Challenges in Digital Social Research Methods: Algorithms, Traces and Footprints. A Resume of the Current Debate[*]

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Abstract

Nowadays, the digital scenario could be conceived as an extension of social reality where everything is real and where everyday life partly takes shape due to the cut of the online/offline duality in an always on world.

Ascertained this premises, the role of the researcher and the readjustments of method and research techniques are as much as central. To focus them properly, it is necessary to take stock of the social objects central in social research and wonder with which native objects of the network can the researcher engage.

What methodological itineraries and sets of techniques can be reconfigured to investigate social phenomena that extend within and beyond the network? What identification and operationalization procedures do they use to distinguish and categorize social objects appropriately taking care of the emerging of algorithms and digital traces?

This paper proposes a reflection on the viable paths for the social researcher who must recognize the extensions of social reality within the Net today and inevitably grapple with its challenges. The reflection on limitations and methodological opportunities to overcome obstacles that arise in the researcher's path are the insights properly evidenced in all the research papers contained in this issue.

Keywords: digital methods, digital traces, algorithm role, digital challenges in social research methods.

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[*] The work presented is the combined result of the reflections of the two authors. Specifically, Introduction, paragraphs 1 and 2 should be attributed to Giuseppe Michele Padricelli, paragraphs 3 and 4 to Marianna Coppola.

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1. Introduction

Although every moment in the history of civilization appears to be characterized by phases where "societies are built from this or that 'characteristic technology'" (Miconi, 2012, p. 95), we can frame the concept of innovation by considering technologies as "something that depends on the social context to which they are anchored" (Bennato, 2011, p. 65). If, indeed, following Everett Rogers' perspective (2003), we frame innovation as "an idea, a practice, or a project perceived as new by those who will be interested in it" (Bennato, 2011, p. 65), and which gives rise to "events with multiple and not easily predictable consequences" (Crespi, 1999, p. 299), one might think of the creation and development of technologies as "a series of choices made among different technical possibilities, and each choice is influenced by a wide range of social factors" (Boccia Artieri, 2012, p. 18).

This background distinguishes the relationship between society and innovations in a processuality with precise timing. The concentration of innovations that has characterized the last two centuries, for example, has led, according to Van Dijk (2012), to describe their development process multiple times as a true revolution (Beniger, 1996; Williams, 1982), although it is equally appropriate to define it as a predominantly evolutionary process. Innovations indeed follow long preparation processes. The digital transition phase, for example, "did not happen suddenly" (Salganik, 2020), and "it is misleading to think that technologies arise suddenly" (Van Dijk, 2012, p. 4-5). In the context of studies on digital transformations, the technological aspect is just one piece of a "complex puzzle that includes accurate structures, processes, and cultures to generate paths of value creation" (Vial, 2019, p. 118) whose form according to Van Dijk (2012) is distinguished both structurally and technically.

In this sense, the digital realm is already configured in its genesis as a true communicative revolution, whose structural premises shape themselves into evolutionary paths through which "techniques and languages merge between communication diffusion and rituals, communicative codes, relational matrices" (Boccia Artieri, 2012, p.24).

Given the turning point that has led to digital pervasiveness in the daily lives of every segment of society over the last 20 years, social research has yet to be caught unprepared, facing multiple reflections on methodological opportunities helpful in understanding how to adapt research actions and techniques. This consideration extends to reality even within online environments. The challenges still open mainly concern the role of the researcher and their choices in approaching the ontological objects typical of digital environments in the best possible way. These objects and practical opportunities are digitally born and overlap within and outside the network.

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Continuous engagement with these objects and methodological applicative revisions simultaneously confront significant limitations, such as coverage difficulties that prevent the assurance of appropriate probabilistic sampling strategies and the corresponding opportunities to extend results to entire reference populations.

In light of these premises, this paper proposes a reflection on the viable paths for the social researcher who must recognize the extensions of social reality within the network today and inevitably grapple with its challenges. The reflection on overcoming limitations and methodological opportunities to overcome obstacles that arise in the researcher's path is, in this sense, the reflective coordinates from which new insights on online social research are aimed to be proposed.

