**Users as Naïve Scientists: Decoding the Networked Authenticity of Political Information**

**Abstract**

This article proposes a conceptual framework for understanding how users shape cognitive processes and social (inter)actions in the current media ecosystem where the authenticity of political information is continually questioned. Toward that end, I suggest the term users as naïve scientists in tandem with the idea of false-default mode of reception. In the first part, the process of obscuring the authenticity of news on social media is discussed through a synthesis of broad communication theories. In the second part, various recent studies on users' folk theories are reviewed to update the concept of active users. Through this, I argue that users concomitantly negotiate with algorithmic systems to preserve their agency. Lastly, the mechanism by which users and algorithms co-produce media ecosystems is outlined. Discussing that users' interpretation of given computer-mediated communication can affect the media ecosystem itself, the article calls for more scholarly attention to users' connotational sense-making processes.

**Keywords**: Social Media; Algorithmic Curation; Political Information; Authenticity; False-Default; Naïve Empiricism

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"Forty-two." This is the answer to life, the universe, and everything. If in doubt, please google "the answer to life, the universe and everything." Google Calculator will confirm that 42 is the right answer to the ultimate question (CBS, 2001). If you actually googled it (or asked ChatGPT), or if you are a fan of British sci-fi writer Douglas Adams, you may already *know* that the answer comes from his 1979 now classic novel *The Hitchhiker's Guide to the Galaxy*. In that book, the supercomputer Deep Thought outputs that, after 7.5 million years of computation, the answer is that. The characters in the novel, of course, are disappointed. They wonder and thus search for the *meaning* of the number. Not just them, the desire for sense-making spilled over into reality (Delahaye, 2020). For mathematicians in particular, 42 is a special number: it is one of the Catalan numbers that are rarer than prime numbers, as well as one that raises the conundrum of *sum-of-three-cubes puzzle* ($x^3 + y^3 + z^3 = k$) that has not been solved for over 65 years. In 2019, the long-standing effort to find the *x*, *y*, and *z* for *k* = 42 has finally borne fruit from Andrew Sutherland of MIT, a big fan of Douglas Adams, and Andrew Booker of Bristol University (Booker & Sutherland, 2021).

What makes the answer so mysterious? The secrecy is folded twice. First, we do not know how Deep Thought had calculated the number through what process. Perhaps someone might be willing to probe the process, but no one can live 7.5 million years. Second, the answer simply does not make sense. If Deep Thought presented the answer as "Love" or "Empathy" or "0", people, regardless of fictional characters or real-world scientists, would not have been so absorbed in solving the puzzle. Those simply make sense, like the teachings of the sages.

Social media users often face such two-folded puzzles when they encounter political information on the platforms with embedded algorithmic news recommenders (Cools et al.,

2021; Martens et al., 2022). The inner workings of algorithms under the curated flows of the top layer are invisible to users (Eslami et al., 2016; Hargittai et al. 2020). They do not fully know how and why the black-boxed algorithms exposed certain information to them (Pasquale, 2015). Moreover, in the media ecosystems where information is overflowing, it is difficult for users to make sense of what to believe at a glance (Molina et al., 2021).

To grapple with such deeply intertwined uncertainties, some users attempt to validate the authenticity of information based on their prior knowledge, existing beliefs, and assemblage of readily available communication resources (Tandoc et al., 2018; Wenzel, 2019). But their acts of authentication are complicated in social media platforms. The algorithmic systems dismantle the news production and distribution conventions of traditional journalism, providing every user with the potential to produce political information on their own (Hermida, 2011). The practice of authenticating raw information, which Schudson (1978) called naïve empiricism, can no longer be monopolized by news media in digital networks (Klinger & Svensson, 2015). As the flow of information becomes more decentralized, journalists cannot be completely sure that they are *keeping the gate*. Ultimately, this dispersion of power over the media ecosystem accompanies the inevitable consequence of "spreading the onus of authentication to news audiences." To get reliable news amid "the spread of raw information without traditional vetting from journalists" (Tandoc et al., 2018, p. 2747), some extent of naïve empiricism is also required from users.

This article explicates what we currently know about how users shape their ways of thinking and (inter)acting while authenticating political information in the media ecosystems where the authenticity of news is continually questioned. To that end, I suggest the term *users as naïve scientists* in tandem with the idea of *false-default mode of reception*. The rationale thereof operates from the assumption that in the context of (mass-oriented) computer-mediated

communication, political information is transmitted as subject to authenticity judgment (Lee, 2020), thus users are also positioned to have to navigate communication environments to collect endogenous as well as exogenous *information* to decode the meaning of given communication (Martens et al., 2022; Swart, 2021).

The first part of the article draws upon three communication theory lineages to delineate how algorithmic curation obscures the authenticity of political information on social media platforms: theory of mediated authenticity (Enli, 2015; Lee, 2020), Truth-Default Theory (TDT, Levine, 2014) and Communication Infrastructure Theory (CIT, Ball-Rokeach et al., 2001). In the second part, I address how users, as naïve scientists (Kerlinger, 1986; Watt & van den Berg, 2002), develop their own theories about the information environments and further test their lay understanding through specific actions in order to evaluate authenticity of a given communication. In the last part, I briefly outline how dialectical interplay between the active users and the responsive algorithmic systems co-produce news ecosystems. Through this, the article renders that users' actions based on their authenticity evaluation can recursively affect how algorithmic systems operate. In conclusion, I tentatively suggest how this framework—for reconceptualizing contemporary users—can be utilized to incorporate users' inductive reasoning itself as a research tool for studying algorithmic news ecologies.

