



Making Value: Storydoing Actions for Cultural and Creative Industries

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Abstract. The paper develops a comparative analysis of the cultural and creative competencies within the educational offer of the University of Bologna, using multiple sources and tools. This contribution is based on the hypothesis that the narration around the value of the cultural and creative disciplines in academia needs to be critically reviewed. This path of observation, mapping, narration, and visualisation resulted in being consistent with the critical role that cultural and creative disciplines have played at the University of Bologna since the 1970s; by developing unprecedented educational models and impacting the territory through the generation of new economic models and the development of a diverse system of cultural and creative industries. The methodological approach of the research is based on a comparative analysis of the main documents regulating the cultural and creative economy on the international, national, and regional levels. The second stage of the research process was built on an explorative strategy based on desk analysis to create the dataset. The question arose about how to make a database accessible to a broader audience: the conclusions show that data visualisations, as a creative tool, can enable story-doing processes and thus create awareness and value.

Keywords: cultural and creative disciplines · data visualisation · storydoing · CCI · cross-disciplinarity

1 Developing Awareness of Cultural and Creative Competencies to Enable Cross-Disciplinarity

The Made in Italy creativity is a trademark: an all-Italian ability to convey elegance and beauty by incorporating an essential component of culture and creativity into products [1]. Creativity as human behaviour that enables life is essential in the way our species adapt to the environment [2]; creativity as a cultural model that, since the 1990s, has itself become a cultural product and an agent of regeneration of cities [3]; creativity as an embodied, material and social practice for the creation of products and services which design critical geographies [4]. For these and many other reasons, creativity must be preserved, innovated, financed, educated, and narrated.

In Italy, therefore, developing an active dialogue between the university education system in creative cultures and design and the main stakeholders of the production, institutional and social system is increasingly becoming a strategic objective.

This objective has been defined “Third Mission” [5]¹ – which is the set of activities of scientific, technological and cultural transfer and productive transformation of knowledge through processes of direct interaction of the university with civil society and the business fabric, to promote the economic and social growth of the territory – and it is aligned with the knowledge triangle model and the objectives of the European Institute of Innovation and Technology (EIT).

What is the relationship between creativity, innovation, and technology?

How is knowledge instrumental in achieving social, cultural, and economic benefits?

Through what processes of communication and representation?

The paper develops a comparative analysis of the cultural and creative competencies taught at the University of Bologna, using multiple sources and tools; our contribution is based on the hypothesis that the narration of the value of the cultural and creative disciplines in academia needs to be critically reviewed; the conclusions show that data visualisations, as an innovative tool, can enable story-doing processes and thus create awareness and value.

The research methodology described below exhibits degrees of applied knowledge innovation that were deemed of interest during the design of the proposal submitted to the first European Institute of Innovation & Technology (EIT)² call on Culture & Creativity. The advanced approach applied for the creation of an open and scalable mapping to detect emerging creative disciplines and professions has been taken up as a possible model by the Una Europa Alliance³. The model integrates mapping and data visualization tools that aim to synthesize and communicate the productive value of creativity and culture to educational institutions, governments, and creative business.

Over the past decade, the EIT, through the selection of globally relevant but “a-sectoral” themes (Climate, Digital, Food, Raw Materials, Innoenergy, Health, Manufacturing, Urban Mobility), has identified in the creation of Knowledge Innovation Communities (KIC), the possibility of spreading open innovation applied to knowledge innovation at a European scale. This new EIT Culture & Creativity confirms the role of culture and creativity as cross-sectoral knowledge, and the goals of this new pan-European community are (EIT Culture & Creativity, 2022):

- Break boundaries in Cultural & Creative Sectors and Industries (CCSI) education by teaching cutting-edge technology to creatives and creativity as a cross-industry skill;
- Deliver mission-driven innovations leveraging the change-making power of CCSI to develop eco-systemic services and products;
- Transform CCSI businesses through custom-fitting innovation support, incubation schemes, and novel investments;
- Mainstream the impact and value of CCSI, especially culture and heritage, as an enabler for economic regeneration;
- Deepen the acknowledgement and knowledge of CCSI’s unique contributions to research and innovation ecosystems based on the novel, data-driven methods.

¹ Italian National Agency for the Evaluation of the University and Research Systems.

² <https://eit.europa.eu/>.

³ Una Europa is an international network of European research-intensive universities. Launched in early 2019, the alliance is headquartered in Brussels, Belgium and connects eleven universities, nine of which are in the European Union.