The pervasiveness of digital media, technologies that integrate and interact with previous technologies rather than relying solely on mass use (Lüders, 2008), is such that today "in most societies, virtually no human activity is exempt from the changes they bring or from the challenges and opportunities they open" (p. 14). The domestic dimension acquired by Web 2.0, understood by O'Reilly (2005) as "network as platform," leads to increasing opportunities for the production of user-generated content (UGC), but not only that. In addition to spontaneous content produced for various purposes by users, digital traces, as described by Airoldi (2021) and Gandini and Risi (2023), also find space and interest in the landscape of social research. These digital traces reflect social elements shaped in a systematic process where products attributable to technical affordances (such as algorithms) and cultural affordances (such as social norms, communication styles, etc.) coexist.

In light of these assumptions, what methodological itineraries and sets of techniques can be reconfigured to investigate social phenomena that extend within and beyond the network? How do social researchers who operate in digital environments for research purposes leverage or not leverage technologies to adapt research tools to the investigated contexts? What identification and operationalization procedures do they use to distinguish and categorize social objects appropriately?

2.   A new methodological imagination

Over the past few decades, social research has often grappled with multiple epistemological conflicts. The overcoming of the quality/quantity duality has given way to the online/offline dichotomy, which in the early 2000s categorized the digital environment as a spatial, delimited context within which part of social reality could transpose. The overcoming of the concept of cyberspace, to the

extent that digital environments are considered, is particularly emphasized in the strand of digital methods (Rogers, 2013), which frame the digital scenario as an extension of social reality where everything is real and where everyday life partly takes shape.

To focus on the role of the researcher and the readjustments of method and research techniques, it is necessary to take stock of the social objects central in social research: how do they transpose into digital environments? With which native objects of the network can the researcher engage? Considering social objects as those elements to which the studied properties refer, the extensive literature on social research methodology reminds us of the possibility of identifying a social object starting from assigning its properties, given the direct relationship between objects and their characterizations. With the digital turn, there is an interest in those social and communicative effects attributable to innovations, that is, to the repertoires and practices of ICT use, which, as Addeo and Masullo (2021) remind us, can be synthesized in three specific implications[1]: the considerations on communication in the broader context of the globalisation processes, through the selection of the appropriate theoretical apparatuses to understand the relationship between individuals and media;

- The labels and definitions describing the current historical and social phase, linking it to the broader debate on post-modernity;
- The issue of the methodological and technical tools best suited to describe and explain reality as it is emerging in its communicational dimension

In this way, according to Natale and Airoldi (2017), social objects are now accompanied by:

- the media context, fundamental in discussing socio-technical features of data and its effect on results. Society reflects itself through media and it is necessary to be confident with the media environment in order to understand the reflected phenomena correctly;
- public Opinion, when it becomes necessary to study the socio-identity breakpoints of the symbolic sphere;
- digital behavior, not only interactions, but also the practices are fundamental to study social change. A log-in on a web site, as well as a streaming play or a geo position allow researchers to study cultural consumption thanks to the traces organized as metadata and left on the web;

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[1] Taking care of the previous social models that centralize the more traditional units of analysis (individual, social aggregate, social event, and cultural product).

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- users, but studied as an aggregate. Because of privacy reasons socio-demographic data are in fact not always available or time friendly, so much so that, for this type of study, we talk about post-demographic research, in which the subjective component is studied in the aggregation of the actions it produces and of which it leaves traces on the net (Padricelli et al., 2021).

The current debate regarding the evolution of methodological applications addresses numerous research questions that have focused in recent years on. On the one hand, the overlap, change, or replacement of typical research actions such as observation, inquiry, and reading in light of the opportunities presented by digital territories; on the other hand, on the practices of distinguishing between information and data generated by human and non-human intervention. In this way the debate has led to a third dichotomous distinction that gives rise to what Gandini and Risi (2023) define as an "autopoietic loop" between human and non-human actions. On the one hand, User Generated Content (UGC) corresponds to content created with direct intentionality (characterized by multiple purposes) by connected individuals; on the other hand, we find online a multitude of sociotechnical artifacts created based on algorithmic logics and produced by non-human actors such as bots, translators, computational interpreters, etc.

In the era of datafication, where social practices converge in processes of renewed tension (Flensburg & Lomborg, 2021), much of the knowledge produced nowadays derives, on the one hand, from those processes of meaning construction directly generated by connected users online. These processes are traceable through new applications of ethnographic methods aligned with virtual methods (Hine, 2005) and digital methods (Rogers, 2013). On the other hand, the knowledge produced also stems from data streams originating from advanced artificial intelligence systems, tools, and paths of machine learning. The combination of these processes thus prepares the cognitive ground traversed daily by social researchers who aspire to understand social change even through the internet and who also need to find a position online, questioning how the assumptions of intrusiveness on the observation field change.

