New Narratives for Made in Italy: Communication Design Through Disruptive Technologies

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Abstract
The Made in Italy label has long symbolized excellence rooted in the integration of design culture, craftsmanship, and aesthetic quality. In the digital transition, its communication risks reducing these complex values to superficial narratives, especially regarding sustainability and innovation. The *Emotional* project addresses this issue through a design-oriented approach that integrates disruptive technologies, such as Extended Reality (XR) and Data Visualization (DV), to restore narrative depth and accessibility to these complex contents.
The article presents two complementary approaches: an immersive virtual reality experience, based on the embodied perspective of the crafted object, and an interactive semantic atlas mapping the evolution of concepts related to circularity and sustainability in the Made in Italy context. The study shows how communication design mediates systemic complexity and emotional engagement, making these intangible values visible and shareable.

Keywords
Made in Italy
Sustainability
Intangible values
Immersive Experiences
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INTRODUCTION

The historical values embedded in the term “Made in Italy” characterize the history of Italy’s post-war innovative industry, as they highlight the excellence of the synergy between design and manufacturing that has gained worldwide recognition since those years (Dellapiana, 2022). These values are reflected in aesthetics, quality, and craftsmanship, the result of a know-how rooted in materials and the expertise of various Italian production sectors. The tradition of Italian design is expressed in the passion for creating products that embody stories, cultures, and skills, becoming a symbol of prestige and originality (Lotti, 2022).

In a context of rapid digital transition, the design values that constitute contemporary industrial heritage risk being reduced to a mere digitization of the artefact, without conveying identity and authenticity. This inadequate use of digital tools, combined with a lack of technological and cultural knowledge, poses a concrete risk of losing competitiveness in digital markets (Branzi, 2014). To this is added the difficulty of effectively communicating sustainability values, which are often conveyed through technical information that can feel distant and difficult for consumers to understand, precisely where a profound shift in social behaviors is most needed. In this context, design plays a strategic role in fostering interdisciplinary relationships, introducing technical innovations to the market, giving meaning to those innovations, and encouraging appropriate and sustainable behaviours (Lotti et al., 2024).

This highlights the importance of promoting a technological development that not only preserves Italian tradition but also becomes a key resource for enhancing competitiveness without compromising the cultural essence of Made in Italy (Bettiol & Micelli, 2005).

Within this framework, the *Emotional project* | *Experience Made in Italy: Immersive Storytelling Design for Contemporary Values and Sustainability* is introduced. Developed as part of the PNRR – PE11 *Made in Italy Circular and Sustainable* (Spoke 2), the project aims to deepen the understanding of Made in Italy by fostering awareness of both its tangible and intangible values, as well as those related to eco-design and circularity. These concepts are made accessible to a wide range of stakeholders, including companies, designers, industry experts, and end users. The project adopts a perspective of promoting social innovation, encouraging behavioural change toward more sustainable practices through communication tools designed to raise awareness. The goal is not merely to inform, but to inspire, creating an emotional connection between consumers and Made in Italy, so that it remains a symbol of quality, innovation, and environmental responsibility on the global stage (Dellapiana, 2022).

In response to the complexity of communicating intangible values—such as those linked to a sustainable and circular Made in Italy—the *Emotional* project adopts a dual and integrated approach that combines two disruptive technologies: Immersive Experiences (IE) and Data Visualization (DV). This communication strategy is designed to activate awareness, critical understanding, and emotional resonance.

On one side, immersive storytelling based on Extended Reality (XR) serves as a tool capable of generating multisensory engagement and high-affective narrative experiences, fostering deep, empathetic, and transformative participation. On the other, DV, supported by semantic analyses, surveys, and interactive atlases, offers a more analytical, structured, and accessible model

of interpretation, capable of clearly representing the complexity of underlying values.
Both modalities contribute to making the intangible visible, activating complementary cognitive and emotional processes. While narrative immersion builds a sensory and affective connection with the content, visual data representation makes explicit the semantic, historical, and symbolic trajectories, adding depth to what is often implicit in products and processes. Together, XR and DV are not autonomous technological solutions, but synergistic communication devices capable of supporting a cultural shift toward more conscious, informed, and participatory models of production and consumption.