## Social media: Pervasive Ambiguity and False-Default Mode of Reception

The mechanism of algorithmic inference identifies human subjectivity only at the surface level, i.e., in their behavior (Anderson, 2021). This way of working behind social media, which Fisher and Mehozay (2019) called *algorithmic episteme*, makes the operation of the platforms opaque to users (Eslami et al., 2016). Notwithstanding, social media does not provide discrete

benchmarks for the hidden working processes, so the path through which users probe how it works is fundamentally restricted (van Dijk et al., 2018).

This absence of benchmarks is also found in that social media platforms organize news feeds in a social and non-exclusive way (Kümpel, 2022). As social media streams hard news, soft news, mis- disinformation, journalistic sources, and user-generated contents in a tangle of curated flows (Thorson & Wells, 2016), personal opinions and fact-based reports are delivered on the same top layer, forming a mixed flow. In such collapsed communication contexts, the ambiguity of the sources gradually increases as the information travels through multiple digital intermediaries (Flanagin, 2017; Sundar & Nass, 2001; Toff & Nielsen, 2018). Technological affordances of social media platforms converge interpersonal and mass communication, and the convergence likewise provides room for fabricated information to permeate into the network (e.g., Molina et al., 2021). Intentionally produced falsehood takes the chance to be placed alongside reliable information, and this arrangement often serves the purpose for which it was produced (Bode & Vraga, 2015). In this way, social media platforms covertly incubate the crisis of authenticity in (mass-oriented) computer-mediated political communication.

As Enli (2015) writes in their book *Mediated Authenticity*, political communication has held an exclusive domain in communication scholarship from its special relationship to reality. However, the reality that traditional news media has been reproduced does not represent pure truth (see Parks, 2022). Indeed, what gives credibility to news organizations is not the premise that they deliver facts as they are, but rather the shared journalistic norms that the institutional media systematically pre-authenticate the processes of news production (Schudson, 1995; Tandoc et al., 2018). This so-called naïve empiricism (Schudson, 1978) allows audiences to rely on journalistic sources in carrying out their political communication. However, the algorithmic

curation blends institutional news with user generated political information, so the legacy

media's verification acts often lose their effectiveness. While distributed on users' ego-centeric

network, journalistic news cannot specify their recipients, nor can they be guaranteed to preserve

their original context (Flanagin, 2017). That is, the epistemic authority of journalism (Carlson,

2020) is challenged by the algorithmic episteme (Fisher & Mehozay, 2019).

In this (mass-oriented) computer-mediated communication (CMC) context, therefore,

users are more likely to be exposed to the circumstances in which they are more suspicious of the

political information they encounter (Lee, 2020). Yet, as the ways of consuming social media and

traditional media are different, the ways to resolve such doubts also differ between audiences in

the past and users today. From this perspective, I would like to note how social media users'

suspicions differentiate the conceptions of *credibility* and *authenticity*. This approach is

especially relevant in that it identifies users' cognitive and behavioral processes in evaluating the

trustworthiness of given political information in the context of CMCs (i.e., social media

platforms), which is distinct from legacy media appreciation.

**Authenticity versus Credibility**

As authenticity scholars often admit, credibility and authenticity largely overlap within

their conceptual properties (Lee, 2020; Lee & Eastin, 2021). Thus, to conceptualize authenticity

as distinct from credibility, those scholars tend to emphasize that authenticity encompasses a

wider range of hybrid communication forms, while credibility is a construct primarily focused on

the transmission model of conventional mass communication (Lee, 2020). Nevertheless, it is true

that both have more in common than differences in that they share *trustworthiness* as their most

central sub-component (Enli, 2015; Lee & Eastin, 2021). By its definition of "the extent to which

a given communication act, as a whole, is perceived to be real and true" (Lee, 2020, p. 61),

authenticity cannot be completely isolated from trust-oriented credibility. Therefore, rather than enumerating the differences between them, I attempt to scrutinize how different the internal architectures of each concept are, even though both use similar materials (i.e., trust). This conceptual exploration will show how authenticity operates differently from credibility. First and foremost, explaining the concept of trust, which is at the intersection of credibility and authenticity, will reveal how the two diverge.

Trust is a key value that allows individuals to overcome vulnerability and to move toward collective action in uncertain situations (Tandoc et al., 2018). Just as members of a society collaborate, cooperate, and communicate based on trust, trust in news serves as a cognitive basis on which citizens perform certain political actions (Metzger et al., 2010). However, in operating this *basis*, credibility and authenticity take different paths. On the one hand, credibility refers to the extent to which a particular source, message and medium are perceived to be believable and dependable (Hu & Sundar, 2010; Metzger et al., 2003), so trust, as a component of credibility, is manifested through *belief* in the overall communication contexts (Hovland & Weiss, 1951). That is, individuals assess the credibility of news based on their trust, which consists of their belief in the source that produces the information, the message it conveys, and the platform on which it is exposed.

