Jan-Felix Schrape

### Digital media and reality. A brief introduction to operational constructivism

This paper (first draft) provides a brief introduction to Niklas Luhmann's epistemological perspective of operational constructivism. Subsequently, it uses this perspective as a basis to discuss the interplay of mass media, many-to-many communication, and journalistic content on the social web in the social construction of reality. How does a »common« description of the present emerge in the digital information society where the co-existence of different perspectives becomes an everyday experience? How do processes of social complexity reduction and algorithmic selection procedures interact? What opportunities and challenges arise for the integration of new points of view?

### 1 Introduction

Almost 50 years ago, Paul Watzlawick (1976: xi) argued that »all our versions of reality are the results of communication and not reflections of eternal, objective truths.« Clearly, our world is shaped by physical, chemical, biological, material, and technological conditions, as well as social facts that cannot be argued away. However, how these conditions and social facts are understood and interpreted varies considerably depending on the perspective from which they are observed. Against the backdrop of divergent individual life experiences, collective communication processes, and socio-cultural dynamics, a multitude of different perceptions of reality emerge, which sometimes appear entirely incompatible. This has never been more apparent than on the platforms of the social web, where diverse points of view are in direct conflict with each other, high-frequency attention and disinformation campaigns are run, and countless social media influencers engage in product, political, or self-marketing.

»Reality« is a contested value—and what we see as »shared« reality can primarily be described as the result of genuine social communication processes. The suspicion that »reality« is a socially situated matter was formulated early on in sociology: Already Auguste Comte (1798-1857) was concerned with a culture's changing understanding of reality; Max Scheler (1874-1928) emphasized the »fundamental fact of the social nature of all knowledge and of its preservation and transmission, its methodological expansion and progress.« (Scheler 1980 [1926]: 33); Alfred Schütz (1899–1959) assumed that the individual »life-world« includes »not only the >nature< experienced my me but also the social (and therefore the cultural) world in which I find myself« (Schütz & Luckmann 1973: 5). And Peter L. Berger (1929-2017) and Thomas Luckmann (1927-2016) then explicitly applied these insights to the everyday world, in which they see all individuals confronted with a cascade of socially ingrained views of reality, most of which are internalized without question (Berger & Luckmann 1966).

Mass media, as became increasingly evident in the second half of the 20th century through the work of Marshall McLuhan (1964) and Betty Friedan (1963) or the novels of Philip K. Dick (»The Penultimate Truth«, 1964), play a prominent role in the coordination processes between individual and collective world views. Mass media not only reach a large audience but also convey a highly selective picture of world events given scarce attention resources, in which specific contexts are highlighted while other relations are overlooked. In their information and entertainment offerings, they pass on established views of reality and offer a prominent orientation and demarcation surface in individual socialization. Moreover, in the course of their development-from the first print media to the World Wide Web-they have fundamentally reconfigured human communication patterns. Substantial transformations in the media structures are, therefore, always accompanied by far-reaching changes in the social construction of reality (Couldry & Hepp 2022).

This paper (first draft) examines how the social processes of reality construction are changing through the institutionalization of social media platforms as a genuinely new media form and how digital many-to-many media and one-tomany mass media interact in the social description of the present. This is done from the epistemological perspective of operational constructivism, which essentially identifies Niklas Luhmann's (1927–1998) sociology as a theory of social reality construction and, that is the view represented here, continues to provide instructive conceptual tools for studying the communicative dynamics of digital information society.

# 2 Operational constructivism: basics and distinctions

Luhmann's theory of social systems (Luhmann 2012, 2013 [1997]) has irritated students of all social science disciplines and regularly provoked adverse reactions among social science researchers of differing provenance, which relate above all to the decision to consider humans not as parts of but as the environment of society (e.g., Fuchs & Hofkirchner 2009). Then again, recent publications discuss whether such a narrowing of society to communication, as Luhmann suggested, could open up the possibility of also describing nonhuman entities (e.g., generative artificial intelligence) as points of attribution in societal communication (Esposito 2022; Dickel 2023).

The following remarks focus on an area that can be, to a certain degree, decoupled from questions about adequate models of society: the relationship between communication, media, and a socially crystallized »common reality«. Based on its epistemological foundation, Luhmann's sociology can be read as a theory of social reality construction that deals with the question of how the genesis of a societal description of reality understood as common becomes possible despite the contingency of all knowledge (Luhmann 1988). This contingency becomes even more evident in digital society due to the multitude of information and communication possibilities.

### 2.1 Observation and knowledge

The thesis that our understanding of reality is shaped by individual experience and is, in principle, a relative matter has been pursued in philosophy since antiquity, discussed in a variety of ways from Plato (ca. 428-348 BC) to Karl Popper (1902-1994) and addressed in numerous popcultural works), particularly from the late 20th century onwards, such as the Wachowskis' movies and series (e.g., »Matrix«, 1999; »Sense8«, 2015-2018). Luhmann's operational constructivism takes up this assumption in a clang with recent cognitive science (e.g., Friedenberg et al. 2022) and assumes that knowledge and knowers are inextricably linked: »Regardless of how cognition reflects upon itself, the primary reality lies not in >the world out there<, but rather in the cognitive operations themselves [...].« (Luhmann 2000 [1996]: 6)

The existence of an ontological reality is not denied in operational constructivism; otherwise, »the concept of the system's boundary, which presupposes that there is another side, would make no sense either« (Luhmann 2000: 6). However, reality cannot be grasped independently of the observer, which is why there are just as many views of reality as there are meaning-processing systems-psychic systems (human entities of consciousness) and social systems (communication contexts). Consequently, operational constructivism »does not lead to a ›loss of world‹« but »assumes that the world is not an object but is rather a horizon, in the phenomenological sense.« (ibid.). In other words: »Luhmann's theory of operational constructivism radicalizes hermeneutics by spelling out that observation always involves an observer, and as such it is always biased.« (Rasmussen 2004: 177) Every observation is already an act of interpretation-»seeing is a >theory-laden< undertaking« (Hanson 1958: 19).

Every person perceives their environment differently, given diverging biographies; every psychic system interprets environmental events depending on its previous social experiences. Likewise, in every communication context, idiosyncratic views of reality are brought into play; every social system of meaning sets specific observation priorities and interprets observations along the lines of previous communication processes.

