BOOK REVIEW


Overview

Data have frequently been described as ‘digital gold’ or as the ‘new oil’. I cannot disagree more. Oil and gold are limited resources with high market value and a remarkable but limited presence in our lives. Moreover, they have a questionable future in our societies. But data are virtually unlimited: imagination is the only boundary for digitization pretensions and thus, digital information affects a huge and growing part of life. No one would question the future importance of the role that data play in everyday situations. Understanding the patterns and impacts of digitalization, especially in society, is complex. The striking importance of the outputs, tensions and changes generated by digital technologies triggers research needs and requests.

The origin of this handbook lies in the scoping review of Ways of Being in a Digital Age, a project commissioned in 2016 by the Economic and Social Research Council (ESRC) in the UK. This scoping review, led by the University of Liverpool in collaboration with 17 other universities and organizations from the UK, the EU, the US and Singapore, was aimed at increasing the awareness of ESRC initiatives on the mutual impact of society and digital technologies. The project sought to identify present and future research questions and challenges for the social sciences posed by the impact of digital media and technology.

The structuring of the Handbook was derived from the initial ESRC questions for future research, but also from comprehensive literature reviews and analyses, Delphi surveys and discussions, and stakeholder workshops. Even though the final report of the project organized analysis in six domains; the Handbook reverts to the original ESRC domain chapters, or ‘ESRC reviews’: (1) health and well-being, (2) communication and relationships, (3) economy and organizations, (4) communities and identities, (5) citizenship and politics (6) data and representation and (7) governance and security.

In addition to these reviews, responses to an open call as part of the Ways of Being Conference (2017) developed into complementary chapters which, headed by their closest ESRC domain chapters, form the corresponding sections of the Handbook. These additional chapters, selected as complements to the seven main themes, address more specific research gaps and challenges for social research in the digital age, covering issues within one of the seven foci of the project. Altogether, they result in 25 chapters organized in nine sections, with the following final structure:

1. overview
2. health, age and home
3. communication and relationships
4. organizational contexts
5. communities, identities, and class
6. citizenship, politics and participation
7. data, representation, and sharing

^1 More on the project is available at https://waysofbeingdigital.com/

DOI:10.13169/prometheus.38.3.0356
8. governance and accountability
9. synthesis.

The project responds to the UK ESRC call, which points at a “real need for meta-analytic work to synthesise and interpret the existing literature and data, to refine and consolidate existing understanding of the social, cultural, economic, political, psychological and other effects of digitalisation” (p.27). Such work should bring new insights, ideas and methods, which may explain the focus on twenty-first-century texts. By digging into recent research contributions, the authors seek to summarise a ‘multi-domain holistic view’ of the mutual shaping between digital technologies and different life aspects. Many of the texts seek to analyse a joint effect of digital technologies, instead of that from the individual technologies or case studies, avoiding current research trends on atomisation and limited scoping, specific technologies’ analyses, platform-focused insights, explorations of digital-based phenomena, etc. As a result, the Handbook reveals, for each domain, a comprehensive set of research questions, key topics, authors, concepts, methods, approaches, theories, gaps and challenges.

Despite and because of the selection method and the academic focus, this compilation of texts is a straightforward reference that avoids referring excessively to well-known classics and gurus of the digital transformation. Most classic references from the last quarter of the twentieth century play a secondary role, mainly for subject contextualization and listing of previous theoretical frameworks. Nor does the book allocate too much time to general context introductions or broad theoretical framings. This means that it renounces the progressive embedding of digital structures – a task satisfactorily addressed by the existing literature – and departs from established thinking on the digital society. For this reason, the contributing authors focus their work on the present and future challenges of the digital society, with less attention to their origin and previous development.

Editing such a handbook requires a common, but ambitious format, since it deals with a wide range of subjects. In this sense, this work is more overarching than, for instance, more specialized research handbooks, and presents a very different approach, inspiration and tone from the recent Routledge Handbook of Digital Media and Communication (Lievrouw and Loader, 2020). The Handbook edited by Yates and Rice was not conceived as a mere collection of essays, but as a seamless scoping review that comprises relevant topics selected in a systematic, participative and creative manner.