On the other hand, trust in authenticity is embodied through an evaluation of how consistent a given communication act and *reality* are (Lee, 2020), or how correlated the mediated representation and the facts are (Enli, 2015). If the identity of the source claimed or the content of the proposed message match the perceived reality, individuals *trust* the given communication acts, as a whole. Therefore, evaluating how authentic a news is requires individual users' to seek authenticity markers within communication environments. Yet, since they cannot witness every

detail of the actual political scenes, the authenticity judgment might often be done through mediated communication. In other words, some individuals seek *credible* media outlets such as institutional media to determine whether political information encountered on social media is true: Belief in fact-based news could be regarded as a substitute for reality.

**Figure 1**

*The Architectures of Credibility and Authenticity*
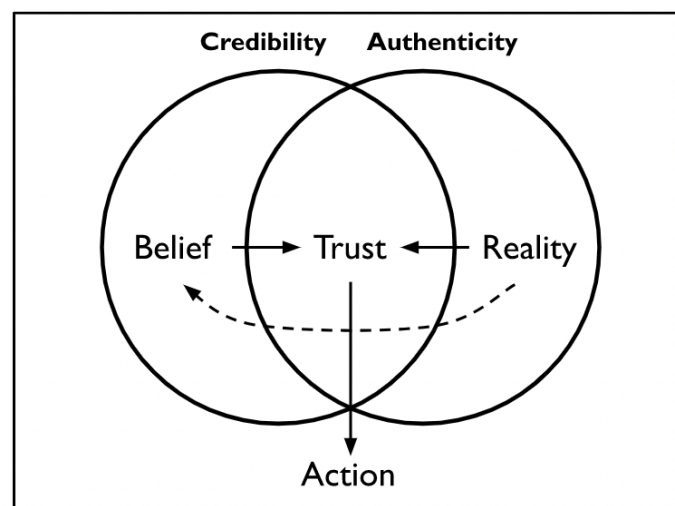


More specifically, this structural difference suggests that the degree of trust in social media news will vary depending on whether users have taken the path of credibility or the path of authenticity in verifying the information (Tandoc et al., 2018). Yet, the magnitude of trust does not guarantee the accuracy of judgment (Pennycook & Rand, 2021). This paradox is evident in the oft-cited case of the Associated Press Twitter account being hacked in April 2013 (see Aral, 2021). After the (hacked) AP News account tweeted "Breaking: Two Explosions in the White House and Barack Obama is injured.," the market immediately panicked and the Dow Jones Industrial Average fell over 150 points. As such, this example illustrates how social media can make in*authentic* information look *credible*. The disinformation was effective (perceived as

trustworthy) based on the credibility of the source, despite the absence of authenticity—the claimed identity did not match the source's real identity.

**Destabilized Truth-Default Mode in Pervasive Ambiguity**

Likewise, credibility does not seem to assure authenticity on social media. This is the backdrop to the argument that the "truth-until-proven-false principle may not hold up in mass-oriented CMC" (Lee, 2020, p. 62). Every political information encountered on social media platforms could be a subject of doubt in the first place. Indeed, the key premise of TDT, "people tend to believe others and that this "truth-default" is adaptive" (Levine, 2014, p. 378) seems to become unstable in the communication context of social media platforms. Rather, it seems highly likely that suspicions about the authenticity of information may become a baseline mindset for users in appreciating social media political information (Enli, 2015, p. 107). In that sense, I propose to term the mindset as false-default mode of reception.

However, this does not mean that the premise of the truth-default is completely discarded in social media. Considering that false information accounts for only a small fraction of the total information flow and is usually shared among certain groups (Guess et al., 2020), TDT's core presumption, "lying is much less prevalent than honesty, that most lies are told by a few prolific liars" (Levine, 2014, p. 387) seems to still be maintained on the platforms. Nevertheless, the term "false-default" reflects the nature of the current media ecosystems that veracity is not uniformly distributed. Where every day is April Fool's Day, the possibility that the information encountered may be false should be examined in the first place (Conti et al., 2017). False-default, therefore, refers to the reception mode of users whose cognitive state of truth-default becomes temporarily or circumstantially unstable.

Viewed in this light, the term false-default broadly echoes Ball-Rokeach's (1973) concept of pervasive ambiguity. In the CIT framework (Ball-Rokeach et al., 2001), individuals fall into the state of pervasive ambiguity when the communication ecologies are perceived as uncertain. Thus, to cope with this uncertainty, individuals attempt to alleviate the tension of uncertainty by navigating their communication resources (Ball-Rokeach, 1973). For example, focus group discussions conducted in four U.S. regions found that participants have a sense of confusion in their current communication ecologies where *dis*trust is generalized, which in turn attempt to clarify the situation by assembling various communication resources (Wenzel, 2019). To be specific, the study reports that participants who worry about fake news tend to verify the information they encounter by navigating a wide range of information resources, from interpersonal sources to social media interactions, and that such fact-checking practices often end with the use of institutional media such as TV news.