From the perspective of operational constructivism, psychic and social systems are characterized by both cognitive openness and operational closure (Fig. 1): They perceive their environment with all their senses and are indissolubly embedded in this environment-and at the same time, they can only interpret their perceptions in the context of their own operations. A person cannot decide to forget everything previously thought in order to approach a situation as >openly< as possible. In a communication context, previous discussions cannot be erased from the collective memory. In other words: »[...] the only reality in which different systems, both psychic and social, can operate is the reality that stems from their own operations.« (Nassehi 2012: 14)

Fig. 1: Operationally closed but cognitively open meaning-processing systems



Source: own illustration

In order to create basic compatibility between these divergent views of reality, socially crystallized symbol structures and shared references are necessary, as otherwise countless individual experiences would have to be introduced into everyday communication contexts (see also: Elias 1991; Abrutyn & Turner 2022): Without a shared language, communication remains laborious; without a shared understanding of time and numbers, many processes of social coordination would be inconceivable; without a collectively anchored concept of money, even buying bread would become a highly complex matter.

### 2.2 Communication and action

The basic conviction of operational constructivism that every observation is already an act of idiosyncratic interpretation is accompanied by a specific understanding of communication.

As people are not determinable entities, the transfer of the sender-receiver model (Shannon & Weaver 1949) to human communication seems misguided from Luhmann's perspective: Content cannot be transmitted without interference between psychic systems, but can be interpreted differently, selectively perceived or forgotten; divergent socio-cultural imprints can hinder understanding. Added to this is the general opacity of human cognition: we can never know what the other person is thinking; we can only strive to make ourselves understood and to understand.

Social systems theory, therefore, describes communication as a triad of three contingent selections (Luhmann 1995 [1984]: 137ff.):

- Information refers to the selection from a nearly infinite horizon of referential possibilities as to what content should be communicated. This selection is not determined directly by environmental events but by the perspective of observation.
- Utterance describes the selection from a repertoire of intentional acts or a specific mode of message, for example, in the form of verbal or written statements, using physical gestures, or via media technology channels with specific characteristics.
- Understanding describes the choice of how the distinction between information and utterance is observed (»What has been communicated and how?«) as well as the following reaction, from which it can be deduced how it has been understood.

From the perspective of operational constructivism, communication only comes about through the synthesis of these three selections and is consequently described as a self-referential process: as a self-stabilizing social meaning-processing system that stands between the involved psychic systems (Fig. 2). If, in the simplest case, psychic system 1 wants to communicate something to psychic system 2, what is to be communicated (A) must first be translated into a form that can be communicated. Psychic system 2, in turn, cannot refer to A itself but only to an externalized derivation (A'), i.e., to a thought encoded in a shared language. Furthermore, psychic system 2 must first decode this utterance again. Thus, in its reaction B it always refers to A"— to the message A' as it has interpreted it (hence the often-heard query: »Did I understand that correctly?«).



Fig. 2.2 Communication as a social system of meaning

Source: own illustration

In this sense, what social science researchers can observe consists solely in the context of meaning that becomes visible between the involved psychic systems. This context of meaning is the only thing on which further communication in the paradigm of social systems theory can be based. Everything else-thoughts or actions-must first be observed and communicatively encoded before reference can be made to it (similar to a thread on the Web). Luhmann (1995: 255ff.) thus initially analytically excludes people from society to enable precise analytical distinctions to be made. At the same time, however, he recognizes their interpenetration: Society is constituted solely through communication-and for the process of communication, psychic systems are essential as syntactic and semantic interpreters.

The thesis of operational constructivism thus also leads to a social-theoretical castling of »action« and »communication« (Luhmann 1995: 137ff.): Since actions must always first be observed and introduced into communication in order to make a difference there, actions attributed to social actors appear just as much as a context-relative construct as the image of an acting actor functions as a projection surface for a multitude of attributions. Individual and collective actors (e.g., social movements; Tilly 2002) or organizations (Luhmann 2018) are attributed specific characteristics and action orientations—and these attributions can vary considerably depending on the perspective of observation.

#### 2.3 Societal function systems

Given the observer relativity of all cognition, as stated in operational constructivism, successful communication initially appears unlikely. In order for communication to be perceived as successful, three improbabilities must be overcome:

- Firstly, the message must reach the addressee or come to their attention. In modern society, this reach is facilitated by dissemination media.
- Secondly, it seems unlikely that the addressee will understand the message as intended. This understanding is simplified by shared symbol structures and references.
- Thirdly, it is unlikely that the addressee will react to the message as expected. One indicator is the subjectively perceived credibility or usefulness of the content communicated.

In addition to socially crystallized symbol structures, in Luhmann's sociology, *societal function systems*—i.e., social meaning-processing systems tailored to specific societal functions—contribute to increasing the probability of successful communication (Table 1). Social functional systems such as politics, economics, or law reduce the complexity of communication in specialized areas. Every functional system of meaning has a symbolically generalized *communication medium* that makes communication more reliable, as all participants know, in principle, what is meant and can react accordingly (Luhmann 1997: 743ff.). Young adults, for example, typically know what can be done with the communication medium of money; they know what can happen if current legal norms are violated; they know what power means in the political sphere.

	Symbolic medium	Program	Guiding distinction	Function
Economy	Money	Price, budgets	Payment / non-payment	Material reproduction
Law	Legal norms	Jurisdiction, laws	legal / illegal	Normative certainty of expectations
Politics	Power	political ideas and programs	Government / opposition	collectively binding decisions
Science	Insight	Theory, empirical research	true / untrue	Generation of new knowledge
Religion	Faith	Revelation, dogmatics, rituals	Immanence / transcendence	Orientation, reduction of indeterminacy
Mass media	Attention	Topic setting	Information / non-information	General description of the present

 Table 1:
 Some societal function systems

From the perspective of each functional meaning-processing system, the complexity of the environment is reduced along a specific *guiding distinction* in observation. The economy, for example, observes its environment along the distinction of »payment / non-payment«; in the context of law, this distinction is »legal / illegal«; politics observes society along the question of power. In the case of a war or a pandemic, for example, the economy is primarily interested in economic consequences; politics is interested in shifts in power tectonics; the law asks to what extent observed activities are within the legal system.