The University of Bologna participates at the EIT Culture & Creativity through the partnerships within Una Europa, through the collaboration with ART-ER⁴ who will coordinate a new Co-Location Centre in the South area of Europe dedicated to Policy Making in Culture and Creative Sectors, and the H2020 project *Time Machine: Big Data of the Past for the Future of Europe*.

During the months of writing the proposal (2021) and in the first phase of project start-up (2022), the need emerged to measure culture, creativity and the business sector in the various territories with comparable tools.

This need already emerged in the last decade in the Anglo-Saxon productive circles, as evidenced by the qualitative mapping studies of the Culture and Creative sector conducted in the mid-2010s [6]; a result of the rise of the digital tools and the consequential emergence of new specialised creative profiles [7] and 2.0 sharing platforms as well as the social network society.

Thanks to a project originated at the University of Bologna, a group of researchers and professors since 2016 together with the regional system of stakeholders (gathered in associations and laboratories: Clust-ER Create⁵ and Open Laboratories⁶) and in line with the Smart Specialization Strategies of the Emilia-Romagna region, developed educational paths (1st and 2nd cycle degrees, masters, etc.) aiming at reviewing the training modules for creative experts, as figures of mediation between culture, creativity and industry. With the publication of the CCI Manifesto [8], the University of Bologna had an anticipatory vision in the study, analysis, and comparison of data referring to education in the cultural and creative fields, their impact on new start-ups and the production of cultural and creative manufactures, as already occurred since the 1970s with the innovative birth of the first course in Italy devoted to the Disciplines of Visual Arts, Music, Performing Arts (D.A.M.S.) [9].

In 2019, the establishment of C.R.I.C.C. (Research Center for Cultural and Creative Industries⁷) led to innovative processes and methodologies in conceiving new products and services thanks to interdisciplinary approaches and the interaction with the CCI realities, thanks also to the adoption of cutting-edge and enabling technologies.

The continuous quantitative mapping of cultural and creative competencies within the University of Bologna, as experimental research by C.R.I.C.C. supported by Area Servizi alla Ricerca (ARIC)⁸, has therefore adopted a cross-disciplinary approach in analysing the elements to enhance a wider overview and start the creation of a qualitative ecosystem between different departments.

This mapping model represented through data visualisation can be considered a methodological reference as evidence that the University of Bologna offers Una Europa a new model to share and integrate processes to be adopted in the start-up phase of the EIT project. Thanks to the expertise gained in these years of experimentation and

⁴ ART-ER Attractiveness Research Territory is the Emilia-Romagna Joint Stock Consortium born with the purpose of fostering the region's sustainable growth by developing innovation and knowledge, attractiveness and internationalisation of the territory. <https://www.art-er.it/>.

⁵ <https://create.clust-er.it/>.

⁶ <https://www.laboratoriaperti.it/>.

⁷ <https://site.unibo.it/cricc/en>.

⁸ <https://www.unibo.it/it/ateneo/organizzazione/amministrazione-generale/4082>.

prototyping, Una Europa has proposed C.R.I.C.C. to coordinate a workshop within one of the first Action Programmes in June 2023. The workshop will gather the mappings conducted within the 11 universities belonging to Una Europa, taking a step toward the first goals the Knowledge Innovation Community (KIC) has set for itself, which are:

- EDUCATION - SO1. AP1. Mapping of existing programs running within the university/educational partners in the ICE consortium/EIT PhDs and Masters;
- EDUCATION - SO1. AP2. Mapping of the lifelong learning practices for CCSI within the Partners/The mapping should also include innovative digital approaches (MOOCs).

This path of observation, mapping, narration, and visualisation resulted in being consistent with the critical role that cultural and creative disciplines have played at the University of Bologna since the 1970s; by developing unprecedented educational models and impacting the territory through the generation of new economic models and the development of a diverse system of cultural and creative industries.

2 Data-Mining: A Methodological Comparison of Multiple Sources

The methodological approach of the research is based on the dual analysis of two data sets and their respective extraction methods. By comparing the results of the data sets extracted, one carried by a researcher (human-based model) and one based on algorithm⁹ (semantic-based), the research team claims that semantic extraction is not comprehensive and inclusive. A more complex understanding of cultural and creative skills could be methodologically approached by human analysis or a trained AI.

The first methodological step of the research was developed by analysing the main documents regulating the cultural and creative economy on the international, national, and regional levels and consisted of identifying the CCS tags; the comparative methodology was used to harmonise the selection of the tags from different multimodal sources.