Despite such resonances, the false-default reception mode has two differences from pervasive ambiguity. First, pervasive ambiguity focuses on how individuals mobilize the existing communication resources to cope with uncertainty, but false-default reception mode emphasizes their reasoning process about the operation of the communication ecologies and their interactions within the system as a whole. More importantly, pervasive ambiguity prompts individuals to forage *credible* information they can trust (Kim & Ball-Rokeach, 2006), whereas false-default mode leads them to evaluate perceived *authenticity* of the information encountered through comparisons with perceived reality (Lee, 2020). Notwithstanding, the two are logically compatible in that each action triggered by each cognitive state is both the pursuit of a more reliable information (see Enli, 2015, pp. 106-107). More than that, they share a common premise that makes them compatible: users are active.

**Users: Active Audiences and Naïve Scientists**

Users seek authenticity to tackle uncertainty of the current media ecosystems. Thus, they not only evaluate how authentic algorithmically curated information is, but also attempt to make sense of how algorithmic systems work (Eslami et al., 2016; Martens et al., 2022; Toff & Nielsen, 2018). These active media practices, of course, are hardly new to communication scholarship. In a review of reception theory, Livingstone (2000) describes such interpretive processes as "defamiliarizing the familiar" (p. 175) for making sense of reality as a social construction. "Defamiliarizing" herein simply denotes that individuals can gain a subjective understanding of what seems obvious by doubting it.

This subjectivity recalls the tenet of the Uses and Gratifications (U&G) that media effects depend not just on intrinsic quality of media texts but rather on audiences' selectivity in exposure and their divergence in interpretation (Blumler et al., 1985). At this very point, U&G scholars hoped that a bridge would be built to connect their discipline with cultural studies (Katz, 1979). Certainly, Stuart Hall's (1980) Encoding/Decoding model provides a connection point with U&G. The model defines *decoding* as audiences' interpretive process of building a structure of understanding, thus it is true that both share the basic theoretical proposition that individuals have an *agency* in media use.

However, the virtual bridge lying between them is greatly shaken by Hall's point (1980) that the degree of understanding depends on the "degree of symmetry/asymmetry" in the power relationship between encoder and decoder (p. 131; see also Schrøder, 2013). Media producers can encode media texts in a way that specifies an ideal audience with a particular way of interpretation: A media text does not completely open to the multiplicity of interpretation. This point largely corresponds to the long-standing criticism that U&G is overly user-centered (see

Ruggiero, 2000). Yet, even recent studies accepting this criticism tend to incorporate considerations of the technological affordances of certain media platforms into their theories rather than downplaying users' agency (e.g., Nagy & Neff, 2015; Sundar & Limperos, 2013). Thus, the debate over the agency is also endemic in the study of algorithmic systems, so are efforts to reconcile the conflicting positions. All in all, this suggests that the way we understand users' agency may hold the key to explaining how they understand the current media ecosystem.

**Explicating Negotiation between the User and the Algorithmic System**

The research line that focuses on how algorithms exert power on daily life articulates that the system fundamentally restricts users' agency in the first place (Diakopoulos, 2015; van Dijck et al., 2018). In contrast, the studies of users' folk theory on algorithmic systems emphasize how users attempt to understand and further control the systems. Although this line of research acknowledges that the platform owners have decisive power and authority to define the system's operating principles (Cotter, 2019; Swart, 2022), it rather focuses on articulating that users seek to get what they want from the system by probing its operation and enacting specific strategies for concomitant actions (Haim et al., 2018).

Drawing upon Livingstone's (2000) emphasis on the role of active audience in "a dynamic process of negotiating the meanings" (p. 181), I suggest that users and algorithmic systems are in continual *negotiations* over one limited resource, the agency (see also Sundar, 2020). Agency herein refers to the efficacy that allows communication actors to utilize and control the communication resources required for the production of meaning. Hence, depending on which side has more agency, either the users or the algorithmic systems, the power to represent information and establish context thereof is adjusted between them. Of course, this negotiation does not take place in a symmetrical position: The platforms, as a final encoder,

fundamentally hold more power to control the adjustment process. Yet, because of the asymmetry, users rather attempt to preserve their agency more strategically (Eslami et al., 2016; Martens et al., 2022).

For example, users are uncertain what factors drive specific news exposure on social media, so they perceive that ambiguity pervades the information environment, in turn, are likely to seek out more reliable information in order to address the uncertainty (e.g., Wenzel, 2019). In other words, the information-seeking agency is constrained by the system, so users activate the reception mode of false-default, heeding the system. However, it is important to keep in mind that the negotiations take place on a judgmental continuum: The extent to which agency is preserved may depend on factors that affect user's motivation as well as ability to elaborate on a given communication. Referring to the Elaboration Likelihood Model (Petty & Cacioppo, 1986), users may be more likely to process certain algorithmic news via the *central route* if it is personally relevant to them, if it reflects their cognitive needs, if they have sufficient knowledge about it, and if their communication setting is relatively free of distractions (see O'Keefe, 2008).