According to the theory of social systems, modern society is differentiated into a multitude of social function systems, which are aligned with idiosyncratic references and operate in a cohesive manner. The economy, for example, serves material reproduction; politics serves the production of collectively binding decisions; the law creates normative certainty. Luhmann (2012: 49ff.) emphasized, however, that operational closure should not be understood as isolation. Rather, the cognitive openness of a social system is based precisely on its operational closure because the degree of specialization determines its ability to avoid information overflow. Undoubtedly, companies can be influenced by uneconomical offers or politicians by financial grants; however, these do not affect social function systems per se, but rather organizations or individuals who align themselves to other references.

Based on the thesis of operational constructivism, Luhmann's sociology is concerned with the social structures of meaning that make social order possible. Its focus is on the network of memories and expectations in social meaning-processing systems, to which humans cannot be fully assigned: Even Warren Buffett cannot be exclusively formatted as an »actor of the economy«, as he is also involved in other social systems. On the other hand, all communication that is oriented towards specific references can be assigned to a function system: As soon as money and payment are involved, for example, communication can be described as part of the economic system.

### 2.4 Mass media and the description of the present

If we adopt the perspective of operational constructivism and assume that a multitude of specialized social systems operate in modern society, the question arises as to how a description of reality understood as shared can be updated in the short term. Luhmann's answer to this question is: through the *mass media*.

»Whatever we know about our society, or indeed about the world in which we live, we know through the mass media. [...] On the other hand, we know so much about the mass media that we are not able to trust these sources. Our way of dealing with this is to suspect that there is manipulation at work, and yet no consequences of any import ensue because knowledge acquired from the mass media merges together as if of its own accord into a self-reinforcing structure. Even if all knowledge were to carry a warning that it was open to doubt, it would still have to be used as a foundation, as a starting point.« (Luhmann 2000: 1)

In social systems theory, however, mass media are not described as a conglomerate of organizations and media outlets but rather as a meaningprocessing system that observes the world along the unspecific distinction of »information / noninformation« or the question »What is societally relevant / irrelevant?« and thus continuously generates a highly selective general description of the present (Schrape 2017).

Luhmann (2000: 25–62) identifies three superordinate mass media program areas:

- News continuously determines which developments find their way into the social short-term memory. As the focus is on compact provision, strict selection criteria prevail: News must report something novel and appear credible and significant across the entire society, which is why conflicts and crises are often prioritized. Understanding is facilitated by introducing communicative objects (e.g., »climate crisis«), which we associate with clear meanings, even though they could be interpreted differently. The result is a highly complexity-reduced description of the present, which, as a rule, cannot be returned to the same level of dissemination.
- Entertainment offerings construct an idiosyncratic reality. Fictional stories (e.g., streaming series, novels) can be decoupled from the perceived »real world« to a certain degree, but the recipient must still be able to put themselves

in the stories' shoes. Orchestrated entertainment events (e.g., a world cup) must appear sufficiently credible to attract attention. On the one hand, shared views of reality are reimpregnated through entertainment; on the other hand, recipients can position themselves regarding the content without risk.

- Advertising not only fights for attention but also explicitly aims to manipulate. Since this is well known and nobody wants to be directly influenced, advertising acts as an aid to selfdeception: techniques of opacification, catchy slogans (e.g., »Just do it«), or the labeling of everyday items as premium goods make the addressee engage with the products and want what they did not want before. Luhmann (2000: 46) also ascribes to advertising the function of providing general references in matters of taste—or »to provide people who have no taste with taste«.

In all these areas, the mass media can rightly be accused of continuously excluding topics from public discourse—an accusation that has gained traction in the social sciences since the establishment of television (e.g. Herman & Chomsky 1988). However, this does not change the need for a quickly graspable general description of the present, to which non-specific communication can be oriented. From the perspective of operational constructivism, it makes little sense to ask »whether and how the mass media *distort* reality; they *generate* a description of reality, a world construction, and this *is* the reality on which society orients itself« (Luhmann 2013: 318).

This is not to say that there is a uniform public sphere, nor that it is impossible to distinguish oneself from mass media descriptions: Even early newspapers served divergent audiences, and this diversity has increased further with electronic media.

Nevertheless, generally known *communicative objects* are constantly crystallizing and serve as points of reference even when they are rejected or when mass media reporting is questioned in general. Once introduced, these objects function as references that leave only the decision of »to agree or disagree« (Luhmann 2000: 60). The news that a state possesses weapons of mass destruction, for example, can be evaluated by the individual as »real« or »fictitious«—but in both cases, she/he must refer to it.

As soon as mass media are understood as a social system, however, the suspicion of a static concept arises, which makes the scope for the bottom-up integration of variations seem hardly conceivable. Luhmann's understanding of social systems as meaning-processing communication contexts that only exist in their actual operations does, however, reflect gradual change. Since social systems are maintained solely through communicative reproduction and their expectation structures are interpreted situationally, their references oscillate continuously, and this favors incremental change.

As short-term communicative objects, novel descriptions of the present or viewpoints can quickly gain widespread attention via the mass media. However, to be regularly discussed there and to consolidate themselves as shared patterns of »common« reality, they have to overcome a variety of hurdles. Empirically, it can be observed that variations often initially spread in communicative niches before they occasionally become part of the general societal description of reality (Schrape 2017). While »climate change mitigation« and »sustainability«, for example, were initially topics of the environmental movement, these terms can now regularly be found in all mass media program areas and the mission statements of most organizations.

# **3** Operational constructivism in the digital information society

From the perspective of operational constructivism, modern society can thus be described as a network of more or less extensive social meaning-processing systems, each of which pursues its own view of reality—from individual communicative contexts to topically, socially, or spatially specified communication contexts to societal function systems. In this perspective, mass media as a social system fulfill the function of updating a general and unspecified description of the present, which appears incomplete from any more specific point of view.