**Terminology, boundaries and taxonomies**

Defining a set of overlapping classifications is a hard task. Sections, domains, topics and concepts are some of the categories used to show priorities and boundaries. This ambitious venture endangers the clarity, consistency and coherence of the work, since the detail of the documented selection process makes reference to several similar taxonomies being used at different moments of the project and for different outputs and ends. A clear example is the introductory update to identify issues and provide context. This is based on a recent sample of 89 publications, ranging from 2009 to 2018. The complementary analysis reveals five themes (theory and conceptualization, technology, issues, context, effects) with their corresponding codes and subcodes, and three clusters (individual cases, societal and technological issues, effects). This additional classification is independent of the domain-based one that structures the book.

Moreover, sections and domains are not necessarily equivalent, since the former encompass a wider range of topics than the latter, which brings some terminological confusion. For example, section 3 embraces a homonymous domain (‘Communication and relationships’), but section 6 is called ‘Citizenship, politics and participation’ while the heading ESRC review is named ‘Citizenship and politics’. Section 2 (‘Health, age and home’) is introduced by the domain review ‘Health and well-being’ and section 8, called ‘Governance and accountability’ starts with the domain ‘Governance
and security’. Additionally, the analysis of the stakeholder workshops (chapter 24) contributes two more classifying systems, the first with eight research clusters and the second with ten, and both of them with their corresponding question sets. This may appear a minor issue, but it jeopardizes the consistency, coherence and understanding of the overall analysis, and the effectiveness of the work as a handbook.

New trends on terminological uses, like the adoption and abandonment of terms referring to digital technologies, are revealed throughout this work. Yates, Rice and Blejmar start by proposing four ‘crucial components of digital technology’ that highlight the transformative nature of the digital world: digitization, computing, microprocessors via integrated circuits and digital networking (p.6). However, this taxonomy will not appear again in further analysis. Additionally, the authors of the first chapter also identify four ‘key terms’ related to the changes and social impacts of digital-based phenomena: ‘digital age’, ‘digital era’, ‘digital society’ and ‘digital technology’. Surprisingly, despite being part of the book’s title, the last term is not repeated consistently in the rest of the publication. Even though it is a useful term to encompass all the devices, platforms, systems or innovations at stake, a variety of expressions will be found in the following chapters: ‘communication technologies’, ‘computer-mediated communication’ (CMC), ‘information and communication technologies’ (ICTs), ‘digital media’, ‘digital solutions’ or even the less frequent ‘global information infrastructures’ (GII).

Strictly speaking, a digital camera or a digital audio recorder can be considered ‘digital’ technologies, even though they are not necessarily connected to the internet. Chapter 13, on the uptake of digital solutions, defines digital technologies – used at work or at home in this case – as ‘any equipment that uses the internet to play a role in digitizing documents, processes or tasks’ (p.373). The combination of the terms ‘digital’, ‘information’ and ‘communication’ seems to be an appropriate way to perceive an agreed concept of digital technologies – devices and systems that make use of communication infrastructures to exchange digitized information. It is noteworthy that for the moment we still have put the ‘automation’ factor aside for such definitions. Nevertheless, this aspect begins an interesting debate reflected in chapter 24, which draws on the two stakeholder workshops undertaken during the project, revealing that ‘separating automation, AI, augmentation, algorithms and digital technologies [has] in general proved problematic’ (p.666). Moreover, one of the issues arising from the discussion is how to distinguish between ‘automation’ and ‘digital’. All these terminological considerations trigger reflection on the development of digital technologies over the last 50 years: starting with an increase in digital information processing (development of sophisticated sensors, microchips and circuits), which would be continued with an increase in networking and communication capabilities (development of sophisticated ICT infrastructures and devices which decrease latency in an exponential way) and finally, with the current focus on automation (development of sophisticated algorithms fed by previously digitalized information, and applicable to a broadening scope of activities). Obviously, CMC, digital technologies and ICTs leave the floor to the rescued term ‘artificial intelligence’.