The concept of tags, in a data-driven approach [10] is to be understood not as a product, considered objective, derived from the measurement of a phenomenon, but as a filter. This tool allows us to categorise its aspects, make them comparable, and relate meanings. The design of the qualitative/quantitative research reading model followed an iterative process that led to the definition of CCI tags. A process that went through several steps marked by the critical readings of the following documents:

- 1) REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL establishing the Creative Europe programme (2021 to 2027)¹⁰ and repealing Regulation (EU) No 1295/2013;
- 2) UNESCO's Framework for Cultural Statistics¹¹;

⁹ Provided by APOS – University of Bologna.

¹⁰ REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL establishing the Creative Europe programme and repealing Regulation (EU) No 1295/2013, (2021 to 2027).

¹¹ UNESCO's Framework for Cultural Statistics. (2009).

- 3) EIT Call for Proposals 2021¹² for a new EIT - Knowledge and Innovation Community (KIC) in the Cultural and Creative Sectors and Industries;
- 4) Culture and the creative economy in Emilia-Romagna, Italy by Local Economic and Employment Development (LEED)¹³;
- 5) *CCI Space*¹⁴, an online and interactive platform developed by the Research Center for the Cultural and Creative Industries.

By exploring the macro-categories defining the cultural and creative sector in each report, the research team has drafted the first list of tags to filter the cultural and creative competencies of the educational offer at the University of Bologna.

This first list has been later compared to the extraction of semantic information provided by the APOS Division¹⁵ of the University of Bologna. The results of this comparative process have detected eighteen tags overall:

- Architecture
- Cinema
- Communication and Multimedia
- Craft
- Cultural Heritage
- Digital
- Education
- Fashion Design
- Food
- Landscapes
- Performing Arts
- Publishing
- Reactivation
- Tech
- Tourism
- Visual Arts
- Wellbeing

This process aimed to select the specific tags that could reflect the Creative and Cultural Sector in the international and regional scenarios, namely the EU and Emilia-Romagna region; the goal was to contextualise the range of cultural and creative professional competencies provided by the University of Bologna with a bottom-up approach.

The second step of the research process was devoted to data collection based on exploratory human-based analysis. Through desk research, the observation has examined

¹² EIT Call for Proposals 2021 for a new EIT Knowledge and Innovation Community (KIC) in the Cultural and Creative Sectors and Industries (CCSI). <https://eit.europa.eu/eit-community/eit-culture-creativity>

¹³ OECD: Culture and the creative economy in Emilia-Romagna, Italy. OECD Local Economic and Employment Development (LEED) Papers, No. 2022/05, OECD Publishing, Paris (2022). <https://doi.org/10.1787/841f1338-en>.

¹⁴ <https://adu.unibo.it/osservatorioicc/cc-stories/>

¹⁵ APOS - Settore Sviluppo organizzativo e formazione - Organisational Development and Training Sector.

each department of the University of Bologna (32 departments) in the academic year 2020/2021. The data collected were integrated into a database which contains the cultural and creative educational offer of each department divided into (Table 1.):

Table 1. Matrix of data-set based on human-based research

	Bachelor's degree	Master's degree	Doctorate	Higher Education and Specialisation School	Labs and research centres	European Projects and outreach activities
Department xy						

As explained above, each finding has been associated with a tag to facilitate the data visualisation. As an example (Table 2.):

Table 2. Matrix of data-set based on human-based research of the Department of Architecture.

	Bachelor's degree	TAG
Department Architecture	Industrial Design	design; communication and media; visual arts; tech; craft; publishing

This process has been completed for each educational activity presented in all the Departments. As a result, each data collected in the database has been associated with a tag, generating an interesting matrix of information that was never explored before (Fig. 2). Therefore, the research team deemed it necessary to share the findings with the community of the University to increase awareness and engagement concerning the cultural and creative sector. The question arose about how to make a database accessible to a broader audience. Here, design comes to our aid. The evolution of technologies in participative approaches to the user experience has highlighted the power of interaction in raising awareness and education [11]. One-way storytelling has been overcome in favour of a more participative and empathic interaction [12] through data visualisation, gamification and fictioning. In the meta-universe of future design, design praxis must fully deliver capabilities to collect, manage and visualise datasets using a fair and intersectional approach, to be a tool for anticipations, influencing decision-makers and empowering citizens.