Of course, Luhmann formulated his ideas long before the triumph of smartphones and social media platforms, in the course of which the »end of mass media« was postulated once again. Dan Gillmor summarized the underlying expectations for the news sector early on as follows: »Grassroots journalists are dismantling Big Media's monopoly on the news, transforming it from a lecture to a conversation. [...] The communication network itself will be a medium for everyone's voice, not just the few who can afford to buy multimillion-dollar printing presses, launch satellites, or win the government's permission to squat on the public's airwaves.« (Gillmor 2006: I, XIII)

Nevertheless, not only regular surveys on media use but also the ongoing criticism of the »mainstream media« point to the role that mass media and widely received media brands continue to play in the societal description of the present, albeit less via linear broadcasts than via on-demand offerings and contributions on the social web. The exchange dynamics on social media platforms are characterized by a changed interplay of technological and social structuring patterns, opening up new visibility potentials for variations in meaning and, at the same time, making new forms of disinformation possible. More than anything else, however, the intertwined flows of communication on the social web demonstrate the plurality of reality views in a poly-contextural society.

### 3.1 Poly-contexturality as everyday experience

Luhmann adopted the concept of poly-contexturality from Gotthard Günther (1979) and incorporated it into his theory of operational constructivism. This means that an infinite number of context-bound world descriptions can be given in a society, which can only be evaluated from other context-bound perspectives. There is no observation position from which an unbiased description would be possible. Seen this way, even an epistemologist becomes »a rat in the labyrinth and has to reflect on the position from which he/she observes the other rats.« (Luhmann 2006: 250) From this perspective, modern society has always been characterized by a multitude of juxtaposed views of reality, which have usually been camouflaged by prominent overall narratives. In digital information society, however, this poly-contexturality is now openly evident in everyday life, as divergent and established reality descriptions collide at the same technological access level.

The digital transformation of media to date is marked by three core dynamics:

- Media structures are subject to *platformization*, accompanied by a convergence of distribution and communication channels. This expands the possibilities for context-specific retrieval of media content, individual and collective interaction radii, and the diffusion potential for variations in social reality construction in infrastructural terms. At the same time, the abundance of available content makes algorithmically automated selection processes indispensable, giving market-leading IT companies considerable structuring power (Dolata & Schrape 2023).

Personal media repertoires are undergoing *diversification*, associated with further individualizing everyday information and communication routines. However, empirical studies also indicate that the majority of online users

continue to rely on established media brands for news reception (Newman et al. 2023) and that streaming of entertainment content is often oriented to the popularity rankings of favored platforms (Prey 2020; Poell et al. 2021).

The spectrum of public communication is undergoing a *pluralization*, whereby different arenas of public communication can be distinguished from one another with regard to the targeted audience, typical reach, and communicative asymmetries, even on the web (Table 2). The spectrum of low-threshold discussion and self-presentation arenas has expanded considerably; nevertheless, regularly achieving high reach remains presuppositional (Schrape 2021).

	Asymmetry	Audience	Reach
Mass media arena	high	dispersed, anonymous	high
Advertising / organization arena	high	dispersed, anonymous	high
Expert arena	high	Professional community	context-dependent
Social media influencer arena	performance-related	following public	low to high
Many-to-many discussion sphere	low	context-dependent	as a rule: low
Personal sphere	low	own network	low

*Tab. 2: Some arenas of public communication on the web* 

Taken together, these dynamics, as Jürgen Habermas (2022: 153) has put it, are »blurring the perception of [the] boundary between the private and public spheres of life, although the socialstructural prerequisites for this distinction [...] have not changed«. In other words, just as prominent overall narratives previously concealed the poly-contextural character of social reality construction, nowadays, the boundaries between the spheres of public and private communication are receding into the background—and the co-existence of general journalistic, context-specific, and individual descriptions of reality at the same level of access is becoming the norm.

From the perspective of operational constructivism, every digital platform can be described as a distinct social meaning-processing system with specific expectations and a specific communication logic (Rachlitz et al. 2022). Moreover, every communication context that unfolds on digital platforms can be understood as a social system, too: In each thread, every hashtag history, and every communication network, selective views of reality and idiosyncratic points of reference emerge regarding which contributions are classified as appropriate or off-topic and social demarcation processes take place. In extreme cases (as in the COVID-19 pandemic), this form highly polarized communicative domains in which any dissenting view is classified as »disinformation«.

The poly-contexturality of social reality construction is thus becoming more explicit on the social web—and at the same time, platform structures offer extended opportunities to escape the associated pressure of complexity: As all forms of public communication are located on the same infrastructural level in the digital society, it is easier than before to track down the communicative contexts in which one's own world view is confirmed. Digital transformation is accompanied by increased visibility of the poly-contextural character of social reality construction and simultaneously opens up new options for channeling individual and collective perception.

# 3.2 Algorithmic selection and social complexity reduction

This finding per se would support the long-circulating thesis of a fragmentation of the mass audience (e.g., Neuman 1991), which, on the one hand, is based on the media usage patterns of young people, whose disinterest in political news has not only been lamented since Instagram and TikTok but already since the heyday of television. On the other hand, this thesis is given a boost by the concept of the »filter bubble«, which was introduced by Eli Pariser (2012) to describe algorithmically personalized information flows on the social web and has since become an everyday metaphor for self-referential communication contexts (»in my bubble«).

However, empirical studies conclude that even highly specialized online users are regularly confronted en passant (e.g., via references and links on social media platforms) with a basic stock of generally shared communicative objects that outline an agenda of cross-societal relevant topics, which are then interpreted in an idiosyncratic way in more specific contexts (Schäfer 2023; Fletcher & Nielsen 2018). If there were no such basis of shared topics, there would also no longer be a description of the present that is perceived as common and thus no longer the basis for making collectively binding decisions. In this respect, a core question of operational constructivism is posed today in an exaggerated form: How does a »shared« description of society and the world emerge in in the age of digital media where the coexistence of different views of reality becomes an everyday experience?

