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Algorithmic you

What is Infopoetry?

Die Poesie der Daten

Universitäts- und Landesbibliothek Darmstadt
12. April – 24. Juni 2024



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From top to bottom.

Atlante delle stelle [Star Atlas] by Andrea Benedetti (2016/2017).
The Colours of Languages by Francesca Calloni (2018/2019).

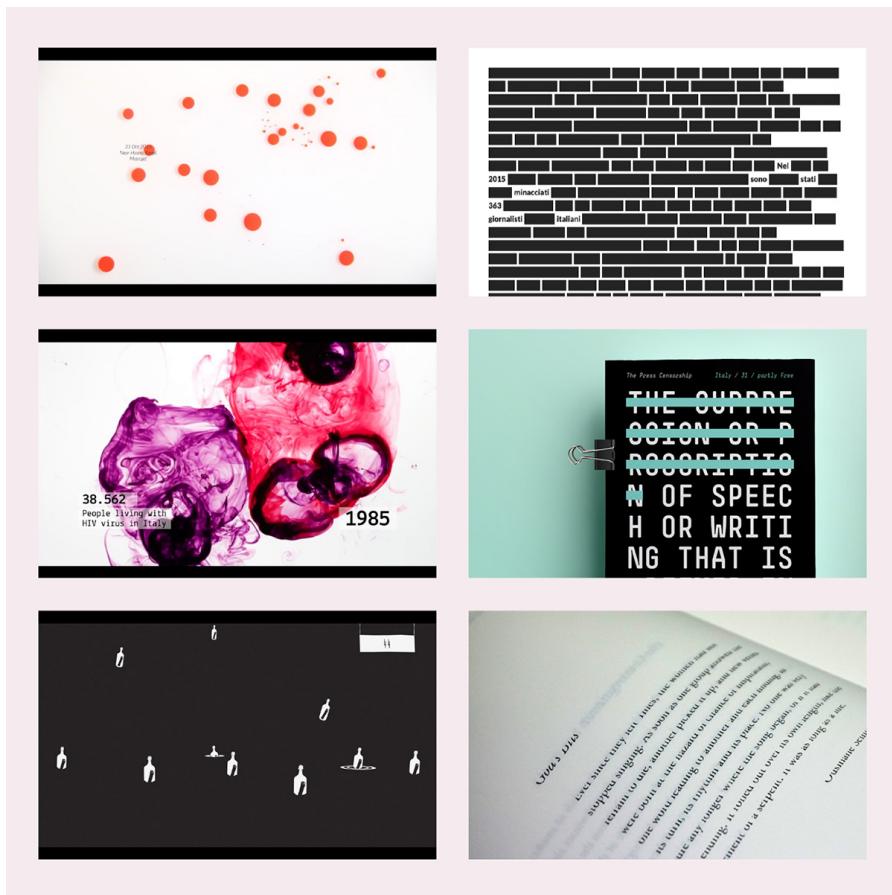
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Details of Infopoems, 2014-2019.

On the Relevance of Infopoetry in Designing with Data. A Designerly Approach to Trigger Users' Re-actions

Author Paolo Ciuccarelli

¹ Launched for the first time in the A.Y. the infopoetry exercise is still used as part of the educational experience of the final studio led by DensityDesign research Lab, within the second year of the Communication Design Master program at Politecnico di Milano.

² See the presentation "The poetics of data experiences. And how to teach it" I gave at EYEO 2016.

³ No doubt that data visualization can directly influence people's perception, here the reflection is more about a direct push towards action, and potential for socially coherent behaviors.

The inception of an info-poetic exercise aimed at challenging communication design students dealing with data¹ was sparked by an incidental encounter with a tweet²; it may have not produced any 'combustion' though without two thoughts I had been already contemplating:

1. the observation of the profound impact of technological skills in shaping students' understanding of data (and design): as their expertise grows, there's a tendency to zero in on data manipulation techniques, losing sight of the larger design frame they should be adopting: Seduced by the allure and the potentialities of data visualization tools and libraries, they might neglect considerations about the user, the context and ultimately the consequences and the impact of those data transformations. Infopoetry emerged as a means to counterbalance that phenomenon, introducing friction to cultivate a critical stance, by triggering a deeper reflection, and situating technological proficiency within the wider scope of design-driven innovation.

2. somehow connected, is the awareness of the difficulties in engaging non-expert users with data about complex phenomena: the less familiar users are – and want to be – with the data and the phenomenon it represents, the more difficult it becomes to capture their attention and guide them towards understanding the issue at stake – let alone acting upon it.

While both aspects are significant, the latter is the focal point here, nestled within a broader, ongoing, reflection into the politics of data representations – a hallmark of DensityDesign's scholarly and educational endeavors (Mauri et al., 2019). A common frustration within the community is the perceived lack of (direct) agency in data visualization, a sense of impotence³: even when understanding is achieved,

prompting consistent, consequential actions proves arduous, especially among users that do not feel particularly concerned or involved in an issue, or are skeptical. I have previously addressed this as Data Apathy, defined as: “the lack of interest and/or motivation – the status of being passive and unconcerned – towards a data driven representation about

⁴ The first time I publicly talked about the infopoetry exercise was at EYEO in 2016, but I hadn't a clear definition for it at that time, just a description of the brief I proposed to the students. The definition I quote here comes from my presentation “Data, Design and Poetry. Fighting Data Apathy” at the S-H-O-W conference in Utrecht (NL), on April 11, 2019 – with the theme of the conference being “Emotions in data visualisations and information design.” A systematic analysis of infopoetry as a concept through the lens of semiotics has been attempted in Piccoli Trapletti, 2017.

⁵ Again in the “Data, Design and Poetry. Fighting Data Apathy” presentation at the S-H-O-W conference in Utrecht (NL).

⁶ See also (Tyng et al., 2017): “Emotion has a particularly strong influence on attention, especially modulating the selectivity of attention as well as motivating action and behavior. This attentional and executive control is intimately linked to learning processes, as intrinsically limited attentional capacities are better focused on relevant information.”

a natural, social or cultural phenomenon, thus leading to unwillingness of being involved and participate”. Communications during the COVID-19 pandemic are emblematic on this regard: despite extensive scientific evidence and the deployment of all sorts of means and modalities for its representation, both in mainstream media and scientific publications, people, and societies at large often disregarded data, and behaved in disparate ways, when not opposite to official, scientific, health guidance.

Among other issues, such as the inherent abstraction of data visualization languages creating an artificial distance, and specific visualization issues (Lupi & Ciuccarelli, 2022), the challenge often lies in not adequately considering potential user reactions and the designer's intentions, and their interrelations – once minimized, if not cancelled (D'Ignazio, 2020), in prominent data visualization approaches. That's why in the first definition I used⁴ to introduce the concept of infopoetry, the response of the user – what comes after understanding – the actual, intentional, effect of the communication artifact, was as important as the mere transfer of information and knowledge; infopoetry was then defined⁵ as “a data-based communication artifact designed to both convey information and intentionally provoke a long-lasting emotional response, in order to get an audience interested, involved and eventually active towards an issue.”

Both information and emotion are meant to exist symbolically in the info-poetic framework, mirroring intrinsic connection between cognition and emotion: “Each situation that affects us emotionally does also concern us cognitively, and vice versa [...] Just as there is no cognition without emotion, at least in the sense of emotionally driven attention and interest, there is also no emotion without a cognitive grasp of the given situation.” (Fuchs & Koch, 2014)⁶. When the goal is to include all the potential stakeholders of a complex phenomenon, understanding the underlying issues and estab-

lishing an enduring deeper bond with them may and should coexist; it may require the expansion of data representation beyond the single artifact, to enable an experience, or a journey, that starts with the data and (hopefully) ends with new knowledge (Masud et al. 2010), and an activated audience. An experience that may develop in time, through a range of diverse touchpoints and milestones, where info-poetry could well be either the beginning or at the end. Bringing (scientific) evidence to certain users is a designerly effort – almost physical – that the etymology of the word translation well describes⁷ and the (communication) design translational paradigm – even though not exhaustively – may help codify (Zingale, 2016a, 2016b), in the path towards the making of infopoetry as a disciplinary tool and not just a provocative exercise. In the common dichotomy between analytical and narrative purposes (Segel & Heer, 2010), I position info-poetry beyond the latter,

in the realm where data embodiment (Streeck et al. 2011), visceral representations (Stark, 2014) and persuasive visualization (Pandey et al. 2014) converge, with the aim of nudging readers and users towards a desired outcome. If no data representation is ever neutral, here is where empathy leads, subjectivity is key, a direct message is needed, and designers openly reclaim their political role.■

⁷ I refer here to the Latin translates, as “carried over” serving as past participle of transferre “to bring over, carry over”, from trans “across, beyond” + lätus “borne, carried”. Interestingly, the Old English word it replaced (awendan, from wendan) also brings the meaning of “to turn, direct”, suggesting perhaps that visualization as a translation activity may also be able to direct or to turn someone towards an intended goal, or behavior. <https://www.etymonline.com/word/translate> – retrieved on April 1st, 2024.

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Infopoetry: The Poetic Enunciation of Data.

