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## “Blockchain may automate jobs done by the boss and AI can predict a heart attack”

Discourses of (imaginary) applications of new technologies in journalism

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**Abstract.** This chapter explores how a shared understanding of the potential uses of new, abstract technologies is created in journalism. We analyse Finnish journalistic texts from 2015–2020 in which blockchain and artificial intelligence (AI) are introduced to the readers, conceptualized, and discussed. Drawing on the classic Technology Acceptance Model (TAM), we discuss how journalism frames and reframes the salient attributes of these technologies especially in terms of their perceived usefulness and ease of use. Furthermore, through regarding these speculative meanings as reflections of the *technological* or *algorithmic imaginary* we look into the discourses through which their potential or imaginary applications are explained. This research is important because technologies do not enter the lives of people as concrete devices or programs, but initially as conceptual, imaginary, and affective entities.

**Keywords:** Blockchain, Imaginary, Artificial Intelligence, Technology Acceptance Model, Journalism

### 1 Introduction

This article explores how a shared understanding of the potential uses of new, abstract technologies is created in journalism. Our focus is on two new technological phenomena, *blockchain* and *artificial intelligence* (AI), and how they are introduced to readers, conceptualized, and discussed. We are interested in the discourses through which these technologies have been defined, and how their potential or imaginary applications have been explained and evaluated (cf. [10, 3]). This is important as technologies do not enter the lives of people as concrete devices or programs, but

initially as conceptual, imaginary, and affective entities (e.g. [5]). In this paper, we theorize the issue, present an analysis model, and offer some initial findings through selected examples.

Technologies, and especially new technological innovations, play a special part in the future orientation of many Western societies. Expectations and promises placed on new technologies are most visible in journalism. While positive framing may generate unrealistic expectations, such as technology hypes, negative framing may constrain or stop the adoption of a technology or delay the acceptance of its applications [20]. Drawing on the classic Technology Acceptance Model (TAM, see [32, 31]), we discuss how journalism frames and reframes (e.g. [27]) the salient attributes of these technologies especially in terms of their perceived usefulness and ease of use. Furthermore, we are interested in speculative meaning-making since we regard meanings as reflections of the *technological* (see [21], p. 67) and *algorithmic imaginary* [4]. These imaginaries reveal something about what kinds of desires for a better society and anxieties for worse are associated with blockchain and AI technologies.

Blockchain and AI are technological megatrends that are thought to have wider social, societal, and cultural impacts. They are expected to change the world around us in unpredictable ways. Blockchain is a technology that solves problems of storing, authenticating, and protecting data through peer-to-peer-operated decentralized ledgers of record. AI as a simulation of human intelligence is based on machine learning, the processing of massive amounts of data, and ever-increasing computing power. It gradually makes it possible for computers to be perceived to interact more like humans, for example to see, read, speak, and even negotiate emotions (e.g. [22, 28]). These technologies hold promise for solving many current problems, and even for easier and better lives for people, but simultaneously, they may come with unforeseen threats.

Hence, the objective of our chapter is to show how the journalistic frames used for representing AI or blockchain in the scenarios studied relate to each other and to the expectancies presented according to the TAM model, and how they indirectly promote the technological and algorithmic imaginaries. Our paper contributes to the earlier discussion on the public perception of new technologies (e.g. [5, 10]), and fills a gap in earlier research by combining two theoretical approaches and by introducing a comparative approach between blockchain and AI technologies. When it comes to complex and multifaceted issues such as these, journalism is an important channel for informing the citizens. It does not only offer an arena for deliberating the threats and possibilities of complicated societal questions, but it also diffuses information about these to people who are not necessarily interested in them. It is important to study how new technologies are framed for different audiences, lay people and specialized publics alike.