COMMUNICATION DESIGN THROUGH DISRUPTIVE TECHNOLOGIES

In a world marked by growing complexity and continuous transformation, communication design is called upon to redefine its tools and languages in order to effectively address contemporary challenges. In this context, Disruptive Technologies—such as DV and IE—do not merely represent technical innovations, but rather new forms of interaction between information, perception, and behaviour (Manovich, 2002).
Their disruptive value should not be seen in the novelty of the technology itself, but in the ability to foster awareness and promote meaningful change. On the one hand, DV enables the synthesis and structured representation of complex phenomena; on the other, IE offer an experiential modality that engages users both emotionally and cognitively, stimulating deeper interaction with content (Kennedy & Atkinson, 2018). In this regard, it becomes crucial to question the relationship between advanced digital tools and content, rethinking communication design through a transdisciplinary lens and repositioning emerging technologies as enablers of strategy, storytelling, and behavioural transformation (Licaj & D'Ascenzi, 2023).
Communication design, therefore, through the use of disruptive technologies, must adopt a systemic vision, one that integrates ethics, accessibility, narrative coherence, and contextual adaptability. The goal is not the uncritical adoption of the latest available technology, but the construction of transformative experiences capable of generating understanding, participation, and awareness.

IMMERSIVE STORYTELLING FOR SOCIAL RESONANCE

Specifically, in the face of the growing popularity of immersive experiences across culture, media, and education, strategic communication design must play a central role in shaping how these technologies could be applied (Maldonado, 2015). Rather than privileging technological sophistication for its own sake, design can redirect decisions toward socially purposeful, emotionally resonant outcomes. Technologies often considered less advanced within the XR spectrum (such as 360-degree video) have proven more effective in fostering empathy and engagement (Milk, 2015), particularly in contexts of social awareness and behavioural change by aiming to stimulate social resonance, transforming worldview, and eliciting not only emotional but also cognitive and behavioural responses (Rosa, 2019). In this scenario, immersive storytelling design refers to a narrative approach that places users

within multisensory experiences, eliciting a heightened sense of presence (Slater & Wilbur, 1997), and cultivating emotional participation, affective depth, and embodied engagement to shift perceptions of complex social realities (Grau, 2003). Among the most significant case studies in immersive storytelling through 360-degree videos is *Clouds Over Sidra*, a VR documentary directed by Chris Milk and Gabo Arora that depicts the daily life of Sidra, a young Syrian girl living in the Za'atari refugee camp in Jordan. Commissioned by the United Nations to raise awareness and foster empathy around the Syrian crisis, the project demonstrated how virtual reality can translate emotional engagement into concrete action. Another notable example is Iuventa, a VR documentary produced by the German public broadcaster ZDF, which chronicles the rescue mission of the NGO Jugend Rettet in the Mediterranean Sea, highlighting the human and operational challenges faced in the context of migration. *Lastly, Our Home, Our People* employs 360-degree storytelling to illustrate the impacts of climate change on Fiji, emphasizing the cultural value of "*Vei Iomani*" (love in action) and advocating for global environmental action. These projects exemplify how immersive media can combine emotional involvement with social awareness. Although exemplary cases demonstrate the powerful potential of immersive realities to foster empathy and drive engagement, a design-oriented perspective calls for integrating advanced digital technologies with complementary design methodologies to fully unlock their transformative capacity. For instance, emotional design, focusing on the affective relationship between user and experience, could significantly enhance how users feel, engage, and retain meaning (Dybvik, 2022). Speculative design, described by Dunne and Raby (2013) not as a method but as a critical mindset, could invite audiences to imagine alternative futures and challenge dominant narratives, an essential function in storytelling aimed at social change. User experience design (UX) ensures that immersive environments remain accessible, coherent, and emotionally legible, aligning with the user's sensory and cognitive capacities. Lastly, and even more broadly, strategic design, as Zurlo and Cautela (2014) suggest, offers a systemic vision and fosters dialogic processes that enable multi-stakeholder engagement and long-term social impact. In this view, designers are no longer just content producers, but facilitators of transformative, socially responsible experiences, bearing a narrative responsibility, especially when working with vulnerable communities or sensitive sociopolitical issues (Couldry, 2010). It operates at the intersection of design, art, technology, and activism, enabling new modes of participatory awareness and civic engagement.

DATA-DRIVEN INTANGIBLE VALUES COMMUNICATION STRATEGIES

Among disruptive technologies, DV emerges as a highly impactful tool due to its ability to translate the invisible into the visible, making complex concepts, systemic dynamics, and intangible values more accessible. Thanks to its capacity to integrate both quantitative and qualitative data into interpretable visual structures, DV proves to be not only an effective design language but also a concrete communication strategy capable of fostering awareness and critical understanding around complex phenomena. Specifically, DV becomes a key tool for narrating dimensions such as identity, memory, sustainability, and innovation, all often intangible elements of contemporary cultural and productive heritage.

The state-of-the-art analysis, together with selected case studies, demonstrates how the use of AI can enhance the potential of DV in this context, making it a strategic tool for interpreting and communicating cultural heritage. This is particularly evident in the field of digital humanities, which stands out as the most active domain of experimentation. The literature shows that DV, when integrated with computational analysis techniques, is redefining how complex cultural content is read, interpreted, and communicated. The most significant contributions in the field of digital humanities highlight not only the technical effectiveness of these tools but also their ability to reveal latent structures and otherwise invisible semantic patterns.