An Experiment between Art and Communication Design

Author Salvatore Zingale

¹ The website of the DensityDesign Workshop, founded and directed until 2019 by Paolo Ciuccarelli, is densitydesign.org. Today the workshop is directed by Michele Mauri.

² The main part of the workshop involves group work. The infopoetry, on the other hand, was conceived as an individual exercise, replacing previous ones.

³ The term 'artefact', prevalent in design literature, is understood here as a declination of the term 'enunciation'.

1. IN THE BEGINNING WAS A TWEET

In January 2013, a short post appeared on Twitter in which Matteo Borsacchi, a digital co-communication consultant, defined the infographics published by Corriere della Sera's Sunday supplement *La Lettura* with a lapidary hashtag: #infopoesie. The tweet also contained a link to the website of the research laboratory of the Milan Polytechnic's Design Department, the workshop from which those poetic data visualisations came: the DensityDesign Laboratory¹.

The term 'infopoetry', a neologism, intrigued and amused the recipients of so much attention. In particular, it was immediately adopted by Paolo Ciuccarelli, the scientific and didactic director of DensityDesign, who grasped its potential and immediately interested the teachers and researchers of the didactic laboratory, not only designers, but also epistemologists, statisticians, computer scientists and semioticians. This gave rise to a challenge: what if we really tried to inject poetry into data visualisation, which is often as aesthetically refined and fascinating as it is lacking in passion?

Hence the intention to use this part of didactics² to induce students to undertake a design exercise in which they bring their subjectivity into play and reflect on an inelimitable element of enunciation: intentionality. In designing an infopoem, the subjectivity of the student-designer is called upon to *expose* itself, together with and within the expressive plane of the communicative artefact³. At the same time, the enunciational-dialogical game calls into question the user's sensitivity rather than cognition, with an involvement that is more typical of the arts than of design. In infopoetry, in fact, the purpose of the visualisation is not only to *show* data, but above all to make them *feel*: infopoetry, at the same time, *inform* about the data represented and *arouses passions*. In

this sense, it proceeds along the path traced by various poetic-artistic experiences⁴ as well as a mixture of methodologies proper to design action and expressive manifestations ascribable to the arts: it is information *plus* poetry.

2. AS A TRANSLATION

It is not difficult to observe that the formulation of such a challenge – which, among other things, entails an increase in the significance of communication artefacts – constitutes a stimulus and an opportunity for semiotic didactics. The mingling of *information* and *poetry*, in particular, leads to rethinking the very purposes of visualisation, projecting design work into a borderland and synthesis between art and design.

⁴ In this regard, infopoetry is grafted into the 20th-century tradition of Concrete Poetry and Visual Poetry, with even some references to Conceptual Art. On this field of artistic and poetic experimentation I refer to Accame (1977/1981) and Stefanelli and Pignotti (1980).

⁵ On design as translation, I refer to the collected volume edited by Giovanni Baule and Elena Caratti (2016), which also contains my contribution cited above.

Infopoetic production, in fact, as we shall see, makes it possible to emphasise in particular two semiotic aspects, among the many involved, that concern the work of visualisation: (i) the translative character of visual artefacts; and (ii) the transition from visualisation presented as an *enunciative* act (the well-displayed but detached exposition of the data) to visualisation as an *enunciations* act (the presence of the visualiser within the visual artefact). This second aspect entails another, which I will only mention here: the consideration that design, precisely because it cannot ignore the direct involvement of the user-recipient, has a dialogical vocation and the artefact a responsive nature.

The first aspect, which has already been addressed theoretically in Zingale (2016a, 2016b), starts from the idea that every form of design can also be considered as a form of translation. This hypothesis cannot, of course, be exhaustively developed here⁵; but we can identify the ‘translational reason’ for design in the need to move from one state of affairs to another: from that which initiates the drive to design (including desire, no less incisive than economic perspectives or social needs) to an artefact or service or system capable of interpreting it. The questions then are: from what to what is translated in design? and what are the translation steps in a design process? The conception of ‘design as translation’, as is easy to guess, immediately finds itself having to unravel a paradox: if to translate is to go from one text to another, on closer inspection, design does not

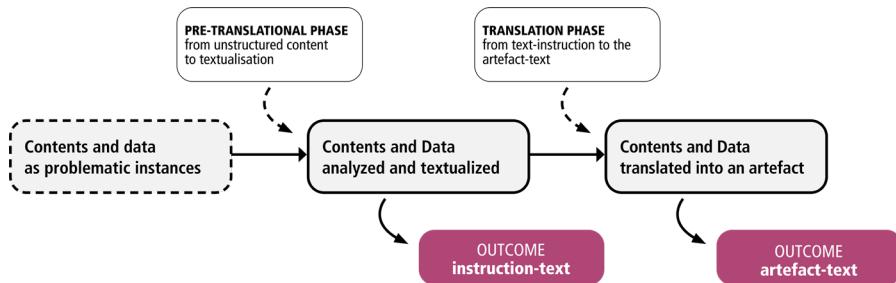


Figure 1. Outline of the translationprocess in data visualisation.

start from a text proper, but from instances of another kind. Hence the question: what is the *object* of translation in design?

⁶ The 'amorphous and indistinct mass' of thought that precedes, already according to de Saussure, 'the appearance of thought' (Saussure, 1916, p. 136 transl. It.). According to Cosimo Caputo, the Purport, or Matter, "has a non-scientific, non-semiological form, which means that it is a scientifically amorphous substratum and at the same time the site of every possible sign. As such it is *materia signanda*" (Caputo 2010, p. 181).

In Zingale (2016a, 2016b), I attempted to answer the paradox by taking Roman Jakobson's (1959) well-known tri-partition as well as Louis Hjelmslev's (1943) semiotic model. Of the latter, I believe that not only the subdivision of signification into two planes should be taken into consideration, but in particular, in our case, what the Danish scholar places as much *before* as on this side of both planes: the *Purport*. In design, one does not translate in order to make one understand what is 'said in another language', but to turn into an unprecedented or unexplored form of expression, thus inventive, yet appropriate and pertinent, the result of varying degrees of invention, that which originally presents itself without a defined form or textual structure. Thus, in design – this is my theoretical hypothesis – we can imagine the translatable passage as differentiated into two stages: (i) from the undifferentiated matter of the *Purport*⁶ to a textual form, albeit with a provisional and preparatory status; (ii) from this textual form to the artefact proper.

I have thus summarised this hypothesis in a diagram (Figure 1) that envisages the following steps, relating to data visualisation in general and to any form of design.

The first, *pre-translative* phase is articulated as follows:

1. textualisation phase, which consists of two points:
 - 1a. proposal or choice of the data set to be visualised, which arises both as a *communicative intention* and as a desire to make known through infopoetry neglected aspects of social and cultural reality;

1b. transformation of the data set into an instruction text, which takes the place that, in interlinguistic and inter-semiotic translation, is occupied by the *source text*.

The aim of this first phase (1) is to collect and reformulate data on a certain topic of interest in a textual form, so that it becomes the object of shared analysis. In fact, data are not always presented in an articulate and structured manner; they almost always have to be searched for in a myriad of scattered places, on the web, in social networks, as well as in other media and documents. Visualisation work often takes its cue from data to be ‘extracted’ from repositories of various kinds, even from encyclopaedic sites, blogs or interviews. It is then not to be ruled out that data are sought and as embedded through survey work, conducted directly by the designer through interviews, field observations and other forms of ethnosemiotic⁷ survey.

The result of this phase is what I have called a *text-instruction*: not yet a text designed for communication, but a kind of score that initiates and directs the discourse. This text can take different forms, although the tabular form generally prevails.

⁷ On ethnosemiotics, I refer to Marsciani (2007).

The second phase, the properly *translating* one, is more articulated and involves the passage from the pre-existing instruction-text to an *artefact-text*:

2. visualisation phase, which is articulated, in the case of infopoetry, in the following points:

2a. analysis of the data set as it emerges from the text-instruction: this phase is decisive with respect to the whole process that follows, because it is the one that prepares and determines every discursive strategy;

2b. selection of the pertinent features inherent to the data set that one wishes to bring out: here the subjectivity of the designer is revealed, who through a selection and choice of the pertinences to be highlighted makes explicit both the presence of his or her own point of view and the recourse to the processes of negotiation or compromise;

2c. identification of the effects of meaning that one intends to produce in the fruition, bearing in mind that the aim of infopoetry is twofold: (i) to involve the user emotionally, just as in a true and proper aesthetic experience, with respect to the theme treated (paying particular attention to both the factual and conative functions); (ii) to obtain this effect by drawing the user’s attention to the reliability of the data

represented and to the various themes to which they refer (thus also paying attention to the referential function);

2d. choice of a strategy of figurativeisation of the statement, through the construction of a metaphor or other figures: this point is the one that puts the designer's inventive abilities to the test, because there are no – nor can there be – rules or procedures to follow, but only acting by 'abduction strokes', or associations of ideas, to find the figure capable of interpreting both the initial data set and the very rationale of the design choices;

2e. identification of the most appropriate medium in relation to the pertinences selected in (2b) and the intended sense effects in (2c);

2f. making discourse, or *staging*, which takes place in two phases: the first *on-desk*, through the usual design tools; the second *in the field*, especially if it is a matter of finding particular or unusual materials (such as, for example, a thousand cigarette butts) or setting up backstage for unusual video footage.

