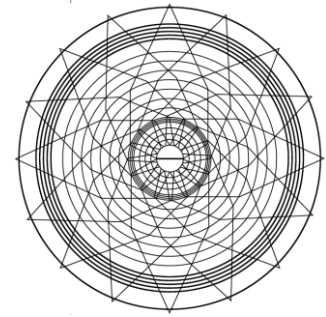


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*The Digital Future of the Media: a Systems Theory Perspective*



## THE DIGITAL FUTURE OF THE MEDIA: A SYSTEMS THEORY PERSPECTIVE

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### **Abstract:**

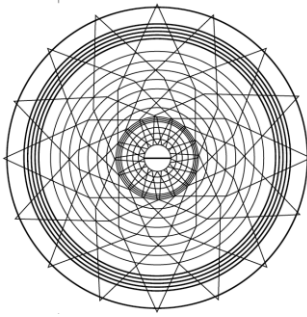
Digitalization is affecting all systems of modern society. The media system, one of the core system that serves to observe all other systems, is playing a special role in this process: it was one of the first that underwent a dramatic transformation due to the application of digital technologies on all levels and in all phases of production, distribution and consumption of information. Furthermore, as a result of its special role in society, this transformation of the media system also affects how we deal with the digitalization of our societies on a very general level. This article discusses three basic elements of digitalization that help us better understand this deep-going impact of digital media in society. First, it looks into the technical foundation of digitization to recognize how far-reaching the current digitalization processes are. Second, the consequences of the new digital paradigm for information distribution – with a particular focus on social media and the emergence of new platform-based intermediaries – and the role of data as a medium of interaction are discussed. One main conclusion is that traditional ways of analysing current societies need an update, as digitization is opening up completely new ways of interaction in and between subsystems of society.

**Keywords:** Digitalization, media system, social media logic, platforms, data, systems theory

### **Introduction**

In 1997, just one year before he died, Niklas Luhmann was interviewed by a magazine and asked what he thought about the advent of the internet and its effects on the media system and society in general. His answer reflects his confidence in the general explanatory power of his theory:

"For mass media, the new innovations like the internet or individualized information will not be of much relevance. They will take their place besides mass media, like newspapers or TV, without replacing them." (Laurin, 2008, translation by the author)



Even if we take into account "Riepl's law" – saying that new media are never replacing old media completely but just redefine their functions and initiate processes of convergence (Riepl, 1913) – we must state from today's perspective that Luhmann at his time may not have fully grasped the ground-shaking consequences of digitalization for our societies. As we see in our everyday lives, traditional mass media are severely affected by the new digital technologies, and all levels of society are involved in processes of digital transformation, affecting almost every aspect of life, like work, health, mobility, security, citizenship. Furthermore, this impact cannot be described as the simple substitution of the old by the new but as a complex process that comprises of a transformation of traditional media, development of new ones and processes of convergence on many levels.

All in all, to be just, this misconception is not Luhmann's fault. First, as a general remark, he was not a naïve utopist. When analysing society, he clearly recognized and discussed the many problems connected to the functions of the media system for society. Second, many scholars – including the author of this article – shared this expectation at that time. If we remember what the internet was like in the mid-1990s, this characterization as a new and innovative mass medium seemed to be quite logical. Looking back from today, the World Wide Web was only a very first version – a "Web 1.0" – of today's global digital network, a version that still was very much mass media-like, more a technology for information distribution than a "medium" in a narrower sense, with websites providing information for a disperse audience of people not known to and aware of each other (Loosen & Schmidt, 2012), complemented by some media for interpersonal communication like online chats or e-mail, which very much resembled traditional personal media like the telephone or written letters.

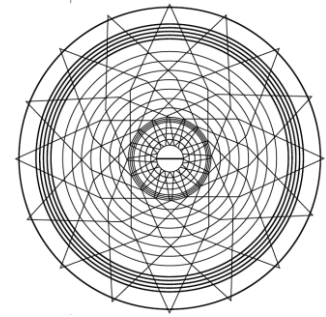
There were some researchers though who already have noticed that the internet inherited characteristics that distinguished it clearly from the old media logic (e.g. Morris & Ogan, 1996) – like allowing for a much broader variety of communication configurations like many-to-many communication, combined with a mix of synchronous and asynchronous interaction opportunities. However, in these early days, we did not see practical applications that tapped the full potential of these configurations. The result was that many scholars like Luhmann viewed the internet just as an evolution of the media system, in the same way as radio and television have once pluralized the formerly print-based media landscape, without shaking the foundations of mass media logic as a whole.