If we focus on more specific issues, it is interesting to note that ‘digital inequality’ can be also considered a problematic concept in definition and terminology consensus. In this sense, chapter 5 contributes an interesting reflection on related terms that vary depending on the combination of ‘access, skills, uses or attitudes to media and technologies’ (p.428). The authors of the chapter list a remarkable number of concepts: ‘digital divide’, ‘ITC divide’, ‘information divide’, ‘digital inequality’, ‘digital inclusion’, ‘digital literacy’ and ‘digital engagement’. Identification of this area as both a cross-cutting topic and a hard-to-define theme highlights the need for even more complex approaches than Van Dijk and Van Deursen’s digital divide analyses (van Dijk, 2005; van Deursen and van Dijk, 2019). It is also remarkable that some well-established expressions are rarer than one might expect in this type of handbook. I refer to such framing concepts as ‘information society’ (which is almost ignored), ‘surveillance society’, ‘knowledge society’, as well as such economy-centred terms as ‘knowledge economy’, ‘attention economy’, ‘digital economy’, ‘informational capitalism’ and ‘surveillance capitalism’.
Contradictions, tensions and directionality of the impacts

Besides the difficulties derived from defining clear classifications, and delimiting all the domains, topics and challenges, it is also important to consider their relationships. If the Oxford Handbook of Digital Technology and Society explores present as well as future research-worthy areas, focusing on current paradoxes is essential. At an early stage of the book (chapter 1), contradictions in the digital age identified by Turkle (2011) are listed, including such observations as connectivity distancing patterns, identity flexibility with privacy trade-offs, selective attitudes towards real-time options, information availability in exchange for information quality, remote work benefits and drawbacks. After listing Turkle’s paradoxes, the authors make what I consider one of the most impactful statements of the book – a transversal and fundamental paradox, reminding the reader that ‘what some researchers or users may perceive as a positive aspect may be considered negative by others’ (p.23). This summarizes nicely the contradictory nature of the relationship between digital technologies and society. Despite such fatalism, it is possible to find a consensus on which outcomes of the digital age are positive or negative. A very different question would be whether impacts are acceptable. Paradoxes may arise and they cannot be uncritically considered as no more than trade-offs.

At the beginning of chapter 7, Green, Comber and Kuznesof note that some recent global and globalizing shifts in social organization ‘bring technologies, societies and cultures into complex tension with each other’ (p.186). What seems to be just an introductory statement actually reveals something important: analysing the mutual relationship between digital technologies and societal elements is, to a great extent, a matter of understanding and tackling with complex tensions. The intertwined nature of such tensions requires, in the first place, avoiding misleading preconceived notions and assumptions. To this end, the scoping review offered by this handbook is also a useful resource to discover and revisit key research questions.

Tensions are often illustrated by dualities, which can be identified throughout the book: well-being/psychopathology (chapter 4), exclusion/inclusion (chapter 5), to master/to be mastered (chapter 9), workplace/home (chapter 13), empowering/exploitive (chapter 14), offline/online (chapter 17). More ‘conventional’ dualities can also be observed transversally in the book. One example is the traditional public/private tension (Habermas, 1991), reflected in issues related to data sharing, digital citizenship and privacy (chapters 16 to 21). Another case is the individual–community continuum, especially addressed in chapter 22, where individual and state needs, and thus, rights and power balance in political systems, are identified as key tensions deserving attention and research. In general, such tensions and dualities are ultimately related to a lack of control, to the positive or negative character of the impacts, and to the definition of acceptable boundaries or thresholds for digital technologies.

The original call of the UK ESRC demanded meta-analytic work that would refine and consolidate existing understanding of the social, cultural, economic, political, psychological and other effects of digitalization. Nevertheless, the editors prevent any potential suspicion of technological determinism by considering the developed project as a ‘multi-domain holistic view of how digital technology mediates our lives, and of the way technological and social change co-evolve and shape each other’ (p.28). In line with Castells’s (2010) premise of a dialectical interaction between technology and society, Yates and Rice insist that the focus of the book is on how the integration of digital technologies shapes and is shaped by society. Directionality,
multiple causality and dilemmas around negative or positive impacts taken as inherent features of a technology demand an especially critical gaze. Turkle (2011) exemplifies this by encouraging understanding of technological addiction as a phenomenon related to the way we use technologies instead of an unavoidable consequence.

**Methods, sources, tools and disciplines**

The methods used in this book combine an original and complex mix of traditional and digital-based research resources that respond to the main challenges of the ESRC call. The ESRC reviews that form the core content of the handbook were the product of a systematic literature review combined with a synthesis of expert opinion. A core project team, formed by academic staff, provided input to the Delphi elements, workshops and conferences, and contributed with initial inclusion criteria, keywords and key citations for the systematic reviews.