Let us add that, in infopoetry, it is not a matter, as in *information design*, of translating the measurable or numerical into the visible, but rather of setting up a representational scenario where the visual or material reconstruct aspects of the experience and problematic realities examined.

3. BEYOND CONNOTATION, EVOCATION

In infopoetry, precisely because of the atypical and experimental modalities that characterise it, the translation process, as already mentioned, has its starting point in a sort of *dialogic contract* between designer and user. Each infopoem contains an implicit request, which we can formulate as follows: 'With this artefact, I am showing you the data relating to a certain phenomenon, as happens with every data visualisation; but in addition to the *denotation* of the data, I am asking you to pay attention to the possible *evocations* that derive from the way they are presented'. The question is: what are these evocations and where can they lead?

We have said that, unlike other forms of visualisation, in infopoetry the subjectivity of the designer is an ineradicable, indeed necessary, character. To answer this question, let us now add that the dialogic contract

foresees, on the part of the designer who enunciates, a perlocutory act that is both a commitment and a promise, and requires from the enunciating user an act of trust: if one relies on the designer's know-how – and on *his/her will* to do, on his intentional plan – knowledge of the datum can become an experience that transcends the datum itself, in order to give a more ample perception of it. In fact, while declaring the renunciation of any neutrality of representation, infopoetry brings the datum back to its most genuine task: to recount the phenomena of which it is a part, often allowing us to touch – or feel with our eyes and ears – its harshness or tragic nature, or even its lightness or strangeness. This, after all, is one of the reasons for metaphor: to be able to *make meaning* beyond the very limits of signification.

The methodological difference between infopoetry and information design lies, then, in what we may define as going beyond the stage of denotation and connotation (the stage within which information design and data visualisation have the task of holding themselves back)⁸ and entering the territories of evocation. It is for this reason that the

use of metaphor, the ability to find the most appropriate one, is one of the turning points in the design process of an infopoem.

But here we have used another term, on which we must dwell: *evocation*. This is a term that Massimo Bonfanti (1987, 2000) uses to complete a ‘process of interpretation’, to complement denotation and connotation. It is an ‘in principle unlimited series of interpretative passages, in

which the interpreter can deviate from the pragmatic programme of the text, proceeding by evocation, according to an abductive inferentiality that accentuates the “spo-ments” [...] passing into poiesis of narratives’ (Bonfanti, 1987, p. 108). It is safe to assume that Bonfanti is referring here to the interpretation of a ‘product of meaning’, such as a projection or a text. In our case, interpretation is also that which is part of the design work in the designer’s mind, a projective interpretation that goes in search of a mode of expression capable of constructing ‘poiesis of narratives’ on the chosen datum.

The idea of evocation, as an interpretative response, was already present in Gottlob Frege (1892), who called it *Vorstellung* (representation, imagination) and distinguished it from both denotation and connotation. It is the mental image, ‘often impregnated with feelings’, that is formed in the mind of an utterer when faced with an ‘open’ semiotic manifestation (Eco, 1962). Frege writes:

⁸ When and as long as, of course, visualisation acts as a service to users, producing an optimal representation of data in order to make information accessible, continuing Otto Neurath’s (1931) visual education programme.

If the denotation of a sign is a sensibly perceptible object, my representation of it is, on the other hand, an internal image that has been formed on the basis of memories of sensible impressions I have experienced and of activities, both internal and external, that I have exercised. (1892, p. 12)

The difference is that Frege's *from me* here is to be understood as a *from us*, by a collectivity of interpreters who draw on a heritage of images, of 'memories and sensible impressions' of a shared encyclopaedia.

In infopoetry, evocation is thus responsible for the *oscillations of meaning*; and consequently it proposes itself as an inferential stimulus and invitation to 'learn more'. As if the enunciator were invested with the task of exploring the phenomenon presented and represented more extensively.

4. FOUR EXAMPLES

But we cannot talk about a form of visual utterance without showing it. I select four examples, which I take directly from the repository put together by the DensityDesign Workshop: infopoetry.densitydesign.org. These are works created with four different media: a video; a book; an installation; and an object.

4.1. Until the Last Cry

This Chinese student's video is entitled *The Weeping*. It tells us about the progressive decrease in the birth rate in China from 1960 to 2015 (Figure 2). The coffee beans represent, pro rata, the number of children born every five years. The video is accompanied by the first cry of newborn babies, the first breath that allows the alveoli to dilate and oxygen to pass through. As the number of coffee beans decreases, the number of crying babies also decreases, almost to the point of silence.

4.2. The Paper Body

In this infopoetry book by Carola Barnaba, *Crumpled Italy*, the theme is violence against women in different Italian regions (Figure 3). Gathered in a book to be leafed through, the pages tell one of the saddest dramas of our country with mere data and battered paper. In Italy, 6,788,000

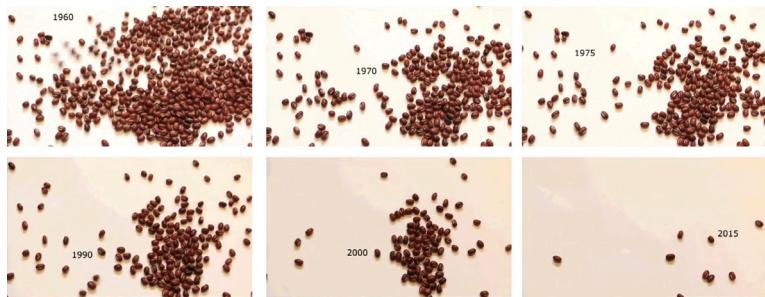


Figure 2. *The Weeping* by Xuanxuan Hou (2015/2016). Some Stills from the Video.



Figure 3. *Crumpled Italy* by Carola Barnaba (2015/16). Eight Pages of the Book.

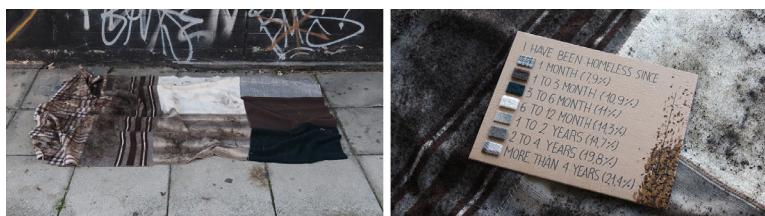


Figure 4. *Under the Blankets* by Alessia Musio (2018/19). Left: detail with data.

women, aged between 16 and 70, are victims of all kinds of violence, both physical and sexual, during their lifetime; 10.6 per cent of them experienced sexual violence before the age of 16.

The metaphor is the crumpled sheet of paper, bruised each time in relation to the percentage of violence. Like the woman's body, the sheet does not crumple, but once it is crumpled, it cannot fully stretch and return to the way it was before.

4.3. A Blanket on the Ground

What is left when all is lost? This question introduces the theme of Alessia Musio's infopoem, *Under the Blankets* (Figure 4). Here she recounts the loss of the domestic place and the existential condition of the homeless, starting with the stories of seven people – out of the 43,595 surveyed in Italy – forced to live on the streets. The selected data concern representative samples from those who have just entered this state of precariousness to those who have in fact assumed it as a new, sep-painful, way of being. The blanket placed on the ground, using the patchwork sewing technique, becomes a diagrammatic field: the greater the degree of dirt on each *clochard*'s blanket, the more time each *clochard* has spent on the street.

4.4. The Weight of the Cloud

Few of us think about it, but the various clouds we use to store our files are anything but environmentally friendly. *Cloud Matter*, by Guilherme Appolinario (Figure 5), is a concrete cloud, heavy (physically) and bulky: yet it 'only' corresponds to 6 gigabytes, far less than we carry in our pockets inside a pen drive. In this installation, the weight in gigabytes was converted to the weight of CO₂ emitted to transfer the amount of data indicated. The infopoesia is an interactive sculpture and, when raised, allows one to perceive the impact of the pollution caused by the clouds of data.

5. CONCLUSION: FROM TRANSLATION TO NARRATION

Enclosed in its dimension as a didactic exercise, the infopoetry experience has so far been limited to the refinement of a method. Its next development should consist in proposing itself as a public communi-



Figure 5. Cloud Matter, by Guilherme Appolinario (2019/2020).

cation tool, seeking channels and social contexts in which this form of visualisation can be not only an object of enjoyment, but also an opportunity for reflection and discussion. Indeed, it cannot be ruled out that an infopoem, however related to the phenomena it speaks of, cannot ‘speak’ beyond the strict topicality of the data from which it originates. On the contrary, it is precisely its being on the borderline between art and design that hints at expressive potential yet to be explored.