In Luhmann's theoretical world, the media system is a core system in our societies, a system that observes all other systems of society, giving us access to many fields of reality we cannot experience directly, with at the same time constructing a media reality according to the operations that define the system of journalism and mass media (Luhmann, 2000). Today, the challenge for media and communication scholars is to understand what Luhmann – and many of us with him – did not see: How is digitalization changing the foundations of the media world and society as a whole?

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In order to approach this question, it is worthwhile to listen a bit further to Luhmann as in this interview he was speaking about more specific problems of public communication, problems that still are very apparent today in our digital media world. He was talking about how the media system is dealing or should deal with wrong or unreliable information. Today this phenomenon is called "fake news" and is a big and even bigger issue in our social media world than it was in the 1990s mass media. Luhmann's answer to the interviewer's question of how the media system can keep its integrity and sort out right and wrong information roots in his deep understanding of the old, traditional mass media system:

"Many of these problems will be solved by economic pressures. Scandals like the fake Hitler-diaries in the German magazine 'Stern' have forced the publishers to improve their procedures; otherwise, they would suffer from a decline in circulation and the damage of their reputation." (Laurin, 2008, translation by the author)

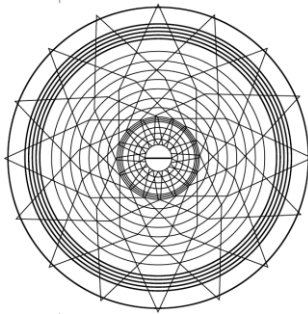
Today, we see that this logic may still apply to classic journalism, but not anymore to media in general. In the last few years, we have seen a very large and vivid market for what is called "fake news" emerge online (Waisbord, 2018). This indicates that digital information infrastructures and also economic rationales in digital media are not the same as they were in the traditional media, and new economic rationales, besides political ones, may even accelerate and not impede fake news circulation.

In the following, I will use Luhmann's example to highlight the core elements that are responsible for this fundamental change of our media system. I will focus on three aspects, particularly. First, I will discuss the role of the digital code as a technical basis of digitalization. This will allow us to understand better how digitization is dramatically changing media and communication systems in general. Second, I will examine the platform structure of digital media in order to understand better how dysfunctional aspects of public communication like fake news and false information can be traced down to this new communication infrastructure and how differently these processes work compared to the old media system of Luhmann's time. And third, I will turn to the granular level of digital "data" and data economy that obviously is so different from the old economy Luhmann spoke about. There are surely many more relevant aspects, but many are connected to these three, and Luhmann's arguments from the beginning can guide us through this analysis of the current processes of social change in the context of digitalization.

## **Digitization and the media system**

The English language provides for two terms that help to analyse the social implications of digital technologies: the first term describes the technical process of translating analogue information into digital data (digitization), the second one is generally used to describe the global process of subsystems of society adapting to this technical translation (digitalization).

The idea of a binary system of numbers, which is the basis of modern computer technology, is quite old. The German philosopher and universal scientist Gottfried



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Wilhelm Leibniz was the first to describe this system (which he at his time called "Dyadics") in a comprehensive way with its mathematical implications (Leibniz, 1697/2001). For him, it was more a play of thought and evidence for how logical the world was designed by God, which he presented to his sovereign and employer, the Count of Braunschweig-Wolfenbüttel, in a handwritten letter in January 1697.

It needed two more centuries and the development of electronics to make this binary system so very valuable. Electric systems work on a "power switch on/off" basis and thus are a very good and operable technical representation of the binary number system. For making information accessible for computers, it just needs to be transformed in binary language, the process we refer to as "digitization". If we, for example, want to digitize a classical painting to allow it to be displayed on computer screens and be distributed via digital networks, every pixel of the digital screen needs to be assigned an exactly defined colour in the form of a digital code. In early colour-screen times, such codes were 8 bits wide and therefore – in the binary number system – allowed for just 256 different colours to be differentiated. Later, 32- or today's 64-bit systems and much more elaborated operating systems allowed for several million, which is way enough for the human eye to experience a colourful picture. For a screen with a common resolution of 1920 x 1080 pixels, about two million single codes (each 64 digits wide) out of this set of several million colours is needed to display such a picture.