The overall methodological structure includes an ambitious Delphi process, a set of six stakeholder engagement workshops and a digital-supported systematic review of literature. The first method contributes with reviews of expert opinion that generated four sets of data for each domain (scoping questions for future research, key authors and key literature, key topics to be addressed and key challenges). The stakeholder workshops, aimed at engaging academic and non-academic stakeholder partners, were conceived to review and validate the results of the Delphi process, to discuss more focused areas and to comment on the project’s results. The most striking part, the digital examination and systematic review of the literature, was supported by the work of the Digital Humanities Institute (DHI) at the University of Sheffield and analysed 3,971 publications produced between 2000 and 2016. The literature data were subjected to two analyses: a first one designed to obtain concept pairs and trios, and a second one designed to identify key topic clusters. This partly automated method sought an overall content analysis and a predominantly narrative systematic review. Analyses of the ESRC review chapters were inspired by Borah’s study (2017), which attempted to bolster future research in emerging communication technology by learning from past mistakes. Beyond the ESRC reviews, literature analysis is common in many of these studies.

Literature analysis techniques pose serious challenges for researchers. An increasing pressure to publish jeopardizes the quality of knowledge production. The effect of growing rates of scientific outputs (Günther and Domahidi, 2017) is a concern of chapter 4, where Adrian Meier *et al.* share their worries about skewed word choices. Borah (2017) also expresses her concern about an increasing volume of information and Jinha (2010) reminds us that since the beginning of academic journals, more than 50 million articles have been published. Apparently, the information society brings too much information.

The problem of more publications is worsened by increased availability. Open access is both a gift and a curse since it makes limiting a review’s scope even more challenging. Research could be easily biased towards digitized and open publications if publishers do not adapt their collections to the most recent trends on knowledge management and consultation. Chapter 9 is quite revealing on this question: ‘where possible, we obtained the full publication’ (emphasis added, p.256). Chapter 12 contains reviews of publications in English only and only when full text was available (p.348). Quality criteria is another factor to be considered. In chapter 6, the controversial impact factor is used as a guide for journal selection. Insights on what should be considered reliable and eligible sources are rare in the book. For instance, chapter 5 nods towards what is sometimes unfairly called ‘grey literature’: a small collection of 16 items is included ‘to provide richness, context, and currency to the review’ (p.114). Of course, these publications are marked in the reference list with two warning asterisks.

Here it is important to come back to the original purpose of the project that originated this book, since the ESRC reviews try to identify research questions, key topics, authors, concepts, methods, approaches, theories, gaps and challenges. On the other hand, if the goal is to research on
how the integration of digital technologies shapes and is shaped by social factors, scientific peer-reviewed publications could fall short. A vast amount of extra-academic references might have provided crucial reflections: reports, white papers, blog posts, articles, even documents produced in audio-visual format. Moreover, this sort of reference is often developed by scholars or practitioners with a close relationship to the research object. The book’s editors warn about the limits of the reviews and acknowledge that they are using new and experimental methods (pp.45, 325), and the book includes a meta-scientific and self-reflective perspective. Analytic, empirical and epistemological approaches of the reviewed literature are scrutinized, but also thoughts concerning ways to conduct research are shared: methods challenges, the prevalence of big data, the caducity of collected information, ethical concerns on how we do social research and the use of digital tools and processes to assess research publications.

Big data’s 5Vs (volume, variety, velocity, veracity and value) might have been considered here as hints to assess the appropriateness of the sources reviewed. Changes in research methods in social sciences may be accompanied by different acceptance levels within the academic community. Therefore, the methodological argumentation is important. Volume and time were two of the factors that motivated the selection of the methods explained above (p.36). Project members had to face a huge amount of literature in a relatively short term (12 months). Also, volume and time are precisely two of the features of digital information that determine its chaotic consumption patterns. Tons of available data have to be explored, while rapid societal changes require immediate analyses in order to provide conclusions that are still valid when published. In this sense, it is possible to conclude that digital technologies determine the volume and characteristics of the information generated, but at the same time, the vast amounts of complex data determine the requirements and characteristics of what is of concern in future technologies. It is interesting and even paradoxical to note that a study that integrates significant discussions on the automation of this work itself needs to automate some of the tasks to be developed.