But if we look closely, infopoetry also necessarily lies between the chronicle and history, hence between information and memory of its own era. Infopoesies – we have seen this to some extent – talk about the problems of the world, from ecology to social conflicts, from technology to behavioural habits. All this suggests a further step to take, which sees the poetic enunciation of data not only as an act of translation, but as a narrative and argumentative activity. Not least because the communication of data, as is repeatedly stated, stimulates questions rather than answers. ◎

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Final Exhibition of the Students' Work During the Open Presentations Day at the Politecnico di Milano, February 2020.

Algorithmic You. A Design Setting to Create Poetic Narratives with Personal Data

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The article describes an educational activity that uses personal data to create a poetic narrative

and reflect on the relationship between humans and technology. “Poetic narratives”, built on the concept of “info-poetry”, transform data into evocative narratives through visual, audiovisual, and material languages. The main goal is to aesthetically represent data as a means of expression and interaction with technology. The activity is part of a Communication Design course at the Politecnico di Milano, focusing on information design, data visualization, statistics, and semiotics for a critical approach to data and design. “Algorithmic you” explores the design of narrative objects to contemplate data rather than analyse it. Students are invited to collect their data from everyday devices and platforms, such as pictures on their phones or data on social media, and concepts such as mirrors and glitches guide the inquiry to narrate with objects that straddle art and design their own experience and relationship with technology. The activity encourages students to reframe data to design an expressive language that explores the complex relationships between people, data, and algorithms. Student work examples show various data design practices, such as transforming text into images or vice versa.

INTRODUCTION

Experimentation in the visual, physical, aural, and multimedia representation of data traverses different paths that continue to expand the traditional boundaries of information visualization. In transforming and translating data from one language to another, such as the visual, one must consider how data amalgamate into a communicative narrative. This paper presents the experience of an educational activity preparatory to creating a setting for the exploration of personal data to reflect on the human–technology relationship for the creation of a narrative and poetic data visualization. We refer to the definition of poetic narratives as expressive narratives that move data from a dimension of notation and connotation to one of evocation (Zingale, 2020) connected to the experiential component of the author through visual, audiovisual, and material languages.

Storytelling through data is not new and was initially formalized by case observations from data journalism (Segel & Heer, 2010). Storytelling with data visualization defines a spectrum between author-driven and reader-driven approaches to interacting with data. This relationship between the author and reader involved in the story is one of the aspects of communication that the poetic narratives we propose follow; however, they offer emotion-driven rather than narrator-driven reading. The poetic narrative we discuss is a type of designing with data that integrates different values and new looks at research on the relationship with technology. Our definition of poetic storytelling is based on reflections from our experience as teachers and researchers and other alternative data uses for representation that position infopoems as an exercise between design, art, and semiotics.

Information visualization is related to the domain of symbolic representation from the moment information is encoded in numbers and letters. However, visualization can only begin when the data already exists. But the definitions and techniques for approaching data representation are comprehensive and constantly evolving. Access to new tools for collecting, analysing, and representing data, as well as artificial intelligence tools for the generative creation of image, sound, and text, are part of the toolbox for communication designers and those who approach designing with data.

Other alternative uses of data representation, such as data art (Viégas & Wattenberg, 2007) and casual data visualization (Pousman et al., 2007), encourage “passionate” reading of a given topic instead of

pursuing the scientific approach of universal representation (Dörk et al., 2013). Data art, or artistic visualizations, often include personal experiences, individual opinions, and the context of the visual experience in the interpretation. On the other hand, casual data visualization uses computer tools to represent personally meaningful information in visual form, focusing on the knowledge of the person viewing the information, how they view it, and where it is perceived.

Another approach we refer to is data physicalization through indexical data visualization (Offenhuber & Telhan, 2015), which leads us back to autographic visualization (Offenhuber, 2019). These approaches propose understanding data as something tangible, focusing on materials rather than data encoded in numbers and symbols, and experiencing physical outputs as a medium for communicating the experience of data. The concept of indexicality, founded in semiotics, describes contiguity relationships in representing a phenomenon. Charles Pierce defined indexicality as a trace or imprint of physical space when it has a causal relation to the object that created it. In this case, the representation of indexical data is very much related to the meaning through the context in which it is presented and its performativity in front of the audience, which can be transformed from a consumer of information to a witness to an experiment. Autographic visualization will be a technique that brings out the trace from a matter by designing and applying methods that reveal it (such as, for example, using a chemical agent in the SARS-CoV-2 rapid test sample). Visualization of indexical data through various techniques, such as autographic visualization, can encourage careful observation and critical curiosity about how information and knowledge can be related to physical phenomena.

THE FINAL SYNTHESIS DESIGN STUDIO AS A FRAMEWORK

The DensityDesign course is a final synthesis design studio that since 2004 has aimed to make the complexity of social phenomena visible, accessible, understandable, and manageable through data visualization and information design (Mauri et al., 2019, 2020; Valsecchi et al., 2010; Zingale, 2020). Over the years, the course's structure, content, and methods have been adapted to reflect the evolving technical and critical skills needed by design students entering the professional world. The overall goal of the course is to teach students how to design in a complex world, making them think about the social and political implications of creating data- and information-intensive artefacts. The

course is a five-month workshop taken by students in their final year of the Master's Degree in Communication Design; consequently, these students already have a solid background in visual communication. The course generally has about 50 students who create groups of five to seven components to do the work; group work is essential to develop the skills required by the course. Group work is complemented by personal exercise as part of the module concerning design semiotics.

To address concepts of social complexity through data by design means, the course interweaves other disciplines that provide students with knowledge of statistics and semiotics. The course is mainly based on laboratory sessions, where instructors review and discuss student work. Theoretical lectures are used to introduce the conceptual basis for the design of data communication devices. The faculty assigns each group of students a theme that will be explored in different ways along a three-step process. The proposed themes are broad enough to allow students to choose the specific framework for addressing them.

Infopoetry: A Semiotics Exercise for Data Representation

The didactic and research work of infopoetry integrates well into the context of the course, by proposing the artistic interpretation of data visualization as an individual exercise: each student is called upon to face the design challenge individually and with his or her subjectivity as a designer.

Infopoetry is a neologism that, on the mould of the better-known infographic, relates the words “information” and “poetry”. In this context, however, we speak of poetry because one of the main purposes of the designer will no longer be only to “explain” data and thus make it “known”, but also to translate it into a sensitive image and thus make it “felt”. The relevant and necessary character for its production is hence that of the intentionality posed by the designer. As Zingale writes:

Every infopoetry contains an implicit request, which we can formulate as follows: “With this artefact, I show you the data related to a given phenomenon, just as happens with every data visualization; but in addition to the denotation of the data I ask you to pay attention to the possible evocations that result from the way they are presented.” (Zingale, 2020, p. 4)

In the production of infopoetry, it is therefore possible to find two purely semiotic aspects: on the one hand, the translational nature of visual artefacts, and on the other, the shift from visualization as an explanation detached from the data set (enunciative act) to the narration of the data set mediated by the presence of the visualizer (enunciational act).

Again, according to Zingale (2020), the first phase of design concerns the “textualization phase” during which one proceeds by selecting a data set seen both as a “communicative intention” and as a willingness to convey some “neglected aspects of social and cultural reality”. The data set may include data from different sources, extrapolated and assembled through the designer’s work. The next phase, that of translation, properly concerns the “visualization phase” in which one proceeds initially by analysing the data, choosing the aspects one intends to bring out and identifying “the sense effects” one has set out to produce during fruition. Next, the designer is first called upon to choose the metaphor, rhetorical figure, or device that will be used to interpret the data set; then, regarding the choices made, he or she identifies a medium congenial to them, and finally arrives at “putting it into discourse”. The shift that takes place from information design to infopoetry is found in the passage that occurs during the search for the metaphor or rhetorical figure, which in this way highlights, in addition to the denotation and connotations of the visualization, its ability to produce evocations: the subject’s free interpretations, the “whims of personal associations of ideas” (Bonfantini, 2000, p. 69). This leads the designer to perform “a process of interpretation” that calls into question the encyclopaedia (Eco, 1984) shared by the community of interpreters and that includes images, events, and impressions.

Based on the experience gained and from Giulia Piccoli Trapletti’s master’s thesis (2017) over the years, a six-point process has been formulated that defines infopoetry production and its narrative exploration. The six points are aspects that students need to define during their infopoetry design: 1) the data set; 2) the relevant elements of the data set; 3) the choice of a metaphor; 4) the medium of expression; 5) the designer’s arguments and intentions; and 6) the desired effect on the user.