In addition, online news exposure via "distributed discoveries" (Toff & Nielsen, 2018) is bound to involve a mixed-distribution of veracity and falsity, so the *credibility* of the source alone is not enough for users to adequately decode the meaning of the news (e.g., the fake news from the hacked AP news Twitter account). Users should also assess its *authenticity* if they want to preserve their agency at a higher degree (i.e., Did you hear that news, too? Where? Who shared it? Was it posted on the AP website as well? How did the NYT or Fox News report it?). Viewed in this light, I would like to make the point that these users' pursuits of understanding algorithmic curation share many similarities with scientific inquiries in terms of the ways they think and act. Specifically, I propose that these users could be characterized as *naïve scientists*.

**Conceptualizing Users as Naïve Scientists**

The term "naïve scientist" is adopted from contemporary journalism studies (Schudson, 1978; Tandoc et al., 2018) as well as reflection of post-positivist epistemologies (Kerlinger, 1986; Watt & van den Berg, 2002). To start with its epistemic aspects, it seems useful to review the most basic points first. Watt and van den Berg (2002), in their textbook, put that "all humans spend time puzzling about the world around them and wondering *why* and *how* things happen. [...] As *naïve scientists*, we try to understand some interesting situation in a way that will predict or explain its *operation*" (italic added, p. 1). In this naturalistic point of view, humans are willing to make sense of phenomena by explaining and predicting, so above all, they develop theories. The theories herein explicitly refer to "a simplified explanation of *reality*" (italic added, p. 2). Thus, to reframe their overall premise in accordance with the purpose of this article, it would be as follows: *Users as naïve scientists develop their own theories to explain the algorithmically curated information or predict the operation of the systems thereof.*

Pointing out this very basic epistemological foundation is of particular relevance in the present discussion. While extant research has well documented *why* users develop their own folk theories in using algorithmic systems (e.g., Bucher, 2017) and *how* those lay understandings are formed through *which* processes (e.g., DeVito et al., 2018a), relatively little attention has been paid to *who* they are. It is often just assumed. However, recalling that the term *audiences* has nearly been replaced by *users* (Sundar & Limperos, 2013), it seems essential to clarify the difference between active audiences and active users. As discussed earlier, news audiences in the past only had to examine credibility of the information in order to operate trust in news, but today's users of digital intermediaries also have to evaluate its authenticity to do so. Thus, considering that authenticity assessment is the pursuit of empirical truth (i.e., perceived reality), I

propose that the empirical epistemology implied by the term naïve scientist illuminates the difference between the active audiences and the active users.

This pursuit of empiricism also invites journalism traditions to the current discussion. Without doubt, the legitimacy of professional journalism has been based on their fact-based reporting practices (see Parks, 2022). This solid foundation, which Schudson (1978) called naïve empiricism, provides audiences with a basis for recognizing institutional news as reliable information (Schudson, 1995). However, the affordances of social media and the broader Internet enable the production and distribution of political information that have not undergone the journalistic vetting processes. Thus, along with their newfound ability to produce news on their own, users also assume the onus of authenticating the information they encounter on their own (Tandoc et al., 2018). But the authentication process becomes more complex as the power relation to control the gatekeeping dynamics becomes more complex (Barzilai-Nahon, 2008; Chadwick, 2013). Accordingly, some users may pursue a naïve empiricism similar to that internalized by journalists, seeking to sift trustworthy information from distributed discoveries.

**Comparing Folk Theory to Scientific Theory**

So far, the focus has been on the noun "scientists" which implies empiricism, but the adjective "naïve" should also be noted. Folk theory studies typically start by describing how lay people's folk theories are similar to scientific theories. A pioneering study on folk theories of journalism states that folk theories, like scientific theories, attempt to capture certain patterns in repetitive abnormalities (Nielsen, 2016). The study also posits that folk theories do not need to cover all individual phenomena, just as scientific theories do not purport universality. Even though folk theories tend to provide a generalized concept, a single piece of evidence cannot

conclusively falsify the whole theory. Hence, like anti-Kuhnian multi-paradigmatic theories, they often complement each other, as well as sometimes contradict each other (Toff & Nielsen, 2018).

Compared to these loose commonalities, the differences are distinct and direct. Various definitions across multiple disciplines seem to form a consensus that folk theory is *ordinary* people's *informal* and *intuitive* understanding of the world, which are not *institutionalized* (Keil, 2010; Toff & Nielsen; 2018; see also DeVito et al., 2018b). This definitional consensus sharply distinguishes experts, who produce knowledge through systematic research protocols, from naïve scientists (Kerlinger, 1986). In other words, the distinction dictates that users' scientific mindset is naïve after all. This informality of users consequently anchors folk theories to practicality that guides specific actions, not accumulation of knowledge.

Among studies of folk theories of algorithms, it is common to presume that users deploy a theory if it provides certain *utility* in planning their future actions, even if it does not accurately reflect reality of the system as a whole (e.g., DeVito et al., 2018a). Likewise, Nielsen (2016) conceptualizes folk theories of local journalism as an operationalizable "toolkit" that can be used in needs rather than a unified cultural framework. In this sense, folk theories, as utility or toolkit, are assumed to be deployed to establish users' strategies in negotiations with the platforms about the extent to which their agencies are preserved. For example, Toff and Nielsen (2018) define three folk theories of distributed discovery via digital intermediaries (i.e., social media platforms) in their in-depth interview study ("*news finds me*", "*the information is out there*", "*I don't know what to believe*"), and they show that users organize their online news repertoires in different ways depending on the way they hold or combine each of those theories. In this sense, it would be useful to look at them to flesh out the relationship between fork theory and agency.