The editors have made the most of the gathered data by making some of the results available online. A dedicated concept interface hosted by the DHI allows the visualization of the top 50 most frequently occurring pairs and trios obtained by concept modelling techniques. The combination of results published in the book in the traditional way with data available online suggests an interesting path for the optimization of research. Open data give the chance to make a more efficient – and thus, responsible – use of the time and resources dedicated to research, and provide a valuable source of information to those with fewer opportunities to gather it (Ph.D. candidates, independent researchers, etc.).

The *Handbook* makes almost no use of additional data sources, such as sociological statistics (excepting the reports on a national survey of UK employees in chapter 13) or technology-related charts. It also lacks summarizing tables to deal with the complexity of the presented methodology. For instance, chapter 2 would have benefited from a figure containing a chronogram, the number of workshops and their size, and the literature sample size and timespan. Additionally, it would have been useful to illustrate the relationships between the different elements of the methodology.

Some awareness of the views of different disciplines and profiles would also have been useful. As Coombs et al. state in chapter 12, the case of intelligent machines ‘is associated with a variety of academic subjects and complex sociotechnical systems’ (p.356). This can be generalized to all digital technologies, especially if a ‘multi-domain holistic view’ is being sought, The *Handbook* was meant to have a ‘strong social science focus, even where it is interdisciplinary’ (p.27), and the broader project team included, besides social scientists, expertise from the arts, engineering and science. A wider range of disciplines would have brought in advice of experts from other fields.

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2Concept modelling is a computational linguistic process that involves identifying the emergence of concepts, or key ideas, via lexical relationships. For the purposes of the review, lexical relationships were limited to high frequency co-occurrences of terms as pairs and trios. The process is entirely data driven and resulted in 2 million rows of data. The interface is available at https://www.dhi.ac.uk/waysofbeingdigital/.
including those with less familiarity with digitalization. It is also important to bear in mind that the documented research process remains mostly at the expert and academic level. The non-academic and grey literature were largely avoided. In addition, the composition of the project team suggests that the contributions of professionals who deal daily with these challenges, as well as users’ perspectives, are largely absent.

A handbook is not an encyclopedia. However, the composition of project team will affect the exhaustivity, comprehensiveness, comparability and opportunities for extrapolation of results. Digital technologies are global, but they are unevenly used, and their impact will be different within groups, regions and countries. The contributor list reveals a gender-balanced composition, but with Anglo-Saxon overrepresentation. A UK-centric approach, acknowledged by the editors, is especially present in chapters 11 and 13. This would not have been a problem had the ESRC call explicitly mentioned that the research would address the socio-technical phenomena affecting a specific part of the world. In this sense, the spatial and temporal scope of the project remains sometimes unclear. It is crucial to remember that the resources and time limitations of the project hindered its chances of producing a more ambitious, interdisciplinary, wide-reaching work.

**Final remarks**

*The Oxford Handbook of Digital Technology and Society* is not just a collection of essays, but also the product of a coordinated and integrated research process. As a handbook, it is a useful reference for focusing research on the relationship between digital technologies and society. Indeed, it is hard to assess the domains and contents of this work, since they rely on the adequacy of what has been previously published. This book poses, probably intentionally, more questions than answers. Why, for example, is there not a single definition of ‘handbook’ in the academic literature.

The *Handbook*’s structuring sections, and especially the ESRC reviews, are not easy to use individually; they require background knowledge of the book’s context and origin. A brief summary at the end of each ESRC chapter or section would have avoided this problem. Moreover, the different parts of the book are unbalanced: while section 6 (on citizenship, politics and participation) contains only two chapters, section 7 (on data, representation and sharing) contains four. This issue is counterbalanced by the constant and necessary overlapping of a considerable number of topics. This interconnection takes the form of identified cross-cutting research questions, themes and challenges, as well as inter-chapter and inter-section cross-references. At the same time, the seamless approach ignores any explanation why there are no dedicated sections for themes that one would expect to find in this book as domains in themselves, such as ethics, privacy and education.