In this respect, the internet cannot be generally characterized as a »mass medium« in Luhmann's sense. Rather, the internet reflects all previous forms of dissemination media: from media for individual communication to meso media for specific contexts to mass media offerings with an audience of millions. In contrast, social media platforms are a genuinely new form of media that have become hubs of communication on the web over the last 20 years. Social media platforms and their operato are not traditional media companies that produce content for the mass market, nor are they neutral transmission service providers. Rather, the services that social media platforms indirectly sell consist explicitly of the automated and personalized compilation of content produced elsewhere or generated by users: »[...] they are neither distinctly conduit nor content, nor only network or media, but a hybrid that has not been anticipated by information law or public debates.« (Gillespie 2018: 210)

From the perspective of operational constructivism, given the increased integration of automated solutions in the social construction of meaning, it can be assumed that algorithmic and social structuring services are interacting increasingly intensively not only in online communication but in the social construction of reality as a whole:

- Algorithmic processes reduce the multitude of potentially processable content by automated curation procedures based on a chain of defined instructions (from search engines to generative artificial intelligence). In the social web, algorithmic processes channel perception through numerous topical, social, and temporal structuring patterns that are aligned with the respective platform identity—i.e., the interests, references, and routines explicated there, which, however, vary from platform to platform and can differ from the self-description in other communication contexts.
- Processes of social complexity reduction take place in a distributed form along the references of specialized social meaning systems (e.g., economy, politics), which direct attention in the social web, too, to specific aspects of the observation horizons, channel communication and in this way co-determine which content is classified as significant or negligible. In addition, generally known communicative objects that establish shared references between these idiosyncratic communication contexts continuously crystallize through the topics set by widely received media brands (Luttrell & Wallace 2021).

Processes of social complexity reduction and algorithmic selection procedures are in a continuous interrelationship: Even basic algorithmic structures are products of genuine social decisions, just as their training data are selective representations of social dynamics and already established views (Airoldi 2021). Which platform accounts are associated with is determined by collective click paths. Which references to a thread are listed is determined by the content registered there. Which links and references are suggested to users on the web depends on their usage behavior, which, in addition to algorithmic recommendations, is also based on tips from experts or influencers who achieve their status not only through counts and figures but also through social attribution.

In this sense, Axel Bruns (2021) points out that many of the phenomena discussed under the term »filter bubble«, including selective world perception and a preference for views close to one's own point of view, are not purely technology-induced phenomena. Also in earlier times, there were communicative domains in which prejudices and resentments became entrenched (seminal: Elias & Scotson 1965).

Automated curation mechanisms offer a solution to a fundamental cognitive challenge of the digital information society, in which all meaningprocessing systems, both psychic and social, depend on effective procedures to identify what is memorable and negligible due to limited attention resources. They offer a technology-mediated response to the increased selection pressure associated with the abundance of instantly visible content. However, they do not directly overwrite either long-term societally crystallized reality patterns or the consolidation dynamics of idiosyncratic descriptions of the world in specific communication contexts, which, in the event of radicalization, can move far away from the description of reality that is perceived as common.

Moreover, algorithmic selection procedures are inextricably embedded in processes of social complexity reduction—and become further reference points in communication: In individual cognitive navigation, they establish an initial orientation basis from which to proceed. They open up new horizons of expectation in developing and evaluating media content. And they offer a quick overview of highly popular content via automated rankings.

### 3.3 Social media, mass media, and the description of the present

A signature feature of digital information society thus consists of a new mixture of technical and

social structuring processes in the genesis of the general or context-specific description of the present. Especially on the social web, algorithmic selection procedures have become omnipresent coplayers in the social formation of meaning. In addition, the internet is, at least to a certain degree, fulfilling hopes for a democratization of media (Carpentier et al. 2013): Smartphone users today have all the media technology means at their disposal to produce and disseminate text, audio, image or video content; any topic can, in principle, participate in the game for public attention. Long-term observation shows, however, that selection thresholds remain in creating societywide visibility and that the effort required to gain societal attention beyond chance remains high.

Although individual social media posts or crowd dynamics (e.g., #MeToo) can regularly be identified on social media platforms that trigger society-wide debates, the subsequent mass media coverage often contributes significantly to the further diffusion of corresponding positions (Brunner & Partlow-Lefevre 2020). Similarly, the attention dynamics surrounding social movements such as Fridays for Future (e.g., Della Porta & Portos 2023) show that addressing mass media selection criteria continues to be part of the repertoire of relevant protest PR alongside mobilization on the social web (Mölders & Schrape 2019). Furthermore, studies on social media influencers show that, if successful, they are generally subject to increasing professionalization and economization (Van Driel & Dumitrica 2021).

This indicates that, in addition to algorithmic selection procedures, cumulative processes of social complexity reduction remain indispensable in the digital age: No person or communication context can keep an eye on the whole world by itself; without the references of social function systems, individual and collective observation of the world would be permanently overburdened. Against this background, there is much to be said for describing the genesis of overarching visibility as a gradual multi-level process, which is, however, characterized more explicitly than before by the interlocking of technical and social structuring patterns (Schrape 2017):

 Situational communication dynamics are significantly shaped by the infrastructures used and available. Like conversations on buses and trains, in public places, or in pubs and bars, volatile exchange dynamics on social media platforms are co-determined by the enabling and channeling characteristics of the respective socio-technical conditions. Since the negotiated content is more visible on the social web than in less technologized environments, networking or accumulation effects can occur more easily. Without further efforts of social coordination, however, consolidation beyond the moment remains unlikely.

- Issue-centered communication contexts are characterized by a higher degree of organization and a narrowing of the content and forms of communication marked as suitable. Today, such topically, socially, or spatially specified communication contexts are, in many cases, initially based on algorithmically pre-structured discussion dynamics on the social web. Over time, however, they develop their own structuring patterns and idiosyncratic views of reality that enable them to differentiate themselves from their environment and make them more independent of the peculiarities of specific platforms or infrastructures.
- Cross-societal communication contexts are based on the structurings of societal function systems, which constantly generate a highly selective and complexity-reduced version of the distributed communication in society. For the description of the present, Luhmann (2000) has ascribed this function to the mass media and insofar as mass media are understood as a social meaning-processing system and not equated with specific organizations or outlets, there is little reason to question this diagnosis in principle, also in view of regular studies on media use (e.g., Newman et al. 2023).

From the perspective of operational constructivism, the weight of algorithmic selection compared to processes of social complexity reduction is reduced with the level of universality in communication. While situational communication dynamics are made considerably more effective through automation and the pool of visible variations of meaning on which issue-centered communication contexts can be built is increased, non-specifically oriented social meaning-processing systems such as the mass media remain relevant in the overarching description of the present, as they observe distributed communication processes, disseminate discontinuities and thus contribute to the continuous construction of a »shared reality« as a general basis of reference.