We start with the choice of the data set, in which we select the topic to be discussed and the source from which to draw the data; we then proceed by selecting, describing, and highlighting the relevant features. The choice of metaphor will make it possible for the expression of the infopoem to also become a bridge for the translation of the data set, immediately followed by that of the medium to be used to best express

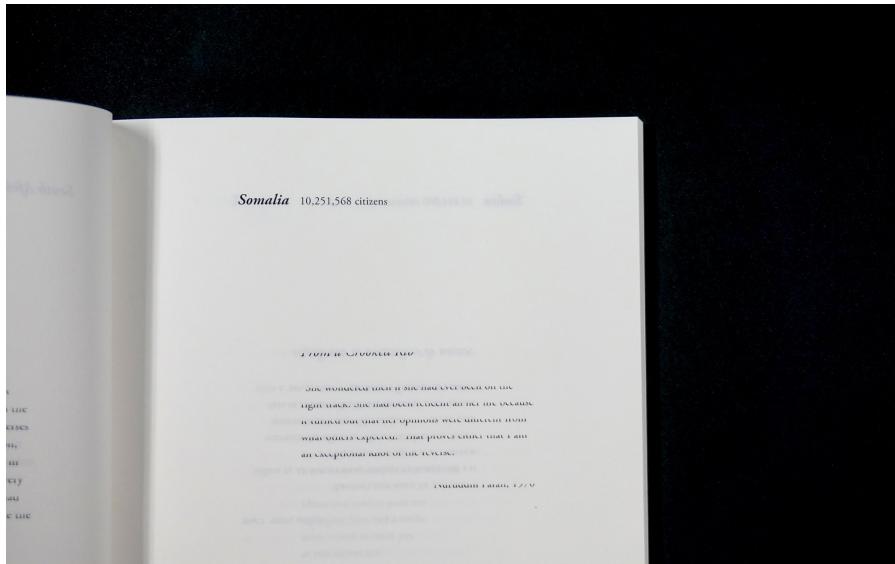


Figure 1. Infopoetry by Simone Costagliola (2016–2017), *Unwritten*¹ <<https://infopoetry.densitydesign.org/infopoetries/unwritten.html>>.

¹ Simone Costagliola proposes a reflection on the average level of literacy in each country.

² Through autographic visualization, Ginevra Terenghi approaches the tangible experience of climate change by representing the melting of coloured ice on paper.

it. Also important to consider will be the arguments and intentions from which the infopoetry takes its beginning, and finally to reflect on the intended effects on the user/user of the infopoetry. These initial six points were used as an initial outline called a “preparation form”, helpful for individual students to present their project idea during mid-term reviews with faculty. Referring to the exercises of past years, as anticipated we can find references to social and cultural realities that should be highlighted according to the designer’s point of view. The artefacts presented over the years range from object to video, through audio and purely visual productions such as posters, books, and useable websites. For example, during the 2016–2017 course, student Simone Costagliola proposed a book, *Unwritten*, to convey the social issue of media literacy in different nations, emphasizing how the possibility of reading the literary piece also implies free access to culture (Figure 1). The artefact is divided into five chapters, with each page representing a country. Costagliola further explains that to highlight the identity of each country, “the single page contains an excerpt from the main literary work of the nation’s most representative writer”. The text is removed in proportion to the literacy rate, not allowing for complete reading.

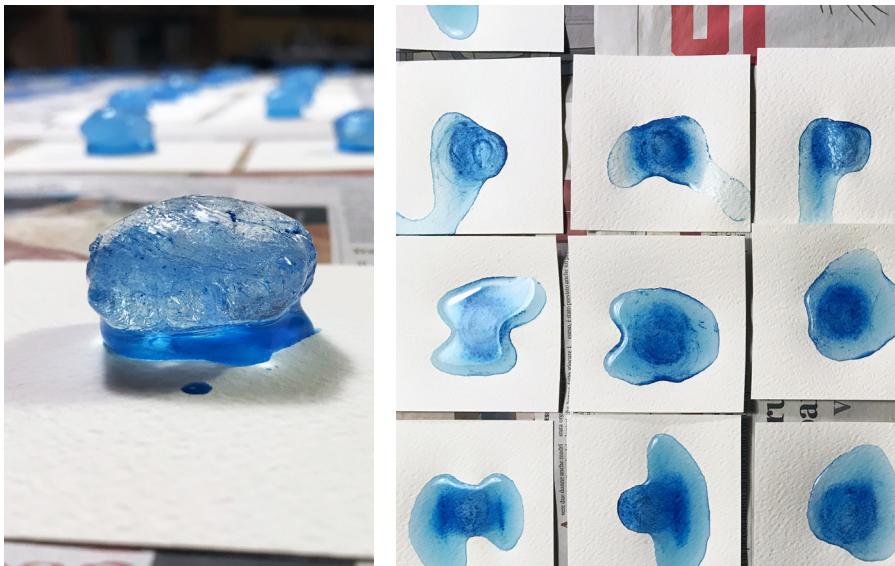


Figure 2. Infopoetry by Ginevra Terenghi (2017–2018), *Weeping-Bergs*² <<https://infopoetry.densitydesign.org/infopoeties/weeping-bergs.html>>.

Another infopoem tells how the various effects of climate change are not immediate and occupy a long period that often prevents us from understanding the significance of their impact. Melting glaciers have caused vast areas of ice to break away in the oceans one at a time in recent years. Genevra Terenghi's Weeping-Bergs project employs auto-graphic visualization techniques in which melting coloured ice (representing different glaciers) transfers the dramatic sensation of melting large masses of ice (Figure 2). The method employed by Terenghi consists of designing the experiment (paper size, colour, and size of each iceberg) while leaving open how the melting ice could behave.

As can be seen from these two works, thanks to the intentional aspect of the designer, infopoetry communicates with its audience by displaying data visually and leading the user toward reflection and discussion of the issues touched upon. Indeed, “the poetic enunciation of data [is seen] not only as an act of translation, but as a narrative and argumentative activity” (Zingale, 2020).

“ALGORITHMIC YOU”: INFOPOEMS TO EXPLORE THE PERSONAL RELATIONSHIP WITH TECHNOLOGY THROUGH DATA

The infopoetry editions through 2021/2022 have focused on the poetic representation of data of a public nature, such as data available on open data portals, or national statistics, or even data collected by activists, concerning issues ranging from climate change to the impact that war has on an area. In the 2022/2023 and 2023/2024 editions with “Algorithmic you”, students were asked to focus on exploring their relationship with technology through digital traces left on different digital channels, from social media such as Instagram and TikTok to usage statistics that can be found from their mobile devices.

With “Algorithmic you”, a more robust synergy is defined between two different methodological concepts of investigation regarding personal data that emerge as fundamental in infopoetry: (1) autoethnography, i.e. a method of analysis derived from anthropology, linked to the communication of a personal point of view of the designer in the representation of data; and (2) the re-enactment of a social and cultural situation for ethnographic investigation, linked to the concept of the enunciation of data in an infopoem.

In the first instance, the exercise takes its inspiration from autoethnography (Adams et al., 2022), where researchers from various disciplines analyse social situations and contexts through the documentation and description of their own direct experiences: while with other methodologies the researcher mitigates their perspective, here it is almost celebrated (Dunn & Myers, 2020). In an autoethnographic process, the researcher is called upon to put their own experience at the centre of his or her investigation, just as the designer of an infopoem is called upon to put their point of view at the centre of the data representation (Zingale, 2020). Secondly, the exercise relies on enacting an everyday situation observed by designers to make it explicit to an audience. Pink and Mackley (2014) define the concept of re-enactment as a method of investigating the “hidden” moments of the research participants’ everyday life. However, while the authors use re-enactment through video recordings of performances of everyday actions (2014), in the context of “Algorithmic you” what enacts the personal relationship with technology is the representation of the digital traces left by the interaction with it, collected from data sources, e.g. online platforms or smartphones.

Objectives of the Individual Exercise

The exercise sees three levels of objectives that overlap. The first level is didactic objectives, i.e. those that enable the transfer of knowledge from the teaching staff to the students. The didactic objectives are twofold: on the one hand, one wants to transfer knowledge on how to reappropriate data by illustrating some ways of downloading the data made available on the platforms (PO1), even if only by making it clear that this can be done; on the other hand, one wants to enable students to put into practice some notions of semiotics in a project environment (PO2). In this case, we assess the delivery of the paper itself, as the result of data collection work (PO1) and its transformation of meaning (PO2). The second level of objectives is the project objectives, i.e. those linked to the theme proposed to initiate work with the students. The project objective thus revolves around the development of the ability to translate data extracted from online platforms or one's own devices into narrative elements through which one can communicate one's relationship with technology (Op1), and the evaluation of the effectiveness of how the artefact containing these narratives is realised. At this juncture, the quality of the product is assessed (Op1): how relevant it is to the theme and how clear the message shared with observers is through the design object designed by the students. The third and final level is related to the research objectives, which revolve around the experimentation of the teaching method and its validation through the students' work. In particular, the research objectives ask how the exploration method of personal data favoured design success (Or1), and whether it succeeded in fostering moments of reflection on one's relationship with the technology explored by the artefact (Or2).

Mirrors and Glitches, Two Lenses through which to Look at One's Data

As mentioned, the exercise was carried out individually for each student. The work consisted of a series of aspects of the artefact to be defined independently, and then discussed in moments of sharing and revision with the teaching staff. The presentation of the exercise, putting into practice what we call “poetic narratives” in this article, involved on the one hand an introduction to the purpose of the exercise and the type of project to be delivered, and on the other, an explanation of the theme that would be addressed with it.