More specifically, three key insights emerge: (i) DV can serve as a powerful tool for linguistic and stylistic analysis- it allows for the identification of textual patterns that would otherwise remain hidden, enabling a synthesis between close and distant reading approaches, through tools that operate at both microand macro-textual levels, thus opening new perspectives for literary criticism (Scrivner, 2017; Correll et al., 2011; Sterman et al., 2020); (ii) accessibility and interactive navigation in humanities contexts are crucial,the focus is placed on the usability of interfaces and the ability to explore large bibliographic archives in a visual and non-linear way, with the aim of making computational analysis accessible to non-expert audiences (Plaisant et al., 2006; Schlechtweg-Dorendorf et al., 2006; Landau et al., 1998); and (iii) the need for critical design and the expansion of the visual design spacethis involves reflective and well-documented approaches, where the design itself becomes an object of narration, validation, and typographic experimentation, and where visualization emerges as a critical and transdisciplinary language (Wood et al., 2019; Brath, 2018).

Despite the potential of these tools, the analysis of the most relevant case studies in this field reveals a significant gap between theory and practice: in case studies such as *Viral Texts Visualizations*[1], *Slave Voyages*[2], *Historypin Victorian London*[3], *Exploring Erotics* in Emily Dickinson's Correspondence (Plaisant et al., 2006) a critical issue related to accessibility persists: complex interfaces, specialized languages, and abstract theoretical models risk limiting the communicative impact of these projects, especially when addressing broader audiences.

By contrast, standout examples of excellence include projects such as *Divine Commedy.digital*[4] e *Atlante Calvino*[5] that succeed in bridging the gap between analytical rigor and communicative accessibility. Both demonstrate how a design approach attentive to user experience—in terms of interfaces, visual storytelling, and modes of exploration—can translate dense, theoretically complex, and culturally layered content into forms of visualization that are intuitive, engaging, and accessible to diverse audiences. In these projects, data is not merely computational evidence; it becomes narrative material capable of activating interpretive pathways and semantic relationships that reinforce the cultural and symbolic dimensions of information.

[1] https://viraltexts.org/visualizations/

[2] https://www.slavevoyages.org

[3] https://www.historypin.org/en/victorian-london/

[4] https://divinecomedy.digital/#/eng/landing

[5] https://atlantecalvino.unige.ch

DEVICES OF MEANING: FROM IMMERSIVE REALITY TO THE SEMANTIC ATLAS OF VALUES

In the context of current socio-technological transformations, the need to communicate intangible values, such as craftsmanship, sustainability, care, and cultural memory, requires the use of design devices capable of integrating experiential, symbolic, and informational dimensions. In the *Emotional* project, on one hand, the XR experience takes the form of an embodied narrative of the artisanal production process; on the other, the construction of an interactive semantic atlas allows users to explore the evolving trajectories of the concepts of Made in Italy, circularity, and sustainability through the design of interactive DVs. Both experiments are grounded in a design-driven approach aimed at mediating between complexity and accessibility, heritage and innovation.

XR Immersive Experience

The immersive experience developed within the *Emotional* project stands as an emblematic case study of communication design applied in the realm of Extended Reality (XR), aimed at conveying the intangible values of Made in Italy through a multisensory narrative. This experience was specifically tailored to the production processes of a company within the Tuscan manufacturing ecosystem, with a particular focus on the ceramic firm Marioni. The design process behind the *Emotional* immersive experience was far from a mere technical exercise in audiovisual transposition. Rather, it unfolded as a complex, recursive, and deeply situated design methodology, in which every narrative, visual, technological, and spatial choice was deliberately calibrated to generate a meaningful cognitive experience. Moreover, while the empathic potential of XR is already well documented (Lacle-Meléndez et al., 2025), the object-as-narrator approach extends existing immersive storytelling practices by shifting the locus of perspective from human to material. Instead of inviting users to empathize with other people or fictional characters -as commonly explored in XR- this experience encourages them to recognize the agency, history, and relational potential of designed objects themselves. The goal was to convey the profound cultural and aesthetic values of Made in Italy through the perspective-taking of a design object itself **Fig. 1**.

