancient Roman
  Modern Roman
  Egyptian

- SANS-SERIF
  Grotesque
  Geometric
  Humanists

- SCRIPT/MANUSCRIPT
- GOTHIC
- DECORATIVE

PREDOMINANT COLORS:

- Cold:
  Blue
  Green
  Purple
  Black

- Warm:
  Red
  Yellow/Gold
  Land
  Orange
  White

ICONOGRAPHIC ELEMENTS

CHARACTERS:

- Christ
- Virgin
- Other Saints
- Angel
- Romano
- Penitent
- Nazarene
- Woman in a mantilla
- Acolyte
- Costalero
- Musician
- Foreman
- Priest
- Public
- Animal

VEXILLOLOGY:

- Flag
- Coat of arms
- Banner
- Symbol

RELIGIOUS ELEMENTS:

- Rosario
- Crown of thorns
- Feet of Christ
- Nails
- Cruz
- Corona
- Powers
- Candle
- Incense
- Sheet
- Lighthouse
- Chalice
- Sanctuary
- Custody
- Medal
- Vases
- Candlesticks
- Palio
- Cloak
- Throne
- In the past
- Hairpins

ENVIRONMENT AND SCENARIOS

MONUMENTS:

- Cathedral
- Church
- Castillo
- Tower
- Bridge
- Arch
- Plaza
- Park

PLANT ELEMENTS:

- Tree
- Stem
- Remaining
- Flores
- Petals
- Leaves
- Plants

LANDSCAPE:

- Sky
- Officer
- Sun
- Stars
- Mountain
- Mar
- Lake
- River
- urban complex
- Domestic environment
- Market
- Street

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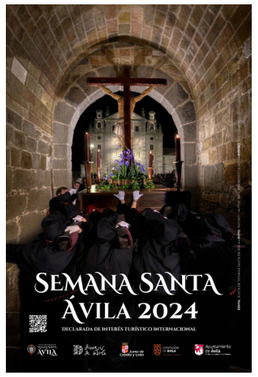
The analysis was carried out on a corpus of 52 posters. The criteria for selecting this sample were those published for Easter 2024, as this is the most recent year for the current study, and they belonged to all the provincial capitals in Spain.

COMPOSITION OF THE SAMPLE

Figure 1
Holy Week posters 2024

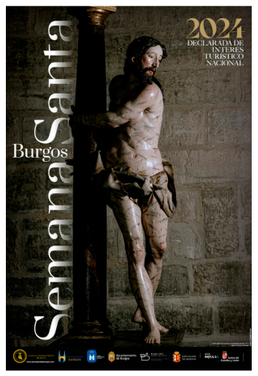
Note. Albacete



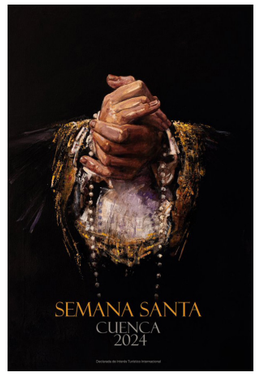
Note. Ávila

Note. Sevilla

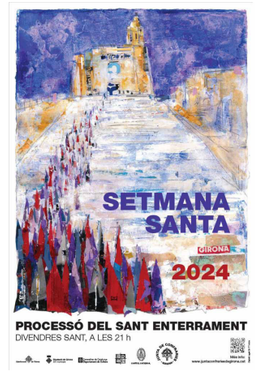
Note. Badajoz



Note. Burgos



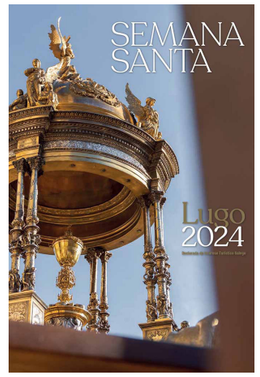
Note. Cuenca



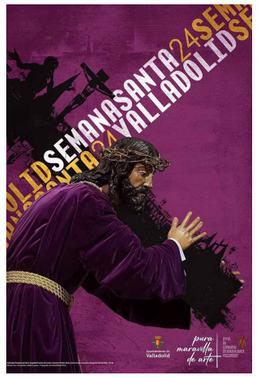
Note. Girona

Note. Las Palmas de Gran Canaria

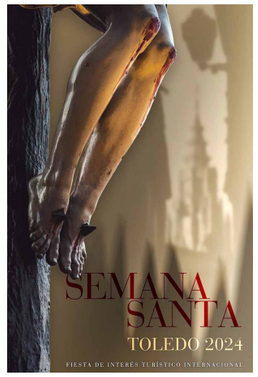
Note. Granada



Note. Lugo



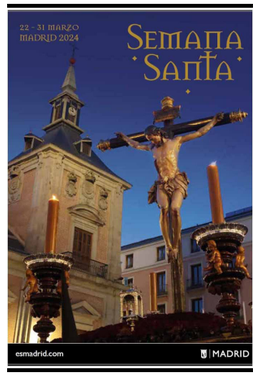
Note. Valladolid



Note. Albacete

Note. Teruel

Note. Salamanca



Note. Madrid

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3. RESULTS

Figure 2
Technique

Figure 3
Representation

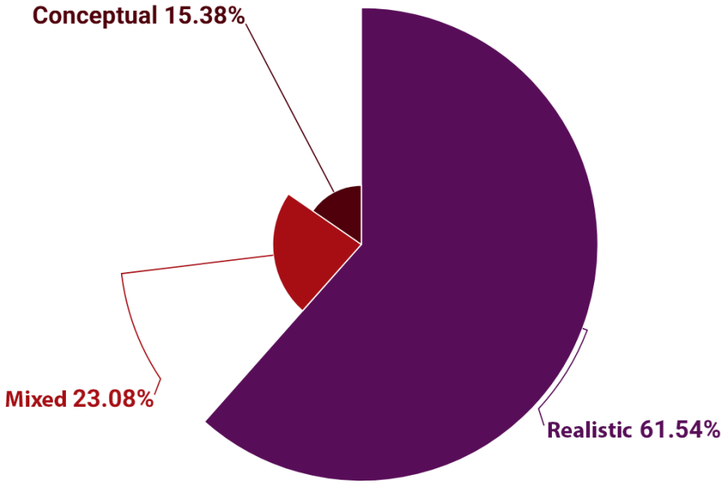

Figure 4
Typography

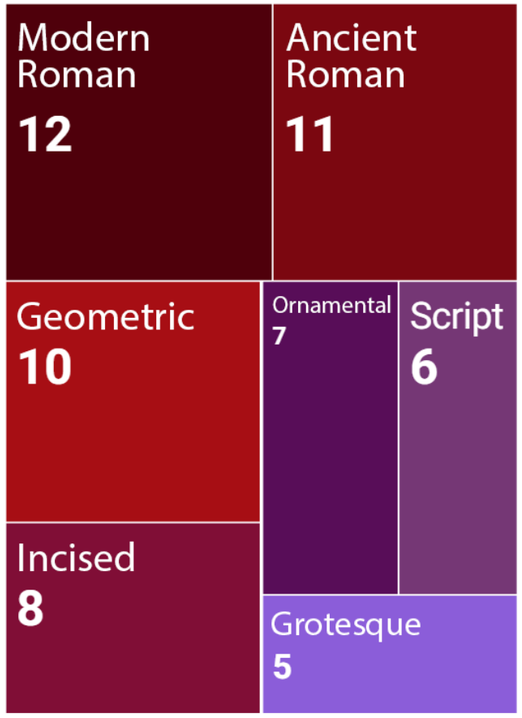

Figure 5
Characters

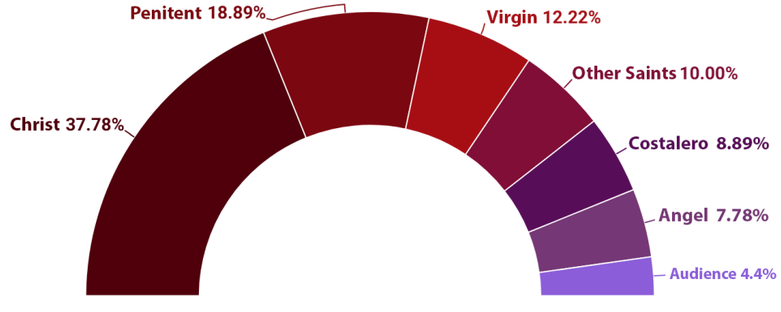

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Figure 6
Monuments

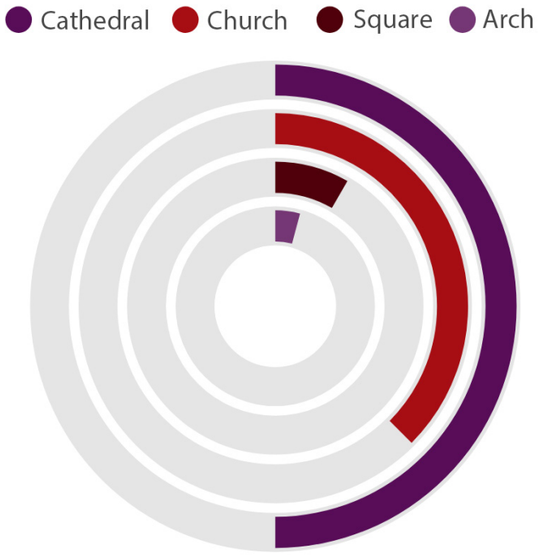
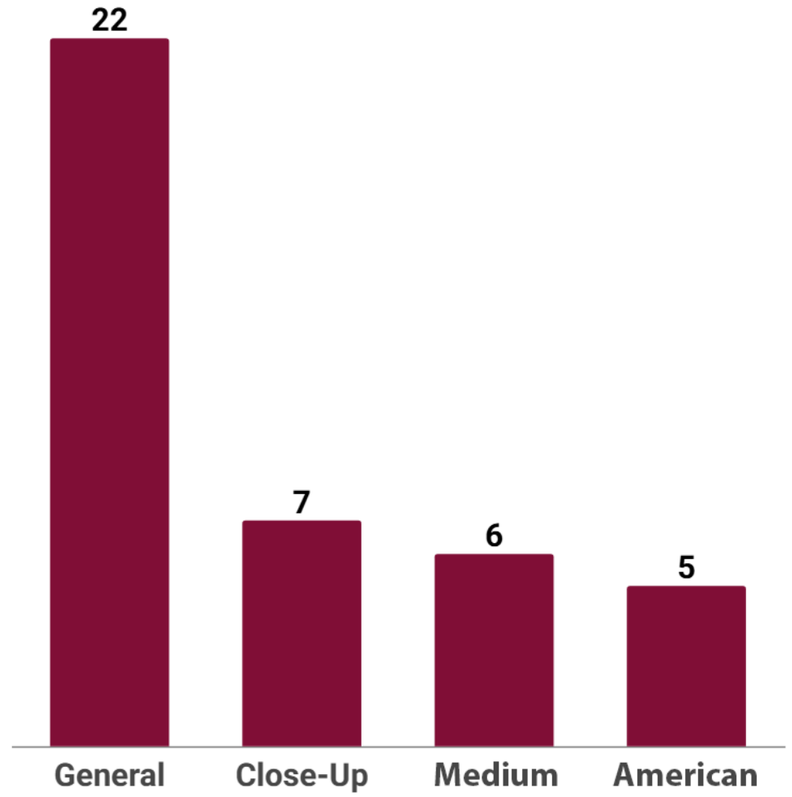


Figure 7
Landscape

Figure 8
Plan types



Throughout the project, the objectives set have been satisfactorily achieved, providing a current and detailed overview of religious brotherhood posters in Spain. The analysis has identified the main graphic, symbolic and compositional characteristics of the 2024 Holy Week posters, as well as highlighting the cultural elements specific to each province. In addition, a specific analysis sheet has been designed that may be useful for future research in the field of graphic design and religious visual communication.

With regard to the hypotheses, four have been confirmed, one has been partially verified and another has not been validated. Clear differences between Spanish regions in terms of visual style, graphic resources and symbolic representation have been demonstrated. For example, in Andalusia, a baroque and realistic aesthetic predominates, with dark backgrounds, highly dramatic photography and references to the sea; while in communities such as Catalonia and Navarre, more conceptual proposals can be observed, with less direct religious content and a greater focus on landscape or contemporary themes.

The coexistence of new technologies and traditional techniques has also been noted, with digital photography being the predominant technique, although media such as oil

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painting still persist, especially in the centre of the peninsula. Illustration appears to a lesser extent and is usually associated with more symbolic or stylised approaches.

On the other hand, although there are occasional attempts to modernise the visual language to attract young audiences, in general a sober aesthetic linked to tradition is maintained. Finally, the frequent inclusion of urban and architectural elements that reinforce local identity and the link with the territory has been confirmed.

Overall, the results obtained not only validate the initial hypotheses, but also open up new avenues for reflection on the role of graphic design in the representation of religion. The trends observed reflect a balance between tradition and innovation, and show how religious posters continue to be a vehicle of cultural expression deeply rooted in the collective imagination of each region.

4. CONCLUSIONS

Regarding the proposed hypotheses, four of the six were confirmed.

The initial hypothesis (H1), which proposed the existence of differences between posters from different regions of Spain, was confirmed. The study reveals notable variations in visual style, use of color, symbolism, and composition. For example, in Andalusia, a strong presence of the Baroque style is observed, with realistic, dramatic photographic images and a focus on elements related to the sea, accompanied by classic fonts and dark backgrounds. In regions such as Catalonia and Navarre, more conceptual proposals predominate, with less religious symbolism and greater attention to landscape elements or contemporary graphic design. These differences reflect not only different graphic sensibilities but also cultural and religious diversity among the regions.

The second hypothesis (H2), centered on the coexistence of new technologies and traditional elements in the current brotherhood poster, has also been confirmed. Although digital photography is the dominant technique—present in more than 70% of the posters analyzed—the use of traditional techniques such as oil or acrylic is still detected, especially in communities such as Castilla-La Mancha and Castilla y León. This shows that, although technology has transformed production processes, there is still interest in maintaining techniques that connect with the aesthetic and devotional tradition of Holy Week.

The third hypothesis (H3), which affirmed the predominance of photography over illustration in the current poster, is also confirmed, but deserves further reflection. Photography is clearly the predominant technique, being the most frequently used in 39 of the 52 cases. However, this trend seems to respond to the intention of conveying an image of closeness, realism, and direct devotion. Illustrative techniques, although present, appear to a lesser extent and are usually associated with symbolic or minimalist approaches, as is the case in some proposals from the north of the peninsula.

In contrast, the fourth hypothesis (H4), which suggested a growing trend toward conceptual representations at the expense of realism, has not been validated. Although some posters, such as those from Álava, Barcelona, and Lugo, embrace a more symbolic aesthetic, the vast majority have a realistic approach, focusing on the main religious figure and faithfully represented. Conceptual representation is still an exception within the group and does not constitute a widespread trend.

The fifth hypothesis (H5), referring to a possible intention to attract younger generations through contemporary graphic resources, has been only partially confirmed. While it is true that some posters incorporate elements that we might associate with a modern visual language—such as sans serif fonts, cleaner compositions, or less traditional color schemes—in general, a sober, solemn graphic language strongly linked to the classic visual imagery of Holy Week persists. In other words, there are occasional attempts at aesthetic updating, but this does not represent a notable change.

Finally, the sixth hypothesis (H6), which proposed the recurrent inclusion of urban or architectural elements specific to the city alongside religious iconography, has been largely confirmed. In numerous posters—such as those from Cádiz, Granada, and Salamanca—local monuments, cathedrals, churches, and even emblematic streets are clearly visible, providing a strong sense of identity and location. These elements serve a dual function: contextualizing the scene and reinforcing the connection between the religious celebration and the community that experiences it.

Overall, the data obtained not only allow us to validate or reject the initial hypotheses, but also open up new avenues for reflection on the current state of religious brotherhood graphic design in Spain. The balance between tradition and innovation, regional diversity, and the symbolic weight of visual elements remain key to understanding the evolution and communicative function of these posters.

In closing, it is worth noting that the analysis allows us to identify certain visual trends according to geographic region. In the south, especially in Andalusia, a traditional and baroque aesthetic predominates, with recurrent use of realistic photography, dark backgrounds, and a clear focus on religious figures. In contrast, in the north—Galicia, Asturias, the Basque Country, and Navarre—more conceptual or sober proposals emerge, with greater presence of landscapes, symbolism, and less conventional compositions. In the central Iberian Peninsula, especially in Castile and León and Castile-La Mancha, a classical and devotional approach is maintained, with some provinces where the use of oil paint and iconography faithful to the traditional religious imagery persist. The Mediterranean region, meanwhile, displays a duality: classic posters coexist with brighter designs that are more open to the urban or natural environment. These differences reflect not only graphic styles but also the cultural, heritage, and emotional significance that Holy Week carries in each region.

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Fashion Design

DESIGN AND MARKETING STRATEGIES

COMPARATIVE ANALYSIS OF SOCIAL MEDIA FOR LOW-COST, MID-RANGE AND LUXURY BRANDS. CASE 2025

Laura Vergne Cañete(*)

Abstract. This study investigates the communication of fashion brands through digital marketing on social networks. The methodology used is known as content analysis, to which a quantitative and qualitative approach has been applied. Three social networks of twelve brands were analysed during the months of March and April 2025. The specific objectives of this work are to study how consumerism has increased in the fashion industry as a result of the appearance of social networks, to analyse the impact of advertising on social networks on different social groups and their tendency to consumerism, to make an analysis proposal to compare the marketing strategies of different brands, to identify which marketing strategy on social networks obtains the best results, to determine the creativities that generate the most engagement in brands and to analyse how content generated by influencers and viral trends affect consumer purchasing decisions.

Keywords: Marketing strategy, fashion, social networks, textile industry, consumerism.