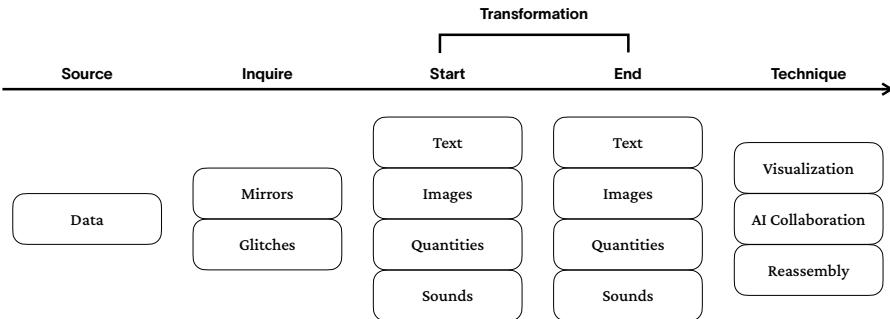


Figure 3. The Infopoetry Construction Process the Students Followed³.

The narrative exploration of infopoetry (through the six points presented in Section 2.1) is guided by two concepts we offer as observational

³From the choice of data from a source, an analysis point of view (mirror or glitch) was chosen, through which the data was transformed from an initial to a final form (text to text, text to image, image to sound, etc.) through a technique (visualization, collaboration with AI, reassembly).

cues: mirrors and glitches – two modes of investigation based on opposing concepts of observing data. The two concepts invite students to reflect on the data based on their experience and not as detached elements. The mirrors prompt the students to explore reflections of themselves, cutaways that perfectly mirror aspects of their direct experience with online platforms and technologies. Glitches (Meunier et al., 2021), on the other hand, focus on problematic aspects or errors in the data-mediated representation of students' identities. In this case, students are encouraged to look for what does not match the data, their experience or expectations, and to recount it as a moment of technological disenchantment, which allows them to observe technology from the inside. We observed that only once students understand the data as part of their experience, in this case through mirrors or glitches, can they fully re-appre-appropriate, reflecting on the power dynamics between the data, the entities/company/company that collect it and personal experience. This is where true reflection on the relationship with technology emerges. The process of reappropriation observed ties in with the idea of data literacy that enables people affected by inequality to ask critical questions about power and also offers the wider possibility of seeking the skills and awareness needed to make sense of data visualizations (Pinney, 2020).



Figure 4. Final Exhibition of the Students' Work During the Open Presentations Day at the Politecnico di Milano, February 2023.

Developing the Concept of the Poetic Narrative

With the help of the reflections produced between teachers and students, the revisions lead each project towards the definition of its final concept. In detail, the aspects to be defined concern technical aspects of realization (the title, the format of the work), but also more complex aspects of communicative intention (metaphor and structure). The following table shows what is required to define the project concept.

The conclusion of the exercise led to the design of a final exhibition (Figure 3) in which, together with the presentation of the final DensityDesign synthesis workshop, the course undertaken was narrated through the students' work. The exhibition saw the works displayed in a space within the Milan Polytechnic's School of Design, where the course was held, with an opening event in which the authors of the works were able to describe their project to visitors to the exhibition, including: university staff, professionals, students from other sections and finally students not enrolled in the master's degree course in which the course is included.

Results of the Teaching Activity

As a result of the participation of 49 students in the course, a total of 44 individual works in different formats were delivered and finally exhibited during the final workshop exhibition. Of these 44, six were not considered in the qualitative analysis of the works as they were not considered to be in line with the outline proposed by the exercise.

The analysis of the works, which were the result of the teaching activity, was carried out on four axes: the mode of investigation (mirror or glitch); the source data; the translation that was carried out on this data; and finally the technique with which it was carried out. By combining these four axes, it is possible to obtain a categorization of the works that highlights certain recurring patterns in the creation of discursive design artefacts that narrate problematic moments in the relationship with technology (Figure 4).

From the choice of data from a source, an analysis point of view (mirror or glitch) was chosen, through which the data was transformed from an initial to a final form (text to text, text to image, image to sound, etc.) through a technique (visualization, collaboration with AI, reassembly). The students used a wide variety of data from different platforms to tackle the exercise. By grouping the data sets, some noteworthy recurrences emerge (Figure 5): ten students used social platforms as sources, extracting data from a total of six platforms (among which Spotify appears most frequently).

The other most recurring category concerns data focusing on the use of certain technologies, including the time of use of their smartphones (three students), the movements tracked by Google Maps (two students), and finally the network calls made while surfing the web through browsers (one student). A large part of the class focused instead on the exploration, from various perspectives, of photographic material, mainly from the gallery of their smartphones. Only one piece of work focused on images posted on Instagram, thus crossing both an exploration of the photographic material and its relationship with the source platform. Finally, part of the class (five students) decided not to deal with data from digital platforms or devices, instead working on an ad hoc or analogue data collection. Despite the fact that it was an activity not totally inherent to the outline, the teachers decided to accept this type of work anyway, so as not to jeopardize the success of the exercise.

⁴The Visualization Represents a Summary of the Themes and Data Sources Used by the Students for their Personal Work. Each circle represents the number of students who used the same data source.

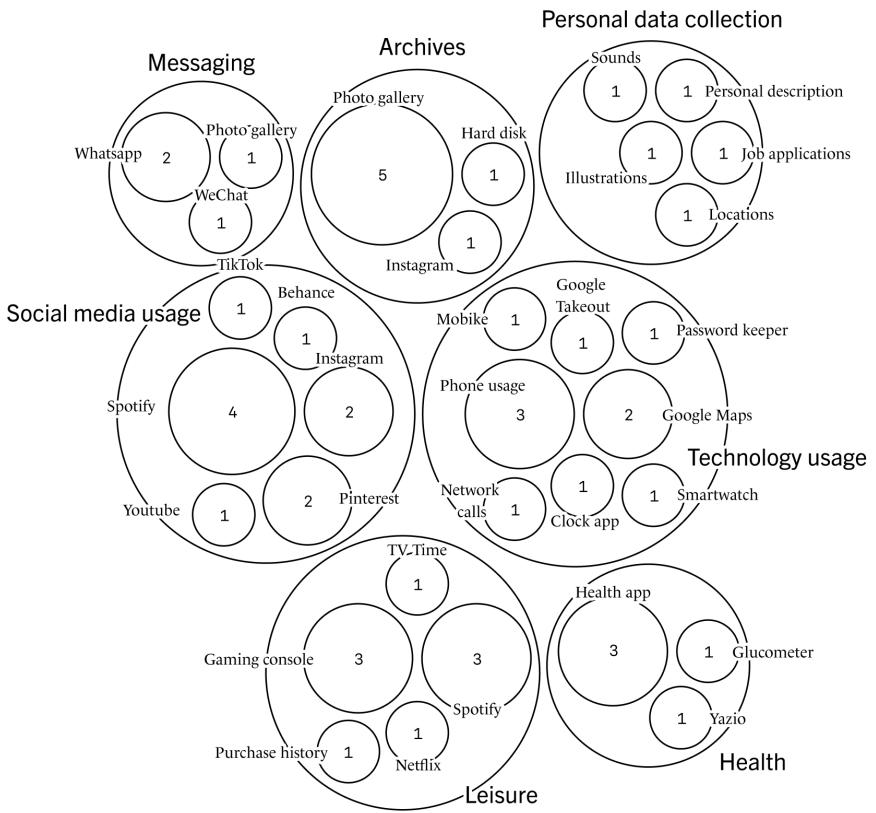
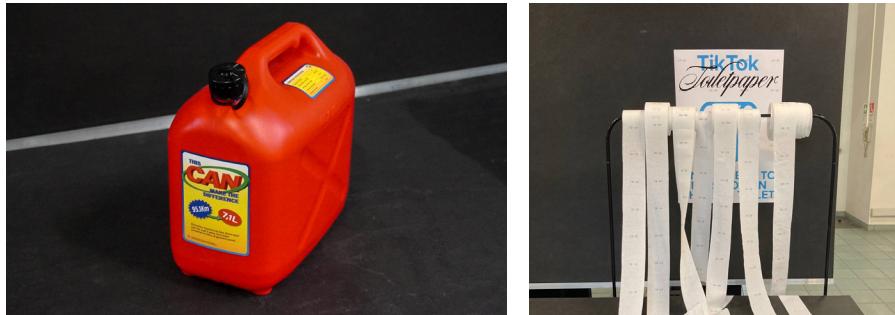
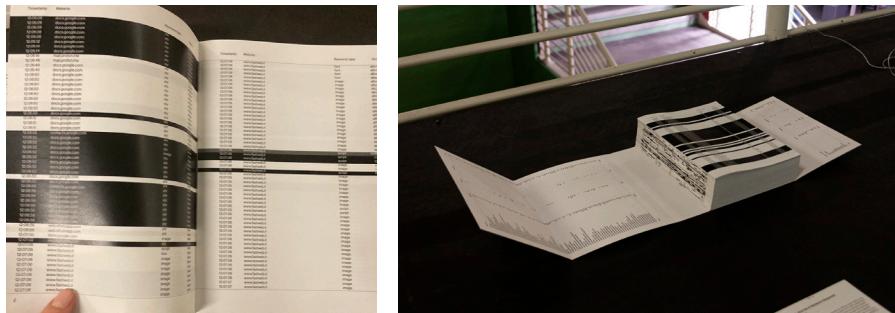


Figure 5. Summary of the Themes and Data Sources Used⁴.