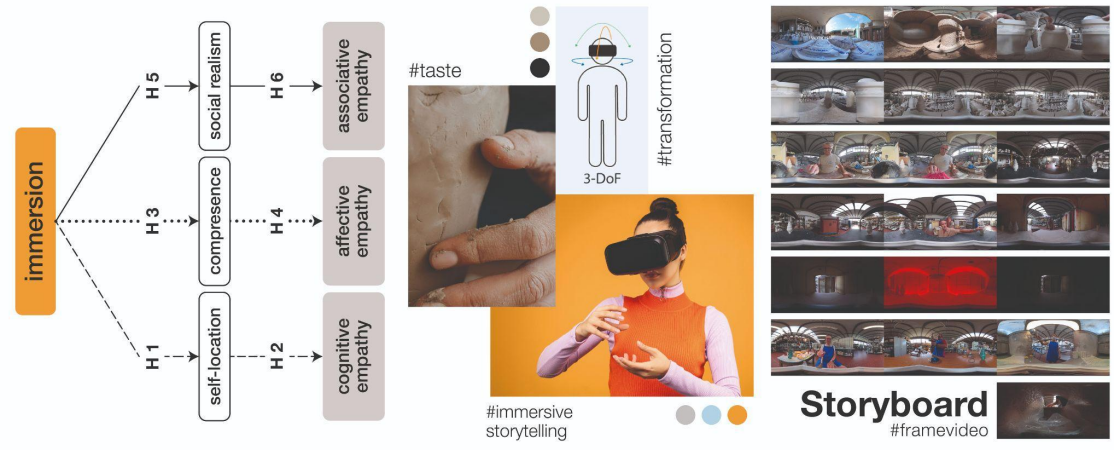

Fig. 1
Development of an immersive experience, from scientific research and concept definition to storyboard creation and related filming activities.

The methodological phases applied included:
Phase 1 – Defining the Narrative Concept
The point of departure was the formulation of a radical narrative metaphor: shifting the vantage-point to the object itself and allowing it to become the conscious protagonist of the story. Instead of an external, documentary gaze, the experience offers an embodied immersion in the material's life-cycle, escorting the user from raw clay dust to the finished form through the artisans' hands. This semantic inversion went on to shape every subsequent decision.
During this phase the team produced an initial conceptual map of transformation, identifying the symbolic thresholds that would structure the experience as a narrative rite of passage, inspired by anthropological models and theatrical experiential paths.

Phase 2 – Meetings, Interviews, and Co-Design with Artisans and the Selected Company
Workshops were held with artisans, designers, ceramic-sector professionals, and with company *// Volo*. These became semi-structured interviews aimed at gathering detailed qualitative insights into processes, techniques, production rituals, and the emotions tied to working with ceramics.
This phase served a twofold purpose: accurately mapping the real production workflow and, simultaneously, surfacing those invisible yet meaningful details—pauses, rhythms, symbolic gestures, workshop atmospheres—that would later be translated into narrative and sensory elements.

Phase 3 – Storyboard and Immersive Sequence Design
Insights from the interviews were distilled by the research group into a narrative storyboard on Miro, tracing every stage of the ceramic process in a fluid, interrelated sequence that articulated a clear beginning, development, and end. This framework guided scene organisation, identified turning points, and defined the experience's emotional arc.
The narrative flow was broken down into eight micro-sequences corresponding to the object's transformation stages: raw-material unloading, grinding, moulding, drying, manual finishing, internal transport, first firing, glazing, decorating, lamp assembly, and packaging.

Phase 4 – On-Site Surveys and Initial Filming Tests
Multiple site visits to Marioni followed, validating the storyboard in situ, checking light and acoustic conditions, and conducting preliminary 360° camera tests to gauge the impact of the immersive point of view in different production areas. This proved crucial for optimising the immersive mise-en-scène and choreographing fluid gestures around the camera.

Phase 5 – Research of Texts and Quotations for the Second Narrative Layer
In parallel, theoretical, literary, and philosophical texts were researched to embed a deeper cultural reading for audiences attuned to symbolic storytelling. The selection focused on writings that evoke the mystery, transformation, and affective bond with clay. These quotations were inserted during editing at emblematic moments, gifting users a second, culturally enriched interpretive layer.

Phase 6 – 360° Video Capture and Immersive Sound Design

Filming took place in the company's actual spaces using an Insta360 Pro 2 in 8K stereoscopic mode to ensure depth of field and realism. Each scene was spatially directed to foreground the object while the artisan remained an "orbiting presence" around the ceramic-user.
Sound design drew on authentic environmental recordings, reworked and spatialised in ambisonic audio to preserve coherence between visual and auditory stimuli and heighten the "being there" sensation. Silences, reverberations, and organic sounds were treated as essential narrative elements.

Phase 7 – Recording Vocal Tracks
Two vocal tracks were layered onto the authentic ambient sounds:

- An external narrating voice introduces and concludes the experience by reading a quotation from Ettore Sottsass, taken from the volume La Ceramica delle tenebre, as an invitation to deeper and more critical reflection.
- An internal voice represents the consciousness of the object (the lamp), narrating in the first person its sensations, transformations, and the gestures it undergoes throughout the process. The tone was carefully crafted to sound intimate and textural, as if it were the very voice of terracotta coming into being.