As we can also see from the visual comparison, compared to the data visualisation resulting from the analysis of the database derived from the semantic extraction (Fig. 1), the data visualisation designed from the human-based analysis (Fig. 2), shows a greater complexity that is worth communicating, analysing and enhancing. In fact, for the second mode of analysis, it was necessary to design a matrix to bring everything into system.

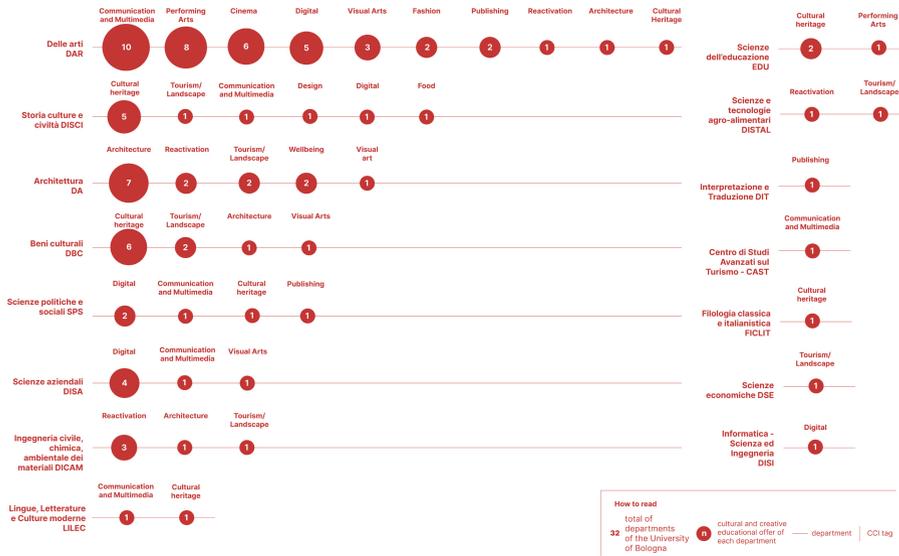


Fig. 1. Cultural and creative disciplines in the University of Bologna ecosystem. A data visualisation based on the semantic extraction of the database provided by the APOS Division of the University of Bologna.

In the context of a broader academic audience, how can a multi-directional and multi-layered communication of the data be driven to generate awareness about the relevance of cultural and creative skills and their impact?

3 Driving Awareness Through Data-Visualisation and Story-Doing

As can be seen from the preceding paragraphs, the primary objective of this research is to develop awareness on the need of renewing educational models that can have impacts on the territory generating new economic models and the development of a diversified system of cultural and creative industries. To do this, it is necessary to structure a communication strategy capable of raising awareness of the importance and urgency of these actions. The targets of the campaign could be divided into two categories: other bodies such as Italian and European universities, creative and creative companies. The task of communication in this case therefore is not only to raise awareness of urgency but also to create strong relationship networks and a new active community.

But what are the paradigms on which a communication of this type must be based today?

Nowadays, in the Data-driven Social Network Society, the medium and modalities in which we communicate, relate, and exist have radically changed.

The inhabitants of today’s society exist in a digital/virtual space for many hours a day, almost half of the waking hours [13], and they recognise this space as the source of their daily new experiences and knowledge. Therefore, in this context, it occurs that all types of communication take place. There, where algorithms, bots, fake news and filter



Fig. 2. Cultural and creative disciplines in the University of Bologna ecosystem. A data visualisation based on a human-based extraction and analysis model.

bubbles mediate experiences and knowledge, or if not, the concept of reality and truth itself. There, millions of posts on social networks contend at every access to emerging in our feed, to overcome our digital distraction, to be effective in 8 s - the new detected threshold of our maximum attention span, against the 9 s of the goldfish [14]. There are at least two new paradigms in communication today; it is undoubtedly becoming fragmented and frighteningly fast [15].

But how does the human mind operate in such a fragmented and fast flow? The function of our left hemisphere is precisely that of finding meaning among information. It tries to bring order and find purpose by generating a coherent account; in short, it creates a story [16].

Storytelling has never enjoyed better health than today. We live enveloped in the perfused and subtle narrativity radiated by a global communications system whose interstitial penetration force is unequalled in human history [17].

Storytelling has always been a vital tool for effective communication, but in recent years it has undergone a new evolution, strongly influenced by the advent of social networks. Indeed, experts talk about the transition from storytelling to story-doing where, unlike the models of the past that favoured symbolic and unidirectional communication, there is a preference for communication that aspires to the authentic and multidirectional narration [18]. Going beyond concepts such as exclusivity, simulation, passive identification, [19] to embrace a more active, engaging, co-participated, co-designed, but above of all authentic, communication model.