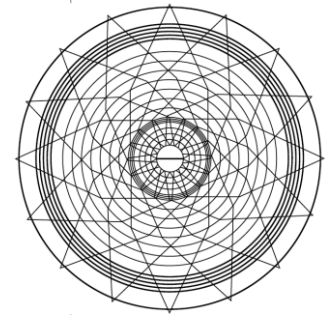
This process of digitization of oil-on-canvas-based information has some paradoxical consequences. First, although the numbers of colours in our example are extremely high, they are nevertheless limited, while an artist using canvas, brush and oil paint is not limited in shades of colours in the same way. In consequence, digitization means a heavy loss of information (although human senses may not notice the difference in many cases). Second and making the problem even worse, despite the fact that the information is heavily reduced, the mass of data to be processed is exploding with digitization: the progress of – in our case – resolution of screens and power of operating systems and computer processors produces more and more bits that have to be defined, processed, stored and transferred. For some decades, this problem has limited the fields of application of computing to the professional sphere (Ceruzzi, 2012). However, digital machines have, over time, constantly gained in speed of their operation and capacity of data storage and data transfer following "Moore's law" (Moore, 1965); being inferior in their early days, digital products (music, animated movies etc.) today have outperformed analogue ones in many fields. And: this is still an ongoing process.

Media and the cultural industry were among the first to experience the social and economic consequences of this translation process of analogue information into digital code. Content production, content distribution and the monetarization of content changed dramatically, and with it, a lot of questions arose: can the traditional media system still provide its observatory functions for society? How are media's interconnections – the "structural coupling" in Luhmann's words – with other systems, how are their modes of irritation and co-orientation affected by digitalization?

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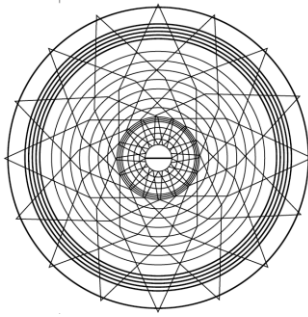
Digitalization, as described above, is a big "equalizer" of information. All kinds of information can be processed in the same way by very simple calculating machines, which allows for very complex new reconfigurations of data (Qvortrup, 2006). This characteristic is particularly blurring the system borders between mass communication and private interaction. New sets of code are emerging – like memes – that not just replace older analogue content while serving the same media functions, but opening up new spheres for individual agency, social interaction and emergence of social structures. One example would be "personal public spheres" (Schmidt, 2009), which are communication networks around the interests of individuals (making it private or personal and not public) and which include – with the help of digital media like social media platforms – more distant people, even strangers, and which allow references to other digital resources and much more. Such personal publics can flicker between private and public. If, for example, a person is posting a news item on his twitter account, having his friends to react – the conversation among friends is visible to the public at the same time, and thus it can eventually turn into a public debate. In such a case it becomes almost impossible to decide which functional system we are observing and decide which are the dominant codes and media of such a hybrid process (Thye, 2013: 215) and where it interferes with the journalism system and professional codes.

Although we are interested in media and communication mostly, we should be aware that digitalization is not only a media phenomenon. There is almost no social system that remains unaffected by this phenomenon, which qualifies digitalization as an innovation that has the power to lead our society into a new era, which Dirk Baecker (2018) calls "next society", following the earlier eras of tribal, ancient and modern society.

## **Platform media and public communication**

Over time, the technical digitization of information has resulted in a deep-rooting digitalization of media organizations. When we talk about electronic media, from a systems theory perspective it is important to note that they are not just spaces of communication but also technical media of distribution: electronic media establish procedures and codes of transmission of information (other terms may be "content", "meaning" or "observation of society") into society itself, at the same time establishing implicit or explicit regulations and norms for this process. Besides the question whether new digital media constitute mass media in the same way as newspapers or television, what is much more apparent today is that the mode of distribution of information has dramatically changed with their appearance on the scene.