Resumen. Este estudio investiga la comunicación de las marcas de moda a través del marketing digital en redes sociales. La metodología utilizada responde al conocido como análisis de contenido al que se le ha aplicado un enfoque cuantitativo y cualitativo. Se han analizado tres redes sociales de doce marcas durante los meses de marzo y abril 2025. Los objetivos del trabajo son estudiar cómo se ha incrementado el consumismo en la industria de la moda a raíz de la aparición de las redes sociales, analizar el impacto de la publicidad en redes sociales sobre diferentes grupos sociales y su tendencia al consumismo, hacer una propuesta de análisis para comparar las estrategias de marketing de diferentes marcas, identificar qué estrategia de marketing en redes sociales obtiene mejores resultados, determinar las creatividades que más engagement generan en las marcas y analizar cómo el contenido generado por influencers y las tendencias virales afectan a las decisiones de compra del consumidor.

Palabras clave: estrategia de marketing, moda, redes sociales, industria textil, consumismo.

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1. INTRODUCTION. OBJECTIVES AND HYPOTHESES

This study is an investigation into how fashion brands communicate their products through social media. It analyses the evolution of marketing, from traditional media to today's digital marketing, highlighting the fundamental role of platforms such as Instagram, TikTok and Facebook that have made the globalisation of fashion possible, giving visibility to both large and small brands quickly and at a lower cost. In January 2023, the number of active social media users equalled 59% of the world's population, an increase of 3% compared to January 2022 (Kemp, 2023).

The study focuses on how social media has transformed consumer behaviour, encouraging more immediate and impulsive consumption. It also examines the impact of digital marketing, the influence of content creators and the new forms of consumption that have emerged as a result of social media.

We have focused on analysing how fashion brands manage their social media presence, looking at aspects such as frequency of publication, continuity of content and creativity in their strategies. The main objective is to understand how they structure their digital activity to generate impact and engagement with their followers. Different strategies are compared according to the type of brand (economy, media or luxury), evaluating differences in frequency, formats, narratives and choice of protagonists. We also studied which visual and audio elements generate the most interaction, and complemented the quantitative analysis with a questionnaire to find out users' perceptions.

The research is limited to Instagram, TikTok and Facebook, social networks selected for their popularity and relevance in 2024, during the months of March and April, coinciding with the launch of the spring-summer season. The brands analysed cover different price ranges, from Zara and H&M to Jacquemus and Sandro, allowing a comparative view of the sector.

1.1 OBJECTIVES

1. To study how consumerism has increased in the fashion industry as a result of the emergence of social networks.
2. To analyse the impact of social media advertising on different social groups and their tendency to consumerism.
3. Make an analysis proposal to compare the marketing strategies of different brands.
4. Identify which social media marketing strategy gets the best results.
5. Determine which creatives generate the most engagement for brands.
6. Analyse how influencer-generated content and viral trends affect consumer purchasing decisions.

1.2 HYPOTHESES

- Fashion consumerism in society has increased following the advent of social media.
- The use of influencers or celebrities as a marketing strategy for the promotion of fashion products has a direct impact on brand engagement.
- Fashion companies design and adapt their strategies according to the target and the social network in which these ads are disseminated, in order to have a greater impact and increase sales.

1.3 STATE OF ART

Fashion brand communication has evolved significantly with the emergence of social networks, which have largely replaced traditional media and have become key spaces for sales, interaction and identity building. Various research studies offer a theoretical and practical framework for understanding this transformation.

From a sociological approach, studies such as that of Martínez Barreiro (1998) explain how the desire to consume fashion is related to symbolic, aesthetic and social factors, helping to contextualise the role of networks in the expression of identity. On the other hand, research such as that of Campoverde Ochoa (2021) shows how the strategic use of social networks improves the visibility and sales of small brands, highlighting the importance of visual content and constant interaction.

Other studies, such as Critikián et al. (2021), highlight the influence of influencers on Generation Z, who consume fashion as a form of self-expression and trust digital recommendations more than traditional advertising. Likewise, Rodas Casal (2023) analyses the role of influencer marketing on Instagram and TikTok, highlighting the use of storytelling and virality as keys to connecting with the public.

Finally, Pérez et al. (2021) highlight the relevance of planning, segmentation and periodicity, factors that are especially useful for emerging brands such as Nude Proyect. Taken together, these studies underpin the analysis in this paper, which focuses on how brands communicate on social networks through creative, consistent strategies aimed at building audience loyalty.

2. METHODOLOGY

This work is structured in two phases: a documentary research and a practical study. First, a comparative analysis of the digital marketing strategies used by twelve fashion brands on Instagram, Facebook and TikTok during March and April in 2025, year in which this work was carried out and coinciding with the launch of the spring-summer season. The brands are divided into three categories according to their price range (low, medium and high), which will allow us to compare approaches according to market positioning.

Data will be collected on frequency, type of content and level of engagement, organised in tables to facilitate comparison between networks and brands. Subsequently, a survey will be conducted using Google Forms to understand consumer behaviour, their perception of social media marketing and the impact of influencers on their purchasing decisions.

The aim is to identify which strategies generate the greatest impact and how social networks influence the desire to consume fashion. Finally, conclusions will be presented based on the analysis of quantitative and qualitative data, including graphs and key observations.

Figure 1
Matrix, content Analysis

BRAND			
DAY/CONTENT	INSTAGRAM	TIKTOK	FACEBOOK
1/03/2025	–	–	–
2/03/2025	–	–	–
3/03/2025	–	–	–
4/03/2025	–	–	–
5/03/2025	–	–	–
6/03/2025	–	–	–
7/03/2025	–	–	–
8/03/2025	–	–	–
9/03/2025	–	–	–
10/03/2025	–	–	–

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A first table has been created with the daily content published by each brand on Instagram, TikTok and Facebook during the months analysed, including metrics such as views and likes. The aim is to compare which strategies generate the best results according to the type of brand and its approach to social media.

The metrics evaluated include the format and type of content (such as reels, posts, influencer presence or music) and the performance of each post. This data has been organised into specific tables for easy analysis and comparison.

Figure 2
Matrix, content Analysis

INSTAGRAM	N° Followers					
	N° Monthly posts					
	Use of influencers / celebrities / collaborations					
	Average likes per month					
	Volume of publications in stories					
	Type of content	Reels		Average n° of likes		
		Photo Posts		Average n° of likes		
	Posts elements	Object/ locations/ texts		Average n° of likes		
		Brand models		Average n° of likes		
		Influencers / celebrities		Average n° of likes		
	Ratio of likes / n° of followers					
TIKTOK	N° of followers					
	N° publicaciones en el mes					
	Use of influencers / celebrities / collaborations					
	Average views of the month					
	Average likes of the month					
	Ratio of views / n° of followers					
	Ratio of likes / n° of views					
	Posts elements	Object/ locations/ texts		Average n° of views		
		Brand models		Average n° of views		
		Influencers / celebrities		Average n° of views		
	Type of content	N° talking videos		Average n° of views		
		N° videos with music		Average n° of views		
FACEBOOK	N° of followers					
	N° monthly posts					
	Average likes of the month					
	Content type	Photo posts		Average n° of likes		
		Video		Average n° of likes		
	Ratio of likes / n° of followers					

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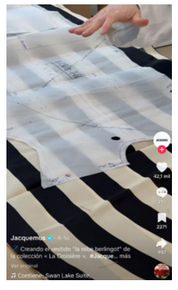
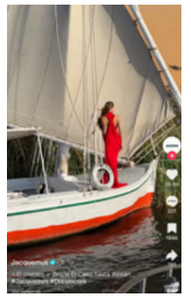
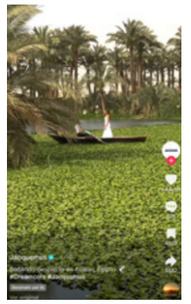
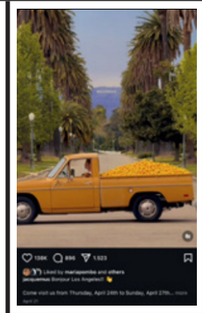
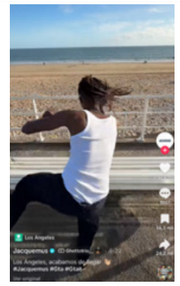
The second table analysed the engagement of the publications, including data on followers, views and interactions, as well as the ratio between likes and views with respect to the number of followers. The use of influencers was also classified according to their frequency of appearance in the publications.

In addition, a Google Forms survey was designed with 17 closed questions divided into three sections: participant profile, consumption habits and use of social networks, and interest in fashion brands. The survey allowed us to identify patterns according to age, gender or socioeconomic level, and was disseminated mainly through Instagram and WhatsApp.

2.1 EXAMPLE OF ANALYSIS

Figure 3
Jacquemus content April

DÍA/CONTENIDO	INSTAGRAM	TIKTOK	FACEBOOK
1 / 4	–	–	–
2 / 4	–	–	–
3 / 4	–	–	–
4 / 4	–	–	–
5 / 4	–	–	–
6 / 4	–	–	–
7 / 4	–	–	–
8 / 4	–	–	–
9 / 4	–	–	–
10 / 4	–	–	–
11 / 4	–	–	–
12 / 4	–	–	–
13 / 4	–	–	–
14 / 4	–	–	–
15 / 4	–	–	–
16 / 4 **Instagram:** post carousel new cruise collection (111.000 likes) **Tiktok:** video on the making of the dress (42.900 likes / 3.300.000 views) **Facebook:** same content as Instagram (223 likes)			
17 / 4	–	–	–
18 / 4 **Tiktok:** video new collection (35.600 likes / 2.200.000 views)	–		–
19 / 4 **Tiktok:** video new collection (66.200 likes / 3.500.000 views)	–		–
20 / 4	–	–	–
21 / 4 **Instagram:** LA reel (139.000 likes) **Facebook:** same content as Instagram (146 likes)		–	
22 / 4 **Tiktok:** video content LA @ghetto-trio__ (298.600 likes / 9.400.000 views)	–		–

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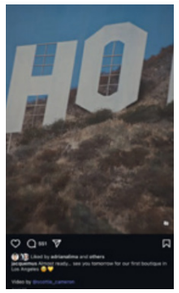
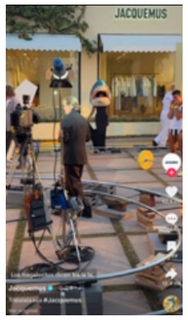
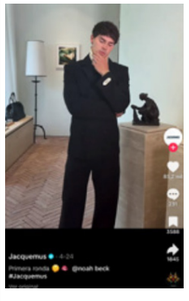
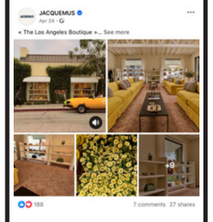
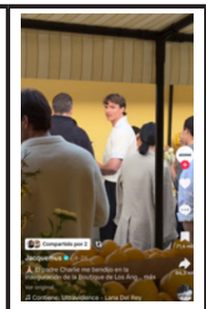
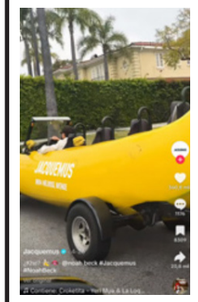
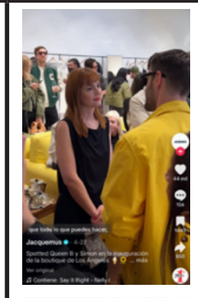
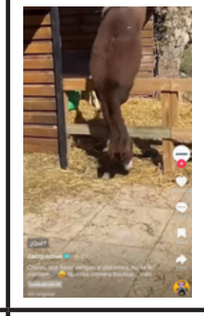
23 / 4 **Instagram:** LA reel (139.000 likes) **Facebook:** same content as Instagram (146 likes)		–	
24 / 4 **Instagram:** LA new boutique post carousel (102.000 likes) **Tiktok:** content video (94.200 likes / 1.300.000 views) / influencer content video @noahbeck (86.300 likes /2.600.000 views) **Facebook:** same content as Instagram (196 likes)		 	
25 / 4	–	–	–

26 / 4 **Tiktok:** celebrity content video (1.300.000 likes / 14.800.000 views)/ influencer content video @noahbeck (362.700 likes / 8.300.000 views)	–	 	–
27 / 4 **Tiktok:** celebrity content video (44.100 likes / 1.300.000 views)/ influencer content video @noahbeck (195.300 likes / 3.600.000 views)	–	 	–
28 / 4	–	–	–

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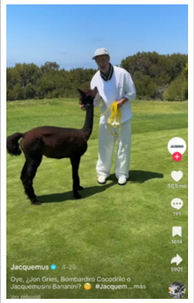
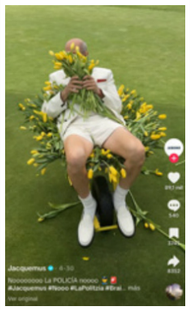
29 / 4 **Instagram:** carousel post new collection @jongries (184.000 likes) **Tiktok:** video celebrity content (30.500 likes /1.600.000 views) **Facebook:** same content as Instagram (114 likes)			
30 / 4 **Tiktok:** content video (89.100 likes / 4.400.000 views)	–		–

Figure 4
Jacquemus analysis April

INSTAGRAM	N° Followers	6.600.000				
	N° Monthly posts	5				
	Use of influencers / celebrities / collaborations	Yes. Celebrities or influencers appear in 40% of april posts.				
	Average likes per month	Average of 134.000 likes per post.				
	Volume of publications in stories	Weekly.				
	Type of content	Reels	2/5	Average n° of likes	140.000	140.000 / 6.600.000 =2,1%
		Photo Posts	3/5	Average n° of likes	132.666	132.666 / 6.600.000 = 2%
INSTAGRAM	Posts elements	Object/ locations/ texts	3/5	Average n° of likes	121.000	121.000 / 6.600.000 = 1,8%
		Brand models	0/5	Average n° of likes	0	–
		Influencers / celebrities	2/5	Average n° of likes	148.000	148.000 / 6.600.000 = 2,2%
	Ratio of likes / n° of followers	134.500 / 6.600.000 = 2%				
TIKTOK	N° of followers	1.300.000				
	N° publicaciones en el mes	12				
	Use of influencers / celebrities / collaborations	Yes. Celebrities and influencers appear in 58% of april posts.				
	Average views of the month	Average of 4.918.182 views per post.				
	Average likes of the month	Average of 220.891 likes per post.				
	Ratio of views / n° of followers	4.918.182 / 1.300.000 = 378%				
	Ratio of likes / n° of views	220.891 / 4.918.182 = 4,4%				
	Posts elements	Object/ locations/ texts	0/12	Average n° of views	0	–
		Brand models	5/12	Average n° of views	2.725.000	2.725.000 / 1.300.000 = 209%
		Influencers / celebrities	7/12	Average n° of views	6.171.429	6.171.429 / 1.300.000 = 474%
	Type of content	N° talking videos	2/12	Average n° of views	2.600.000	2.600.000 / 1.300.000 = 200%
		N° videos with music	10/12	Average n° of views	5.433.333	5.433.333 / 1.300.000 = 417%

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FACE-BOOK	N° of followers	210.000				
	N° monthly posts	5				
	Average likes of the month	Average of 160 likes per post.				
	Content type	Photo posts	3/5	Average n° of likes	178	178 / 210.000 = 0,084%
		Video	2/5	Average n° of likes	133	133 / 210.000 = 0,063%
	Ratio of likes / n° of followers	160 / 210.000 = 0,076%				

2.2 QUESTIONS FROM THE SURVEY

- 1. Age
- 2. Gender
- 3. Current situation
- 4. How would you describe your socio-economic status?
- 5. How important is the way you dress or your clothes to you?
- 6. How often do you shop for clothes or accessories?
- 7. Do you use any social networking sites?
- 8. Which social networks do you use?
- 9. Do you follow any fashion brands or fashion influencers on social media?
- 10. Do you see fashion ads or content on social media?
- 11. What kind of fashion content would you like to see?
- 12. Have you ever bought clothes or accessories after seeing them on social media?
- 13. When you are going to buy a product, do you look for opinions from other users on social networks?
- 14. Have you ever bought a garment or accessory because it was recommended or worn by an influencer or celebrity?
- 15.Do you think that what you see on social networks influences the way you dress and your purchases?
- 16. How important is it for you that a brand has a presence on social networks?
- 17. Do you think social media has changed the way you consume fashion?

3. RESULTS

The analysis of the twelve fashion brands shows how the price and positioning of each one conditions their social media strategy. The low-end brands (Zara, Mango, Punto Roma and H&M) maintain a strong digital presence, although with differences in the frequency and adaptation of content depending on the network. TikTok is more used by brands targeting young audiences, while Punto Roma does not use it because of its more adult target.

The mid-range brands (Scalpers, Nude Project, Nike and Levi's) show a greater effort to adapt content to each platform. Scalpers publishes almost daily with varied and creative content, while Nude Project focuses on quality over quantity. Nike repeats content between networks and is inactive on Facebook, as is Levi's, although the latter does perform well on TikTok.

High-end brands (Jacquemus, Bimba y Lola, Zadig & Voltaire and Sandro) prioritise aesthetics and quality. Jacquemus publishes little but with high visual impact. Bimba y Lola publishes more frequently, but without great impact. Zadig & Voltaire and Sandro stand out on TikTok with visual content adapted to the platform, achieving good levels of engagement.