Digital inequalities are related, as usual, to access, literacy and skills. But they are also contextualized by non-digital questions, such as information literacy (chapter 5) or systems of social inequality and distinction (chapter 15). Who is responsible for dealing with digital inequalities and what governance measures should be taken? How does this topic affect social participation at different levels? Why has the Handbook got nothing to say about the adoption of digital technologies in developing countries? AI also gets little attention. It is fair to say that the second golden age of AI originated precisely between the end of the project and the publication of the book. Numerous scholars are now looking at the impact of AI, and there is currently a huge number of publications related to the ethical consequences of AI. There is even a dedicated *Oxford Handbook* (Dubber et al., 2020). The major concerns of those interested in digital technologies are now focused on AI. Most recent topics and dilemmas are related to such issues as automated weapons, profiling, surveillance, fairness of automated decisions, algorithm transparency, manipulation, information quality and reliability, automated censorship and discrimination. In several chapters of the Handbook, it is possible to identify what I call a ‘basic ethical pack’ consisting of autonomy, agency and privacy. But what the book frequently refers to as ‘ethics’ (whether as a relevant topic, a recurrent concept or a challenge) should be actually be seen as ‘data ethics’.
Another problem is ‘platform-focus’. Big platforms and technology companies are key actors in the digital era. For this reason, brand names populate the academic literature as case studies or as protagonists. It is true that platforms can now have power and geostrategic relevance equivalent or even superior to those of many countries. More specifically, social media platforms are receiving too much attention and they may end up being a misleading synonym of digital technologies, which can shadow both the impact of other digital tools and any holistic approach. The editors have controlled any risk of overrepresenting Facebook, Twitter or Google in the analyses. Policy design should be supported by evidence-based research. Net neutrality, freedom of speech, content regulation, access limitations and power counterbalancing are just some of the relevant issues. This Oxford Handbook does not deal with policy recommendations or approaches (which is conveniently acknowledged by the editors), but it may give some advice on which topics and research questions are to be addressed in the design of policies. What can be said about the gaps and missing subjects? The editors accept their limitations in an area deeply embedded in our lives: ‘the literature associated with digital technology and society is vast and would include a much wider array of topics than are included in this Handbook’ (p.714). I must say that I expected more representation of education and economy-related analyses. Surprisingly, none of the texts is interested in the environmental impact of data. It is probable that this is a recent concern not reflected in the analysed literature. Neither are covid-19 impacts reflected in the collected studies and analyses. This does not invalidate the work done, but it arises crucial questions about the updates required in such topics as health and well-being, communications and relationships, work–home boundaries, digital inequalities, knowledge sharing and governance in digital contexts. Moreover, an interesting concern arises: the caducity and volatility of the data and knowledge would seem to be unavoidable. The Handbook presents a very analytical, neutral and sober approach from the very beginning. Most of the texts, especially the ESRC reviews, stick to the results, contain succinct conclusions and are free from excessively elaborated opinions. As expected from a publication like this, the language used is plain and straightforward – except for chapter 15, which is dedicated to the economic, social and cultural capital in the digital age and is decorated with more complex conceptual constructions. In general, interpretations and references are restricted to literature studies and avoid current affairs. Exceptions to this are the Arab Spring, Donald Trump, Brexit and the Cambridge Analytica scandal. Nevertheless, in chapter 14 it is possible to find a reluctant critic of the utopian attitudes in early work on computer-mediated communication, which trusted in the democratizing potential of digital technologies (e.g., Masuda, 1981).

This book not only suggests areas to explore, but also stimulates reflection on the methodological approaches being used. It describes and suggests uses of digital research, approaches for literature review, ideas to combine digital and analogue methods, and technical resources and expert groups. In general, it provides valuable insights on the benefits, challenges and opportunities of the exploitation of digital research. The result is a key work identifying fundamental topics and issues to be considered for a variety of research activities. The Oxford Handbook of Digital Technology and Society examines the pervasiveness of digital technologies in everyday life. It has no ambitious or encyclopedic aspirations; instead, it provides a valuable information hub listing dozens of reliable sources classified by relevant domains. To structure such a vast amount of literature, the project team had to identify research questions, key topics, authors, concepts, methods, approaches, theories, gaps and challenges. In the future, researchers will still need to ask themselves where to focus their research, how to reinvent their methods, which themes have already been sufficiently addressed, to what extent the existing theoretical frameworks can be applied to new phenomena and where to find inspiration. However, a useful starting point can be found here.

References


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