3. Between netnography and digital ethnography

The evolution of innovations and opportunities for constructing meaning relevant to the digital landscape has been accompanied by developments in methods, techniques, and research strategies applicable to understanding social reality transposed or native to the internet. An example of this is the application

of ethnographic methods, which, based initially on field observations and interviews, have adapted to the dynamics of the internet. A first evolutive step occurred through an initial phase of transposing tools and techniques, following what Kozinets (2020) identifies as Netnography as a «set of general instructions relating to a specific way to conduct qualitative social media research using a combination of different research practices» (p. 7).

Following this transpositional phase, there is a path of ethnographic adaptation to the digital context whereby the internet transforms from a tool of observation/questioning to an actual object and context of research. This occurs through the principles of digital ethnography, what Murty (2008) defines as a valuable process for «linking the researcher directly to the spaces within the studied subjects move and analyzing every relation cluster not concerning the subjects in a place as the virtual world» (Consolazio, 2017, p. 81).

Although emerging at different times in recent history, netnography and digital ethnography do not configure themselves as mutually substitutive applications, but rather as potential complementary paths useful for achieving broader results.

Operating through a netnographic or digital ethnographic approach can only depend on the characterizations and opportunities for field engagement. In this sense, the researcher can find comfort in understanding which path to take based on both the directionality of the research questions underlying the investigations in which they are involved and the specificities that distinguish the two approaches, such as the type of field notes recordable depending on the data processed (whether digitized or native digital).

The typology proposed by Padricelli and Punziano (2023) serves as a tool for researchers to understand whether and how to leverage either one or both of the online ethnographic applications, as well as to delineate the degree of overlap between the approaches in a mixed research design aimed at integrating the results emerging from each phase of inquiry.

Looking at Figure 1, the researcher has the possibility, through observation and interrogation actions, to navigate through the four quadrants, taking into account the following:

- the opportunities for implementing the investigation;
- the endogenous or exogenous prerogatives of the technologies used during the research phases.

Regarding the opportunities for implementation, we mainly distinguish two paths. The first one relates to the immersion which allows to build a primary data through a direct interrogation o by a «self-reflective and introspective collection of research observations and experiences» (Kozinets, 2022, p. 107). The second one regards the investigation processes that consist

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in a «disciplined collection of already existing data – also called online traces – which, in most netnography to date, has come from the archives of social media platforms, blogs, and forums» (Kozinets, 2022, p. 107).

When we refer to the prerogatives of technologies, we instead mean those aspects of external or internal intervention of the devices used by the researcher. On the one hand, the exogenous characteristics are reflected, for example, in the use of devices helpful in collecting field notes (such as voice recorders, cameras, microphones, or note-taking tools); as for the endogenous aspects of innovations, we consider those processes by which the «technologies take part of a whole digital context that becomes an additional and integrated social participatory environment where the researchers take into account as well the role they play about technologies and web affordances: researchers that use some data collection tools to access digital fields that are not limited to study the online cultures, but rather that can aim at detecting cultural changes and social conditions through technologies» (Padricelli & Punziano, 2023, p. 6).

Consulting the proposed typology, the researcher has the opportunity to prepare and review the progress of the investigation by positioning themselves in a specific quadrant based on the functionality of the devices they use and the opportunities for data construction or creation. Classic observation or interrogation techniques carried out in physical research locations are transposed into the digital scenario (moving from the third to the second quadrant), resulting, for example, in the survey becoming a web survey, or interviews evolving into advanced interviews using remote recording devices, and so on. In the case of sequential or nested mixed designs[2] (Amaturo and Punziano, 2016), operations aimed at data construction are continued in integrated research phases, including data collection procedures. In this sense, the researcher who has already achieved part of the expected results through netnographic application finds further opportunities for in-depth exploration by integrating phases of digital ethnography. By moving in the first or fourth quadrant (Fig. 1), they will be able to integrate the initial interrogation phase

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[2] Sequential designs involve an initial phase of qualitative research (in exploratory designs) or quantitative research (in explanatory designs). In the former case, a quantitative phase follows to evaluate how the qualitative themes can be generalized to the entire reference population. In the latter case, following the initial quantitative phase, a second quantitative phase is developed as a follow-up to explore further the initial results obtained.
In nested designs, a secondary set of qualitative or quantitative data collection and analysis is combined within a traditional qualitative or quantitative research design. The objective is to strengthen the primary data set, which may need to be more to provide an adequate answer to the research questions (Amaturo & Punziano, 2016, p. 118).

with reading actions involving content analysis procedures applied to collectible documents, drawing from specific data sources containing UGC.