In this view, it becomes clear that the pointed description of the mass media in the 20th century was by no means the result of inadequate technological development but that cumulative processes of social complexity reduction remain indispensable in a poly-contextural society. This is particularly true for the digital information society, which is confronted with an even more intensified need for selection in self-perception, given the abundance of visible communication.

As the services of the mass media are not linked to specific formats or outlets, however, it seems conceivable that new nodes of mass attention will gain relevance in the future, which are not only substantially oriented towards algorithmic automation in the structuring and dissemination but also in the production of content.

In many cases, journalistic processes are already co-based on the structuring services of digital platforms; likewise, many sports and financial reports are already co-generated by machines. However, the use of algorithmic processes or artificial intelligence and the underlying selection patterns inevitably remain subject to public debate and social negotiation (Deuze & Beckett 2022; Marconi 2020). This can be seen, for example, in the »standards for use of artificial intelligence in newsrooms« (Bauder 2023), which were recently put up for discussion by the Associated Press and other news agencies.

More generally, from the perspective of operational constructivism, the social construction of reality can be understood as an evolutionary process, which— similar to the biological concept of »hierarchical levels« (Gould 2002)—is characterized by interlocking levels of selection (Fig. 3):

- Variations condense in the form of novel descriptions of reality, perspectives, or ideas on less differentiated levels of societal communication, which today are often substantially shaped by information technology.
- As soon as a variation is recognized as a discontinuity at a more comprehensive level, a *selection* occurs. The respective social meaning-processing system decides to reject or accept the variation and integrate it into its own description of the world.

 In both cases, this is followed by a *restabilization* of the social meaning-processing system, i.e., the positive or negative selection is reflected in its further operations (Luhmann 2012: 251ff; Cevolini 2022).

Since selection and restabilization are genuine social processes within the horizon of long-term

crystallized patterns of social reality construction, technical structuring processes play a subordinate role here, especially when it comes to societal function systems. However, it is essential to remember that such a view does not go hand in hand with the notion of absolute sovereignty of social systems at superordinate levels of selection.





Source: own illustration

#### 3.4 Communicative mobility

In the paradigm of operational constructivism, stabilized societal function systems such as the economy, politics, or law maintain themselves solely through the communicative reproduction of their structures of meaning. They are consequently dependent on recognizing and processing changes on other levels of social reality construction at an early stage.

This also applies to mass media as a social system: To be able to continuously generate a description of the present that is generally assumed to be known, their content must regularly enter the realm of general attention. In this respect, the mass media must constantly rebalance themselves and cannot afford to ignore variations on other levels of social meaning formation in the long term (Boccia Artieri & Gemini 2019). From this perspective, the individual levels of social reality construction are thus in a co-evolutionary relationship. Just as changes in the social description of the present affect situational communication dynamics and specialized social meaning-processing systems, the diffusion processes of variations and the formation of new communicative domains on less differentiated levels of social reality construction influence the cross-societal description of the present.

In this regard, new or divergent views can ferment in communicative niches for a long time before they are reflected on a broader level. The goal of ecologically sustainable development, for example, was already outlined in the 1970s and then took several decades to become central part of the socio-political discourse. Today's widespread awareness of the digital transformation of society and the debates on artificial intelligence are also based on long discursive antecedents.

The condensed communication structures of the digital information society are, however, accompanied by intensified exchange dynamics between the levels of social reality construction distinguished here. From the perspective of media and communication research based on network theory, these exchange dynamics are particularly prominent, which is why Friemel and Neuberger (2023: 1) propose that the public sphere should be understood situationally as »a dynamic network of actors and contents that are linked to each other by communicative actions«. From the perspective of operational constructivism, which focuses on the long-term processes of social reality construction, it can be seen that increased connectivity is, on the other hand, not necessarily linked to increased integration of variations in the societal description of the present (Mölders & Schrape 2019):

- As public communication on the social web becomes more effective, the *horizontal communicative mobility* of variations on less differentiated levels of social reality construction increases, and it appears to be less demanding for social movements, interest groups, organizations, or individuals to reach the observation horizon of adjacent communication contexts with their content or to initiate viral dissemination dynamics.
- However, this is not accompanied by a fundamental increase in *vertical communicative mobility*—i.e., no increased probability of these variations being selected by societal function systems such as the economy, law, politics, or the mass media. Conversely, as soon as the number and frequency of potentially visible variations increase, the probability of each variation being recognized as a discontinuity by social systems at a higher level of selection decreases.

In this respect, studies from social movements research show that the vertical communicative mobility of variations in social reality construction (including political impulses for change) is often realized through feedback loops between less differentiated levels of communication and stabilized social systems, including many-to-many communication on the social web and mass media reporting (Della Poeta & Diani 2020). The Fridays for Future movement, for example, which became visible across the board in 2018. was not only able to build on the mobilization achievements of the environmental movement since the 1970s. In addition to its rapidly professionalized public relations work on the web, it was also able to ideally meet the journalistic interest in personalization with the life story of Greta Thunberg. Furthermore, the movement regularly seeks to connect with mass media coverage through high-profile campaigns and collaborations, which has contributed significantly to disseminating its positions (Kern & Opitz 2021). Comparable feedback effects can be identified for other social movement phenomena, such as Black Lives Matter (Carney & Kelekay 2022), and the overarching visibility of publicist offerings by influencers (Riedl et al. 2023).

The cross-societal visibility of content and positions is therefore determined not only by the handling of algorithmically structured attention dynamics on the social web, but also by the ability to connect with established topics in the overarching description of the present (Schrape 2017). The role of the mass media, which continues to be accentuated in these matters, is reflected not least in the criticism regularly voiced in movement contexts, among others, concerning the framing in journalistic reporting (Von Zabern & Tulloch 2021). If the mass media had lost their relevance creating general societal visibility, this criticism would be irrelevant.

# 4 Digital media and the social construction of reality

Luhmann's operational constructivism opens up a long-term perspective on the processes of social reality construction. It focuses on the question of how expectation-stable communication and, thus, social order becomes possible in a polycontextural society.