The most recent and most discussed phenomenon is the development of "platforms" as a new level of intermediaries in the communication process. It is discussed in many contexts, for example, as a new form of capitalism (Mayer-Schönberger & Ramge, 2018) or regarding their new capacities for networking, sharing



or collaboration. The term is very popular but has been rarely developed and discussed in theoretical terms.

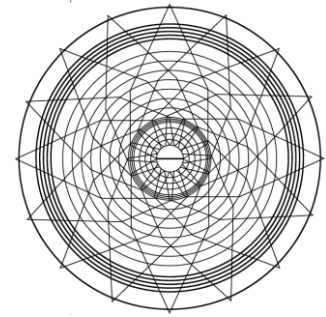
This article does not provide a theory either, but it will identify the core characteristics of platforms and how they are affecting our media systems in order to develop a sense of how these characteristics may impact the media system in our societies. In terms of systems theory, newly emerging online platforms are disturbing an established equilibrium in the field of content distribution. In Western societies, technical organization and political regulation of content distribution for mass media like newspapers and television have been well balanced for many decades. They are following the paradigm of equal and non-discriminating access of all content providers to distribution systems. One major principle ensures that information can float freely and unbiased – content production and content distribution should be independent of each other. With online platforms appearing on the scene, however, this world of content distribution is changing dramatically. While traditional distribution systems are still working today (just with lower numbers of copies and readers or viewers), in the new digital environment a new powerful type of player appeared on the scene, the so-called online platform, which is a digital space that just provides an infrastructure for others to interact and distribute content (Nieborg & Poell, 2018). In their mission statements on their websites, providers like YouTube, Facebook or Google try to define themselves as neutral instances that are just interconnecting others, doing a lot of good like fostering social contacts, improving economic exchange and markets and other valuable things (e.g. YouTube: "our mission is to give everyone a voice and show them the world", <https://www.youtube.com/intl/en/about/>). But with that, they are also imposing new forms of interaction and norms and thus alter power relations between the players in the media system and in public communication in an unprecedented way.

There are four characteristics that are constitutive for these platforms or "intermediaries" in their role as new actors in the process of information distribution. First, as they are organizing a network infrastructure in order to interconnect individuals and let them distribute content among them, they are introducing so-called "network effects" (Katz & Shapiro, 1994) in the communication process: the more people from a person's network are a member of a platform, the more appealing it becomes for them, with the result of all members of their social group (and all social groups in society) gather on just one platform. Even if some people do not like certain aspects of this platform, a change to another one will disconnect them from their networks (as long as the others do not follow them), thus keeping them "locked-in" in the one dominating platform's network. A result is a natural tendency towards monopolization (an example is Facebook) that leaves just specialized niches for competitors (e.g. LinkedIn as a profession-related network or VK in the Russian language world). The second characteristic is not entirely new to the media system: the fact that services are not payed-for by the customers who use it, but that they are financed by a triangular exchange of media users to advertisers to media companies. What is new in the digital platform world are two things: first, the old system is

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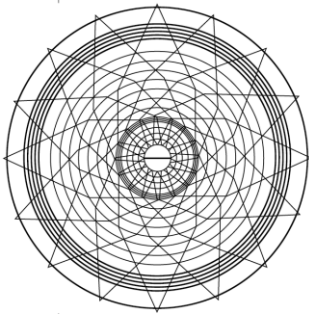
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expanded from a triangle to something more complex, with platforms building a new layer between customers and advertisers, partly depriving media companies of their dominant intermediary role. Second, on digital platforms monetarization of content-use can be lifted to a new level, as users can be sold individually with all of their personal habits and preferences (which can be deduced from the digital data traces left by their actions on the platforms) to companies that individualize ad exposure. This works to an extent unthinkable in the old media world and has raised critical questions about the consequences of this "surveillance capitalism" (Zuboff, 2018) for our societies. Connected to that is the third characteristic of digital platforms in the context of content distribution. It is not only advertising content that is tailored to users of a platform, but it is also every piece of content that can be selected for presentation to individual users. From the front end, YouTube, for example, has the appearance of a public media outlet to users who load the page "youtube.com". However, what a person sees on this page is pre-selected along with data about that person that is available for the YouTube company (which is owned by Google, one of the largest data collectors and processors in the world). Once a person started watching a certain video, the "autoplay" function will provide more and more of the same, following the rationale of keeping the viewer interacting with the platform as long as possible – in order to maximize ad-contact occasions and with it monetarization of platform use. This finally leads to the fourth relevant characteristic, the automatization of the individualized content-curation process by algorithms. These algorithms are the key tools of monetarization of user interaction and therefore, are kept secret. Relevant parts of the public communication process organized over these platforms now remain much more non-transparent than traditional ones after the end of the age of censorship in the 19th century – which is surprising given the stereotypical image of the open and participatory nature of the internet and the friendly ethos in the platform companies' mission statements.