Thus, we have understood how today, social networks and new forms of storytelling are essential elements in the evolution of communication. Still, the third, and perhaps most important, element that has strongly influenced this field is data.

That data is closely connected to this new form of storytelling and social networks as it was understood from the recent political, social and economic events that have also made this triad a weapon for the manipulation of mass thought [20]. However, the history of data teaches us that they have always been used by publishers or institutions as a means of mass communication, using data visualization to explain complex phenomena and create awareness of important social, political and economic issues, such as the Statistical Exhibits of 1913 in New York [21].

The power of data is precisely that of making the invisible visible, while that of data visualisation is that of making the visible accessible, moving, today more than ever, from the scale of one to one to that of many to many, especially via the Net and Social Networks. In addition, in the data we find those characteristics of storydoing, such as authenticity, involvement, participation, these being used in this research as a means of revelation and generation of strong connections between CCI, University and territory. Some experts, however, point out that the relationship between data visualisation and Social Networks is still little explored in the scientific sphere [22]. And it is precisely on this relationship that research could take some of its future steps.

4 Conclusions and Future Steps of the Research

“Even the practices of data visualisation, as applied to so-called big data, seem to want to delude us today about new forms of objectivity, making us forget the debates on iconism of the 1960s that seem to have exhausted the visual’s claim to mimetic objectivity forever, recognizing the inevitable quota of conventionality and culturality implicit in any form of content processing and translation” [23].

Across Europe, we are witnessing a transformation within the academic sector motivated by the need to innovate and design new courses to adapt cross-disciplinary competencies based on culture and creative skills about the emerging professional markets expressed in productive and societal spheres.

The need to renew skills and adopt processes of lifelong learning practices has increased the relations between the University of Bologna and the businesses and private foundations overall that have co-designed new master's programs with the University. This metabolic dynamic reflects the increase of professionalising masters and the proliferation of MOOCs supplied through the innovative and digital learning platform BOOK (UniBO Open Knowledge¹⁶).

The data extraction model tested in the presented research aims to visualize the penetration of culture and creativity transcending the disciplinary scientific fields or sectors. The graphics of the data-viz of this new experimentation are still in prototypical form; however, they aim to demonstrate how the concept of story-doing is crucial to complement the action of making value and functional to create new relationships and impacts in the territory.

Considering the establishment of the Co-Location Centre South in Bologna coordinated by ART-ER, this project contributes to increase the strategic role that the European Union entrusts to this sector and cultural heritage for the future of its identity and recognition in the world.

Thus, narrations exist thanks to innovative data extraction models and have become a political tool to give voice to those who are not traced, represented, or do not produce findings worth measuring and communicating. Examples of this underrepresentation are culture and creativity. It was only in the last decade that policymakers began to believe that measuring performance through the economic impacts and counting those working in the cultural and creative industries could be a multiplier of value. This trend has led to the emergence of networks and websites in the form of observatories all over Europe, which have focused on this phenomenon, elevating it to the status of a driver of new economies and targeting policies to support them.

The future steps of the research will focus on elaborating a communication strategy that will consider the paradigms outlined in the previous paragraphs to create a new interactive platform. An example of this is the post published on Instagram District – Design & jobs, a matching platform between designers and companies, dedicated to narrating through data the fundamental role of creative jobs in the Italian economy (<https://www.instagram.com/p/CmOYS4YNatV/>). This new tool based on AI intelligence could enable a periodical analysis of the educational offer of all the academic programs, filtered by the CCS tags identified by this research.

The platform is intended to be:

- multidirectional: to make information digital and fully open-access;
- custom: with UX/UI experience filterable according to different targets/stakeholders;
- A.I. driven: able to implement artificial intelligence features that can generate an automated data implementation system at an advanced stage to arrive at a final real-time data model.

Finally, to connect the platform's outputs to the social networks for communication purposes, the research will explore the relationship between data-visualisation and social networks to enable effective communication campaigns that can overcome the fragmentation and speed of the social space through the complexities of data visualisation. The

¹⁶ <https://book.unibo.it/>.

aim of the campaign will be to show how fundamental CCI are as a productive sector in Europe and Italy. Another goal will be the expanding of communication target going beyond boundaries of this community, looking for new and unexpected realities that can become part of the CCI world.

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