Figure 5
Average number of views by content on Tiktok, March (Nude Project)

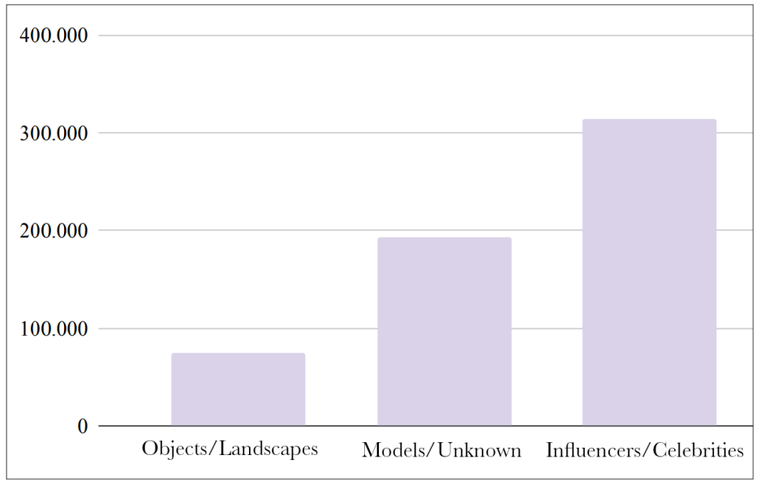
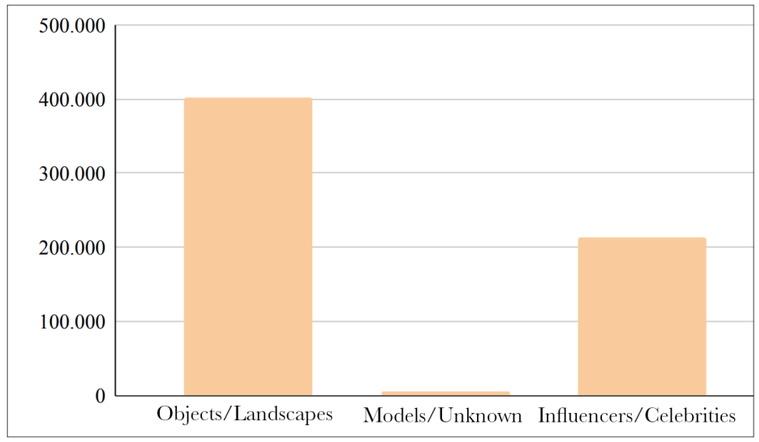


Figure 6
Average number of views by content on Tiktok, April (Sandro)



On the other hand, the analysis of the survey has shown that the irruption of social networks has had a significant impact on fashion consumption habits. A large majority of respondents recognise that the content they view on platforms such as Instagram, TikTok or Facebook directly influences their interest in certain products and the frequency with which they make purchases.

In addition, constant exposure to engaging visual content creates a sense of immediacy and necessity, which accelerates the impulse buying process. Thus, social networks not only act as communication and promotion channels, but have become key drivers of consumer decision making and beviour.

Figure 7
Change in consumer behaviour following the advent of social media

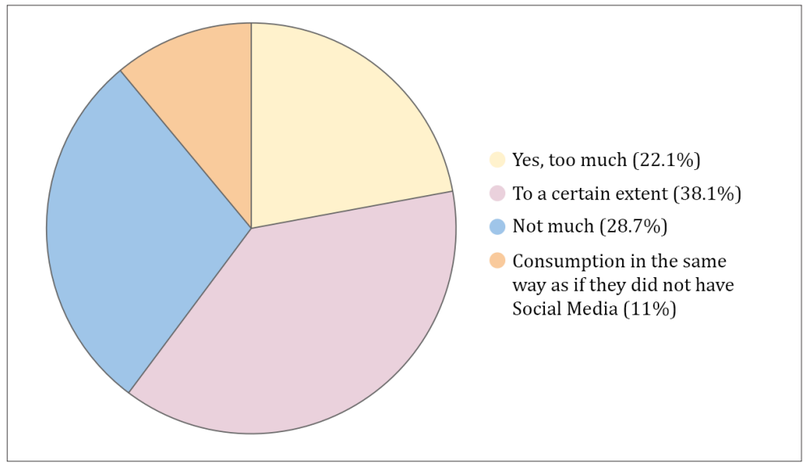


Figure 8
Impact of influencers or celebrity recommendations on consumption

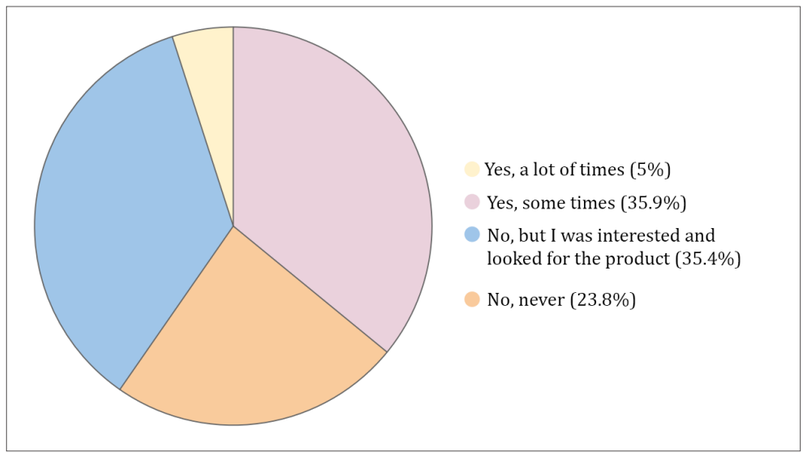
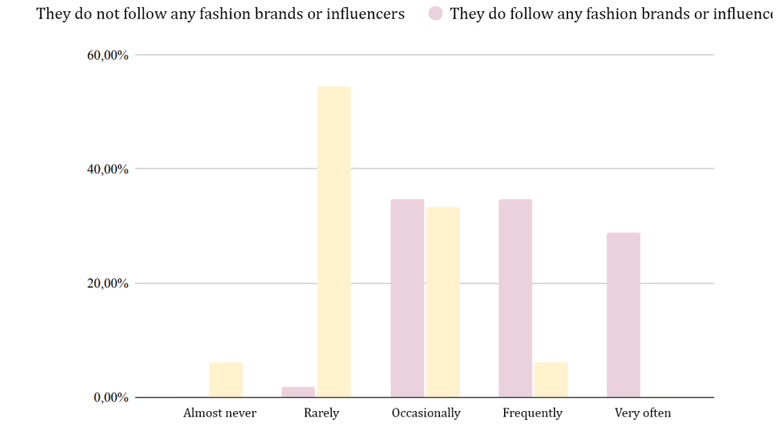


Figure 9
Frequency of purchase in relation to following fashion brands and influencers



4. CONCLUSIONS

The results obtained allow us to validate the first and fourth hypotheses: more than half of the respondents recognise that social networks have influenced their consumption behaviour, and that constant exposure to fashion content generates a desire to buy, even without prior intention.

The second and third hypotheses are partially confirmed. The use of influencers can increase reach and engagement, especially on TikTok, but does not guarantee the success of a post. Moreover, collaborations are more effective when the content is published by the influencers themselves. Regarding the third hypothesis, it is observed that high-end brands adapt their content better depending on the social network and the audience, while low-cost brands tend to replicate the same content on all platforms, although there are exceptions.

Overall, the study has fulfilled its objectives, analysing the impact of social networks on fashion consumption, evaluating different marketing strategies, and observing the role of creativity and influencers in connecting with the public.

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Graphic Design

ILLUSTRATION AS A DIDACTIC TOOL

ANALYSIS OF AESTHETIC AND NARRATIVE EVOLUTION IN CHILDREN'S LITERATURE. PERIOD FROM 2019 TO 2024.

Sara Bailén Martínez(*)

Abstract. The main objective of this study is to identify the relationship between social themes and the aesthetics of illustrated children's literature and how this relationship has evolved in recent years, from 2019 to 2024. To this end, research was conducted using content analysis methodology, applying a qualitative approach through a categorical matrix of visual analysis, examining representation and narrative. The sample selection criteria comprised a variety of national and international competitions specializing in the sector—notably the Bologna Children's Book Fair, the Compostela Prize, and The New York Times Best Illustrated Children's Books. The results demonstrate a progressive transformation: from a naive and communicative aesthetic to a more poetic and symbolic language, without losing its pedagogical function. It is also worth highlighting how the themes have evolved from diversity and equality towards more introspective issues such as sustainability, identity, and grief. Finally, the results confirm how the aesthetics of illustration function as a pedagogical and emotional resource, consolidating the children's book as an artistic medium capable of integrating art and education.

Keywords: Picture book, naïve aesthetics, social themes, visual analysis, narrative, pedagogy, education.

Resumen. El presente trabajo tiene como objetivo principal identificar la relación entre las temáticas sociales y la estética de la literatura infantil ilustrada y cómo ha evolucionado ésta en los últimos años, desde 2019 a 2024. Para ello se ha realizado una investigación basada en la metodología de análisis de contenido, aplicando un enfoque cualitativo mediante una matriz categorial de análisis visual, examinando la representación y narrativa. Los criterios de selección de la muestra han sido compuestos por una variedad nacional e internacional de certámenes especializados en el sector - destacando, la Feria del Libro Infantil de Bolonia, el Premio Compostela o The New York Times Best Illustrated Children's Books -. Los resultados evidencian una transformación progresiva: desde una estética naïf y comunicativa hasta un lenguaje más poético y simbólico, sin perder la función pedagógica. También cabe destacar cómo evolucionan las temáticas desde la diversidad y la igualdad hacia cuestiones como la sostenibilidad, la identidad o el duelo. Finalmente, los resultados confirman como la estética de la ilustración funciona como recurso pedagógico y emocional, consolidando el libro infantil como un medio artístico capaz de integrar arte y educación.

Palabras clave: Álbum ilustrado, estética naïf, temáticas sociales, análisis visual, narrativa, pedagogía, educación.

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1. INTRODUCTION. OBJECTIVES AND HYPOTHESES

Over the last decade, picture books have consolidated their role as one of the most influential formats in children's literature, not only as an aesthetic and narrative medium, but also as an educational tool capable of transmitting values and fostering social awareness from an early age. This evolution responds to a cultural and educational context in which visual and emotional literacy are becoming increasingly important, placing images on the same level as the written word in the construction of learning (Van der Linden, 2020).

Between 2019 and 2024, we have observed how publishing and artistic trends show a boom in works that address social and protest narratives, including diversity, gender equality, single-parent families and bullying, all in line with a change in collective sensitivity and in the pedagogical strategies of illustrated storytelling (Pascual, 2010). This phenomenon is accompanied by an aesthetic transformation characterised by the revival of the naïve style, notable for its expressive use of colour, formal simplicity and emotional spontaneity, which facilitates identification and understanding by young viewers. Far from being a decorative resource, the naïve aesthetic acts as a pedagogical visual language, capable of generating empathy, reinforcing the values conveyed and bringing the complexity of social issues closer to the perceptual level of children (Children's Book Illustration Trends, 2025).

1.1 OBJECTIVES

The main **objective** of this project is:
To analyse the relationship between aesthetics and the representation of social themes in illustrated stories in recent years (2019-2024) in order to understand how the visual strategies used in this type of children's book function as pedagogical resources for values education.

1.1.1 SPECIFIC OBJECTIVES

- Identify the main social themes present in nationally and internationally recognised contemporary illustrated albums in the period from 2019 to 2024.
- Describe and categorise the aesthetic features associated with the naïve style (expressiveness in form, simplicity, use of colour, etc.) in the selected works.
- To compare the aesthetic and narrative evolution of illustrated stories over the last five years, in order to highlight changes in visual trends and values education strategies.

1.2 HYPOTHESES

The **hypothesis** guiding this research is:
Naïve aesthetics, by enhancing the clarity and emotionality of the image, become an effective pedagogical resource for the internalisation of social values, thus reinforcing the role of art as a tool for raising awareness and learning in childhood.

1.3 THEORETICAL FRAMEWORK

Illustration is a technique that is very present in products aimed at children. There are three categories within this field: publishing, animation and video games. Illustration is, for example, among other things, a great resource for children's stories, in some cases complementing a text and in others existing only as an image, and ultimately, through them, important values can be communicated to new generations. It is important to note that graphic design is a very useful tool for transmitting and promoting positive values and good behaviour. In fact, there are inclusive illustrated albums that deal with issues of integration in a completely normal way, with which we can educate generations to be more tolerant, empathetic and culturally enriched, where there is no room for discrimination based on skin colour, gender, LGBTphobia or non-normative physical appearance. Furthermore, picture books are not only valuable because they convey educational values, but also because they encompass aesthetic beauty and artistic training (Aguado and Villalba, 2020).

1.4 ILLUSTRATION

According to the Royal Spanish Academy (RAE, 2025), illustration is defined as:
4.1. The action and effect of illustrating.
4.2. A print, engraving or drawing that adorns or documents a book.
4.3. A publication, usually a periodical, with plates and drawings in addition to the text it usually contains.

After understanding these first three definitions, we can see that they all have in common that they refer to drawings that help to visualise or decorate a text. But is this still the case today? Yes, although more areas outside of books could be added, today illustration is not only used in publishing, but has also entered homes, becoming part of the decoration without the need for text. On the other hand, the definition in E. Souriau's Akal Dictionary of Aesthetics (1998) goes into greater depth: 'to make clearer, more intelligible, to shed light on', and is related to the etymological meaning of the word, which comes from lustrare: to illuminate. Following this definition, we find what Isidro Ferrer (Puerta Leisse, 2006) said: "To illustrate is to illuminate (to shed light), to give meaning to a (foreign) text, but illustrating goes further, because illustrating is linked to the emotional. To illustrate is to signify. To illustrate is to investigate, communicate, express and use as testimony." According to this, it is not surprising that illustration is used as a learning process, not only for children but for people of all ages, as it complements the text and helps to develop visual reading, especially at an early age to encourage this ability.

In addition, it can be seen as a complement to the text, providing details or information that is not reflected in writing. Images aid comprehension by making the content of the text more concrete; words are abstract, while images have a more obvious meaning. However, text encourages the development of the imagination more, as it forces the reader to make an internal mental projection, while illustration does not allow as much room for creativity; it is as if 'everything is already done'.

It can also function as a resource for visual literacy, helping with the conception of visual codes such as shape and colour. Our society is full of images, so it is necessary to be able to understand the codes that form part of this visual reality. In childhood, illustrations help children to understand and identify these codes. This process is visual literacy and is a basic educational objective. It also promotes observation, concentration, concept recognition, memory development and retention, association of ideas, encourages creativity and imagination, and develops empathy through the identification of emotions. According to Nikolajeva (2014), visual representations of feelings (facial expressions or body language) offer readers effective ways to interact with aspects of emotional literacy. She suggests that the interaction between words and images in picture books provides 'perfect training in mind reading even for very young, pre-literate children'. She indicates that reading images can develop readers' understanding of other people's emotions and feelings (Farrar, Arizpe, & Lees, 2024).

When it comes to narrative illustrations (picture books), they contribute to the development of notions of temporality, as this type of illustration implies sequence, rhythm, continuity and the ordering of past-present-future as categories of thought, as in the case of picture books and even poetry books (Aguado and Villalba, 2020).

In relation to illustration as a teaching resource, these same authors state that there are certain requirements for an illustration to work at a pedagogical level:

- **Appropriate use of codes:** Attention to colour (depending on the context of the image and the emotional effect it provokes), tone, formal elements, composition-relationship between elements and temporal rhythm.
- **Complementarity with the text:** Consider the environmental and social context of the narrative or content explained (time of year, characters involved, setting, etc.), determine points of view for each image, and see what the illustration can contribute to the content.
- **Suitability for the age of the children:** the way children process and, therefore, understand and interpret images varies with their age and cognitive maturity (as is the case with concepts). It is therefore essential to consider the reference age of the readers/students when creating educational illustrations. The use of codes and formal elements must be in line with what they need to develop their skills. Children begin by recognising, associating words with images; then they move on to identifying themselves through what the image represents: they attribute action to objects: movement, sequence, location, and even, later on, reason,

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to answer not only what they do but also why. In a third phase, they become capable of imagining, of projecting beyond what they see. They generate their own images from what they see, thus reaching maturity in visual reading.

- **Suitability for the type of content:** in order for children to effectively assimilate concepts, it is important that educational illustrations take into account the differences between the content of social sciences, experimental sciences, mathematics, literature, etc. To help understand nature, it may be more useful to illustrate the descriptive details of animals, plants and rocks (what identifies them), facilitating their recognition. Therefore, a naturalistic (objective) style would be interesting. In contrast, for mathematics, formalistic representation is less important: on the contrary, the ideal would be to conceptualise abstract concepts with simple, schematic images. Social sciences, for their part, require realistic details that aid in the analytical breakdown of the characteristics of objects, but they also require greater emphasis on contextualisation: recreating situations, spaces, and eras with additional details and action (characters using objects or interacting with each other in social groups). In illustrations of situations in which human beings interact, values and norms of behaviour come into play. These must be clearly stated so as not to incur unconscious projections of counter-values, anachronisms or the perpetuation of prejudices and stereotypes. (Aguado & Villalba, 2020).

In recent years, it has been shown that children who read children's stories with a moral increase their level of empathy (Chen H, Lyu D, Zhu L. 2025). Previous studies have also found that socially themed picture books are closely related to children's helping behaviour. Reading moral stories increased children's willingness to help others (Lopatovska et al., 2016). In addition, they confirmed that readers exhibited more helping behaviours and engaged in higher-quality social interactions after reading stories with morals and prosocial content.

2. METHODOLOGY

The chosen methodology is developed using a qualitative, descriptive and interpretative approach, based on the premise that image analysis requires a comprehensive rather than quantitative approach, given its symbolic, narrative and emotional nature. As Banks (2019) points out, images are not limited to accompanying text, but are cultural objects that carry meaning and therefore require specific qualitative methods of interpretation. This justifies the choice of cover and interior pages as units of visual analysis in this research.

2.1 SAMPLE SELECTION

The sample consists of a selection of national and international illustrated books that have been recognised in renowned competitions, including the Bologna Children's Book Fair, the Compostela Prize, The New York Times Best Illustrated Children's Books, and other related mentions in the field of children's literature.

The titles were chosen based on criteria of aesthetic quality and recognition in the narrative, with the aim of representing the main visual and discursive trends of the period 2019-2024. The materials examined for each work will be two fundamental elements: the cover, for its aesthetic and communicative value; and a representative inside page, where the style and relationship with the visual narrative can be observed.