Phase 8 – Editing and Post-Production
The captured material was assembled in Adobe Premiere Pro. Scene transitions were designed with fluid cuts and micro-acoustic cues to preserve narrative continuity and perceptually guide the user without distraction. The experience is intended for individual viewing in a neutral setting, yet it is already configured for integration into collective performance or exhibition contexts.

Adopting an unprecedented narrative perspective - the object's own point of view - overturned the traditional relationship between observer and artefact, placing the user inside the very process of material transformation, from raw earth to finished ceramic. This reversal activated deep empathic and cognitive mechanisms, fostering an emotional bond between viewer and artefact and enhancing awareness of the object's practical and affective value.
Using 360° VR (3-DoF) enabled full visual and auditory immersion, while the narrative architecture was meticulously crafted to amplify a sense of awe and presence. In immersive-experience research, and specifically within *Emotional*, awe denotes the intense emotional response that arises when users are drawn into a story so compelling that it shifts their perception and cognition: they are not merely watching; they become part of the complexity and beauty of the unfolding process. Psychologists such as
Chirico & Gaggioli (2023) show that awe can: inspire reflection beyond surface sensation; stimulate empathy through emotional engagement; and trigger attitudinal or behavioural change—for instance, encouraging more sustainable choices. In *Emotional*, awe thus signifies the contemplative intensity born of feeling inside the object, integral to its transformation, potentially leaving a lasting impact on perceptions of craft and sustainability. The sequences were designed to evoke an expanded, almost meditative sense of time in which bodily experience merges with the symbolic and cultural dimensions of artisanal practice. Preliminary tests at the University of Florence confirmed the validity of this narrative strategy: 100 % of participants reported

a strong emotional bond with the object, and 55 % cited the kiln-firing phase as the peak of immersion, describing it as intense and even claustrophobic. These findings show that immersive design can stimulate not only the senses but also deeper reflections on waiting, transformation, and human labour. Participants also rated the experience on its ability to convey sustainability, craftsmanship, and tradition. All respondents agreed that the narrative effectively communicated these values, reinforcing the idea that an object—far from neutral—can carry meaning and cultural memory. Such storytelling slows consumption cycles, encouraging more responsible, affectionate behaviour toward objects and, by extension, toward the tangible and intangible heritage of Made in Italy. These preliminary findings are encouraging, yet they also highlight the need to define a dedicated strategic design framework capable of assessing the effectiveness of the experience in relation to these themes and of reflecting the diversity of stakeholders involved in the Made in Italy ecosystem -including students, companies, and consumers - as demonstrated by the results achieved in the project's subsequent follow-up phase (Palmieri et al., 2025).

Adopting XR as a multisensory storytelling tool has therefore translated complex values—craftsmanship, tradition, care, transformation, sustainability—into tangible, emotionally engaging, and cognitively relevant experiences. Testing confirms that a shift in perspective, such as viewing through the object's eyes, can serve as a powerful narrative lever, generating empathy, attachment, and a sense of responsibility toward the product and its life cycle.

In conclusion, *Emotional* offers a concrete response to the need to redefine how Made in Italy values are communicated in an era of ecological transition and digital transformation. Through a design-driven, transdisciplinary approach, the project demonstrates that immersive technologies can be harnessed not merely for technological innovation but for cultural innovation that generates meaning, awareness, and participation. It proves that strategically oriented design, in dialogue with emerging technologies, can become a critical and transformative device, capable of generating new forms of knowledge, storytelling, and behaviour. In this sense, *Emotional* not only documents a case study but proposes a replicable model for re-articulating the value communication of Made in Italy in an ethical, sustainable, and culturally resonant manner.

SHAPING THE ATLAS OF VALUES: A DATA-DRIVEN METHODOLOGY

The *Emotional* project follows a process that begins with data collection and analysis and culminates in the creation of immersive experiences that enhance the value of Circular and Sustainable Made in Italy. In the initial phase, the focus is placed on a deep understanding of the various aspects that define Italy's cultural and productive heritage, such as history, sustainability, brand perception, culture, and the use of technologies. The research began with the selection of over 200 sources -including academic publications, design essays, and industry reports- collected and systematized through the open-source platform Airtable, to represent the historical, cultural, and productive dimensions of Italian design. All texts were digitised and preprocessed through established NLP procedures, including lowercasing, removal of punctuation and stop-words, lemmatisation, and the extraction of frequent multi-word expressions (i.e., recurrent two- or three-word

combinations). This ensured a coherent and standardised dataset suitable for computational analysis. To investigate how meanings evolve over time, the corpus was analysed using temporal word embeddings, a method that enables the detection of semantic shifts by comparing word representations across different periods. The dataset was therefore divided into three time slices (2010-2014, 2015-2019, 2020-2024), allowing the project to observe how key concepts such as Made in Italy, circolare, and sostenibilità changed in relation to emerging cultural and industrial discourses. The TWEC model (Di Carlo et al., 2019), an established temporal extension of Word2Vec, was adopted to generate temporally aligned semantic spaces and identify shifts in meaning with mathematical precision.
Once this information was gathered and analyzed, the second phase focused on structuring the data into a digital archive[6]. Through a series of interactive DVs, this archive aims to make the data accessible and easily interpretable **Fig. 2**. This phase is crucial as it enables the translation of identified concepts and values into visual and narrative representations.