First, the folk theory of "news finds me" refers to users' perception that they can obtain relevant political information inevitably and incidentally from social media use. While prior studies often suggest these individuals as passive users (e.g., Gil de Zúñiga et al., 2017), I posit herein that they consciously or unconsciously adjust their agency level lower in the negotiations with the digital platforms. They perceive that the algorithmic curation does not create significant uncertainty in understanding current affairs. In other words, those users believe their surveillance needs of monitoring society are met just by using social media (Cacciatore et al., 2018).

Second, "the information is out there" signifies that individuals are required to play "a potentially more active role" in order to obtain relevant information (Toff & Nielsen, 2018, p. 646). Users who hold this theory indeed find uncertainty in their media environment, but believe that information about facts is readily available in "the Internet's repository of endless knowledge" (p. 648) and that it is easy to acquire (i.e., "I just Google it."). That is, they perceive the pervasive ambiguity of social media, so activate false-default reception mode to scrutinize the authenticity of the information encountered (Tandoc et al., 2018; Wenzel, 2019). This effort also could be interpreted as a strategy to secure a satisfactory level of agency as active users.

The last folk theory, "I don't know what to believe" emerges from individuals who become skeptical due to deepening uncertainty. Rather than empowering their capabilities, these skeptics experience paralysis (Toff & Nielsen, 2018, p. 653) or frustration (Wenzel, 2019) in the process of verification. These users are fed up with being not only unable to get relevant news, but overwhelmed by incidental news exposure. Thus, they judge that it is difficult to preserve their agency (i.e., news self-*efficacy*), so eventually disengage from the information environment to escape from the unfavorable situation. However, reassuringly, this state tends to frequently cycle back and forth with the authentication acts rather than becoming fixed (Wenzel, 2019, p.

1991). As part of active and systematic information processing that incorporates authenticity

judgment, negotiations with algorithmic systems can be resumed at any time unless users

completely leave the media ecosystem.

**Figure 2**

*The Active Users' Authentication Process*
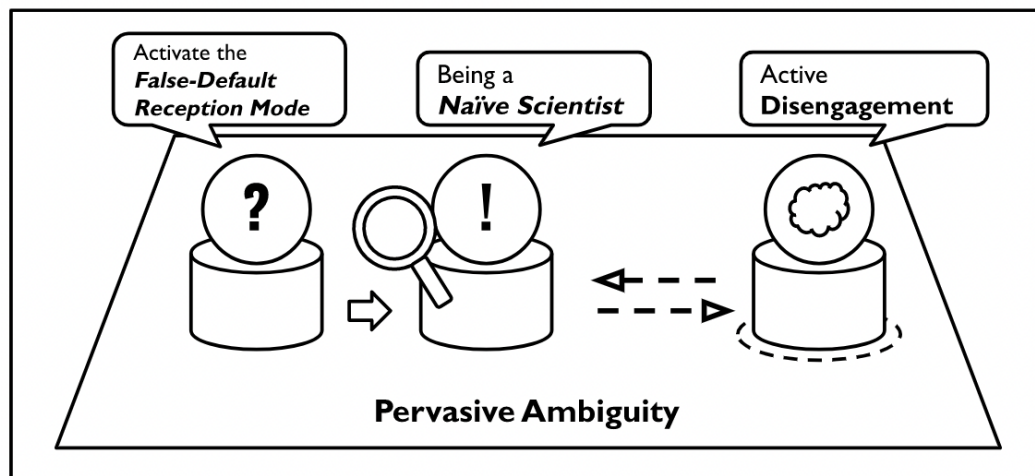


Through this conceptual exploration, the demarcation lines between folk and scientific

theory appear to be blurring. First of all, the fact that even the developers of the platforms can

only have a partial knowledge about the apparatuses narrows the gap between the lay people and

the experts (Friedman et al., 2002; Swart, 2021). In studying such uncertain objects, scientists

also have no choice but to have their own folk theories (Rip, 2006 in Nielsen, 2016). There is no

*accurate* model of the algorithmic platforms (Eslami et al., 2016). Moreover, folk theories also

generate a kind of cumulative social *knowledge* as they are formed and shared collectively.

Active users not only develop but also test their hypotheses by performing specific actions based

on their own theories. They are sometimes even asked by a wider user community to provide

empirical evidence to support their theory (Cotter, 2019, p. 903). Through this pseudo-systematic

review, the understanding obtained collective consensus tends to be endorsed as social

knowledge (see Southwell et al, 2017). Therefore, given the convergence of interpersonal and mass communication in the context of CMC, the reception theory's premise of "everyday social knowledge is used to decode mass as well as interpersonal communication" (Livingstone, 2000, p. 184) seems to become even more significant for studying the current media ecosystem.