## 2 Theoretical Framework

The concepts of *technological imaginary* (see [21], p. 67) and *algorithmic imaginary* [4] can be used as a framework for understanding the role of imagination in interpreting what new technologies mean for different people. These concepts have been used

mainly for the study of new media forms (e.g. [23]) but they also lend themselves to broader applications. According to this framework, cultures tend to attach myths, attitudes, and values to new technologies, in particular if the technologies in question have a potential for making people's lives and society better, or the opposite, for the destruction of social cohesion [13, 21]. As Ferrari (2019) states, technological imaginaries are "sets of practice-based beliefs, individual and collective, implicit and explicit, about the role of technology in social life and social change" [11]. She found three types of imaginaries in political social movements discourses: imaginaries of appreciation, negotiation, and challenge. These results relate to our assumption of technological imaginaries to be inherently dichotomic or balancing in nature, such as *good/bad*, *hopes/concerns*, *optimistic/pessimistic* [24].

When it comes to blockchain, the technological imaginary today is evident in the narratives of people investing in cryptocurrencies and losing all their assets or getting fabulously rich. It is also present in the dual business discourse focusing either on the disruptive character of technology, e.g., undermining the banking system, or its enormous business potential. The concept of artificial intelligence, on the other hand, is connected to the ideas of people becoming liberated from routine tasks and certain responsibilities in working life, as well as having more free time, but simultaneously it is associated with discourses of increasing unemployment and social injustice ([4], see also [24]).

The concrete way imaginaries and discourses are mobilized in journalistic texts is through the practice of *framing*. Framing is a traditional way of interpreting both the production and consumption of journalistic texts (e.g. [26]). In principle, frames are cognitive structures that help people to interpret what is going on in the world [14]. The concept of 'frame' has been used in many ways in earlier research; frames can be found in texts and in journalists' minds, as well as in the readers' or audiences' interpretive practices, or in culture more generally ([8], p. 53). When it comes to framing a new technology in journalism, relevant frames are media frames that can be located in text based on certain framing devices, such as metaphors or definitions (on metaphors, see [12]). These steer the readers' interpretations. There are also audience frames that readers use to understand and make sense of what they are reading. However, in this article we focus on the ways in which journalists frame new technologies and render them intelligible to their audiences (see e.g. [6]). In practice, this framing is interpreted through what we call *scenarios*, or illustrations of ideas in concrete ways [18].

The technology acceptance model maps factors that influence how a new technology is adopted by its users [32]. These factors are *performance expectancy*, which describes how useful the technology is seen to make work (typically) more efficient; *effort expectancy*, which describes how easy the technology is to use and to understand; *social influence* meaning to which degree important others believe it should be adopted; and finally *the conditions* that facilitate the acceptance of the technology in question. Moreover, several additional factors have an impact on the acceptance rate of new technologies, such as gender, age, previous experience, social context, and whether the use is obligatory or voluntary.

While TAM focuses on how individuals react and behave in new circumstances, interpretations of how journalism constructs new technologies are social and

contextual, and based on shared understandings. Therefore, we have chosen to combine TAM as a theoretical framework with other theoretical concepts, the technological and algorithmic imaginary, and framing. In addition, TAM has its limitations (see [1]) in predicting how people behave and in taking into account institutional constraints, but when supported by other conceptual frameworks it can be used as a general background for understanding the discourses of technology in journalism.

### 3 Data and Methods

In this article, we analyze Finnish journalistic texts from 2015–2020, representing both general and specialized journalism in well-established large newspapers and more experimental online zines. The data was collected from the websites of Helsingin Sanomat (HS), DigiToday, TiVi, Kauppalehti (KL), and Taloussanomat (TS) using the customized search tool and the Finnish search words for *blockchain* ('lohkoketju') and *artificial intelligence* ('tekoäly', 'keinoäly'). The topics of analyzed texts cover various societal themes from financial and technological to social and cultural issues. In particular, business perspectives are prevalent in the data, which is a direct consequence of us including financial journalism in the research material (KL, TS). Originally, the number of search results was very high, which is why we have focused on texts in which blockchain and/or AI are in themselves, or are closely associated with, the main topic. As both blockchain and AI are abstract technologies, the actual topic of these articles is usually something more concrete, such as distinct applications, robotics, etc. As a result of these exclusions, our research data contains 600 articles. In this chapter, we report an initial analysis where we have manually processed the texts until we have reached a sample saturation (approximately at the level of 300 texts).