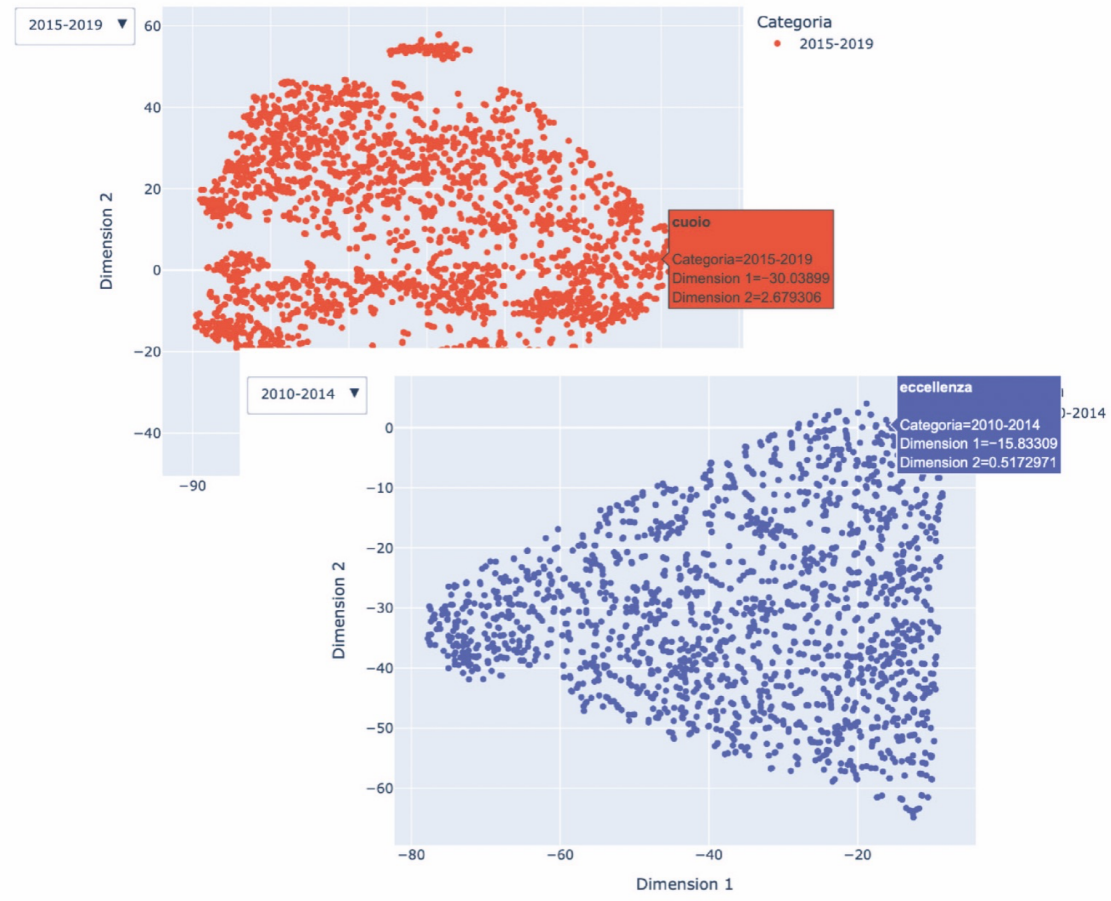

Fig. 2
Data Visualizations from the archive that show examples of the words most closely associated with the theme of Made in Italy across different years.

Within the project, the integrated use of text mining and DV proves to be a key strategy for telling the evolving story of Made in Italy, sustainability, and circularity in an innovative and accessible way. Through semantic text analysis, the project seeks to translate a complex and layered heritage - composed of productive practices, symbolic values, cultural visions, and linguistic transformations-into a visual narrative capable of engaging both

6 https://emotionalspoke2.github.io/Emotional-Data-Viz/

expert and general audiences. The shift from text to data, and from data to visualization, makes it possible to reveal unexpected connections, evolutionary trajectories, and semantic continuities that would be difficult to detect through traditional interpretive tools.
The temporal embedding analysis revealed, for instance, that terms such as “circolare” and “sostenibilità” have experienced a significant semantic shift over the last decade, progressively moving toward clusters connected to technological innovation, resource efficiency, and systemic transformation. These findings support the hypothesis that the language of Italian design is increasingly aligned with global sustainability discourses, while maintaining distinctive cultural shades.