2019:

- Nº1 Escarabajo de vacaciones (Bruno, P. 2019) Ediciones Ekaré. Ilustrado por: Martínez, R.
- Nº2 Amables (Green, A. 2019) Editorial Bruño. Ilustrado por: Varios autores
- Nº3 Cosas que no hacen los mayores. (Cali, D 2019) Editorial Nubeocho. Ilustrado por: Chaud, B.
- Nº4 El circo de las nubes. (Ortiz, E. 2019) Ediciones Jaguar. Ilustrado por: Borlasca, H.
- Nº5 El Perro de Milu. (Máray, M. 2019) Editorial Kalandraka
- Nº6 The Lost Cousins. (Cronin, B. 2019) Viking Books
- Nº7 Un mono suelto en la ciudad (Timmers, L. 2019) Editorial unaLuna
- Nº8 The Farmer (Abadia, X. 2019) Editorial Penguin
- Nº9 Me aburro (Yoshitake, S. 2019) Editorial Pastel de Luna
- Nº10 Child of Glass (Alemagna, B. 2019) Enchanted Lion Books
- Nº11 I miss my grandpa (Xiaojing, J. 2019) Hachette Book Group
- Nº12 Just Because (Barnett, M. 2019) Editorial Walker. Ilustrado por: Arsenault, I.
- Nº13 Another (Robison, C. 2019) Atheneum Books
- Nº14 The Wanderer (Van Den Ende, P. 2020) Levine Querido

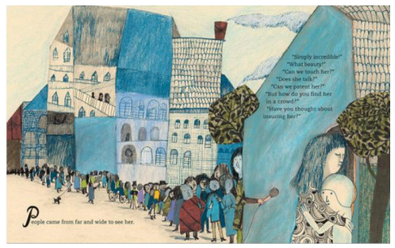
Figure 1
El perro de Milu.

Note. By Máray, M. (2019)

Figure 2
The Farmer.

Note. By Abadia, X. (2019)

Figure 3
Child of Glass.



Note. By Alemagna, B. (2019)

2020:

- Nº15 ¡No me llames Cuchi Puchi! (Taylor, S. 2020) Editorial Edelvives. Ilustradora: Hindley, K.
- Nº16 Tú y yo, hermanos (Roca, E. 2020) Combel Editorial
- Nº17 Mi Vecino Paco (Sanz, I. 2020) Editorial Cuento de Luz. Ilustrado por: Poyato, E.
- Nº18 La vida secreta de los virus (Colectivo Ellas Educan, 2020) Zahorí Books. Tolosa, M.
- Nº19 Lucilla (Mazzetti, S. 2020) Premio Bolonia
- Nº20 Desde 1880 (Gottuso, P. 2020) Editorial KalandrakaNº21 You Matter (Robinson, C. 2020) Libros del Zorro Rojo
- Nº22 Los Carpinchos (Soderguit, A. 2020) Ediciones Ekaré
- Nº23 There Must Be More Than That! (Yoshitake, S. 2020) Chronicle Books
- Nº24 The Strange Birds of Flannery O'connor A Life (Alznauer, A. 2020) Enchanted Lion Books. Ilustrado por: Zhu, P.
- Nº25 A Story About Afiya (Berry, J. 2020) Lantana Publishing. Ilustrado por: Cunha, A.
- Nº26 Outside In. (Underwood, D. 2020) Houghton Mifflin Harcourt. Ilustrado por: Derby, C.
- Nº27 Our Little Kitchen (Tamaki, J. 2020) Abrams Books
- Nº28 The Little Mermaid (Pinkney, J. 2020) Brown Books
- Nº29 If You Come To Earth (Blackall, S. 2020) Chronicle Books
- Nº30 I talk like a river (Scott, J. 2020) Neal Porter Books. Ilustrado por: Smith, S.

Figure 4
Lucilla.

Note. By Mazzetti, S. (2020)

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Figure 5
Tú y yo.

Note. By Roca, E. (2020)

Figure 6
The Strange Birds of Flannery O'Connor A Life.

Note. By Alznauer, A. (2020)

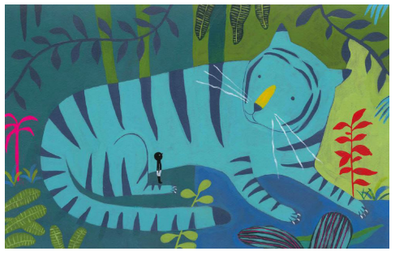
2021:

- Nº31 En busca de la isla de los loros (Misslin, S. 2021) Koala Ediciones. Ilustrado por: Piu, A.
- Nº32 Quizás (Haughton, C.2021) Editorial Nubeocho
- Nº33 ¡Tengo un hambre de dragón! (Benegas, M. 2021) Combel Editorial. Ilustrado por: Sübbauer, A.
- Nº34 Dos ositos (Ylla, 2021) Editorial Kalandraka
- Nº35 La gran aventura de Nara (Pintor, D. 2021) Editorial Degomagom
- Nº36 Selva (Gibert, M. 2021) Editorial Kalandraka
- Nº37 While you're sleeping (Jackson, M. 2021) Librería Sendak. Ilustrado por: Broadley, J.
- Nº38 Más allá del bosque (Robert, N. 2021) Editorial Pipala. Ilustrado por: Dubois, G.
- Nº39 El tiempo es una flor (Morstad, J. 2021) Editorial Juventud
- Nº40 I Am the subway (Hyo-eun, K. 2021) Scribble UK
- Nº41 The night walk (Dorléans, M. 2021) Floris Books
- Nº42 Keeping the city going (Floca, B. 2021) Dreamscape Media Llc
- Nº43 The little wooden robot and the log princess (Gauld, T. 2021) Neal Porter Books
- Nº44 ¡Vamos! Vamos a cruzar el puente (Tercero, R. 2021) Bookshop Santa Cruz.
- Nº45 Cayó del cielo (Fan, E. 2021) Editorial Leetra. Ilustrado por: Fan, T.
- Nº46 Unspeakable The Tulsa Race Massacre (Weatherford, C.B. 2021) Carolrhoda Books. Ilustrado por: Cooper, F.

Figure 7
El tiempo es una flor.

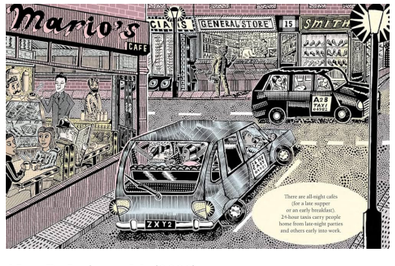
Note. By Morstad, J (2021)

Figure 8
Selva.



Note. By Gibert, M. (2021)

Figure 9
While You're Sleeping.



Note. By Jackson, M. (2021)

2022:

- Nº47 Embolic a la biblioselva (Verdú, I. 2022) La Galera Catalan
- Nº48 De papel (Novarro, C. 2022) Editorial Kalandraka. Ilustrado por: Fonseca, A.
- Nº49 Un par de ojos nuevos (Duthie, E. 2022) Editorial Wonder Ponder. Ilustrado por: Sáez, J. & Marsol, M.
- Nº50 La Roca del Cielo (Klaseen, J. 2022) Editorial Nubeocho
- Nº51 Volver a mirar (López, A. 2022) Ediciones SM
- Nº52 Esperando el amanecer (Anchorena, F. 2022) Editorial Kalandraka
- Nº53 The Upside Down Hat (Barr, S. 2022) Chronicle Books. Ilustrado por: Zhang, G.
- Nº54 The New Rooster (Alexander, R. 2022) Simon & Schuster Books
- Nº55 The Writer (Cali, D. 2022) William B Eerdmans Publishing Co. Ilustrado por: Barengo, M.
- Nº56 Telling Stories Wrong (Rodari, G. 2022) Enchanted Lion Books. Ilustrado por: Alemagna, B.
- Nº57 Bedtime for Bo (Skomsvold, K.A. 2022) Enchanted Lion Books. Ilustrado por: Johnsen M. K.
- Nº58 Night Lunch (Fan, E. 2022) Tundra Books. Ilustrado por: Seiferling, D.
- Nº59 Where Butterflies fill the sky (Marwan, Z. 2022) Bloomsbury Children's Books
- Nº60 Still this love goes on (Sainte-Marie, B. 2022) Greystone Kids. Ilustrado por: Flett, J.
- Nº61 Yellow Dog Blues (Duncan, A.F. 2022) Eerdmans Books. Ilustrado por: Raschka, C.
- Nº62 Farmhouse (Blackall, S. 2022) Little, Brown & Company

Figure 10
Telling Stories Wrong.

Note. By Rodari, G. (2022)

Figure 11
Yellow Dog Blues.

Note. By Duncan, A.F. (2022)

Figure 12
Farmhouse.

Note. By Blackall, S. (2022)

2023:

- Nº63 Mi gato Orlando (Dapena, B. 2023) Editorial Bruño. Ilustrado por: Meléndez, A.
- Nº64 Solo una noche (Antinori, A. 2023) Ediciones SM
- Nº65 La visita (Figueras, N. 2022) Editorial Kalandraka. Ilustrado por: Font, A.
- Nº66 Gato y pingüino (Molsosa, O. G. 2023) Editorial La Galera S.A. Ilustrado por: Serrano, L.
- Nº67 El Caballo Naranja (Hsu-Kung, L. 2023) Editorial Thule
- Nº 68 Bear is never alone (Veerkamp, M. 2023) Eerdmans Books. Ilustrado por: Verstegen, J.
- Nº69 Bunny y Tree (Zsako, B. 2023) Enchanted Lion Books
- Nº70 Before, now (Salmieri, D. 2023) Rocky Pond Books
- Nº71 As night falls: Creatures that go wild after dark (Jo Napoli, D. 2023) Ilustrado por: Sala, F.
- Nº72 At the Drop of a Cat (Fontenaille, E. 2023) Ingram Publisher Services. Ilustrado por: Lópiz, V.
- Nº73 La joven maestra y la gran serpiente (Vasco, I. 2023) Editorial Juventud. Ilustrado por: Palomino, J.C.

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- Nº74 We are starlings: Inside the Mesmerizing Magic of a Murmuration (Furrow, R. & Jo Napoli, D. 2023) Random House Studio. Ilustrado por: Martin, M.
- Nº75 Mary's Idea (Raschka, C. 2023) Greenwillow Books
- Nº76 Rock, Rosetta, Rock! Roll, Rosetta, Roll! (Bolden, T. 2023) Harper Collins. Ilustrado por: Christie, R.G.
- Nº77 How to write a poem (Alexander, K. 2023) Quill Tree Books. Ilustrado por: Nikaido, D.

Figure 13
El Caballo Naranja.

Note. By Hsu-Kung, L. (2023)

Figure 14
La joven maestra y la gran serpiente.

Note. By Vasco, I. (2023)

Figure 15
How to write a poem.

Note. By Alexander, K. (2023)

2024:

- Nº78 Kintsugi (Watanabe, I. 2024) Libros del Zorro Rojo
- Nº79 Bim Bam Bum (Girón, M. 2024) Editorial Kalandraka
- Nº80 Los mapas del agua (Gómez, R. 2024) Editorial Anaya Infantil y Juvenil. Ilustrado por: Pàmpols, L.
- Nº81 The Cat Way (Lundberg, S. 2024) Eerdmans Books. Woodstein B.J.
- Nº82 There's a Ghost in the Garden (Maclear, K. 2024) Enchanted Lion Books. Ilustrado por: Maurey, K.
- Nº83 Yaya and the sea (Marable, K.G. 2024) Denene Millner Books. Ilustrado por: Engel, T.
- Nº84 Here and There (Lu, T.2024) Eerdmans Books
- Nº85 Planting Hope: A Portrait of Photographer Sebastião Salgado (Hoelzel, P. 2024) Atheneum Books Ilustrado por: Alarcão, R.
- Nº86 Little Shrew (Miyakoshi, A. 2024) Kids Can Press
- Nº87 As Edward Imagined (Burgess, M. 2024) Knopf Books. Ilustrado por: Majewski, M.
- Nº88 Animal Albums from A to Z (Bell, C. 2024) Walker Books US
- Nº89 Up, Up, Ever Up! Junko Tabei: A Life in the Mountains (Yasuda, A. 2024) Clarion Books. Ilustrado por: Shimizu, Y.
- Nº90 The Man Who Didn't Like Animals (Underwood, D. 2024) Clarion Books. Ilustrado por: Pham, L.

Figure 16
As Edward Imagined.

Note. By Burgess, M. (2024)

Figure 17
Kintsugi.

Note. By Watanabe, I. (2024)

Figure 18
The Man Who Didn't Like Animals.

Note. By Underwood, D. (2024)

In order to systematically organise the children's picture books analysed, a **categorical matrix** has been developed that integrates variables such as technique, colour, composition and narrative. This tool allows the qualitative data obtained to be organised, classified and compared, facilitating a structured reading of the visual elements (Moreno, 2017). The selection of variables is based on the visual design grammar of Kress and Van Leeuwen (2006), who highlight the structural role of colour, perspective and composition in the reading of images. In this way, the matrix acts as a methodological tool that translates aesthetic elements into categories of meaning, facilitating the interpretation of visual and pedagogical trends in current illustrated albums.

ILLUSTRATION

TECHNIQUES:

– Watercolour
– Gouache
– Ink
– Graphite
– Collage
– Digital
– Mixed media
– Engraving
– Photorealism

COLOUR:

– Lively planes
– Neutral ranges
– Nocturnes
– Warm/cool palettes
– Chromaticism

REPRESENTATION:

– Racialised characters
– Diverse families
– Intergenerational bonds
– Bodily diversity
– Animals

STYLES:

– Styles
– Naïve
– Realistic-poetic
– Conceptual
– Expressionist
– Minimalist
– Experimental

COMPOSITION:

– Figurative
– Linear sequential
– Open
– Use of negative space
– Silent album

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NARRATIVE

THEMES:

– Diversity and inclusion
– Gender equality
– Environmental awareness
– Migration
– Grief
– Emotional education

VISUAL NARRATIVE:

– Linear
– Poetic
– Visual metaphors
– Child's point of view
– Observer narrator
– Silent illustrated narrative (no text)

PEDAGOGICAL FUNCTION:

– Transmission of values
– Emotion management
– Social relationships
– Empathy education
– Social sensitivity
– Aesthetics as a cognitive medium
– Visibility of cultures and histories

INNOVATION:

– Mix of techniques
– Breaking frames
– Emerging iconography
– Book as object

3. RESULTS

The analysis reveals a significant aesthetic and narrative evolution in the treatment of social themes in contemporary children's books. Based on the matrix developed, recurring patterns can be observed that show a progressive aesthetic evolution, greater representative diversity, and a consolidation of the album as a medium for emotional and values education.

In terms of illustration, the research shows a predominance of traditional techniques (watercolour, gouache, graphite and collage), especially between 2019 and 2021, providing texture and sensory proximity. From 2022 onwards, the presence of mixed and digital techniques is consolidated, although with a clear attempt to resemble the traditional without losing artistic expressiveness.

Colour is established as a central narrative and affective resource. During the early years, vivid and contrasting palettes prevail, fitting in with the naïve style and facilitating communication with young audiences. In the following years, the colour ranges tend towards the natural and symbolic, using colour as a means of expressing emotions, narrative or atmospheres.

In terms of composition, there is a clear evolution from centred and figurative structures towards more open, experimental and rhythmic formats. In terms of composition, there is a clear evolution from centred and figurative structures towards more open, experimental and rhythmic formats. The use of negative space, non-linear visual sequences and the prominence of visual silence are consolidated as elements of a more established style.

The style has come a long way, moving from a naïve aesthetic towards more poetic or symbolic languages, bringing greater conceptual depth to the image. Authors such as Beatrice Alemagna, Julie Morstad, Jon Klassen and Issa Watanabe represent this diversity of approaches, from the narrative to the contemplative.On the other hand, in narrative we can find a boom in the integration of text and image, where illustration takes on a discursive role equal to or even superior to that of the word. In various cases, such as Bunny and Tree, The Wanderer, and The Rock in the Sky, we can see how the image completely takes over the narrative. We can appreciate how narrative structures evolve from linear and descriptive stories to poetic and symbolic compositions, in which rhythm, pause, and silence take on an expressive function.

It is worth noting that the most recurring social themes are diversity, equality, sustainability, empathy, grief and self-identity. These can be represented both explicitly and metaphorically, integrated into stories of personal growth, discovery or reconciliation. We find some visual symbols such as water, travel, flight or light, which reinforce the pedagogical meaning of the stories.

We can affirm that the contemporary illustrated album is not limited to entertainment, but is configured as an integral artistic language, capable of combining aesthetics, ethics and learning in a single reading.

4. CONCLUSIONS

Throughout the project, the initial hypothesis has been confirmed: there is a significant relationship between social themes and naïve and expressionist aesthetics in contemporary children's picture books, with visual narrative being an educational resource that facilitates understanding of the values to be conveyed. During the period 2019-2021, naïve aesthetics prevailed as the dominant visual language, notable for its simplicity of form, use of flat colours and expressive lines. This style acts as an affective mediator, promoting an immediate connection between the reader and the story, becoming an effective tool for addressing issues such as diversity, equality and inclusion. However, from 2022 onwards, the visual discourse evolves towards poetic and symbolic aesthetics, in which the educational function is maintained, although it is reflected through more conceptual resources. At the same time, we can also observe a progressive change in the narratives represented. In the early years, the themes addressed focused more on coexistence, inclusion and cultural diversity, while in recent years they have focused more on issues of sustainability, grief, identity and overcoming adversity. This change is due to a growing interest in delving deeper into emotional experiences and contemporary challenges, reflecting a maturity in the discourse of children's literature, which acts as a tool for thought and reflection.

In general, the results show that aesthetics, technique and visual narrative work together to create a visual pedagogy of today's values. The contemporary illustrated album is establishing itself as an artistic and social medium capable of integrating art, ethics and learning, helping to shape a perspective that reflects today's principles.