Figure 1 - Typological schema of ethnographic trajectory in the digital scenario. Source: Padricelli and Punziano (2023).
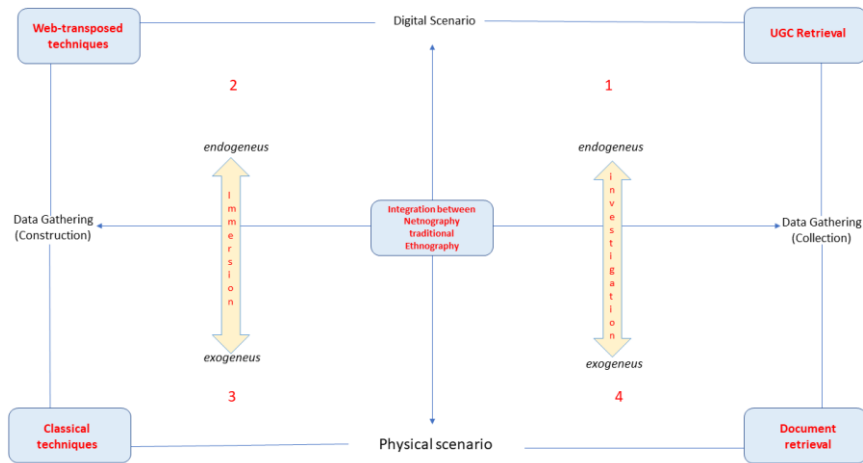
4. The role of algorithms in the circulation process of cultural products: techniques and methods

As anticipated, the digital aspects of reality are not solely constituted by elements produced through direct intervention by connected users online. Social researchers are addressing challenges related to objects produced by non-human interventions. The debate has led to a continuous examination to reconsider the assumptions of accessibility, availability, collection, analysis, and ethical dilemmas for those sense-making products attributable to the intervention of socio-technical artifacts of algorithmic logic[3].

Reflection on research methods focuses on processes helpful in distinguishing between what is constructed and produced online in terms of meaning, and, on the other hand, what concerns potential procedures of

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[3] As Monaci (2023) points out, the concept of Digital trace describes "objects that may result from deliberate agency of the social actor (such as a post on Twitter), or they may result from unconscious actions (such as reading a webpage or a blog)" (p.67). Even if unconscious, these actions can be processed and analyzed because, as Hepp et al. (2018) argue, they "add information to our communicative acts" (Monaci, 2023, p. 67).

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hierarchy, filtering, and organization that stimulate sense-making. The debate
revolves around the contribution and utility of the techniques employed thus
far in studying user-generated products, implemented for the examination of
the "crucial role of algorithms in the processes of selection and circulation of
cultural products" (Vittadini, 2023, p. 51). For inquiries predominantly focused
on the study of online narratives and the cultural products that characterize
them, the most common techniques social researchers employ are Walkthrough
and content analysis. These approaches, in fact, address the study of meaning
constructed online without overlooking the particularities of the media context
within which they are situated and the role played by users.

These techniques adapt with a certain agility in light of the emergence of
digital traces and content generated without direct human intervention. On the
one hand, we can consider walkthrough as a technique that emerges to directly
approach this type of meaningful element, namely as "a way to interact directly
with interfaces to examine embedded technological mechanisms and cultural
references and to understand how the app guides users in shaping their
experiences" (Light et al., 2018, p. 882). On the other hand, it is necessary to
readapt content analysis, and its related Stability, reproducibility, and accuracy
(Krippendorff, 2018), in harmony with the ontological assumptions of digital
traces. Data's arbitrary coding and operationalization rules, which underlie the
stability assumptions on which content analysis is based, are much more
sensitive when the cases treated concern. Stability refers to those procedures
whereby arbitrary rules imposed by the researcher allow for standardizing
coding criteria for collected data. An aspect that is applied to digital traces in
the context of content analysis is increasingly compromised today due to the
difficulties in operationalizing flow data. The difficulty of accessing this data, in
fact, entails particular challenges in the opportunities for study replicability and
the scalability of investigations in comparative perspectives.