So what does this platform logic mean for the "observation" function of the media system in Luhmann's sense – in other words for the process of distribution of information about all other systems of society?

For the fake news case from the beginning, the old economic regulation recommended by Luhmann will not work anymore. This logic has been: if a communicator provided us with wrong information, we would have lost trust and the provider would have lost reputation, which would bring customers to turn away to another content-provider and the initial communicator would struggle to win back trust. In the old Web 1.0 world, this would have worked, but on social media platforms like Facebook or VK users do not select content deliberately as they did in the old media world, but the platform is curating it for them mostly. A user may see various pieces of information in his or her feed or timeline that come from very different sources, selected by a hidden algorithm that knows about their individual content preferences. This disconnects users partly from the sources of information at least to some degree and results in a major loss of the function the media used to have: provide me with a relevant (and as little biased as possible) picture of the world.



Instead, it provides me with the information that pleases me most and makes me stay on the platform (as described with YouTube's autoplay function above). The reason for this is the strong demand-orientation of such platforms that aims on maximizing advertising revenue. And that finally means that users probably wouldn't get as angry as Luhmann expected them to get about "wrong" information and make them contribute to bringing the system back into balance; even if they got wrong information it is most probably wrong information they like, which largely may reduce the probability to sanction the platform by leaving it (to which they are "locked-in" anyway due to the described network effects).

In conclusion, the result of a "platformization" of content distribution is that this distribution does follow journalistic principles much less today, but highlights much more individual feelings of being pleased by certain content.

### **Data as medium**

That brings us to the next relevant aspect of the transformation of the media system by digitalization, the special role of "data" as the new form of medium or "capital" in the digital society (Mayer-Schönberger & Ramge, 2018). One important characteristic for our discussion is the fact that digital data as granular, binary pieces of information – which can carry almost every meaning, from our individual genetic codes to the balance of our bank accounts or the manuscript of a scientific paper – can be many things at the same time.

One interesting example is mobile money M-Pesa, invented by the biggest Kenyan telecom company "Safaricom" in 2007 (Jack & Suri, 2014). They allowed their customers to transfer the airtime they have bought for their mobile phones to other phone numbers. If you have bought airtime for calling or data use, you can transfer a certain amount of it by a simple text code to any other phone number. But this was not just an easy way to help friends to extend call time or allow for more texting. Because the company also allowed customers to withdraw airtime money from their phones in cash at local phone shops even in the remotest village, digital call capacity started to equal cash in a very basic sense, allowing to transfer money even to very rural places with no loss of time (however with substantial transfer fees) and use phone airtime to pay bus fares, restaurant bills and anything else in a new, cashless money transfer system. Just by changing the digital procedures allowed on mobile phones that were simply redefining the meaning attached to binary data, a telecom network provider quickly turned into the country's biggest bank. And more important: it didn't just change into a bank, it just was both at the same time, making it extremely difficult for the legal and political system to regulate it along with traditional regulation schemes. It took several years to establish new rules for telecom operators to minimize risks for the monetary system of the country, risks that emerged as a consequence of a telecom company suddenly doing bank business (Malala, 2017).