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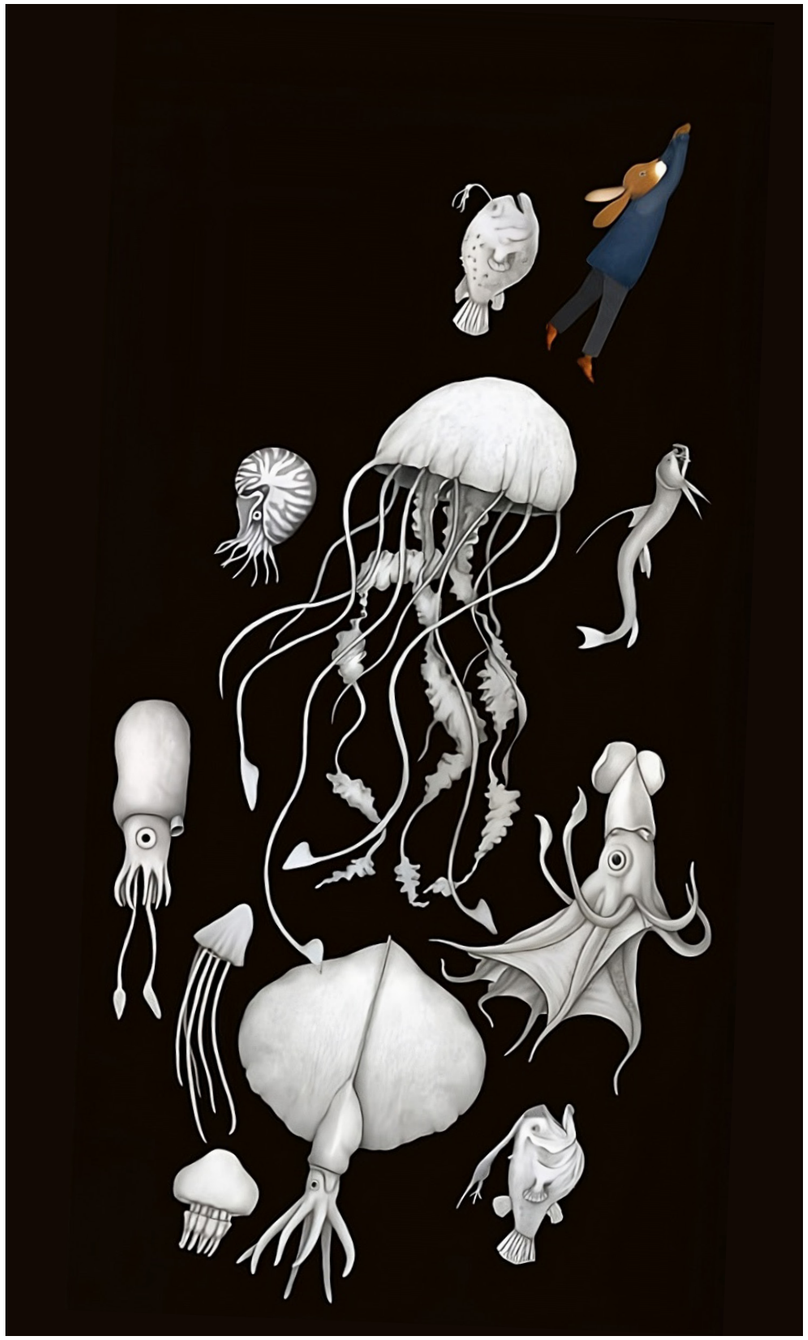

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Interior Design

AN INTERNATIONAL SUMMER SCHOOL FOR DESIGNERS

ADAPTIVE REUSE OF A CHAPEL IN ALPUJARRA. THE NOMAD'S SANCTUARY.

González Casares, J.A.[1*]; Durán Vaquero, M.J.[2*]; Taddonio, S.; Karabağ, E; Psiopoulos, A.; Karabağ, Ö.; Gómez Vélez, C.M.; Moira, M.

1. INTRODUCTION

This article stems from a joint project between Yaşar University in Turkey, the University of West Attica in Greece and ESADA School of Design in Spain, carried out within an Erasmus BIP framework. The initiative focused on an adaptive restoration workshop for a disused chapel in the village of La Cebadilla, located in the municipality of Capileira in the Alpujarra of Granada.

The workshop involved practical work by international teams of students and lecturers from the three institutions. Participants researched the following subjects:

- **History of the Alpujarra:** the region's historical development, major events and influence on its current identity.
- **Water and landscape:** the link between water resources, geography and daily life in the area.
- **Architecture:** the evolution of traditional and contemporary Alpujarran design, integrating modern elements while preserving local identity and sustainability.
- **Culture:** traditions, festivals, music, gastronomy, and how these have been maintained over time.
- **Tourism and contemporary change:** the effects of tourism on the economy, society, culture, environment, heritage, social dynamics, sustainability, and the rise of digital and post-pandemic tourism.

An online phase featured contributions from professionals, including architects Fernando Ortega, María José Durán Vaquero and former Alhambra architect Antonio Ruiz Sánchez.

The chapel, built in the 20th century for hydroelectric workers, is intended to become a space for work, meetings and social interaction, blending its historical character with contemporary uses suited to its natural surroundings. The project responds to rural depopulation by positioning La Cebadilla as a hub for digital professionals wishing to live in nature, encouraging sustainable repopulation.

Research into potential users' ergonomic, technological and social requirements aimed to ensure an inclusive, accessible design. The project not only restores a historic building but also contributes to La Cebadilla's economic and social revival, merging tradition and modernity within a sustainable entrepreneurial context. Five projects have been developed.

This initiative builds on the experience gained from previous international workshops, such as the one held in Nantes in 2024 (Delannoy & González, 2024), and previous experiences incorporating the methodologies, collaborative approaches, and best practices developed in those events (Karabağ et al., 2023). Thanks to this prior experience, participants were able to optimise research, cultural integration, and adaptive design, applying established knowledge to the restoration of historic spaces and the creation of sustainable, functional environments.

We extend our thanks to all collaborators, including ESADA's Erasmus coordinator Félix Guerrero Blanco, and especially to the Mayor of Capileira, José Fernando Castro Zamorano, for providing the resources needed to carry out the project.

Keywords: adaptive reuse, interior design, digital nomads, Alpujarra, BIP Erasmus+.

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PROJECT 1

ART TO THE CONQUER

Gökçe İrem Bozkurt, Ceren Çamlıca, Afroditi Valsamaki, Sara Tepra Darmach & Raúl Fernandez-Espartero Escudero.

Abstract. In Cebadilla town — located in the Alpujarra Granadina — we are proposing an adaptive reuse project based on art and craftsmanship from the Alpujarra and keeping it alive. Using the church of the Cebadilla as the heart of our project, we aim to spread art throughout the village creating an exposition. The exhibition will follow the path from Capileira to Cebadilla, creating a natural experience for visitors and artists alike. The main village will serve as the habitat for artists and the centre of the exhibition.

1. INTRODUCTION. OBJECTIVES AND HYPOTHESES

The project aims to create an exhibition on the town of Cebadilla and the surroundings. The Alpujarra holds a long heritage of culture, craftsmanship and art. La Cebadilla is an abandoned town located in a natural space, using this abandoned space we also epitomize the fact that the culture is slowly disappearing. Although La Cebadilla is a challenging site, we embraced its natural constraints and used them to our advantage.

- Revive the craftsmanship of the Alpujarra and transform it into other arts.
- Strengthen the tourism in the Alpujarra and bring people interested in the arts and artisans into the area.
- Provide a platform for international and local artisans that want to collaborate with each other.
- Using ephemeral architecture and exhibitions as a method of adaptive reuse in the preexisting architecture of the village.

In the Alpujarras, vernacular architecture and traditional architecture have long served to showcase local culture, spatial organisation and traditions (Espigar y López, 2000). That is the reason why we established abandoned villages as a way of keeping tradition alive and to preserve architecture. Having this abandoned town as a blank canvas, the concepts of "adaptive reuse" and "ephemeral architecture" were the ones that caught the essence of the project. These two concepts have gained increasing attention as key strategies in architecture, particularly in the contexts of culture, sustainability and art (Armada, 2012). Therefore, using adaptive reuse as a process of extending the life cycle of this village and ephemeral architecture as a way to protect this architecture was the main focus. It is known that protecting rural spaces is not enough for them to revitalize. While tourism has often been blamed for depopulation, introducing it thoughtfully into these rural areas can help strengthen local traditions, craftsmanship and industries (Signes-Pont, 2022).

2. METHODOLOGY AND RESULTS

The team gathered in Capileira and explored the village of La Cebadilla and its surroundings. The focus was on collecting information regarding the spatial conditions, material heritage and the natural habitat of the area. This gathering was the nucleus of the project. Thanks to that, the team carried out a targeted research into the craftsmanship of the Alpujarras - such as weaving, ceramics and woodwork - and why it had to be preserved. This research was documentary and consultative, serving as an organised source of information. When the concept and the research were solidified, the team developed conceptual proposals and design "possibilities" for potential art installations, workshops and exhibition routes in the area of La Cebadilla and the habitat surrounding it. Activities of this design activity included sketching, making diagrams, generating images of the church with alternative scenarios of what artisans could do and the landscape art path. All outcomes were presented as visual proposals and imaginative scenarios of what the space could look like and be used as, not as a proper executed work.

With the preservation of craftsmanship of the Alpujarras and the need to bring tourism surrounding art into La Cebadilla, a final concept was developed for La Cebadilla's church and its surrounding landscape. The result of this project concluded as a scenario plan of what the concept of massified exhibition and craftsmanship could look like in the area, everything is provisional, ephemeral and changeable. Possible site-specific installations (both inside and outside the church, as well as in its surroundings) were proposed, illustrating how artisans could engage with the Alpujarras' traditional craftsmanship and local heritage.

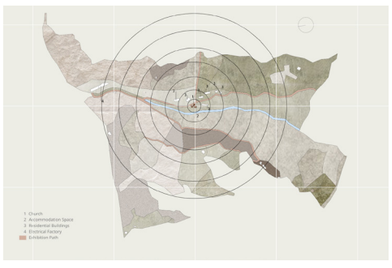
3. CONCLUSIONS

Overall, this conceptual project, Art to the Conquer, shows a carefully researched and collaborative design process that respected local crafts and tradition while opening a rural space for international artistic dialogue. The concept developed as a combination of design 'possibilities' that could be expanded into a tangible international crafts exhibition. Ultimately, the project aimed to create opportunities and artistic connections between the church—the central focus—the village, and the surrounding natural environment.

Figure 1
Inspiration moodboard.

Figure 2
Art's colonisation of the environment.

Figure 3
Distribution of the art along the area.



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PROJECT 2

ECLIPSE

Göktuğ Yiğitol, Jesús José Castillo Vílchez, Laura Moya García, Sevim Çankaya, Nikolaos Ninos.

Abstract. The project proposes the restoration of the old church of La Cebadilla, transforming it into a space for meditation and sensory experiences. The intervention unfolds on two levels that symbolise an inner journey: an upper floor filled with light, purity and serenity, and a lower floor, which is darker and more introspective, accompanied by the sound of flowing water. Through the use of natural materials and the contrast between light and shadow, the design aims to create an emotional and spiritual experience—connecting the visible with the invisible, and the earthly with the transcendental.

1. INTRODUCTION. OBJECTIVES AND HYPOTHESES

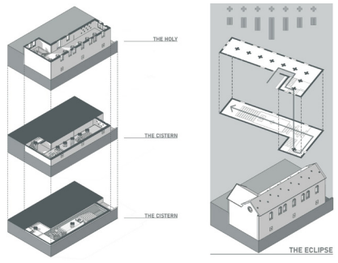
La Cebadilla Route is a circular historical and cultural trail (PR-A-69) of medium difficulty, located in Capileira. It connects the village with the former settlement of the hydroelectric power station. The route offers stunning views of the Poqueira Gorge and the peaks of Sierra Nevada, combining nature, traditional architecture and high mountain landscapes.

Key references include the Meditation Cave in Taipei by StudioX4: a room with a dark, vaulted ceiling featuring an LED oculus that provides a bright, spiritual point of light contrasting with the surrounding darkness (Chen, C. A., et al., 2024)); and the Church of Light by Tadao Ando: a concrete rectangle in near darkness, pierced by a luminous cross that focuses attention towards meditation and spiritual experience (Kristeller, J. L., & Jordan, K. D., 2018).

2. METHODOLOGY AND RESULTS

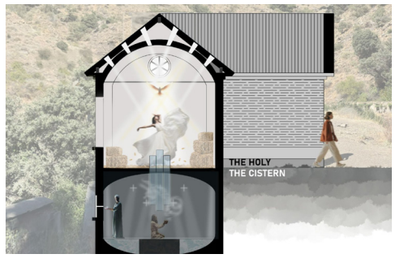
The restoration project of the church in La Cebadilla began with defining our goals and brainstorming ideas. We consulted with teachers for feedback and divided tasks based on each member's strengths: some focused on 3D models and plans, while others undertook drawings, research and the presentation. This collaborative process resulted in a well-rounded and thoughtful proposal. As a result, the project has produced a space for meditation comprising two areas, each offering distinct sensory experiences.

Figure 4
Explosive and connections.



The renovation of the old church involves interventions on both the main and ground floors. The main floor will remain structurally unchanged, becoming a bright, white space symbolising peace, featuring extruded polycarbonate crosses that bring light to the lower level. A path of esparto mats and straw guides visitors downward. The ground floor will be a dark, introspective space with water on the floor and light filtering through cross-shaped openings. Visitors move through uneven steps to a central platform for meditation, symbolising a journey from mental stress to inner calm.

Figure 5
Section and uses.

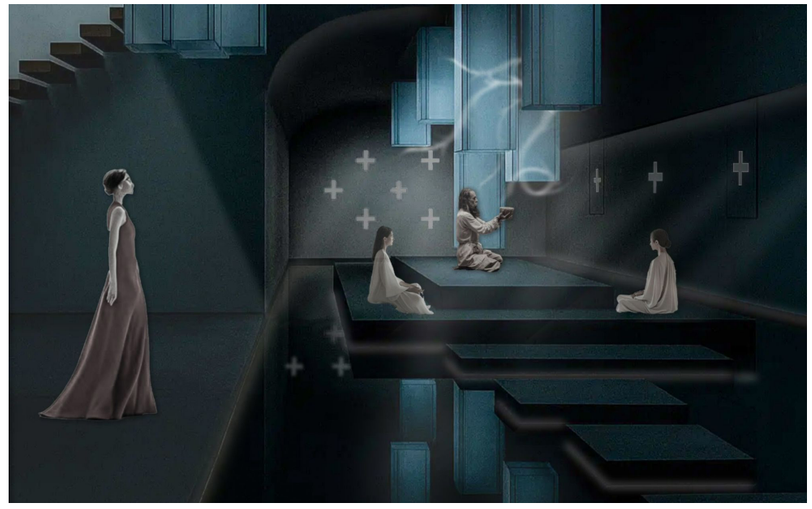


3. CONCLUSION

In conclusion, this restoration project for the church in La Cebadilla has been a proposal that combines respect for heritage with a contemporary vision. Through careful design, we have sought to transform the space into a place of introspection and spiritual connection, using symbolic elements such as light, water, the cross and traditional materials such as esparto grass.

Figure 6
Ground floor.

Figure 7
Basement.



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PROJECT 3

THE DIGITAL CHAPEL OF LA CEBADILLA

Aycan Dede, Gamze Eneş, Isabel María Garzón Vargas, Lucía Sancho Arrabal, Stefania Floraki.

Abstract. The project transforms the former church of the abandoned village of Cebadilla into a "Digital Chapel" where tradition and technology are critically intertwined. The intervention introduces artificial intelligence as a new spiritual and community mediator, replacing classical religious iconography with screens, projections and interactive installations. The route includes a digital prayer space, a lower floor devoted to dialogue with AI and an expanded area for collective experiences through holograms and multimedia rituals. The proposal explores how technology redefines faith, memory and social bonds, inspired by the dystopian scenarios of television series Black Mirror. The intended users—digital nomads, hikers and believers—reinterpret the site according to diverse needs for contemplation, work or communal activities. The choice of materials combines local stone, traditional textiles and digital media to balance identity, sustainability, and innovation. The chapel is conceived as a hybrid laboratory that explores the boundaries between spirituality and digital culture.

1. INTRODUCTION. OBJECTIVES AND HYPOTHESES

This project centres on Artificial Intelligence (AI) due to its deep impact on daily life, from work and education to art and communication. The objective is to integrate AI into a religious context, like a church, allows us to explore how technology can reshape traditional faith and community practices.

Popular AI forms include conversational models (ChatGPT, Bard), recognition systems (Siri, Face ID) and creative tools (DALL·E, Midjourney), which influence communication, art and daily routines.

Inspired by the television serie Black Mirror (Brooker, C., & Jones, A., 2011 – present), the project uses the church as a metaphor for shifting devotion from the divine to technology. Digital media—screens, holograms, interactive experiences—connect memory and contemporary digital culture. Conversational AI acts as a "new mediator," raising questions about AI's role in reshaping human relationships with faith, community and spirituality.

2. METHODOLOGY AND RESULTS

The Digital Chapel offers an immersive journey blending tradition and technology. Outside, LED screens introduce the church, regional history and cultural heritage, providing a 'digital welcome'. Inside, the Prayer Hall features a central digital screen replacing traditional sacred imagery, allowing visitors to engage in ritual through technology. The Lower Level fosters community and dialogue with AI through interactive screens, maintaining the church's role as a gathering space. An Enhanced Digital Space extends this with holograms, projection, and multimedia installations for shared digital rituals and global connectivity. Inspired by television serie Black Mirror, the project explores how technology and AI are reshaping devotion, ritual and human connection.

The Digital Chapel's materials blend tradition, technology and sustainability. The exterior uses slate, reflecting local Alpujarra architecture, alongside durable digital screens for information and heritage connection. Inside, traditional jarapa textiles provide warmth and cultural identity, while bright orange accents and screens symbolize technological innovation. Overall, the materials create a dialogue between past and present, combining functionality, durability, aesthetics and interactivity to support both ritual and digital experiences.

Figure 8
Cross section.

3. CONCLUSIONS

The Digital Chapel of Cebadilla combines tradition, technology and community, raising questions about the role of spirituality in the digital age. The integration of Artificial Intelligence into a religious context opens new perspectives but also presents challenges, including acceptance by the local community and the sustainability of its technological infrastructure.

In the future, the project could be strengthened through greater community involvement, educational and cultural activities and more sustainable energy solutions. In this way, it may evolve into a hybrid center of culture and technology that unites different users, offering an experience where past and future meet.

Figure 9
Storyboard.