As much as the introduction of the exercise saw the distinction between mirrors and glitches as a mode of investigation, only a small proportion were able to find misrepresentations of themselves within their data. This is indicative of the accuracy of the technologies that collect data from the platforms explored but was also indicative of the difficulty many students had in finding these misrepresentations, which were perhaps introduced too abstractly. On the other hand, an example of work that was able to find errors in representation was that of Giulio Alessandrini, who retraced the moments when his smartphone mistakenly associated many steps with his disco nights. Through a “diary” representation (Figure 6), the student shows the discrepancy between where he was and how many kilometres he would have walked according to his phone’s pedometer, highlighting a data collection that reduces physical activity to only the number of steps taken.



From top to bottom.

Figure 6. *À la recherche des pas perdus* by Giulio Alessandrini. Data Extrapolated from Pedometer⁵.

Figure 7. General Journal of Network Requests by Andrea Benedetto⁶.

Figure 8. Left (8a) *TikTok-Toiletpaper* by Leonardo Puca. On the right (8b), *This Can Make the Difference* by Stefano Gubiolo⁷.

In most cases, however, the students concentrated on representing the mirrors in which they could find themselves within the data. In these cases, they represented some peculiar or interesting aspects that represented their relationship with the technology. Andrea Benedetto published in an editorial artefact (Figure 7) the complete list of calls to external networks made by his browser, highlighting those blocked by his adblock, emphasizing the value that this seemingly insignificant data has for web content providers. In this case, the form of the data

has not changed drastically, because the extension used to collect the source data set also uses the table as its display mode. What the data set enunciates in a poetic narrative is its own format and physicality, which give it a new context and space of representation.

⁵ In *À la recherche des pas perdus*, Giulio Alessandri- ni extrapolated the data from the pedometer and assembled it on a cork support containing diary pages (the pedometer data) and photographs (the re-enactment of the moments when the data was collected). The red thread links the data to the specific place where they were collected on the map of Milan.

⁶ In the form of an account book, all network calls in the author's browser are shown in tabular form. The black lines are the calls blocked by adblock.

⁷ TikTok-Toiletpaper attempts to provoke reflection on the quantity and quality of content we watch and scroll through every day. This Can Make The Difference shows the conversion between the amount of fuel and kilo-metres that can be saved by using a bicycle instead of a car.

Another reflection allows us to observe the transformation of data from one format to another and the techniques used to perform this transformation. As seen above (see 2.1.), in previous years the transformation of data was focused on the metaphorical value of quantitative representation: the various students have always experimented with the enunciation of the starting data set with the most varied materials and techniques (Zingale, 2020) in order to generate an emotional response in the observer.

This dimension of materialization and visualization has also remained present in the context of "Algorithmic you". Leonardo Puca (Figure 8a), for instance, transformed his time using TikTok into rolls of toilet paper, symbolizing the controversial quality of the type of content proposed by the platform and which he obsessively consumes. Or again, Stefano Gubiolo (Figure 8b) used the amount of kilometres travelled through the Mobike bike-sharing service to show how much petrol he saved (and not burnt) instead of travelling by private car. In other cases, however, the transformations embraced several types of techniques, not only relating to a translation from quantitative values to physical (and non-physical) materials, but also focusing on the qualitative and narrative aspects of the data with which one was working. In fact, as we saw earlier (Figure 5), much of the data the students worked with were not tables, but photographs, text fragments, sounds and videos, to be considered as data for all intents and purposes.

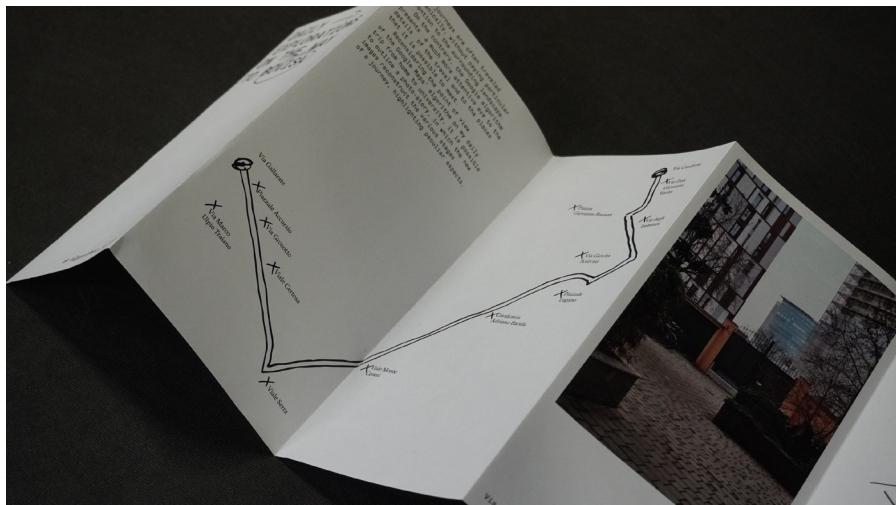


Figure 9. Daily Explorations on the Way to Bovisa by Alessandro Pedriali⁸.

⁸ The work takes the form of a notebook, transforming the algorithm into an investigator who keeps track of all the movements automatically collected by Google Maps. The tracks extracted from the platform (the georeferenced places and the trajectories connecting them) are accompanied by photographs collected separately by retracing the routes.

In this case, putting the data set into action was the most useful methodology for representing it: re-experiencing the data extrapolated from the platforms, and giving the observer the possibility of performing the same action by retracing the data set in its sequentiality, allows one to perceive the pervasive dimension of the data set being visualized. To better understand this concept, Alessandro Pedriali's work (Figure 9) retraces the steps that Google Maps automatically assigned during his daily commute from his home to the university.

The automatically associated tags are often wrong or inaccurate, but they are a demonstration of constant attention on the part of the platform's algorithm. The student, taking the algorithm's side, retraces the steps by paying attention to details that, in the daily repetition of an ever-changing route, are not perceived. In this work, the data are not transformed from one form to another, but two different actions are performed: (1) the data are removed from their context of reference (the Google Maps interface), (2) the data describing the trajectories travelled by the user and the tagged places are reassembled, i.e. manipulated in their internal relationship and reconfigured into a new narrative that is alternative to the context of the platform that holds them. From the extraction of the tags repeated in the daily path, those that are not perceived by the algorithm were identified.



Figure 10. Left: *Disco Incantato* by Alexandra Chiojdeanu decided to record her own infopoem on an audiocassette. Right: Donato Renzulli offers his infopoem *If I Were a Song on an iPod*.

These “unperceived” tags were enriched with other data (photos of the place) in order to reconstruct the glitched path and compare it with the author’s experience. Reassembling data extrapolated from a platform is a strategy that proved to be very common among the collected works. Alexandra Chiojdeanu and Donato Renzulli (Figure 10) exploited this strategy to narrate their music habits by extrapolating data from Spotify. In a data-driven remix operation (Briones Rojas, 2021), they sampled and composed two driven tracks presenting the tracks they listened to most in different time horizons. In this case, the two works come close to what Adema calls “cut-up” (Navas et al., 2018, Chapter 9), i.e. a “cut, copy, and paste” operation where “new logics of meaning can emerge from the text” (2018, p. 105): in this case, from audio. The choice of medium, i.e. the use of obsolete technologies (such as audiocassettes and mp3 players) shifts, in this case as in the previous ones, the remix of data to another contextual environment.

A final group of students, on the other hand, decided to collaborate with AI systems to generate new content from the extracted data. In her work “Human Face”, Silvia Casavola used an object-content recognition (OCR) algorithm to extract the entities recognised in her Instagram photographs. Some OCR algorithms, in addition to extracting the recognised entities, can identify their position within the image. Exploiting this peculiarity, the author recreated a book of concrete poetry that tells

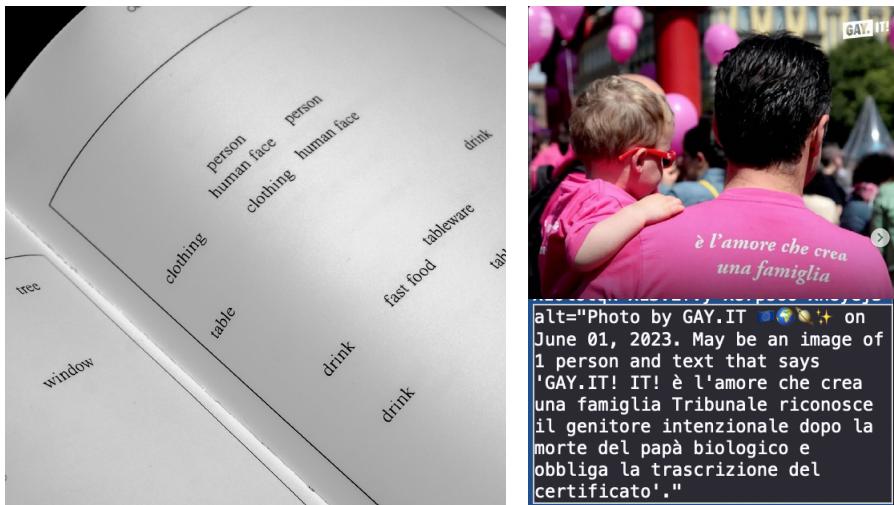


Figure 11. On the left, *Human Face* by Silvia Casavola⁹. On the right, description of the photo content automatically generated by Instagram.