Like any sociological concept, this approach offers only one possible—and unquestionably abstract—observation approach among many to the dynamics of current media change. It counters the impression of a disruptive upheaval and represents an instructive addition to the flood of short-term diagnoses in the discourse on the digital information society. With regard to the changes that accompany the digital transformation of media structures in the social construction of reality, five assumptions can be derived from the theory of operational constructivism.

(1) Modern society has always been characterized by a medially expanded reality. After the expansion of immediate perception and interaction through language and writing, the expansion of social exchange through the printing press was an essential premise for the genesis of modern, poly-contextural society, whose observation and communication radii have been expanded once again with electronic media. With digital media, the associated media convergence, and the institutionalization of social media platforms, the social construction of reality is experiencing further acceleration.

(2) The digital transformation expands the possibilities of societal self and world description. The condensed media and communication structures of the social web, as well as automated selection. curation, and ordering processes, open up a multitude of new observation possibilities for psychic and social meaning-processing systems and expand the scope for the diffusion of variations and novel or deviant points of view. As a result, the social construction of reality is becoming more dynamic, the quantity and frequency of circulating, often competing, descriptions of the society and the world-including disinformation-is increasing and the poly-contextural character of social reality construction is experienced ubiquitously in everyday life.

(3) Algorithmic selection and social complexity reduction are increasingly interacting. It is not only on the social web that the formation of social meaning is increasingly based on the services of automated selection and curation services, which are now shaping the individual and collective world view in many respects. At the same time, algorithmic processes are inextricably embedded in processes of social complexity reduction. They are not only a product of genuinely social decisions in their design but are also subject to continuous adaptation to changing social expectations in their modes of operation—through machine learning or active recoding on the part of their operators (Dolata & Schrape 2023: 13f.).

(4) Social function systems not losing importance in the digital information society. The references of social function systems such as the economy, politics, and law do not recede into the background compared to network configurations, but rather continue to gain in prominence in view of the increased visibility of the poly-contextural character of social reality construction. Social function systems continue to shape the network of memories and expectations in interpersonal, mediated, and (semi-)automated communication contexts. In their world observation and their offers of meaning, applications of artificial intelligence are oriented towards socially crystallized distinctions (e.g., payment / non-payment) and generalized symbolic media (e.g., money), too.

(5) A shared description of the present remains indispensable in a poly-contextural society. This applies in particular to the digital information society, where the coexistence of divergent views on reality and self-referential communication contexts (»bubbles«) has become a discursive datum. Even if established media organizations are currently in economic crisis, the distributed synthesizing services of the mass media as a social system can still be understood as constitutive for society: Across all media outlets and platforms (e.g., social media, broadcasting, apps) and program areas (news, entertainment, advertising), widely received media brands continuously generate well-known communicative objects that serve as a shared basis of reference in communicationwhether they are trusted or distrusted.

From the perspective of operational constructivism, the digital transformation of media structures does not result in an erosion of long-term crystallized modes of social complexity reduction but rather in a further expansion of the possibilities of social reality construction.

Undoubtedly, the intensified exchange dynamics on the web and the inclusion of artificial intelligence in communication are challenging established social function systems. However, the fundamental problem for which the mass media as a social system offer a solution remains in the digital information society: the continuous production of a society-wide description of the present that can serve as a basic reference in general communication. This does not rule out the possibility that new solutions for updating a »shared« reality description will be established, which hardly remind us of the mass media as we know it. Their descriptions of reality will nevertheless be just as much an object of public criticism and social negotiation as the services of the mass media today.

#### Literature

- Abrutyn, S. & Turner, J. H. (2022): *The First Institutional Spheres in Human Societies*. London: Routledge.
- Airoldi, M. (2021): Machine Habitus. Toward a Sociology of Algorithms. Cambridge: Polity.

Bauder, D. (2023): AP, other News Organizations Develop Standards for Use of Artificial Intelligence in Newsrooms. In: Associated Press, August 17, 2023. https://apnews.com/article/artificial-intelligenceguidelines-ap-news-532b417395df6a9e2aed57fd63ad416a (12/2023).

Berger, P. L. & Luckmann, T. (1966): *The Social Construction of Reality*. New York: Anchor.

Boccia Artieri, G. & Gemini, L. (2019): Mass Media and the Web in the Light of Luhmann's Media System. In: *Current Sociology* 67(4), 563–578.

Brunner, E., & Partlow-Lefevre, S. (2020): #MeToo as Networked Collective. In: *Communication and Critical/Cultural Studies* 17(2), 166–182.

Bruns, A. (2021): Echo Chambers? Filter Bubbles? The Misleading Metaphors that Obscure the Real Problem. In: Pérez-Escolar, M. & Noguera-Vivo, J. M. (Eds.): *Hate Speech and Polarization in Participatory Society*. London: Routledge, 33–48.

Carney, N., & Kelekay, J. (2022): Framing the Black Lives Matter Movement. In: *Social Currents* 9(6), 558-572.

Carpentier, N., Dahlgren, P., & Pasquali, F. (2013): Waves of Media Democratization. In: *Convergence* 19(3), 287-294.

Cevolini, A. (2022): L'ordine del Sapere. Un Approccio Evolutivo. Milan: Mimesis.

Couldry, N. & Hepp, A. (2022): Media and the Social Construction of Reality. In: Rohlinger, D. & Sobieraj, S. (eds.): *The Oxford Handbook of Digital Media Sociology*. London: Routledge, 27–39.

Della Porta, D. & Diani, M. (2020): Social Movements. An Introduction. 3rd ed. Oxford: Wiley.

Della Porta, D. & Portos, M. (2023): Rich Kids of Europe? Social Basis and Strategic Choices in the Climate Activism of Fridays for Future. In: *Italian Political Science Review* 53(1), 24-49.

Deuze, M. & Beckett, C. (2022): Imagination, Algorithms and News. In: *Digital Journalism* 10(10), 1913–1918.

Dickel, S. (2023): Der kybernetische Blick und seine Grenzen. Zur systemtheoretischen Selbstbeschreibung der digitalen Gesellschaft. In: *Berlin Journal für Soziologie* 33, 197–226.