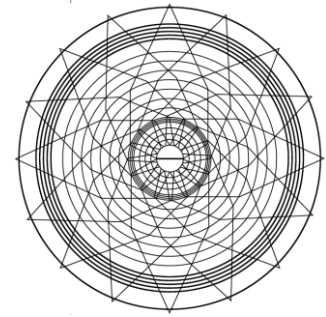
This example highlights the multifaceted quality of data as a new form of capital in the digital society. The special characteristic of capital is that it has no value in itself,



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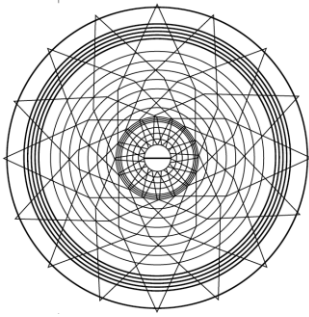
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but the value depends on the capacity of solving a problem in a neighbouring field. If a person owns a thousand shares of a company, it depends on the success of the company, whether the shares make her a rich person or not. Data today can serve this function in many contexts: Whether data like a birthday is worth anything depends on several other factors, for example, with what other kinds of data the birthday can be interconnected. Knowing the job profile or buying record of a person on amazon.com can make it either a very valuable or a worthless piece of information. A consequence of this logic is that it is not so much the quality of a single piece of data but the mere number and interconnectability of data and their variety that opens up the most promising opportunities for monetarizing data. This also resonates with the McLuhan's notion that the technological shape of a medium may carry more potential to affect people and society than the pure message encoded in it (McLuhan, 1964, p. 19).

The "plasticity" of digital data – its ability to represent almost anything – is complemented with a second aspect, and this is the fact that digital data today is emerging permanently in abundance and can be analysed and used in real-time. Every click on a website by a user starts a complex and information-rich process of data transmission. And this process is not just about demanding and sending page content; it includes the download and analysis of user data either from the personal device (stored in the form of "cookies") or from profile data stored by providers with which users have accounts (like Google, Facebook or Amazon). Before providers answer to a user request, they usually analyse previous user behaviour and tailor the data they send in an increasingly detailed way to the user's personality, be it news or entertaining content or products and services they search for and intend to buy. This is changing the processes of communication and observation within a society dramatically. Although even in former times companies and state institutions used to collect and analyse data, the paradigm has changed dramatically. Consumer research used to consist of mostly small-scale, sample-based and time-consuming data collection and analysis and resulted in generalized models ("customers with certain characteristics tend to buy a certain kind of products") in order to improve marketing or communication strategies. Today, in our digital environment, this is not confined any more to exemplary and generalizing analyses, but it can be done instantly for every single person and in real-time with every single interaction online, and be it a dozen times in a second. This opens up completely new paths of business, for example in advertising as Luhmann discussed it (Luhmann, 2000, pp. 49-50): the tailoring of content to individuals allows for new levels of differentiation and identification with products. Consumers feel much less part of a "mass audience" but experience advertised products as very personal things that fit into their lives. His diagnosis that the elaboration of advertising in the context of new media (with television as an example) leads to an ongoing differentiation of subsystems can be supported by new social media phenomena like "influencer marketing", which contribute to a blurring of system boundaries and a reduction of structural coupling.

The new data quality also affects public communication in a broader sense. Regarding the function of observing society, the analysis and interconnection of



communication data is a powerful tool for actors in society to influence streams of communication – actors beyond the traditional system of journalism that was responsible for organizing the information flow in previous times. Political manipulation and surveillance techniques are just one problem we are facing today as a result of the current form of media organization based on digital data (Zuboff, 2018). The most recent stage in the evolution of data use in communication is its role in developing artificial intelligence (AI) systems. Such systems are automatizing data analysis processes, even more, further reducing restrictions for running these complex procedures.

The downside of this accelerating data dynamics is, first, that more and more processes of communication are curated or "manipulated" in a clandestine way. Users do not know anymore and in detail, the grounds on which they are presented certain pieces of information. We just know that it's a certain data analysis process that results in selecting something as appealing to a person in a certain situation, and not, as in Luhmann's time, the social relevance of a piece of information selected by professional journalists for a certain social group or the society as a whole. Second and finally, this problem highlights the fact that it's our data, produced by users, that is taken, stored and analysed for these purposes. The related questions of privacy and economic value of these data have not been answered by now.