However, one line that distinguishes "true science" from "naïve inquiry" remains firm: Folk theories do not establish themselves as scientific knowledge (Watt & van den Berg, 2002, p. 8). Without a true-scientific review, ordinary people's lay understanding cannot take an *institutionalized* form. This is evident from the fact that folk theory cannot claim authorship. For example, some users may hold and act on the folk theory of "news finds me" as defined by Toff and Nielsen (2018) in navigating their information environment, but those individuals do not need to refer to the authors or any other users who provided such understandings. Social scientists, however, have an ethical and procedural obligation to refer to the original authors when using this concept in their scientific inquiry. The concept of "news finds me" was originally developed and operationalized by Gil de Zúñiga et al. (2017), thus Toff and Nielsen (2018), of course, cite the original work in defining that particular folk theory.

As such, users' scientific endeavors are limited by their naïveté. But, given all its resemblances to scientific inquiry, their quest to understand the system should not be viewed as entirely arbitrary. If users do indeed adopt a naïve empiricism, it would be worth discussing how the episteme itself might be reflected in their interactions with the media ecosystem.

## Co-Production of Media Ecosystem: Dialectical Interplay between Users and Algorithms

Users as naïve scientists seek authenticity markers in uncertain communication situations. This pursuit of authenticity shapes not only their actions but also their reactions. For example, some users believe that authentic reciprocal relationships on social media are endorsed by other

users and the algorithms (Cotter, 2019). Thus, they tailor their communication acts so that their

identities, messages, and interactions are perceived as authentic (Enli, 2015, p. 89). Since such

users presume that other users and algorithmic systems *also* pursue authentic communication *like*

they do, the pursuit of (perceived) authenticity is reinforced through feedback loops of the

platforms (see DeVito et al., 2018a). This potential mechanism implies that the fabrication of

false information in the form of real news (Allcott & Gentzkow, 2017) could be paradoxically a

response to the pursuit of authenticity because fake news may only take effect when it looks real:

As "only communication *perceived* as authentic can change people's minds, move their hearts,

and shape their actions" (italic added, Lee, 2020, p. 70), users' quest for authenticity may also

fuel the evolution of fake news to camouflage real news (Lazer et al., 2018).

　　As such, if, as Enli (2015) puts, "media producers and audiences both acknowledge that

authenticity is a *currency* in mediated communication" (italic added, p. 132), it could be argued

that the current social media economy is suffering from authenticity inflation due to its excessive

issuance. In this communication environment where the value of authenticity-currency has

declined, users may activate false-default reception mode with skepticism of "I don't know what

to believe" rather than uncritically appreciate "perceived authenticity" as reality (see also

Marres, 2018). Viewed in this light, I suggest that the dialectical interplay in negotiations

between reactive users and responsive algorithmic systems tentatively explains the increasing

distrust in social media news as well as established news media (Newman et al., 2022; Reese,

2021). As in the case of the AP News Twitter account being hacked, social media users can trust

in news based on their belief in credible sources, but without empirical proof, the belief is

manipulative in the first place (Enli, 2015, p. 107). Furthermore, most people consider that

authenticating information is a task that is up to themselves, not media platforms or tech tools

(Toff & Nielsen, 2018; Wenzel, 2019), which seems to suggest that trust in news is open to users' persistent interpretation—even if it seems credible at a glance. Ultimately, this brings to the fore the need to review studies on false information through the eyes of naïve scientists.

**Naïve Scientists' Connotational Sense-Making**

Extant research on so-called *fake news* postulates that even though false information only takes up a small slice of the total information flow, it can cause potential harm to the entire news ecosystem as it penetrates the social media networks (Gil de Zúñiga & Diehl, 2019). Under this premise, existing studies have intensively explored what fake news is and what types of people get what kinds of information from what forms of content (see Tandoc, 2019). Unsurprisingly, these focuses have quickly established a field of research that explores the multi-layered conditions that can influence people's ability to discern fake from real (see Pennycook & Rand, 2021). But on the other hand, surprisingly, how people attach what meanings to the fake has received relatively little scholarly attention so far.

In light of Livingstone's (2000) typology on the sense-making process, extant studies seem mainly concerned with how people understand the denotational level of fake news. To be specific, the typology emphasizes distinction between *denotation* and *connotation*, with the former indicating aspects of literal meanings of media texts and the latter referring to what meanings can be generated from them (Hall, 1980). This emphasis is further stretched to the distinction between *comprehension* and *interpretation*. On the one hand, comprehension refers to the denotational level of the sense-making process, which accounts for what content people are exposed to and to what extent specific tendencies in that content are reflected in the receivers. In studying false information on social media, thus the comprehension perspective generally captures what information is transmitted to which users and how persuasive it is to them. Yet,

this approach that remains faithful to the traditional transmission model examines primarily whether users accept the given information, i.e., the degree to which they consider the information credible (see Metzger et al., 2010). On the other hand, the interpretation perspective incorporates users' "evaluation, contextualisation, connotation and the many divergences in opinion or perspective" (Livingstone, 2000, p. 185). Thus, this approach encompasses not only how social media users identify certain content as true or false, but also how they make sense of the ulterior meanings of that particular information (see also Eveland et al., 2004).

These differences between the two levels reveal that much is still unknown about how users evaluate the connotations of false information. Given that networked media ecosystems are constructed through dialectical interplay between users and algorithms, this void casts a wider shadow. Not only how social media users comprehend the information they encounter but also how they interpret it affects their behavior, which in turn affects the workings of algorithms (see Swart, 2021). For instance, a recent study shows that *the information people believe in* and *the information they share* do not necessarily match (Pennycook et al., 2020), which indicates that some people tend to share what they clearly know is not accurate.