Dolata, U. & Schrape, J.-F. (2023): Platform Companies on the Internet as a New Organizational Form. A Sociological Perspective. In: *Innovation*. Online first. DOI: 10.1080/13511610.2023.2182217 Elias, N. (1991): The Symbol Theory. London: Sage.

- Elias, N. & Scotson, J. L. (1965): *The Established and the Outsiders*. London: Cass.
- Esposito, E. (2022): Artificial Communication. Cambridge: MIT Press.

Fletcher, R. & Nielsen, R. K. (2018): Are People Incidentally Exposed to News on Social Media? In: *New Media & Society* 20(7), 2450–2468.

Friedan, B. (1963): *The Feminine Mystique*. New York: Norton.

Friedenberg, J., Silverman, G. & Spivey, M. J. (2022): Cognitive Science. An Introduction to the Study of Mind. 4th ed. London: Sage.

Friemel, T. & Neuberger, C. (2023): The Public Sphere as a Dynamic Network. In: *Communication Theory*. DOI: 10.1093/ct/qtad003

Fuchs, C. & Hofkirchner, W. (2009): Autopoiesis and Critical Social Systems Theory. In: Magalhães, R. & Sanchez, R. (Eds.): Autopoiesis in Organization: Theory and Practice. Bingley: Emerald, 111–129.

Gillespie, T. (2018): Platforms are not Intermediaries. In: Georgetown Law Technology Review 2(2), 198–216.

Gillmor, D. (2006): We the Media. Sebastopol: O'Reilly.

Gould, S. J. (2002): *The Structure of Evolutionary Theory*. Cambridge: Belknap.

Günther, G. (1979): Life as Poly-contexturality. In: Ders.: *Contributions to the foundation of an operational dialectic*. Vol. 2. Hamburg: Meiner, 283–307.

Habermas, J. (2022): Reflections and Hypotheses on a Further Structural Transformation of the Political Public Sphere. In: *Theory, Culture & Society* 39(4), 145–171.

Hanson, N. R. (1958): *Patterns of Discovery*. Cambridge: Cambridge University Press.

Herman, S. H. & Chomsky, N. (1988): *Manufacturing Consent*. New York: Pantheon.

Kern, T. & Opitz, D. (2021): "Trust Science!" Institutional Conditions of Frame Resonance in the United States and Germany: The Case of Fridays for Future. In: *International Journal of Sociology* 51(3), 249–256.

Luhmann, N. (1988): *Erkenntnis als Konstruktion*. Bern: Benteli.

Luhmann, N. (1995): *Social Systems*. Stanford: Stanford University Press.

Luhmann, N. (2000): *The reality of the mass media*. Stanford: Stanford University Press.

Luhmann N. (2006): Cognition as construction. In: Moeller, H.-G. (Ed.): *Luhmann Explained*. Chicago: Open Court, 241–260.

Luhmann, N. (2012 & 2013): *Theory of Society*. Volume 1 & Volume 2. Stanford: Stanford University Press.

- Luhmann, N. (2018): Organization and Decision. Cambridge: Cambridge University Press.
- Luttrell R. & Wallace A. (2021): Social Media and Society. Lanham: Rowman & Littlefield.
- Marconi, F. (2020): Newsmakers. Artificial Intelligence and the Future of Journalism. New York: Columbia University Press.
- Mölders, M. & Schrape, J.-F. (2019): Digital Deceleration. Protest and Societal Irritation in the Internet Age. In: *Austrian Journal of Sociology* 44(1), 199– 215.
- Nassehi, A. (2012): What Exists between Realism and Constructivism? In: *Constructivist Foundations* 8(1), 14-15.
- Neuman, W. R. (1991): *The Future of the Mass Audience*. Cambridge: Cambridge University Press.
- Newman, N., Fletcher, R., Robertson, C., Eddy, K. & Nielsen, R. (2023): *Reuters Digital News Report* 2023. Oxford: Reuters Institute for the Study of Journalism.
- Pariser, E. (2012): The Filter Bubble. London: Penguin.
- Poell, T., Nieborg, D. B., & Duffy, B. E. (2022): *Platforms and Cultural Production*. Cambridge: Polity.
- Prey, R. (2020): Locating Power in Platformization. In: Social Media+Society 6(2), 1–11.
- Rachlitz, K., Waag, P., Gehrmann, J. & Grossmann-Hensel, B. (2022): Digitale Plattformen als soziale Systeme? In: Soziale Systeme 26(1/2), 54–94.
- Rasmussen, J. (2004): Textual Interpretation and Complexity. In: *Nordisk Pedagogik* 24(3), 177-193.
- Riedl, M., Lukito, J. & Woolley, S. (2023): Political Influencers on Social Media. In: *Social Media+Society* 9(2): 20563051231177938.
- Schäfer, S. (2023): Incidental News Exposure in a Digital Media Environment. In: Annals of the International Communication Association. DOI: 10.1080/23808985.2023.2169953
- Scheler, M. (1980): *Problems of a Sociology of Knowledge*. Boston: Routledge & Kegan Paul.
- Schrape, J.-F. (2017): Reciprocal Irritations: Social Media, Mass Media and the Public Sphere. In: Paul, R. et al. (Eds.): Society, Regulation and Governance. Cheltenham: Elgar, 138–150.
- Schrape, J.-F. (2021): *Digitale Transformation*. Bielefeld: Transcript/UTB.
- Schütz, A. & Luckmann T. (1973): The Structures of the Life-World. Evanston: Northwestern University Press.
- Shannon, C. E. & Weaver, W. (1949): *The Mathematical Theory of Communication*. Urbana: University of Illinois Press.
- Tilly, C. (2002): *Stories, Identities, and Political Change*. Lanham: Rowman & Littlefield.

- Van Driel, L. & Dumitrica, D. (2021): Selling Brands while Staying »Authentic«: The Professionalization of Instagram Influencers. In: *Convergence* 27(1), 66–84.
- Von Zabern, L. & Tulloch, C. (2021): Rebel With a Cause: The Framing of Climate Change and Intergenerational Justice in the German Press Treatment of the Fridays for Future Protests. In: *Media*, *Culture & Society* 43(1), 23-47.
- Watzlawick, P. (1976): *Ho Real is Real?* New York: Random House.