The project thus positions itself as an exploration of the intangible values associated with Circular and Sustainable Made in Italy, made possible through an in-depth semantic analysis of design-related textual production that takes into account the historical, cultural, and social substratum of Italian craftsmanship. In particular, the interactive platform developed allows users to navigate a dynamic archive that not only collects content but reinterprets it through a system of DVs capable of highlighting conceptual trajectories, underlying relationships, and lexical changes over time.
Structurally, the platform is organized into three distinct conceptual pathways -emotional, rational, and integrated- each of which explores different ways of perceiving and analyzing Made in Italy design and its related notions of circularity and sustainability.

The “Emotional” Pathway is based on an interpretive model that integrates quantitative analysis (keyword extraction and correlation) with visual representation, with the aim of revealing narrative patterns that connect the concept of sustainability in Made in Italy with the affective, sensory, and symbolic dimensions that shape its cultural construction. Through the use of animated nodes and connections, the system highlights the density and directionality of semantic relationships, outlining a cultural and emotional cartography that narrates the transformation of Italian design identity over time.
Structured into three main sections—Colors, Emotions, and Senses—the pathway explores how Made in Italy is perceived through the lens of emotional language. The “Colors” section visualizes the most recurrent chromatic associations, offering a symbolic and perceptual reading of the hues linked to specific concepts. “Emotions” sheds light on the feelings evoked by Made in Italy -such as pride, joy, or nostalgia- and their connection to culture, memory, and lifestyle. “Senses” investigates the sensory universe of Made in Italy, mapping the words associated with the five senses and tracing which perceptions dominate the imaginative construction of Italian products.

The “Rational” Pathway, in complementary dialogue with the Emotional one, offers a more analytical, structured, and systemic reading of the textual corpus. It is designed for the exploration of scientific and analytical data by an expert audience. This pathway provides a logical and structured analysis of Made in Italy, organizing words according to themes, historical periods, and semantic relationships.
Divided into four navigable sections, it illustrates how Made in Italy can be articulated into macro-categories such as sustainability or tradition, how it evolves over time, and how fundamental concepts are interrelated. In this

case, the visualization prioritizes expository clarity and precision of connections, making explicit the relationships between sustainable practices, productive rationality, and technical processes.
The interactive maps thus offer a clear and systematic understanding of cultural and linguistic associations, supporting the semantic and evolutionary interpretation of Italian design.

The “Integrated” Pathway combines the data from both the Emotional and Rational pathways to offer a comprehensive and multilayered view of the relationships between colors, emotions, senses, and the rational dimensions of time, themes, and comparisons. The interactive visualizations highlight how these elements influence one another, revealing multidimensional connections. This pathway unfolds as a complex tapestry that weaves together aesthetic, cultural, and material dimensions, merging analytical and perceptual approaches. Within this interweaving, the emotional and rational dimensions blend into a unified exploratory and cognitive experience, capable of revealing new interpretive trajectories.
Taken together, these three pathways-Emotional, Integrated, and Rational-reflect three distinct yet complementary epistemological registers. The interactive system therefore not only explores words, but also activates their identity-related, historical, sociocultural, and technical functions, accounting for the networked complexity that shapes the discourse on Made in Italy design, circularity, and sustainability. The journey through the platform is not linear; rather, it is structured as an experiential navigation within a semantic ecosystem, where users can explore clusters of meaning that connect past and present, tradition and experimentation, rationality and sensory dimensions. The visualizations convey a distributed and networked form of knowledge, a meshwork, as Tim Ingold (2020) would define it, capable of transcending classificatory logics to activate processes of data sensemaking (Klein et al., 2007) grounded in discovery and intuition.
From a methodological perspective, the project adopts a hybrid approach that combines data design, visual semiotics, and computational humanities, enhancing the communicative potential of DV as an interpretive device capable of translating intangible concepts into accessible and explorable forms. In this sense, *Emotional* not only documents the most recurrent terms related to Circular and Sustainable Made in Italy, but also analyzes them,bringing to light, through interaction, alternative and unexpected meanings.
This system aligns with the contemporary discourse on the role of design in interpreting and making complex phenomena accessible, laying the groundwork for a deeper understanding of the cultural and symbolic foundations that underpin the construction of values associated with Circular and Sustainable Made in Italy.

Finally, the platform has been preliminarily validated in academic and educational contexts, through its use by students and researchers during workshops and teaching activities. While this form of validation confirms usability and communicative effectiveness, it also highlights current limitations: the restricted size of the tested corpus, the absence of large-scale industry testing, and the early-stage nature of temporal semantic modelling. These considerations delineate clear directions for future development, including expanding the dataset, refining preprocessing techniques, and strengthening the integration of AI-driven semantic analysis.