This paradox remains open to multiple interpretations, i.e., confusing fake with real; willingly sharing falsehoods; not paying attention to accuracy; reflective reasoning being hampered by the fast-paced social media dynamics (see Pennycook & Rand, 2021). Yet, those still only provide denotational levels of explanation that focus on what literal meanings users find. It is not yet well known what connotational meanings the users *generate* and how the meanings relate to such paradoxical acts that can be fused into the co-creation of the media ecosystem: What cognitive and behavioral processes do they go through in decoding networked

authenticity? To answer this question, it might be fairly good to consult directly with the naïve scientists about their own theories.

**Conclusion: Embracing User-Scientist**

This article has sought to address the entanglement of communication ecologies that shape users' perceptions and behaviors on algorithmic platforms. In the first part, the process of obscuring the authenticity of political information on social media platforms was discussed through the synthesis of a wide range of communication theories. As part of that, the structural difference between the concepts of credibility and authenticity was articulated, and based on this, users' skepticism about the uncertain communication environment was presented with the term false-default mode of reception. In the second part, various recent studies on users' folk theories have been reviewed to update the concept of active audiences in the mass media era to suit today's active users. Through this, I argued that users as naïve scientists negotiate with algorithmic systems to preserve their agency and establish strategies for subsequent actions. Lastly, the mechanism by which users and algorithmic systems co-build media ecosystems was outlined. Discussing that users' interpretation of given communication can affect the algorithmic system itself, I urged more scholarly attention to users' connotational sense-making processes.

Then, what is next? I finally encourage communication scholarship to embrace users as peers. Discover their discoveries and understand their understanding. They are of course naïve, but they are also somewhat scientific, as Peirce saw human beings all have a "faculty of guessing" (1929, p. 282). This call would be particularly valid in studying media communication in that "we can only understand how people use media if we understand how they *understand* media" (Toff & Nielsen, 2018, p. 640). If scholars and lay people both share skepticism over the pervasive ambiguity of algorithmic systems, social scientists would do well to consider active

cooperation with naïve scientists. By doing so, both may have a better understanding of how the other *understands* media.

Robert Merton's words "Perhaps sociology is not yet ready for its Einstein because it has not yet found its Kepler" persistently urge innovation in our field (1968 in Lazer et al., 2021, p. 189). While Duncan Watts once responded to Merton by writing that "we have finally found our telescope" from "the technological revolution in mobile web, and Internet communications" (2011 in Lazer et al., 2021, p. 189), we do not know where our Kepler is yet. As algorithms' understanding of human subjectivity—only at the surface level—can overlook users' interpretive reasoning (Fisher & Mehozay, 2019), there are still many limitations in grasping the meaning of human behavior from vast amounts of computational data. For this very reason, Anderson (2021) calls for more interpretive research. I agree with that, but also further urge a creative and innovative combination between interpretive and computational research. For instance, considering that folk theory serves as a blueprint for future action, we might be able to assume that the theory itself is a variable. If folk theories truly predict users' behavior, just as scientists perform experiments based on their theories, computational methodologies (e.g., structural topic models for open-ended survey responses, Roberts et al., 2014), may allow us to study which folk theory leads to which behavioral, cognitive, and affective outcomes (see Chen et al., 2023).

As such, tentative future research directions could be discussed here. First and foremost, the operational differences between the concepts of credibility and authenticity should be investigated. Many scholars have explained their differences, but they have rarely been empirically tested. *Is there a significant divergence between authenticity and credibility assessments for algorithmic news content, either in terms of process or outcome?* Also, exploring how users' folk theories relate to their authenticity judgments and subsequent behaviors, thereby

influencing algorithmic inferences, would be a promising research prospect (see Thorson et al., 2021). Such mediation-based approaches would offer an initial evaluation of how users' connotational sense-making and algorithmic inferences jointly create the curated flows of the networked media ecosystem. Plus, it would be crucial to add potential factors in the analytical model that could interact with users' authentication acts, such as political orientation, digital competence, self/collective-efficacy, or network homogeneity.

How about recalling the fan of Douglas Adams. The team led by Sutherland and Booker found the answer to the sum-of-three-cubes problem after calculating more than a million hours with over 400,000 *personal* computers that voluntarily participated in a network of UK-based Charity Engine. Asked why the team did not solve the puzzle with a supercomputer, Sutherland replied: "Well, any computer \*can\* solve the problem, provided you are willing to wait long enough, but with roughly half a million PCs working on the problem in parallel, [...] we were able to complete the computation much more quickly [...]" (Miller, 2019).

The resemblance between a math problem and human mind processes might not be immediately apparent—but get some hints from their approach. Interpreting the interpretations of networked users and computing those interpretations with state-of-the-art methodologies could be a fine strategy to solve the puzzles given to us (much more quickly). The people we study may be our Kepler as well as Einstein. Here we can hear Klaus Krippendorff's long-ago dictum resounding louder: "Indeed, most social scientific theories can be shown to have grown out of ordinary folk wisdom" (1993, p. 1).

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