These assumptions, ultimately, strongly question the reliability of traces.
According to Amaturo and Punziano (201), reliability of data refers to "the idea
that the researcher has about how his operational definition works in the field,
as, for example, the probability that it produces, in that given research
(spatiotemporal scope, subjects studied, etc.), more or less faithful data" (p.80).
In this sense, the inspection and analysis of data must recognize the importance
of understanding the contexts within which such traces are produced, namely
the sociocultural contexts in which individuals and sociotechnical artifacts
create cultural products. However, the care and attention to the context of the
insertion of traces, which goes beyond the media enclosure through which
traces are disseminated, is not always feasible due to the observation conditions
granted by the context itself in the temporal dimension of interest.

The issues concerning stability, reliability, and replicability open up two distinct opportunities: analyzing fixed and traceable cultural products online, and examining ephemeral, temporary, or mutable traces over time. More than merely situating oneself within a defined digital sphere of observation is needed for the social researcher. Restricting the analysis to what is available online at a specific moment leads to losing potentially valuable information for research objectives.

This dynamic engenders a situation where "the inability to conduct longitudinal studies of social phenomena online leaves researchers heavily reliant on the present moment, reinforcing paradigmatic approaches to data-driven research" (Acampa et al., 2022, p. 154). Therefore, the researcher cannot solely rely on following the medium. It becomes imperative to extend beyond this, compelled to track social phenomena in real-time, understanding that the interpretative meaning of a particular phenomenon may become inaccessible due to its temporary nature or access restrictions imposed, such as those by digital platform operators.

In light of this, the issue remains unresolved regarding the potential manipulative intentions of those generating digital traces, whether human or non-human. Standardized tools used in content analysis are inadequate for discerning the intentions behind online content production and consequently, for uncovering any manipulative agendas.

Content analysis alone cannot identify content aimed at manipulating its audience (for purposes such as garnering electoral support, promoting commercial products, etc.). Instead, a critical examination of the obtained results, preceded by an analysis of the context and environments where these traces are generated and disseminated (for instance, through a walkthrough), can partly aid researchers in recognizing phenomena like fake news.

5. The new digital challenges. Research experiences between epistemology, methodology and ethics

The research papers that make up this Special Issue will have a common thread that will try to tie them together and create a frame of reference to address the challenges of digital research in the contemporary world by raising epistemological, methodological and ethical reflections.

Riccardo Pronzato in his paper *"The Implementation of Algorithms through Coding and Decoding Practices"* has addressed the issue of the use of algorithms, and the implications related to it, in the context of digital sociology by bringing together a practical approach, which sees culture as a result of the human activities that make up social life, with the tradition of cultural studies that

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highlight the existence of different degrees of power and agency in the ways used by individuals in the interpretation of tests and artefacts. In this paper, algorithms are represented as culturally active, that is, not only as created by the coding/decoding practices underlying their design, but also by their uses and interpretations.

Capuano, Calicchia and Iazzetta in their work *"Tracing the representation of Smart Cities on Twitter. An analysis of the Italian context"* provide an example of the use of algorithms aimed at creating a method of social media listening through Twitter data mining. In this context, data mining is used to perform a descriptive content and systematic analysis of the territory that provides an account of the Italian population's perception and use of the Smart City concept.

The netnographic approach is also used to collect a large amount of data on the type of narrative that appears in the social sphere regarding topical issues and the impact this has on users. A first example is represented by the study *"Measuring fabulation in online narratives of the Russian-Ukrainian war: conceptualisation and operationalisation"* by Giungato, Taddei and Affuso, which, through the analysis of posts published on several Telegram channels, aims to shed light on how different narratives, in this case of war, can generate an involvement and affectivity that goes beyond the empirical objectivity of the information conveyed, contributing to the formation of public opinion. A second case is presented by Koreshkova and Ivanov, who in their paper 'Possibility or Barrier? The influence of WeChat on the integration of Chinese migrants (Siberian case)" seeks to identify how digital social interaction and the use of digital platforms influence the perception of different places in the city to which some trans-local (Russian) and transnational (Chinese) student-migrants in the Irkutsk region (Siberia) have moved.