Our analysis proceeded as follows: First, we employed content analysis (see [2]) to locate text passages where blockchain or AI were described, explained or defined. Following that, we continued the content analysis by extracting scenarios, that is, illustrations of complex and abstract ideas in easily understandable ways (see [16]). The point of using scenarios is that they seem to be the common way of conveying the technological or algorithmic imaginary. Moreover, they form practically sized units of analysis. Scenarios are regularly connected with certain linguistic cues, such as *may be used, can in the future, enables, is planned, is intended for, promise, possibilities*, which make them recognizable and searchable thus allowing larger datasets to be used and even carry potential for corpus-based approaches in the future.

Third, based on the identified scenarios we applied frame analysis [8, 14] to explore which aspects of reality were highlighted to create shared meanings of these new technologies. We understand frames as culturally constructed, and in the data, they are employed to explain the phenomenon at hand in ways that reflect the norms, values, and shared beliefs in society [9, 12]. As the texts in our data demonstrate a reason and an agenda for why journalists have chosen to discuss and represent these technologies in the first place, it is likely that they re-apply pre-existing interpretations to new issues rather than construct new ones (see [15]). We argue that the *expectancies* presented in TAM are such pre-existing lenses. Therefore, in this chapter we discuss how the frames

identified relate to the increased efficiency of work (*performance expectancy*), the ease or difficulty of use and understanding (*effort expectancy*), references to “big players” and pioneers (*social influence*), and facilitating factors (*conditions*).

In our analysis we highlight the most common *framing devices*, such as metaphors, exemplification, and concretization [16, 17, 25, 19] as a way of approaching the technological imaginary presented in the scenarios. These devices tend to overlap and co-occur, which makes them difficult to quantify. In the context of the imaginary, *concretization*, i.e. presenting abstract information in a non-abstract manner, is particularly interesting because there lies an initial paradox in the assumption that something is imagined and concrete at the same time.

## 4 Analysis and Results

In this section, we go through the procedure of analysis and the development of our thinking through selected examples. These examples consist of our own translations of the original Finnish journalistic texts. The examples highlight how our analysis works as a tool for understanding how journalism introduces new technologies to the public and presents them more or less speculatively as useful but still risky ideas. Simultaneously, our discussion shows how the concept of technological imaginary can be used to trace certain discourses in principally fact-based and objective journalistic texts (see [24]). Our qualitative analysis shows how the journalistic frames used for representing blockchain or AI in the scenarios studied relate to each other, to the expectancies presented according to the TAM model, and to the balancing imaginaries of these technologies’ significance in society. We demonstrate in detail how the choices of words and other signifiers relate to the scenarios we find particularly interesting.

Our findings reveal that there are two prevailing frames of introducing new technologies to the reader. These are *the frame of opportunities* and *the frame of risks*, which are often combined in the same text possibly guided by the journalistic ideal of impartiality and fairness (e.g. [29]). However, either of the frames may be emphasized while the other one is given a minor role. When it comes to blockchain, the main frame is most often the frame of opportunities: in these texts, a potential problem is presented first and blockchain is offered as a solution. Only when blockchain-based cryptocurrencies are discussed, the frame of risks is highlighted. With AI, the frame of risks seems to be highlighted, even though both frames often co-exist simultaneously.

In the following section, we discuss two examples of scenarios presenting opportunities (scenarios 1 to 2) and two examples of scenarios presenting risks (scenarios 3 to 4) using the analytical concepts presented in the theoretical framework above.

### 4.1 Scenario 1: Opportunities of blockchain

Example (1) is recognizable as a scenario of the opportunities of blockchain based on certain choices of words: the modal verb form ‘*can*’ signals the future ability of businesses, and a solution *will allow people to self-authorize* later. An even clearer

signal is the use of the phrase *offers ... the opportunity* combined with an example. These signals indicate that we have a scenario where technological imaginary is produced: a more or less fictional possibility of a future use of the technology is presented.