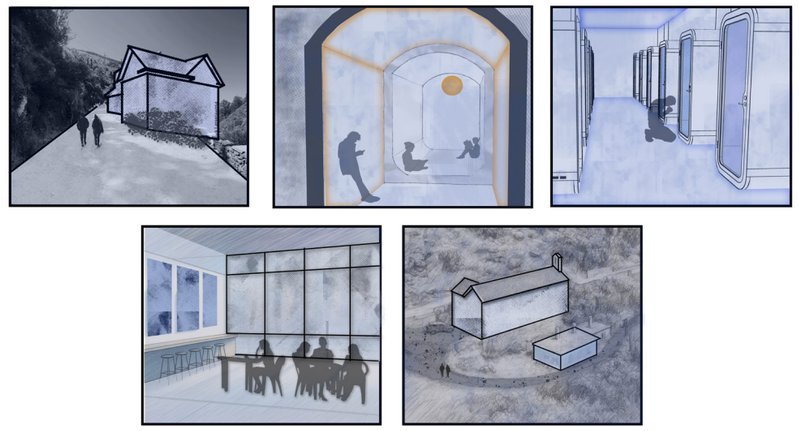
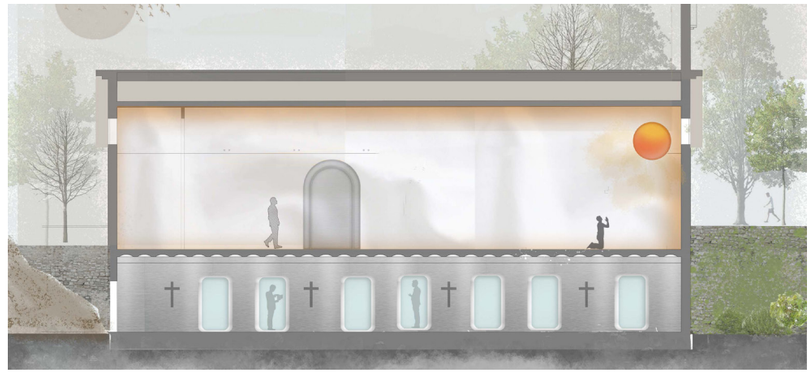


Figure 10
Longitudinal section.



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PROJECT 4

YOUR BODY IS YOUR TEMPLE

Ina Naydenova, Paola Barbero, Ellie Noitaki, Ayten Güner, Türkay Korkusuz.

Abstract. Our workshop project integrates well-being, physical spirituality, and community connection in perfect harmony, drawing inspiration from the Baths of Caracalla and the Basilica of Siponto, with their metal grid structures. It is aimed at both residents and potential visitors. It is a kind of sanctuary. where the body takes center stage, and nudity is not frowned upon. The project provides a protective and restorative space within the village, offering users a moment of pause and self-connection.

1. INTRODUCTION. OBJECTIVES AND HYPOTHESES

The objective of this project is to create a space for tranquillity and exploration of the body for both nomads and potential visitors.

The project is inspired by the work of Edoardo Tresoldi (2016), the Basilica of Siponto, which invites visitors to witness the resurrection of imposing archaeological remains and to walk through the main arches, columns and Romanesque ceiling that crowns the building and by the structural transparency of the Pompidou Center in Paris (Danies, 2020), where the construction itself becomes the protagonist. The work reflects both the monumentality of Roman architecture and the social and almost ritualistic nature of bathing.

Inside, we find equally powerful references: the Baths of Caracalla (Oetelaar, 2014), as a space for water and social gathering; the metaphor that "the human body is a temple," which guides the entire experience; and the Princess Diana Memorial Fountain, whose fluidity and circularity evoke water that unites, purifies and accompanies. In our case, the latter inspires us to see water not only as a physical element, but also as a symbol of continuity, life and emotional connection.

2. METHODOLOGY AND RESULTS

We decided to turn the church into a space for well-being, physical spirituality and community connection under the slogan "Your body is your temple," where the body would be the main focus and nudity would not be frowned upon.

Figure 11
Concept of the body temple.

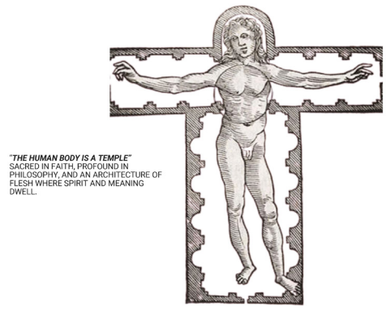
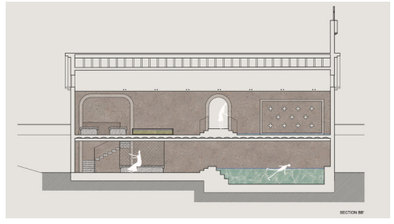


Figure 12
Cross-section.



The main idea is to play with water and its properties so that people who visit this place can feel free and experiment. The role of water in this proposal is to allow visitors to relax and disconnect from the outside world, creating an experience in which they can purify themselves and perceive their body as a true temple.

The building will retain its original façade, without major alterations, but will be surrounded by a metal mesh structure along its sides, inviting visitors to enter the interior or continue along the hiking trail to the abandoned village.

The church will be transformed into a sensory spa with a cold and hot water circuit with the following route:

- **Reception:** upon entering, a space to leave clothes and accessories that should remain dry.
- **Purification showers:** to cleanse the body before beginning the experience.
- **Exfoliation area:** where you can massage your own body or someone else's with natural exfoliants available in the space.
- **Pressure shower:** after descending some stairs, an intense rain will remove any remaining exfoliants and impurities.
- **Large hot water pool:** a place to completely relax.
- **Chill-out area:** a space to sunbathe, rest and escape from the world, accompanied by the sound of the Poqueira River.

Figure 13
Entrance perspective.

Figure 14
Ground floor.

3. CONCLUSIONS

The proposal to transform the abandoned church of La Cebadilla into a spa circuit is an original and appealing idea, capable of combining history, nature and well-being. The project could turn this forgotten space into a unique place for visitors, where water, relaxation, and the body become the real protagonists. At the same time, it recovers the connection with the Alpujarra tradition, deeply linked to its rivers and irrigation channels, thus reinforcing its cultural identity.

However, it also poses certain challenges. The church, as a sacred space, may arouse conflicting opinions when used for such a different purpose. In addition, the intervention must be respectful of the environment, ensuring responsible water consumption and using sustainable materials.

True success will depend on balancing respect for the past with the ability to offer something innovative, special and in harmony with the environment.

Figure 15
Basement.

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PROJECT 5

TOUCHING SOUNDS

Arvanti Smaragda, Ciray Deniz, El Ouafi Rania, Turker, Laura Le Peuch Gutierrez.

Abstract. Our workshop project reimagines the abandoned church of Cebadilla as a central point of encounter and decompression for digital nomads choosing to inhabit the village. The church, once a symbol of community gathering, is transformed into a living mechanism mediating the relationship between humans and nature. It offers a transition from screen-based tension to sensory reconnection through air, touch, smell and visual escapes. The project provides a space where digital nomads can offload daily pressures, find inner silence, and connect with the surrounding environment. It respects the church's architectural heritage and its patina of time—graffiti, decay and hay—as elements of continuity. The intervention fosters a dialogue between the past and the present, inviting newcomers to experience an initial tactile connection with the place.

1. INTRODUCTION. OBJECTIVES AND HYPOTHESES

The project assignment was to explore the church of Cebadilla as a means to attract not only digital nomads who will inhabit the village but also visitors passing through, as the site serves as a crossing point. The church is treated as a cultural heritage: a) through its architectural form, b) through its accumulated patina over time (decay, graffiti, hay).

Within this framework, our goal is to create a machine mediating the relationship of the digital nomad with the place—a mechanism of welcome and connection.

Objectives:

- To attract digital nomads and offer them a moment of decompression.
- To enable disconnection from screens and reconnection with nature.
- To use sensory channels (air, touch, smell, sight) as mediators of this relationship.
- To preserve and reinterpret the existing materiality and history of the church.
- To establish the church as a living landmark of the village's revival.

2. METHODOLOGY AND RESULTS

The church, beyond its architectural presence, carries symbolic meaning for the community that once inhabited the village. Our approach was to maintain its character, both as a monument and as a memory of a living past. By preserving existing materials and features such as graffiti, we created a framework for a new sensory experience that connects humans with nature. This methodology resonates with contemporary architectural practices that respect heritage while introducing new layers of meaning. Instead of imposing foreign elements, the project embraces the site's own qualities -sound, light, air and texture- transforming them into experiential triggers for the user.

On the first level, we created a "machine of first encounter" between the digital nomad and the place they have chosen to inhabit. It consists of metal vertical rods suspended from the ceiling, capable of moving either with the airflow entering the church or through the passage of people among them. This movement acts as a first caress, a tactile and sonic handshake with the site. The floor pattern includes openings that allow communication between the upper and lower level. Through these voids, the sound waves generated above flow downward with a softer intensity, producing a subtle sense of continuity and resonance. On the ground floor, certain wooden boxes are suspended from these voids. Visitors can pull them down and place them over their heads, isolating themselves in complete silence. By blocking both sound and vision, these boxes offer the experience of absolute emptiness for as long as the user needs. At the same time, we extended the space with a glass volume projecting towards the forest, offering a direct visual escape and enhancing the experience of calmness. Hay was introduced to provide

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olfactory stimulation, reinforcing the connection with the local environment, while also forming resting corners where one can pause and relax. The connection between the two levels is achieved through a spiral staircase that hovers in emptiness. By destroying the floor, we wanted to emphasise the feeling of void and suspension. The staircase is surrounded by thin, elongated chains, allowing both tactile engagement and the production of delicate sound when moved by air or human touch.

3. CONCLUSIONS

The project succeeds in transforming the abandoned church into a living machine that respects the site's history and materiality while opening it to new forms of inhabitation. Unlike other interventions that might disregard local context, this proposal cultivates continuity with the village's heritage. It is a mechanism of recognition and self-awareness: a visitor may stay or leave, but the experience of silence, air, smell and sound ensures a meaningful encounter. Ultimately, the church becomes not only a landmark but also a living threshold between technology-driven life and human reconnection with nature.

Figure 16
Cross section.

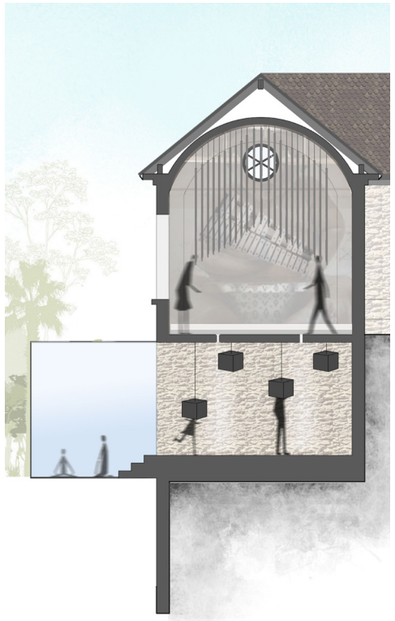


Figure 17
Explosive perspective.

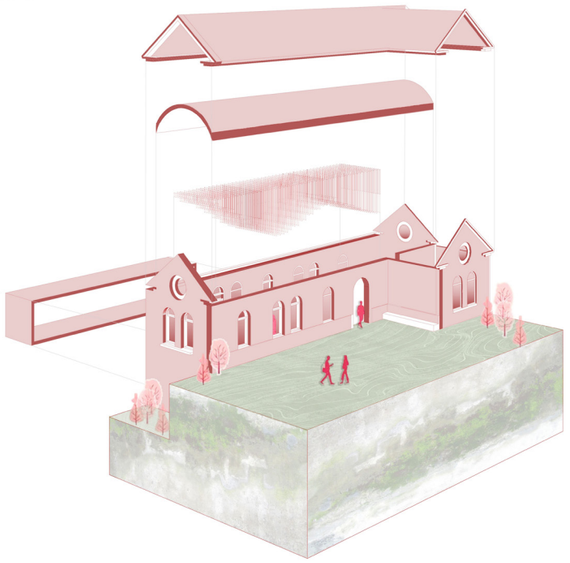
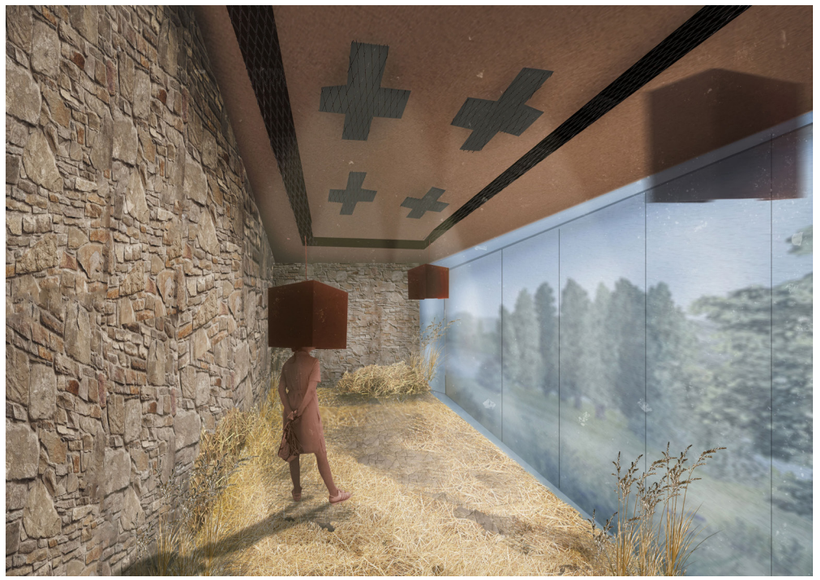


Figure 18
Interior ground floor.

Figure 19
Interior basement.



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Product Design

BIOMIMICRY

DESIGN OF WATER COLLECTION STRUCTURES INSPIRED BY SUCCULENTS.

Samuel Funes Garrido[1*], Olga Cáceres Jijishvili [2*]

Abstract. Biomimetics has now become a key tool for addressing challenges such as climate change adaptation and biodiversity loss. This project explores the application of biomimicry in regenerative urban design. The main objective is to analyze whether it is possible to create a biomimetic-inspired surface to improve water harvesting from the environment without chemical or molecular interventions. Following the Biomimetic Design Spiral methodology, the water strategies of succulents and their structural characteristics were studied. Based on these principles, 3D prototypes were designed and evaluated in a controlled experiment. The results show that the biomimetic design collected less water than the neutral model, with a difference of 27%. This unexpected finding suggests the need to explore new methodologies to evaluate water harvesting and retention. Despite the variation in results, the research opens new possibilities in the study of succulent-inspired design and its application in water harvesting surfaces.

Keywords: Biomimetic design, biomimética, recurso hídrico, captación de humedad, water saving, succulent plants.

Resumen. En la actualidad, la biomimética se ha convertido en una herramienta clave para abordar desafíos como la adaptación al cambio climático y la pérdida de biodiversidad. Este proyecto explora la aplicación de la biomimética en el diseño urbano regenerativo. El objetivo principal es analizar si es posible crear una superficie inspirada en la biomimética para mejorar la captación de agua del ambiente sin intervenciones químicas o moleculares. Siguiendo la metodología de la Espiral de Diseño Biomimético, se estudiaron las estrategias hídricas de las suculentas y sus características estructurales. A partir de estos principios, se diseñaron y evaluaron prototipos 3D en un experimento controlado. Los resultados muestran que el diseño biomimético recolectó menos agua que el modelo neutro, con una diferencia del 27 %. Este hallazgo inesperado sugiere la necesidad de explorar nuevas metodologías para evaluar la captación y retención de agua. A pesar de la variación en los resultados, la investigación abre nuevas posibilidades en el estudio del diseño inspirado en suculentas y su aplicación en superficies de captación hídrica.

Palabras clave: Diseño biomimético, biomimética, recurso hídrico, captación de humedad, ahorro de agua, plantas suculentas.

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1. INTRODUCTION. OBJECTIVES AND HYPOTHESES

This study stems from the article *Product Design and Biomimetics: Research and Development of a Water Resource in Harmony with Architecture* (Cáceres Jijishvili, O., 2023), which explores the application of biomimetics in regenerative urban design.

The present research ranges from the study of these mechanisms to the physical development of products suitable for experimental testing, following the Biomimicry Design Spiral methodology (*Biomimicry Toolbox*, 2019).

Through this approach, the aim is to provide innovative solutions in biomimicry that optimise the use of natural resources.

1.1 JUSTIFICATION

This project seeks to expand knowledge on the integration of design processes inspired by nature. This approach strengthens the connection between theoretical research and its practical application in products or services.

The theme is based on the need to **develop sustainable methods for water collection and management**, which would contribute to preserving water resources and mitigating the effects of climate change in specific communities and urban environments.

1.2 OBJECTIVES

1. **Investigate natural organisms and their biological strategies for water collection, focusing on their structural and formal characteristics.**
   - 1.1 Gather information on organisms that perform water collection functions.
   - 1.2 Identify characteristics related to the structure, shape, surface, and spatial composition of organisms.
2. **Speculate on the applications of organism research to design a water collection element.**
   - 2.1 Conduct a formal analysis of biological references.
   - 2.2 Generate mock-ups and 3D models.
2. **Develop a prototype to test and evaluate results.**
   - 3.1 Manufacture 3D prototypes using 3D printing.
   - 3.3 Develop the experiment to validate the design.

1.3 HYPHOTESES

It is possible to design a surface formally created using biomimicry to improve water collection from the environment, without the need for molecular or chemical intervention.

By researching the formal elements and structural details of organisms, water collection can be improved. With the results obtained, more specific applications can be explored in the future.

1.4 STATE OF PLAY

In the project published in *Nature Communications* entitled 'Integrated Fog Harvesting System Inspired by Cacti' (Ju et al., 2012), researchers investigated how cacti capture and transport water from fog using specialised structures. Based on these findings, they developed artificial systems that improve water collection efficiency in arid environments.

On the other hand, the project 'Directional Water Collection in Wet Spider Silk' (Zheng et al., 2010) analysed the mechanisms of water collection and transport in spider silk. This study reveals how the asymmetrical structure and moisture gradient properties of silk allow for the directional collection of water droplets. In this case, solutions have been developed to improve water collection efficiency in high humidity conditions.