Giuffrida, Condorelli and Beluzzi set out to explore the degree to which users can distinguish between texts produced by ChatGPTs and texts produced by humans, with a particular focus on the existence of a significant correlation between the perception of authoritativeness and trustworthiness and the attribution of the text to AI. This question is addressed in the article *"Does it really work? ChatGPT's perception of trustworthiness in everyday use"*, which stems from the hypothesis that current ChatGPT technology is capable of producing texts that are indistinguishable from those produced by humans, but that when trivially false sentences are present within the text, one is more inclined to believe that the sentence was uttered by a human rather than an AI.

The topic of artificial intelligence is also addressed in Ciro Clemente De Falco's paper *"Rethinking Sustainability in the Age of Artificial Intelligence"*, which explores the role of AI within the debate on sustainable development. Indeed, it can both play a facilitating and hindering role, representing a threat to the

goals set by the United Nations in the 2030 Agenda. Consequently, in this paper, the author draws attention to the need to reflect on how the concept of sustainability is transformed when it is related to AI.

Addeo, D'Auria, Perrone and Esposito investigated the role of social networks within behavioural addictions. Based on the assumption that negative early childhood experiences can have long-term consequences on individuals by making them particularly vulnerable to developing an Internet addiction, particularly if they are heavily exposed to Internet and social media use by their parents (Dalbudak et al., 2014), the authors in their study "*Exploring social network use among youth: developing an index of Whatsapp addiction*" set out to explore how WhatsApp influences the everyday lives of young people and to create and validate an index assessing WhatsApp addiction

Based on Bourdieu's (1979, 1984) habitus theory, Parziale, Cavagnuolo and Matrella in their article *"The use of digital technologies in school. A Bourdieusian analysis of upper secondary school teachers and students in Rome"* aim to analyse how the use of digital technologies in school reproduces educational inequalities, through a research based on two online surveys administered to students and teachers of 20 upper secondary schools in Rome. The survey shows a tendency among students from middle-class backgrounds and schools to make more critical use of digital technologies in the classroom, compared to their working-class peers. However, this inequality is mitigated to some extent by some teachers in vocational schools who, although coming from working-class backgrounds, are inclined to a more selective and critical use of technologies with their students.

In *"Difficult Targets' and Targeted Remote Interviews a methodological evaluation of anti-vaxxers*"* Faggiano, Mauceri, Sonzogni, Dentale and Barbanera present the results of a qualitative investigation focusing on the topic of vaccination hesitancy, carried out by conducting a large number of targeted remote interviews. The authors propose a methodological evaluation to clarify the strengths and weaknesses of the survey instruments used, considering both the target participants and the online transposition of interactions traditionally carried out in person.

Lo Presti, Martire, and Capozza, in their work *"Self-evaluation tools and participatory techniques. A zoom on the dyad "rubrics" and "online focus groups"."* address the issue of rubrics as a specific tool for the evaluation of competencies. In particular, they refer to the research The Social Impact Assessment of DaD after Covid-19, promoted and financed by the Sapienza University of Rome, in which the combination of rubrics and focus groups proved to be advantageous, as it helped students to discuss the main changes they experienced due to the pandemic, allowing them to neutralise the effects of social desirability.

In order to explore the experiences of exclusion and anger expressed on digital platforms by a community of women who identify with the Femcel

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subculture, colleagues Pizzimenti and Penna conducted a non-participant observation to investigate the types of gender abuse and sexualisation reported. Specifically, the article *"Excluded. A digital ethnographic investigation of the Femcel community"* proposes to use digital ethnography to observe a Reddit community for Femcels (non-voluntarily celibate women) called 'Vindicta'. The study showed that the figure of the Femcel woman is not recognised as valid based on the assumption that any woman would be able to seduce a man, as opposed to men who would therefore be the only ones who could identify as Incels.

Social networks can also be a means of approaching the complexity of health issues. In the article *"Audiovisual Languages for Health. Social representations of obesity on TikTok: A case study"* Lenzi, De Falco, Iazzetta, Esposito and Capuano explore the social world as a medium in which users can compare their own experience with that of other users, talk to professionals or communicate with patients with similar conditions (Prestin et al., 2016). These interactions create health data and digital traces on the web that impact the public discourse on health and well-being through the production of big data. These data can provide important insights to improve the health of the users who produce them, offering health professionals a new way to identify risk behaviours and health problems that might go unnoticed during routine health screenings, thus offering new opportunities for intervention. Although it has been suggested that social media may not be the preferred method of contact for health information, it could become effective tools for engaging individuals and communicating 'public health' messages, as well as a valuable source of data to screen the population, so that health professionals and different organisations can leverage such content to develop different patient engagement strategies.