### **Conclusion**

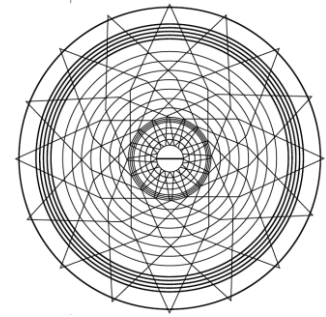
This discussion of the process of digitalization with a focus on the new structures of information distribution and data-logic has shown that digital societies are developing towards more complexity and disintegration of previously well-defined subsystems of society. If we follow Baecker (2018), one of the successors of Niklas Luhmann from the Bielefeld school of sociology, this means that the mode of functional differentiation of modern societies, with subsystems separated from each other, each with their very own modes of operation and media, is coming to an end and we are witnessing the emergence of a new form of society, what he calls "next society". This society is characterized much more than previous ones by complexity, and network structures, the sociologist Armin Nassehi suggests to interpret it as a society of "patterns" (Nassehi, 2019).

As many philosophers have highlighted, Luhmann and Habermas (1989, with his historical analysis of the emergence of 'bourgeois' public sphere) among them, a historical comparison of contexts and ages can help in understanding how social structures are changing. This perspective also shows that dramatic changes as we witness them today are not completely new but have occurred before. And this means that we can learn from these previous experiences; ruptures and disruptions in the running of processes do not necessarily have to be bad for society, because they show that social conditions can be shaped by social action and they allow us to discuss and decide about new structures and processes. When doing so, it is important to fully understand these processes and the deep-rooting changes that will

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be the relevant drivers for the future transformation of the media system and society in general. The discussion of the technical foundation of the current process of digitalization, the consequences of the "platformization" of the media system and the importance of "data" in the future society in this paper aimed at providing such an analytical basis. Only when political and individual decisions are based on a deep understanding of all aspects and consequences of digitalization, the change processes can result in a society where individual and collective self-determination can be preserved and expanded.

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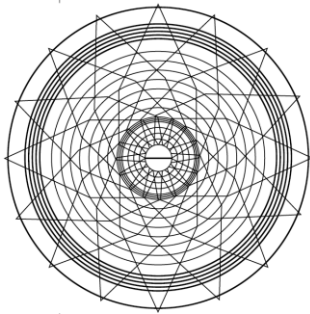
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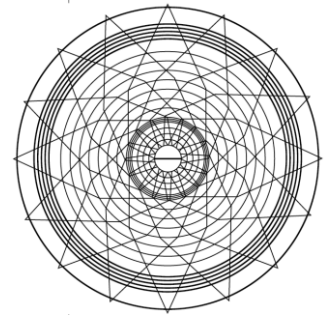
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## ЦИФРОВОЕ БУДУЩЕЕ МЕДИА: ВЗГЛЯД С ПОЗИЦИИ ТЕОРИИ СИСТЕМ

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### Аннотация:

Цифровизация затрагивает все системы современного общества. Медиа-система – одна из основных систем, служащая для наблюдения за всеми остальными системами, играет особую роль в этом процессе: она одной из первых претерпела значительные изменения, поскольку цифровые технологии применяются ею на всех уровнях и этапах производства, распространения и потребления информации. Кроме того, в силу особой роли медиа-системы в обществе, эти изменения также влияют на то, как обстоят дела с цифровизацией нашего общества на самом общем уровне. В данной статье автор рассматривает три основных составляющих цифровизации, благодаря которым мы можем лучше понять воздействие цифровых медиа, оказываемое ими на общество на самом глубоком уровне. Сначала мы рассмотрим технологическую основу цифровизации для того, чтобы понять, насколько далеко она продвинулась на данный момент. Затем — что новая цифровая парадигма привнесла в распространение информации, где отдельно остановимся на социальных медиа и появлении новых посредников, в основе которых лежат платформы, и роли данных как средства взаимодействия. Основной вывод заключается в том, что традиционные способы анализа современных обществ необходимо совершенствовать, поскольку цифровизация открывает совершенно новые способы взаимодействия внутри подсистем общества и между ними.

**Ключевые слова:** цифровизация, медиа-система, логика социальных медиа, платформы, данные, теория систем