Research such as that mentioned above demonstrates the capacity of biomimetics to generate efficient and specific solutions in the field of water use, both in high humidity conditions and in arid environments.

Two areas of research have been identified in relation to water use, depending on the focus of analysis:

1. **Those that use biomimetics as a starting point.**

Within the first strand, we can find studies that investigate the Namib desert beetle and its biological strategy (Park et al, 2013), applying it to the meshes used in disadvantaged communities to obtain drinking water. (Out Of Thick Air, 2011). On the other hand, researchers at the University of Waterloo developed systems that capture water from the air, inspired by both Namib desert beetles and spider webs, using biomimetic surfaces such as sponges or membranes (Researcher Finds Inspiration From Spider Webs And Beetles To Harvest, 2023). With regard to the study of filtering membranes, known as aquaporins, those studied by Aquaporin Inside (A Selective Membrane Inspired by Aquaporin Channels Filters and Purifies Water — Innovation — AskNature, n.d.) are particularly noteworthy.

Another related study is that carried out by Cáceres Jijishvili (2023). This author suggests a type of building designed with regenerative principles and systems for collecting, purifying and reusing rainwater, integrating biomimetic techniques into sustainable architecture.

From this first approach, we extract the possibility of using structural and surface elements of organisms, applying them both on a membrane, surface or product scale, and at an architectural level.

2. **Those that focus on the physical-chemical properties of the environment and materials.**

In this second strand, we find studies such as the 2011 paper entitled 'Atmospheric humidity as an optional source of water for domestic use', which investigates water collection at the macroscopic level through the condensation of atmospheric vapour, and addresses the need for drinking water in cold climates by incorporating the use of an artificial hygrometer to condense atmospheric vapour.

On the other hand, 'Chitosan-Based Composite Materials for Adsorption of Cu(II) and As(V) from Aqueous Solutions: Synthesis and Adsorption Studies' (Park et al., 2013) investigates the ability of certain polymers, such as chitosan-based compounds, to absorb and release water in low humidity conditions. This makes it possible to regulate humidity in environments such as food packaging, providing an effective solution for maintaining the quality of stored products. In this field, the development of new polymer materials, such as the polymer-MOF (PC-MOF) mixed matrix (Yilmaz et al., 2020), is noteworthy.

2. METHODOLOGY

The biomimicry methodological process is structured into several key phases, which guide us from identifying a problem to implementing solutions inspired by nature. According to the Biomimicry 3.8 tool (2019), the biomimicry process is organised into the following stages: Define, biologise, discover, abstract, emulate and evaluate.

For the development of this research, this approach has been followed, organising the project according to these phases and with the active participation of the two team members in all stages:

- Phase 1: Research (October - November 2023)
- Phase 2: Experimentation and Evaluation (November 2023 - May 2024)
- Phase 3: Conclusions and Results (May–June 2024)

Phase 1: Research

- **DEFINE PHASE:** Definition of the objectives and functions of the water collection device.
- **BIOLOGISE PHASE:** Biologisation of the identified functions and proposal of a biological context to serve as a reference for the design.
- **DISCOVERY PHASE:** Research and discovery of biological strategies that can be applied to the design, identifying organisms that have interesting capabilities in terms of water collection.
- **ABSTRACTION PHASE:** Abstraction of biological strategies to the design, creating models and 3D representations that emulate these strategies.

Phase 2: Experimentation and Evaluation

- **EMULATION PHASE:** Application of the knowledge acquired in the abstraction phase to the design. Through the prototyping of the chosen designs.
- **EVALUATION PHASE:** Exploration and testing of biomimetic ideas. In this phase, the results obtained are analysed, the data is recorded and possible improvements to the design are proposed.

Phase 3: Conclusions

2.1 PHASE 1: RESEARCH

2.1.1 DEFINE

How could we design a device that efficiently captures water from the air without resorting to chemicals or molecular interventions using a specific object?

After defining the design challenge, a study of natural organisms is carried out; in this case, succulents are the focus of the research. They could answer the question posed. The results of this analysis are presented in the following table:

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Figure 1
Summary of biological strategies study.

Leaves of certain bromeliads (Bromeliaceae family) The leaves of some bromeliads are convex in shape with upward-curving edges, allowing them to collect and channel water into a central reservoir. Trichomes, which are small protuberances with tiny hairs, cover the leaves and, together with hydrophobic wax crystals, direct water into the reservoir without it adhering to the leaf surface. This mechanism allows the plant to accumulate nutrient-rich water for long-term use (Leaves Capture Water — Biological Strategy — AskNature, n.d.).	
Rosette succulent leaves The smooth, waxy leaves of rosette succulents effectively capture water from fog and light rain. These leaves are arranged in layers that act like a funnel, directing water towards the base of the plant for storage. In higher altitude areas, succulents have developed narrow, flexible leaves that optimise water collection from fog, improving their ability to capture moisture (Leaves Capture Water From Fog — Biological Strategy — AskNature, n.d.).	

Note. Own work. (2025). Illustrations of different biological references [Illustration]. ESADA.

2.1.2 BIOLOGISE

In this phase, the context and key functions that the design must address are analysed. Questions are raised about how nature solves these problems, in order to better understand biological solutions and transfer them to the project. How does nature store liquids in areas with low rainfall? How does nature capture, absorb and filter liquids? How does nature repel liquids? This section is completed using the 'Function Taxonomy' resource, which identifies biological functions and strategies related to water management inspired by succulents:

Figure 2
Study of the taxonomy of functions.

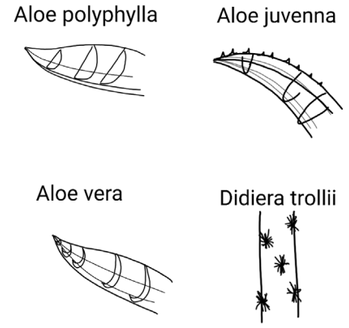
	Capture, absorb and filter liquids	Store liquids	Repel liquids
Functions	- Capture moisture from the air. - Absorb water into storage fabrics. - Filter particles from the collected water.	- Store water in specialised tissues. - Maintain water retention during dry periods.	- Prevent water loss through evaporation. - Repel excess water to prevent oversaturation.
Biological strategies	- Succulents capture and absorb moisture from fog and dew through specialised leaf surfaces. - They have waxy coatings and trichomes that help collect and direct water efficiently.	- Store water in thick, fleshy leaves or stems. - Swell when hydrated and contract when water is scarce, ensuring water availability during droughts.	- Some succulents have a powdery surface that repels water, preventing excessive moisture build-up.

Note. Own work. (2024). Table analysing biological functions and strategies [Table]. ESADA.

2.1.3 DISCOVERY

Once the design of the succulents had been analysed and confirmed as a good model for the project, research was carried out to investigate and explore in depth how the different families of these plants work, using formal analysis. As a conclusion to this analysis, it was decided to interpret the structural and surface forms of the succulents shown in Figure 3.

Figure 3
Elements selected as inspiration for the formal study.



Note. Own work. (2024). Selected illustrative examples [Illustration]. ESADA.

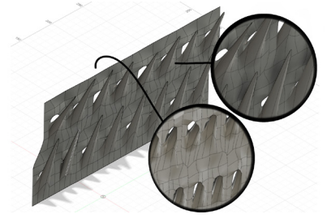
In addition to these physical characteristics, possible interventions such as the use of hydrophobic elements on the surface are being considered.

2.1.4 ABSTRACTION

In this section, biological strategies are interpreted and abstracted into design.

Next, the first 3D sketch is presented, which proposes the most suitable shape for the product. In the model in Figure 8, the front layer mimics the collecting leaves, while the internal rear hole channels the collected water.

Figure 4
Primeros bocetos del estudio de la forma.



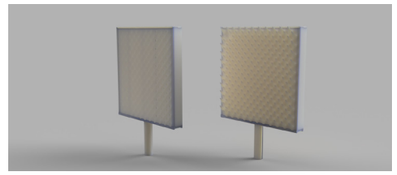
Note. Own work. (2024). Modelling carried out with Autodesk Fusion 360º, with educational licence [3D model]. ESADA.

2.2 PHASE 2: EXPERIMENTATION AND EVALUATION

2.2.1 EMULATION

In this phase, the 3D printing models and prototypes created for evaluation are presented.

Figure 5
3D visualisation of the final model.

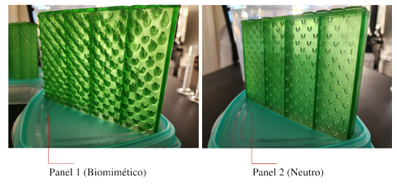


Note. Own work. (2024). Rendering created with Autodesk Fusion 360º, with educational licence [Render]. ESADA.

2.2.2 TOOLS FOR MANUFACTURING THE TEST MODEL

For a comparative analysis of the proposed design, two collection plates were created with the same general shape and the same number of channelling holes. The difference between the plates lay in the biomimetic design of the collection and channelling surfaces, which was only present in plate 1, as shown in Figure 6.

Figure 6
Panels to be evaluated.



Note. Own work. (2024). SLA (Stereolithography Apparatus) 3D printing prototypes [Prototype]. ESADA.

Description of the experiment:
A controlled environment was created, where the panels were placed in conditions of 99% humidity for 4 hours.

2.2.3 EVALUATION

To evaluate the collection capacity, the panels were placed on two sealed containers. Once the exposure time had elapsed, the lids were removed and the contents were poured into two separate test tubes. See Figure 7.

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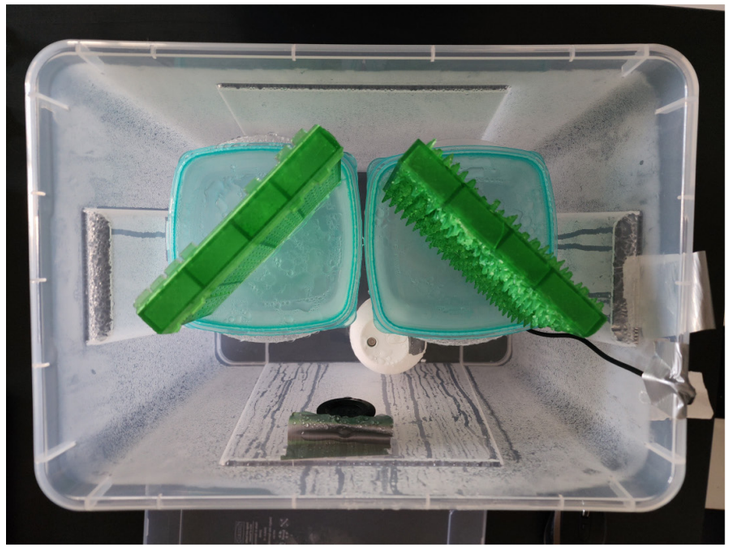
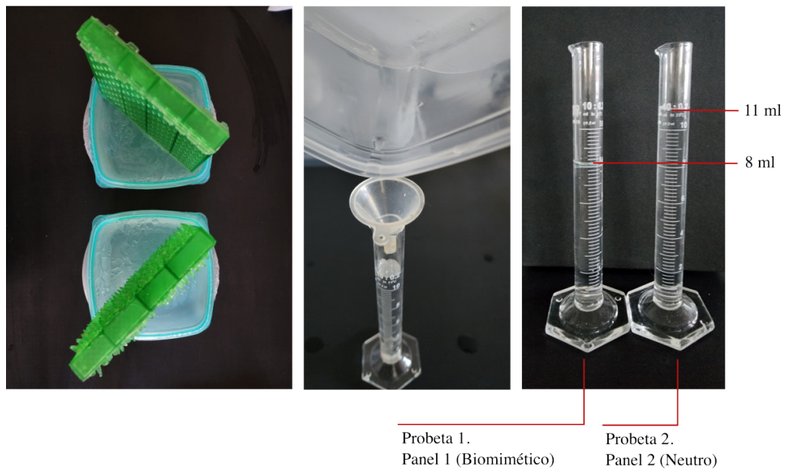
Figure 7
Recording of the experimentation and measurement process.





Note. Own work. (2024). Infographic of tools for the experiment [Infographic]. ESADA.

The data collected on the behaviour of both plates is shown below.

Figure 8
Assessment of water uptake from plate 1.

Panel 1 (Biomimetic Design)			
Time	**Temperature**	**Humidity**	**Collected water**
4 hours	16.5 ºC	99%	8 ml

Note. Own work. (2024). Data record for Experiment 1 of Prototype 1 (Biomimetic Design) [Table]. ESADA.

Figure 9
Assessment of water uptake from plate 2.

Panel 2 (Neutral Design)			
Time	**Temperature**	**Humidity**	**Collected water**
4 hours	16.5 ºC	99%	11 ml

Note. Own work. (2024). Data record for Experiment 1 of Prototype 2 (Neutral Design) [Table]. ESADA.

3. RESULTS

The experiment showed negative results in relation to the hypothesis, as the panel with a succulent-inspired surface design (Panel 1) collected less water than Panel 2 (neutral design). Panel 2 collected 27% more water than the biomimetic panel.

Does the experiment provide information on the design's collection and harvesting capacity?

Although the experiment addresses both collection and harvesting, the data obtained only reflect the capacity to collect and channel water into the container. It is possible that Panel 1 captured water in the protrusions on the surface, but did not channel it completely into the container. Therefore, the results are only objective in terms of water collection and channelling, but do not allow for an evaluation of the total collection capacity.

Are there any biases in the process that may have influenced the results?

It should be noted that the finish of the prototype may have partly influenced the results. It is possible that the holes in Panel 1 are not completely perforated or do not have the same level of perforation as in Panel 2, due to the manufacturing method used. However, the difference in the results is so considerable that it is unlikely that this bias could have altered the results.

4. CONCLUSIONS

Most of the objectives set have been achieved, both in terms of preliminary research and biological references, and in the process of experimentation, emulation and evaluation of biomimetic design proposals. A water collection model inspired by succulents has been prototyped, and it has been demonstrated that the

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difference in surface shape directly affects the behaviour of water particles on it.

However, with regard to the evaluation of water collection, we must conclude that the objective has not been achieved. Biases have been identified in the type of experiment that affect the interpretation of the results.

4.1 PERSONAL ASSESSMENT

This project has provided insight into the difficulties and limitations of research in the field of design. It has helped to better understand how to apply experimental design methodologies to complement traditional scientific research. It has also been a valuable experience in identifying possible biases and subjectivities inherent in the design research process.

Furthermore, the research has reinforced interest in biomimetic methodologies, which represent a meeting point between the scientific field and design thinking. This allows for the generation of applied innovation, with a market-oriented vision focused on society and users.

We believe that this research can be just the starting point for further exploration into the design of biomimetic surfaces with applications in water resource management.

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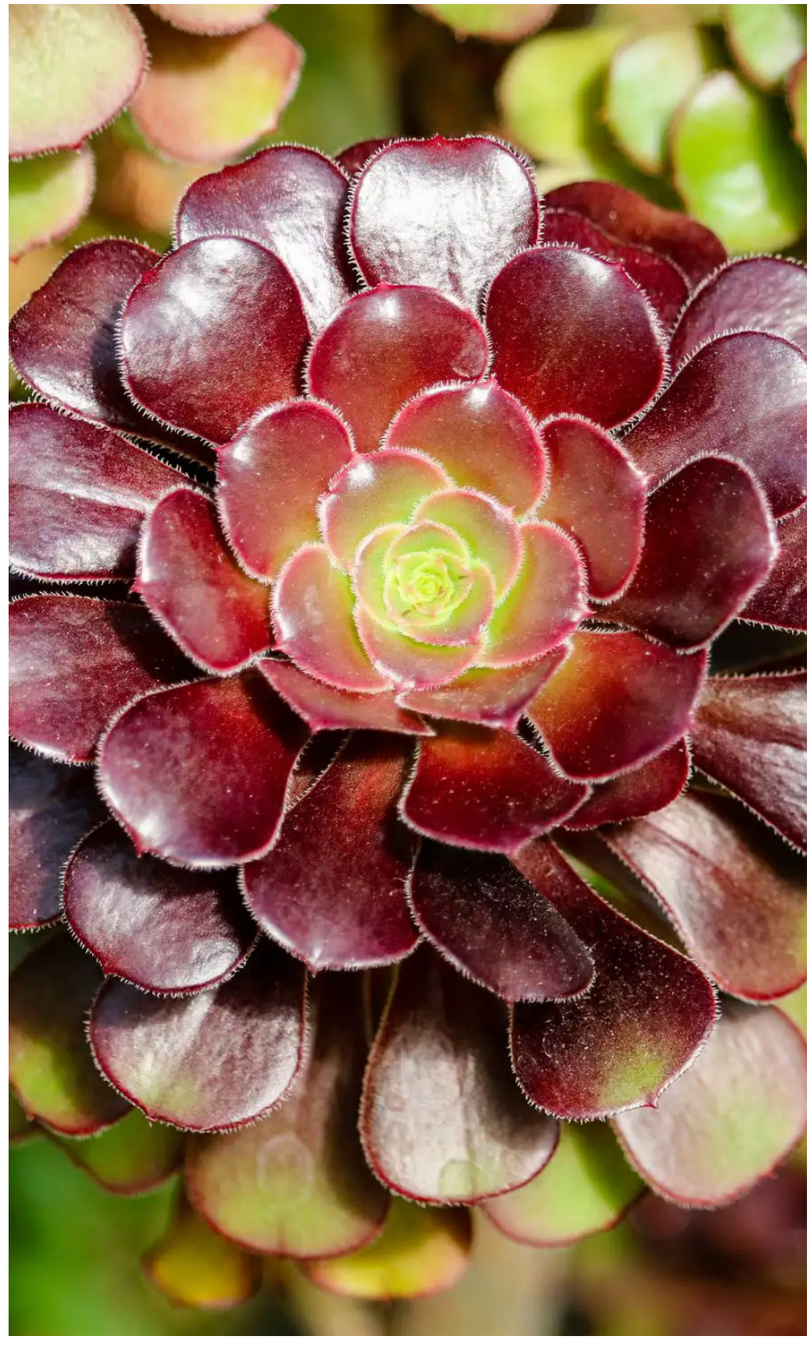

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Graphic Design

GRAPHIC DESIGN AND PACKAGING

PROPOSAL FOR THE CODING OF PHARMACEUTICAL PACKAGING

Ángela Aguilera Baena[*]

Abstract. This project aims to design a proposal for graphic coding applied to pharmaceutical pack aging, with the purpose of creating a system that can be implemented by pharmaceutical production companies and that establishes guidelines to make packaging more intuitive, legible, accessible, and adapted to the needs of the end users older adults. It is a project that explores design in the pharmaceutical industry, gerontodesign, and the needs of this population group. This undergraduate thesis seeks to provide a solution to a current social issue: the difficulties faced by older adults in identifying medications due to poorly accessible packaging design. Through research and graphic design, a labeling proposal will be developed to facilitate this process. In the first part of the project, the objectives are defined, and the topic is contextualized. Here, the need for a project of these characteristics and the role of graphic design within it are justified. The target audience is studied through gerontodesign, focusing on their needs and the most common conditions associated with aging. In addition, research is conducted on the current regulations published in the Official State Gazette (BOE). The development phase then follows, where the proposed code is detailed, and a prototype is generated as a model. The evolution of the project is reflected in the graphic conclusions drawn from the research and their application to the redesign of the packaging of an existing pharmaceutical brand. Prototypes are created to present the final results in a practical and visual way.