Amato, Aragona and De Angelis, in their study *"The digital walkthrough: studying the link between social characteristics and material technicalities in a health application"*, use the walkthrough method, which originated in the field of software development, to investigate the field of human-computer interaction (HMI) within the Campania in Salute smartphone application, which provides all public health services in the Campania region. According to the authors, this methodology allows the researcher to engage with the materiality of technology and enables them to analyse the interaction between the individual and the digital environment.

This interaction is also explored by Acampa, Crescentini and Padricelli who, in their study *"Health in Algorithmic Terms: A walkthrough exploration of medical App"*, analyse the *TonicApp* service, a medical device that, in its presentation, guarantees the technical-scientific security of its diagnostic algorithms. How is the algorithmic intervention for the creation and administration of medical diagnoses configured? What is the level of trust of medical personnel in these

platforms and how does the use of these platforms change the practice of medicine and the doctor-patient relationship?

These research questions guide this paper by inviting an initial exploration of the context, structure and environments of TonicApp. A second phase of in-depth immersion follows this initial exploratory phase through a series of semi-structured interviews with doctors and users of TonicApp to shed light on the usage patterns of the platform and how the use of this tool has contributed to changing the practice of medicine and the relationship with patients.

De Falco, Iazzetta, Punziano and Trezza through their contribution *"Cross-Platform Political Communication by target and the New Season of Politics in Italy"* set out to analyse the cross-platform communication of the main political candidates of various coalitions and parties in order to verify whether they based their media campaign on specific categories and social issues and whether this effort had the electoral impact it deserved. Building on the debate on the risks and opportunities of the Internet for young people, Marino and Matteo in their article *"Gen Z and web reputation management in social media. What implication for digital capital?"* focus on the issue of web reputation in social media, analysing the web reputation management strategies of *GenZers* in social networking sites. The study examines the most relevant practices young people adopt to cope with risky online experiences to minimise the damage received. This work is intended to help reflect on the possibility of relating young people's web reputation management strategies to the concept of digital capital, drawing new considerations from the logic that governs the dialectic of opportunities and risks arising from the use of social media.

References

Acampa, S., Padricelli, G. M., & Sorrentino, R. (2022). What Happens When the Way to "Follow the Medium" Changes?: A Reflection About Emerging Perspectives in the Post-API Era. In A. Delli Paoli & G. Punziano G. (Eds.), *Handbook of Research on Advanced Research Methodologies for a Digital Society* (pp.149-160). Pennsylvania: Igi Global.

Addeo, F., & Masullo, G. (2021). Studying the Digital Society: Digital Methods between Tradition and Innovation in Social Research. *Italian Sociological Review*, 11(4S),153-165. http://dx.doi.org/10.13136/isr.v11i4S

Airoldi, M. (2021). The techno-social reproduction of taste boundaries on digital platforms: The case of music on YouTube. *Poetics*, 89. https://doi.org/10.1016/j.poetic.2021.101563.

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Amaturo, E., & Punziano, G. (2016). *I mixed methods nella ricerca sociale*. Roma: Carocci.

Beniger, J.R. (1996). *The control revolution: technological and economic origin of the information society*. Cambridge: Harvester.

Bennato, D. (2011). *Sociologia dei media digitali*. Bari-Roma: Laterza.

Boccia Artieri, G. (2012). *Stati di Connessione*. Milano: Franco Angeli.

Bourdieu, P. (1979). *La Distinction. Critique sociale du jugement*. Paris: Editions du Seuil (trad.it. 2001, La distinzione. Critica sociale del gusto. Bologna: il Mulino).

Bourdieu, P. (1984). *Homo academicus*. Paris: Editions de Minuit (trad.it. Homo academicus, Dedalo, Bari, 2014).

Consolazio, D. (2017). Digital ethnography. In P. Natale & M. Airoldi (Eds.), *Web & Social Media. Analysis Techniques*, 77-96, Santarcangelo di Romagna: Maggioli Editore

Crespi, F. (1999). *Teoria dell'agire sociale*. Bologna: Il Mulino.