CONCLUSION

The data analysis clearly reveals a vision of Made in Italy and its contribution to sustainability that goes well beyond purely technical aspects,highlighting concepts such as identity, memory, material culture, innovation, and sensory perception. Based on this vision, the project developed the immersive experience by focusing on a narrative capable of connecting rationality and affectivity, translating the intangible into experience, and reinforcing the symbolic and participatory dimension of Circular and Sustainable Made in Italy values.

In the immersive experience, it is the object itself that speaks in the first person, telling how the seemingly inert material comes to life, magically takes shape, and becomes a thing. And in doing so, it acquires value, preparing itself to become a subject within our home. not a silent absence, but a presence ready for dialogue. Perhaps it is precisely through this narrative process that we learn to extend the life of the things that accompany our lives, with clear environmental benefits. By foregrounding the material's own 'voice,' the narrative reframes the user–object relationship and opens a less-explored pathway for empathy within immersive environments. This approach aligns with the idea that representing matter as passive and lifeless may hinder the development of more ecological and materially sustainable production and consumption models- whereas attributing agency and vitality to objects can foster deeper forms of care, attachment, and environmental responsibility (Bennett, 2023).

Italy, in this regard, has much to say: *Pinocchio*, who transforms from a piece of wood into a child, perhaps teaches us that objects, too, can come to life. Italian design has long carried traces of a humanistic sensibility, rooted in the cultural tradition of attributing soul and agency to objects. Rather than being seen as mere functional tools, objects are conceived as meaningful presences within the living environment- entities with which users can establish symbolic and emotional relationships, not unlike those formed with domestic animals. This perspective resonates with a deep-seated cultural heritage, particularly visible in ancient Roman and Pompeian furniture, where chairs, couches, and braziers were adorned with sculpted paws, tails, and animal heads, hinting at an imagined autonomy and life force. Unlike other design traditions, this approach is informed by Mediterranean belief systems, where animist and pantheist views endowed material things with spirit and sacred significance (Branzi, 2007),

Objects, when infused with emotions, meanings, and symbols projected onto them by individuals, societies, and history, are transformed into things, distinct from mere commodities defined by use, exchange, or status. Much like in art, we remove them from their fleeting condition in space and time, elevating them into lasting vessels of meaning- almost as if they become miniatures of eternity (Bodei, 2009).

Following the design phase of the XR immersive experience, a second phase dedicated to testing is planned at the conclusion of the *Emotional* project. This will include the activation of additional synesthetic stimuli (such as smell and touch) to validate the hypothesis that a fully multisensory narrative can further enhance the perception of presence, empathy, and engagement. This experimentation, which involves the creation of an evaluation framework and a series of collective and performative events, represents a further extension of the immersive storytelling concept, transforming user engagement into a

transformative and shared experience (Dourish, 2001). However, the current study presents several limitations that should be acknowledged. First, the user tests were conducted on a small and relatively homogeneous group of participants, which restricts the generalizability of the findings and underscores the need for broader studies involving more diverse stakeholders within the Made in Italy ecosystem, a need specifically addressed in the project's dedicated follow-up phase. Second, the multisensory component of the immersive experience remains in a preliminary stage of experimentation and has not yet undergone systematic evaluation. Finally, broader industrial adoption and the further development of narrative integrations raise additional challenges. Scaling such experience entails in fact considering how multisensory infrastructures, especially those involving olfactory or haptic components, can be integrated into real-world environments such as museums, retail spaces, or domestic settings without compromising usability or sustainability. It also implies the possibility of expanding the narrative corpus: integrating new objects, augmenting the multisensory palette, or allowing organizations to co-create their own "material biographies." Concurrently, while the current prototype is tailored to the specific cultural and material narrative explored within *Emotional,* its methodological structure suggests possible extensions: the object-as-narrator approach could, in principle, be applied to other supply chains, material cultures, or design traditions, generating new narrative ecologies that foreground different forms of material agency Addressing these limitations will be crucial for advancing the *Emotional* framework from a research prototype to a robust and widely applicable design strategy. In parallel, the Atlas of Values has demonstrated how data design can function as a critical and accessible tool for interpreting the cultural and semantic dimensions of Circular and Sustainable Made in Italy. Through the combination of text mining analysis and interactive visualization, the archive does not merely represent data,it renders it narratable, explorable, and open to reinterpretation, fostering processes of sensemaking that activate connections between technical content and cultural imaginaries. The combination of these two technologies, immersive and analytical, lies at the heart of the *Emotional* approach: a polyphonic narrative that integrates emotion and information, memory and vision, body and language. The potential impact of this approach is twofold: on the one hand, it offers companies new tools to communicate their values in an authentic and innovative way; on the other, it contributes to building a design culture rooted in sustainability and in the valorization of intangible heritage.

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