Keywords: Graphic design; pharmaceutical packaging; visual coding; gerontodesign regulation; accessibility; user-centered design.

Resumen. Este trabajo tiene como objetivo diseñar una propuesta de codificación gráfica aplicada al packaging farmacéutico, con el fin de crear un sistema que pueda ser implementado por las compañías farmacéuticas y que establezca pautas para que el packaging sea más intuitivo, legible, accesible y adaptado a las necesidades de las personas mayores usuarias. Se trata de un proyecto que explora el diseño en la industria farmacéutica, el gerontodiseño y las necesidades de este grupo poblacional. Esta tesis de grado busca dar solución a un problema social actual: las dificultades que enfrentan las personas mayores para identificar medicamentos debido a la dificultad de acceso al diseño de packaging. A través de la investigación y el diseño gráfico, se desarrollará una propuesta de etiquetado para facilitar este proceso. En la primera parte del proyecto, se definen los objetivos y se contextualiza el tema. Aquí se justifica la necesidad de un proyecto de estas características y el papel del diseño gráfico en él. Se estudia al público objetivo a través del gerontodiseño, centrándose en sus necesidades y las afecciones más comunes asociadas al envejecimiento. Además, se investiga la normativa vigente publicada en el Boletín Oficial del Estado (BOE). A continuación, sigue la fase de desarrollo, donde se detalla el código propuesto y se genera un prototipo como modelo. La evolución del proyecto se refleja en las conclusiones gráficas extraídas de la investigación y su aplicación al rediseño del envase de una marca farmacéutica existente. Se crean prototipos para presentar los resultados finales de forma práctica y visual.

Palabras clave: Diseño gráfico; packaging farmacéutico; codificación visual; regulación gerontodiseño; accesibilidad; diseño centrado en el usuario.

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1. INTRODUCTION. OBJECTIVES

Graphic design plays a fundamental role when it comes to communicating specific information, especially in sectors where clear and quick understanding is essential. One of these sectors is the pharmaceutical industry, where packaging, in addition to protecting and transporting the medicine, acts as a medium to convey the necessary information to patients.

The pharmaceutical industry, due to its direct connection with public health, is one of the most demanding industries in terms of the quality of its production, packaging, transportation, and distribution processes of the final product. However, the current design of these packages presents a series of drawbacks that directly affect usability, particularly for older adults. This segment of society is the most affected by these issues, since aging often involves a decline in basic abilities such as vision, information comprehension, or memory. The legal framework that regulates the content and requirements of packaging material is established in Royal Decree 1345/2007, of October 11, which regulates the authorization procedure, registration, and conditions of dispensing of industrially manufactured medicinal products for human use.

One of the fundamental aspects of any medication is its identification and information, which must accompany it as a guarantee of its proper use, promoting safety and efficacy in its application (BOE, 2007). The information of a medicine is made up of the following elements: the technical sheet or summary of product characteristics and the packaging material. According to the consulted source, this constitutes one of the essential elements of drug information, as it must guarantee the unambiguous identification of the medicine as well as provide the necessary information for its correct administration and use.

Figure 1
Summary table of mandatory content required on packaging.

Packaging Content		Outer Packaging	Primary Packaging		
			Other than ampoules and blisters	Small boxes	Blisters and strips
1	Name of the medicinal product	YES	YES	YES	YES
2	Name of the medicinal product (Braille)	YES	Absence E.E.	Absence E.E.	Absence E.E.
3	Active substance composition	YES	YES	NO	NO
4	Excipients	YES	YES	NO	NO
5	Pharmaceutical form and content	YES	YES	Content only	NO
6	Method and route of administration	YES	YES	YES	NO
7	Warning: “Keep out of the reach of children”	YES	YES	NO	NO
8	Special warnings	YES	YES	YES	YES
9	Expiry date (month and year)	YES	YES	YES	YES
10	Special precautions for storage	YES	YES	YES	YES
11	Special precautions for disposal	YES	YES	NO	NO
12	Marketing authorisation holder	Name and adress and, where applicable, the name of the local representative	Name and adress and, where applicable, the name of the local representative	Only name	Only name
13	National code	YES	YES	NO	NO
14	Batch number	YES	YES	YES	YES
15	Indication of use (non-prescription medicines)	YES	YES	NO	NO
16	Prescription and dispensing conditions	YES	NO	NO	NO
17	Blank box for posology	YES	NO	NO	NO
18	Transport of radionuclides	YES	YES	NO	NO
19	Technical specifications for medical gases	YES	YES	NO	NO
20	Symbols, abbreviations, and legends	YES	Only symbols	Medicinal products containing radionuclides: international symbol of radioactivity	NO
21	Tamper-proof coupon - National Health System	YES	NO	NO	NO

Note. BOE, 2007.

Aging is a biological process that leads to the deterioration of cognitive and sensory abilities, making it difficult to understand and follow certain processes in daily life. Older adults currently make up 20% of the Spanish population, and predictions indicate that by 2033 this figure will exceed 25% (INE, 2023). They are also the population group most affected in the process of taking medication. As the cited source indicates, polypharmacy is frequent in this sector, which makes it necessary to develop a visual coding system to facilitate this process. Gerontodesign, as part of universal design, focuses on addressing all the needs of older adults. Its purpose is to transform existing products and designs to provide a better quality of life, as well as to create new ones that adapt to their needs (Rivero, M. 2017).

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Figure 2
Most common pathologies and medications in older adults.

Disease	Affects	Medication (Family and compound)
COPD, Enphysema, Bronchitis, Pneumonia	Chronic obstructive pulmonary diseases, lung impairment, difficulty breathing.	Bronchodilators (salbutamol – Ventolin) NSAIDs (paracetamol, ibuprofen) Antibiotics (amoxicillin, azithromycin)
Heart failure	Heart diseases, inability of the heart to pump blood properly.	Positive inotropes (digoxin) Sympathomimetics (dopamine) Vasodilators (nitroglycerin) Diuretics (chlorothiazides) ACE inhibitors (captopril) ARBs (valsartan, losartan)
Arterial hypertension (high blood pressure)	Artery disease, blood pressure in vessels too high.	ACE inhibitors (captopril) ARBs (valsartan, losartan) Aldosterone antagonists (eplerenone, finerenone) Beta-blockers (propranolol, atenolol)
Arthritis	Inflammation of the joints, leading to loss of mobility and possible deformity.	NSAIDs (paracetamol, ibuprofen) Glucocorticoids (cortisone) Monoclonal antibodies (rituximab)
Osteoarthritis	Unlike arthritis, which is more severe and autoimmune, osteoarthritis is caused by joint wear and tear.	NSAIDs (paracetamol, ibuprofen) Glucocorticoids (cortisone)
CVD - Type 2 Diabetes	Affects how the body uses sugar (glucose) for energy, preventing proper insulin use.	Insulin Insulin secretagogues (chlorpropamide, semaglutide) Insulin resistance inhibitors (metformin)
CVD - Obesity, cholesterol	Cardiovascular diseases.	Atorvastatin (Lipitor) Fluvastatin (Lescol XL)
Cystitis	Acute inflammation of the urinary bladder, with or without infection.	Antibiotics (fosfomycin, trimethoprim)
Depression	A psychiatric and psychological diagnosis describing a mood disorder.	Tricyclic antidepressants (imipramine, amitriptyline)
Dementia, Alzheimer's disease	Dementia refers to mental health decline in general, while Alzheimer's disease is a specific brain disorder.	IAcetylcholinesterase inhibitors (rivastigmine)
Parkinson's disease	A brain disorder causing movement, mental, sleep, pain and other health problems.	Dopaminergic drugs (levodopa, carbidopa, amantadine)

Note. By Gómez I., 2018

In graphic design, psychology plays a fundamental role since the goal is to create impact, communicate a message, and ensure it is correctly perceived by the user. The Gestalt laws are a set of fundamental principles in the psychology of perception that explain how the human brain organizes and interprets visual information (Reyes, M., 2016). Pharmaceutical packaging must be highly regulated to ensure patient safety and guarantee the effectiveness of the medicine, among many other factors. When creating a code or regulation for pharmaceutical packaging, the first and most important aspect to consider is the legibility and comprehension of the information. Furthermore, color can act as a powerful psychological tool, influencing perception, memory, and even user behavior. Color goes beyond aesthetics; it helps convey meaning (Brandsymbol, 2025). The well-known Borggrafe table is a chromatic classification system based on the legibility of color in typography. It is founded on the relationship between tones, shades, and brightness to generate visually balanced and functional combinations (Mancini, L., 2024), and it is essential to consider it when developing an effective code. On the other hand, icons are also among the most relevant aspects when creating an effective code. They are especially effective when placed at points where the user must make quick decisions or when it is necessary to reinforce the understanding of specific content (Harley, A., 2024).

Figure 3
Karl Borggrafe's color figure.

Tabela de Karl Borggrafe
(in Favre & November, 1979:48)

Note. 2019.

Figure 4
Use of the color in industry.

Color in industry		
1	Blue	Trust, calm, clinical clarity
2	Green	Healing, cleansing, nature
3	Red	Blood, urgency, strength, warning
4	Yellow	Optimism, movement, energy
5	Purple	Innovation, rarity, neurology
6	Gray/ Black	Sophistication, neutrality, authority

Note. By Reich S., 2013

1.1 OBJECTIVES

General objective:

- Create a system that can be implemented by pharmaceutical laboratories to establish guidelines that make packaging more intuitive, legible, and accessible.

Secondary objectives:

- Research the current regulations and review the existing issues to analyze areas for improvement.
- Design packaging that solves the stated problem by applying the proposed system.
- Develop an appropriate color palette to help easily differentiate treatment lines.
- Create an icon system that reinforces user understanding. - Select the most legible and suitable typefaces.
- Redesign inadequate packaging from current pharmaceutical brands.

2. METHODOLOGY

First, an in-depth investigation will be carried out on the essential aspects to be considered in this project. Current regulations and legislation in Spain will be analyzed, consulting the most recent and relevant articles published in the Official State Gazette (BOE).

Subsequently, the target audience will be studied, focusing on older adults, their main characteristics as a social group, and the

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threats and weaknesses they face in their daily activities. This analysis will be based on the study of gerontodesign by Maya Rivero (2015) , as well as on the principles of accessible and functional design for this group. In addition, the main pathologies and diseases affecting older people will be researched, using data from the National Institute of Statistics and related official studies.

In parallel, an analysis of the discipline of packaging will be conducted through specialized sources such as The package design book (Wiedemann, 2017). Furthermore, colors, sizes, hierarchies, and other essential graphic design elements will be studied through books such as Diseño Gráfico. Nuevos fundamentos(Lupton, J. & Cole, P., 2016) and Diseñar con y sin retícula (Gálvez, F., 2004). After this, prototypes will be developed with the aim of evaluating key aspects such as legibility, contrast, and information hierarchy. Based on this evaluation, an existing pharmaceutical packaging design will be redesigned, applying the proposed graphic system while complying with the requirements established in the regulations.

2.1 CODING SYSTEM

After studying and making the appropriate decisions regarding each of the essential elements in pack aging design, a table is created that compiles all the information and will serve as a code to be applied to the design.

Figure 5
Code table.

Final Coding Proposal		
Aspects	**Decisions**	**Improvements**
Tipography	**Sizes.** Minimum of 9pt; maximum flexible depending on design and available space. **Typeface.** Sans-serif, geometric/ humanist, x-height ≥ 1.4 mm, family with a variety of weights, neutral design. Ensures legibility and comprehension, reduces visual fatigue, especially for older adults. **A brief explanation** of what the medication is and what it is intended for allows users to understand its function and purpose. This information is essential to ensure proper administration, minimize the risk of confusion, and promote responsible and safe use.	Ensures legibility and comprehension, reduces visual fatigue, especially for older adults.
Color	**Associated Color Palettes.** Red – Circulatory system Blue – Respiratory system Dark Blue – Mental disorders Yellow/Orange – Musculoskeletal system Violet – Endocrine system Green – Urinary system	Generates an immediate emotional response, facilitates distinction between treatment lines, conveys meaning before reading the text.
Iconography	**Icon System.** Representing each of the pathology groups. Placed at points of quick decision-making. Outlined, simplified without excessive detail or abstraction. Heart – Circulatory system Lungs – Respiratory system Brain – Mental disorders Bone – Musculoskeletal system Thyroid gland – Endocrine system Kidneys – Urinary system **Pharmicons.** Integration of a standardized pictogram project designed to convey dosage, instructions and warnings.	Improves speed of comprehension and visual clarity; facilitates interpretation of instructions and prevents confusion. Strengthens universal understanding of information, minimizes errors and enhances safety.

3. RESULTS

The mock-ups presented below constitute the practical proposal of the coding system developed in this project. They coherently and systematically apply the entire proposed coding framework, adapting it to different pharmaceutical packaging formats to demonstrate its versatility and real-world applicability. These proposals aim to establish a reference model that facilitates the implementation of the coding system within the pharmaceutical sector.

The mock-ups should not be understood as fixed designs, but rather as a flexible guide or matrix that can be adapted by different laboratories according to their specific needs and brand characteristics, always respecting the established foundations. The proposed graphics combine functionality, accessibility, and design, contributing to an improved end-user experience and promoting clearer communication in pharmaceutical packaging.

Figure 6
Results. General models.

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Redesign to demonstrate the effectiveness and applicability of the coding system, Aristo Pharmaceuticals has been selected as a case study. This choice is not arbitrary, as the current packaging of Aristo Pharma Iberia presents several shortcomings that hinder the correct identification and use of medications. Among the main issues identified are the disorganized arrangement of information, the use of fonts with small sizes, and the application of overly similar colors for completely different drugs, which can cause confusion for the user. Furthermore, the laboratory has been involved in controversy due to the design of its packaging, precisely because of the lack of clarity and accessibility. These errors highlight the need for a review of its system and a redesign of its packaging. The redesign proposal applies the guidelines established in the developed coding system. The result is a packaging solution that is much clearer, more accessible, and more modern, organizing information hierarchically, improving legibility, and using a coherent and distinctive color system to prevent errors in identification. Thus, the redesign not only provides a more suitable aesthetic solution but also optimizes the user experience and ensures effective and safe visual communication within the pharmaceutical field.

3.1 CURRENT DESIGN AND REDESIGN MOCKUP

Figure 7
Original packaging of Aristo Pioglitazone, Type 2 Diabetes treatment. Endocrine system.

Figure 8
Proposal of redesign and details.

Figure 9
Proposal of redesign and details.

4. CONCLUSIONS

Regarding the objectives set at the beginning, it can be stated that the main objective—to create a system that can be implemented by pharmaceutical companies and establish guidelines to make packaging and leaflets more intuitive, legible, and accessible has been achieved. A regulation based on color, typography, and graphic hierarchy has been designed, which is adaptable to different medications and aligns with the current system used in the pharmaceutical industry.

Concerning the secondary objectives: The objective related to designing packaging that addresses the identified problems by applying the created system has also been fulfilled. A graphic proposal has been developed as a guide for implementing the code, and by following it, the packaging of Aristo Pharma has been redesigned, applying the proposed system to achieve clearer packaging. Up to four typefaces, several optimal color palettes, and a comprehensive icon system have been selected, which together form the graphic foundation of the proposal.

The development of this project has involved a complex process requiring continuous analysis and re search. The choice of topic

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represented a challenge due to the complexity of the applicable regulations and the need to address technical, visual, and social aspects of great relevance simultaneously.

During the process, setbacks were encountered related to obtaining reference packaging, as it was not possible to access original medication mock-ups due to their prescription-only status. This limitation required seeking alternatives through external material, which, rather than being an insurmountable obstacle, enriched the project by enhancing problem-solving skills. Likewise, the development of this work was constrained by time, which required narrowing the initially proposed objectives. Nevertheless, this study aims to lay the groundwork for future, more extensive research, encouraging further exploration in the field of accessible design applied to pharmaceutical packaging.

It is important to highlight that establishing a coding system universally applicable to all pharmaceutical companies is not straightforward, given the scope of the industry and the diversity of its guidelines. However, this project seeks to serve as a starting point, emphasizing the need to standardize certain criteria to promote understanding and accessibility of packaging.

In this sense, there is a lack of solid proposals addressing this issue from the perspective of graphic design and gerontodesign—fields that are essential for improving the end-user experience. In conclusion, this project aims to address a current issue: the lack of accessibility and usability flaws in medication packaging. Considering the significant role of medication in the daily lives of millions of people, especially older adults, it is essential to ensure effective, clear, and accessible visual communication. In doing so, it contributes not only to improving users' quality of life but also to strengthening safety and efficacy in the use of medications.

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On the same day in 1891, the rusian designer Alexander Rodchenko, was born.

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