Dalbudak, E., Evren, C., Aldemir, S., & Evren, B. (2014). The severity of Internet addiction risk and its relationship with the severity of borderline personality features, childhood traumas, dissociative experiences, depression and anxiety symptoms among Turkish university students. *Psychiatry Res.*, 219 (3), 577-82.
https//doi.org//10.1016/j.psychres.2014.02.032.

Flensburg, S., & Lomborg, S. (2021). Datafication research. Mapping the field for a future agenda. *New Media and Society*, 25(6), 1451-1469. https://doi.org/10.1177/14614448211046616.

Gandini, A., & Risi, E. (Ed.) (2023). *Tracce digitali e ricerca sociologica. Riflessioni ed esperienze di sociologia digitale*. Milano: Franco Angeli.

Hepp, A., Breiter, A., & Friemel, T.N. (2018). Digital traces in context. An introduction. *International journal of communication,* 12, 439-449.

Hine, C. (2005). *Virtual Methods. Issues in social research on internet*. New York: Berg.

Kozinets, R. V. (2020). "Netnography today: a call to evolve, embrace, energize, and electrify," in *Netnography Unlimited*, Routledge, 3–23.

Kozinets, R. V. (2022). Immersive netnography: a novel method for service experience research in virtual reality, augmented reality and metaverse contexts. *Journal of Service Management*, 34, 100–125. 10.1108/JOSM-12-2021-0481.

Krippendorff, K. (2018). *Content analysis: An introduction to its methodology*. London: Sage. (Original work published in 1980).

Light, B., Burgess, J., & Duguay, S. (2018). The walkthrough method: An approach to the study of apps. *New media & society*, 20(3), 881-900.

Lüders, M. (2008). Conceptualizing personal media. *New Media and Society*, 10(5), 683-702.

Miconi, A. (2012). Le vie dell'impero. Comunicazione e potere. In M. Pireddu & M. Serra (Eds.), *Mediologia. Una disciplina attraverso i suoi classici*, (pp. 95-105). Napoli: Liguori editore.

Monaci, S. (2023). Un approccio ibrido all'analisi dello storytelling per il contrasto dell'estremismo in rete. In A. Gandini & E. Risi (Eds.), *Tracce digitali e ricerca sociologica. Riflessioni ed esperienze di sociologia digitale*, (pp. 67-83). Milano: Franco Angeli.

Natale, P., & Airoldi, M. (Eds.). (2017). *Web & Social Media. Le tecniche di analisi.* Santarcangelo di Romagna: Maggioli Editore

O'Reilly, T. (2005). What is web 2.0? Design Patterns and Business Models for the Next Generation of Software. Consultabile online: https://www.oreilly.com/pub/a/web2/archive/what-is-web-20.html.

Padricelli, G.M. & Punziano, G. (2023). Ethnography and the digital scenario: a typological scheme of differences and evolutionary trajectories. *Frontiers in Sociologuy*, 8(1037359), 1-11.https://doi.org/10.3389/fsoc.2023.1037359

Padricelli, G.M., Punziano, G., & Saracino, B. (2021). Virtual Methods and Digital Methods: Examples of Netnography and Digital Ethnography for a Comparison between Methods for Analyzing the Digital Scenario in Tourism Studies. *Athens Journal of Social Sciences*, 8(4), 259-278. https://doi.org/10.30958/ajss.8-4-4-.

Prestin, A., Lee, L., Wang, Y., Yen, J., & Chou, W.Y. (2016). What Do People Like to "Share" About Obesity? A Content Analysis of Frequent Retweets About Obesity on Twitter. *Health Commun*, 31(2), 193-206. https//doi.org/10.1080/10410236.2014.940675.

Rogers, E. M. (2003). *Diffusion of innovations.* New York: Free Press.

Rogers, R. (2013). *Digital methods.* Cambridge: MIT press.

Salganik, M.J. (2020). *Bit by bit. La ricerca sociale dell'era digitale.* Bologna: Il Mulino.

Van Dijk, J. (2012). *The network society.* London: Sage.

Vial, G. (2019). Understanding digital transformation: a review and a research agenda. *Journal of strategic and information system*, 28, 118-144.

Vittadini, N. (2023). Tracce digitali, media algoritmici e modelli narrativi degli utenti dei social media. In A. Gandini & E. Risi (Eds.), *Tracce digitali e ricerca sociologica. Riflessioni ed esperienze di sociologia digitale*, (pp. 49-65). Milano: Franco Angeli.

Williams, F. (1982). *The communications revolution.* Beverly Hills: Sage.