⁹ Human face collects photographs posted on her Instagram profile over the last five years in a book and uses them in a collaborative process with an AI system (Runway-ML). This process returns object tags within the photos, which are treated stylistically as "concrete poems".

the story as it appears on the social platform, but through the eyes of an algorithm (Figure 11). Here again, the implementation of the data passes through the personification of the algorithm by performing an operation that, in fact, is already done by the platform itself, for example through the alternate text accompanying the images on the web.

To sum up, the students worked by transforming data formats in eight different ways, and it is possible to identify three techniques adopted, which are closely related to transformations (tables 3 and 4). The most numerous transformations, i.e. "quantity-to-image" and "quantity-to-physical-material" mostly used the visualization technique, whereby through the translation of quantities into visual variables they represented their data set (Bertin, 1974). In this case, the visualization technique is also combined with data physicization, i.e. the process of visualizing data through the materiality of the chosen medium. Secondly, the two previously illustrated cases of Chiojdeanu and Renzulli (figures 9a and 9b) are illustrative of work that opted instead for the technique of reassembly, transforming images into visuals. The reassembly technique involves sampling and rearranging the source material: in the cases illustrated, a curatorial selection of their data supports the message the students wanted to convey through their work.

| | |
|--|---|
| Transformations | |
| From quantities to images (12) | Interestingly, in the intersection of the “image-to-image” transformation and the reassembly technique, three students created three catalogues exploring themes of identity through photographic selection. In this case, the term “catalogue” becomes not only a way to collect “objects, but also to re-publish them [...] in dialogue, alongside, in relation to or in competition with the other elements of the group” (Colombo & Bardelli, 2021). Finally, with the widespread use that generative artificial intelligences have seen, several students opted to collaborate with them to produce working materials derived from the data they had at their disposal using the AI collaboration technique. |
| From quantities to physical materials (10) | |
| From images to images (8) | |
| From text to images (6) | |
| From quantities to sound (4) | |
| From images to text (2) | |
| From sound to images (1) | |
| From text to text (1) | |

Table. The students' work can be divided into eight categories of transformation, listed here from most to least.

BEYOND REPRESENTATION, TOWARDS MOBILIZATION

With the culmination of the presentation of work during the course exhibition, the students were able to present their projects to the public. The theme of the exercise

allowed students to produce artefacts consistent with the narrative of “Algorithmic you”, thus creating a collective space for reflection with the audience on the algorithmic mediation between personal data and individuals. Several works raised and made known some problematic aspects of this representation, triggering discussions among the exhibition participants. However, the “Algorithmic you” experiment and the context of infopoetry stop at only part of the process of questioning the issues raised.

If the work aims to use personal experiences to generalize the relationship between personal data and algorithms, this is totally delegated to the perception of the viewer of the artefact. In this way, an additional responsibility is delegated to the observer, that of understanding and comparing what they see with their own personal experience in such a context. However, it is evident that the form of infopoetry favours this type of reflection, where such a representation and enunciation of the datum allows for an abstraction from the student's personal experience to a more existential reflection of the issues addressed. Indeed, by applying notions of semiotics within their creative process, students were able to develop ways of enunciating their data with more or less defined messages.

Consequently, a question arises for further traces of development of the work set up through “Algorithmic you”. It is necessary to reflect on the interaction with the public, understood as a union of individuals mobilized around problematic contexts (de Mourat et al., 2020), where information design artefacts can function as aggregators and catalysts of an active collectivity (Briones Rojas, 2018). In fact, to date we have no way to consider the emotional and reflective response of a potential observer of the artefact, as it remains an internal and unshared process of contemplating a design object that leaves no trace of any kind. If in previous editions of the exercise the designer’s point of view was exclusively linked to the data representation of social phenomena, in this case the designer becomes the object of representation as an individual, albeit through his or her own digital traces. Consequently, the centrality of other individuals with their own experiences evidently becomes a fundamental aspect that has not yet been addressed in the context of infopoeias.

Indeed, the issue of individuality emerges as central when it comes to data, especially when contrasted with the aggregation carried out by Big Tech companies that collect large amounts of data on topics such as those that emerged from the students’ work (Figure 5). Once collected, data produces value through its aggregation and subsequent inference using predictive algorithms (Hankey & Tuszynski, 2017) that identify patterns and repetitions within them. This analysis is done in a different place from where they are collected, namely mobile devices connected to an Internet network and geolocalized.

On the side of the exercise reported in this article, students were prompted to carry out a reappropriation of the digital traces, with the aim of finding an alternative value system to the aggregation of the companies that collect and provide the data used by the students. Reappropriation implies a contextual shift of the data, which are brought back from dislocated data centres to a physical and local dimension, where they become a narrative material for discussion. As Loukissas (2019) argues, data are local, that is, produced in a defined context, and are far from discrete and distant from the “place” (metaphorical and otherwise) from which they were collected. Proceeding to a reappropriation, and consequently a local reaggregation, can open up new avenues of mobilization with respect to the mediation between individuals and technology through data. By local aggregation we mean a collection, a comparison, and finally a discussion between individuals, starting with the representation of their own personal data reappropriated the sources explored by the students. The work of the infopoems

demonstrates the effectiveness that the reappropriation of personal data can have through public representation. It can be amplified, in the future, through collective moments of this type of activity with a heterogeneous public as a practice of resistance to the unawareness of the collection of personal data by the companies that now monopolize its collection.

CONCLUSIONS

We recounted in this contribution the experience of developing a communication design space in which to explore the relationship between people and technology. This was done through the reappropriation and remediation of one's personal data, as a semiotic act of translation and enunciation, and through its representation in communicative artefacts. This process was made explicit in a design exercise ("Algorithmic you") that, straddling semiotics, design, and applied art, pushes for metaphorical representation of data and reflection on its evocative implications. Combining the concepts of infographics and visual poetry, this type of activity has been called "infopoetry", a mode of data representation that also focuses on making the data "feel", as opposed to analysing it. The purpose of this article is to extend the concept of infopoetry to that of poetic narratives. Poetic narratives find reference points with other alternative uses of data representations, such as data art and casual data visualization, orienting themselves toward promoting the emotional reading of a given phenomenon. Other points of reference lean toward data physicalization, through indexical data visualization and autographic visualization techniques. These latter references focus on materials rather than data encoded in numbers and symbols, experimenting with physical outputs as a medium for communicating the experience of data. Continuing the already started work of infopoetry within the Final Synthesis Laboratory of the master's degree in communication design at the Politecnico di Milano, the topic of "Algorithmic you" was presented to 49 students, an investigation intended to make them think about the relationship between data, algorithms, and society.

The exercise allowed students to experiment with techniques and formats in representing personal data to explore this relationship. The investigation took place through two observational cues: mirrors and glitches – two modes of investigation that are based on opposite concepts of observing data. From this proposition, students defined

a data set to represent from a choice of faculty suggestions (such as, for example, data extracted from Instagram, WhatsApp, health apps, etc.) or chosen independently. At the conclusion of the design process, the teaching activity produced 44 artefacts approaching the topic “Algorithmic you” in different ways. All 44 artefacts were displayed at the final exhibition dedicated to the results of the course in which the activities took place.

By analysing the projects, it is possible to identify eight modes of transformation used by the students, who reuse, recontextualize and rerepresent materials such as texts, images, tables, sounds, and videos as narrative materials within their projects. In addition to these transformations, they use three representation techniques: collaboration with AI, reassembly, and visualization. These two formal levels of construction of their works allow them, when combined, to convey the communicative message identified by the students.

During the exhibition, students presented their projects related to the theme “Algorithmic you”, creating a collective reflection on the topic of algorithmic mediation between personal data and individuals. Although the infopoetry format encouraged reflection on the issues raised, the perception of the artwork and the responsibility to compare it with personal experience are delegated to the viewer. Thus, it is possible to identify new trajectories for the development of the work, particularly with regard to interaction with the audience and its emotional and reflective response. The central aspect that can still be addressed in infopoetry is the role of other individuals and their experiences. The theme of individuality becomes essential when it comes to data, especially when contrasted with the aggregation performed by companies that monopolize the collection of personal data. Students were invited to reclaim their digital footprints as an alternative value system to the aggregation of Big Tech companies, moving data from a remote data centre to a physical, local dimension. Students’ work in infopoetry demonstrates the effectiveness of local aggregation, in which personal data are collected, compared, and discussed among individuals, creating new modes of mobilization regarding the mediation between individuals and technology through data. The concept of data locality, in which data are produced in a specific context and are not discrete or distant from where they were collected, is central to this discussion. Local aggregation can open new avenues for reflection and discussion on the representation of personal data and the mediation between individuals and technology.●

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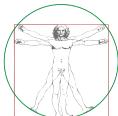
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