- (1) Gem [an IT startup] is focused on developing a platform **on which companies can build their own blockchain applications**. [--] Tieto is currently developing a technology that **will allow people to self-authorize the use of their genetic information in medical research**. At this point, the technology is piloted only for consent, and blockchain itself does not store patient data. The technology **offers researchers the opportunity to obtain, for example, the consent of a person carrying a particular gene** to combine genetic data and other health data in an anonymized form. (TIVi 9.11.2017)

The frame of opportunity in example (1) allows for traces of all the expectancies listed in TAM in the scenario. From the point of view of an individual, *performance expectancy* refers to how much using a system is perceived as helpful for attaining a gain in a work task ([33], p. 447–448). Such an *imaginary* gain is offered for companies in the example. A future application is in development and it offers a potential gain. Also researchers are offered a gain thanks to this new technology. Promises of *effort expectancy* in the example indicate that the future application would be easy to use. The phrase “a technology that will allow people to self-authorize the use” hints that people *themselves* will be able to use it.

Additionally, it is suggested that less effort than today will be needed from researchers thanks to the new technology. The scenario thus is that the application provides companies, individuals, and researchers usefulness and ease of use. In TAM, *social influence* is an external factor which influences the attitudes of users. In the example, naming important developers such as the Finnish company *Tieto* may function positively as social influence as does the high status of medical research. Another external factor is the context of health care, where sensitive personal information is handled. In example (1), the potential risks of combining genetic data with healthcare data of a single person are not highlighted. Rather, they are mitigated by allowing people themselves to give the authorization and also by limiting the application to the authorization phase (cf. [34]).

Thus the scenario of the opportunities of blockchain seems to serve firms, individuals, and researchers equally by promising to make their lives easier and offering them potential gains and ease of performance in the future. Example (1) paints a picture of a positive future where blockchain guarantees the ownership of healthcare data to the individuals rather than the system.

#### 4.2 Scenario 2: Opportunities of AI

Similarly to example (1), in example (2) the scenario of opportunities becomes evident in the word choices that emphasize and frame a specific AI technology as a helpful tool.

Phrases signaling this include word choices such as: *technology may help, falls may be detected without carrying a device, scientists see a new way of rescuing people.*

(2) MIT in the United States has experimented with looking through walls using radio waves to see people. Now the technology is spiced with artificial intelligence that automatically detects objects. [--] The method uses artificial intelligence to teach wireless devices to recognize human positions and movements even through a wall. [--] RF-Pose is based on a neural network that analyzes radio signals bouncing off humans. This creates dynamic stick figures that mime what the person being tracked is doing in real time.

**Scientists see here a new way** to rescue, for example, earthquake victims from collapsed buildings. At the same time, **technology may help** older people live alone. For example, **falls can be detected** without the need for the occupant to carry any device to call for help. But at the same time, the **potential for more accurate and automated surveillance is also evident**. Especially since, according to researchers, technology not only recognizes movements, but **is also able to correctly identify individuals** 83 times out of 100 **based on movements**. (Digitoday 17.6.2018)

Helpfulness and usefulness of the technology is, however, represented with uncertainty and hedging, through the modal verb *may*. As the technology is still in the test phase and not in actual use, developers, actors in the text, and journalists can only speculate about its opportunities. Opportunities are illustrated through concretization, by real life examples but with some speculation (e.g. *see a new way*). This kind of language use and opportunity framing signals technological imaginary that allows us to see new AI technologies as something good and approachable rather than bad or too abstract (see [10]).

The four expectancies listed in TAM are present also in example (2). Traces of performance expectancy may be found throughout the text, and the technology as such is represented as very efficient (*by combining automatic recognition and AI, the technology can identify individuals correctly 83 times out of 100 through the walls*). However, detection through the wall is against common sense, so it seems that those who gain better performance by using this technology are developers and companies, not individuals. Regarding *effort expectancy*, the example shows that especially older people and earthquake victims could benefit from this technology, but not by using it themselves: it helps *older people to live alone* without special equipment, and offers a *new way to rescue... earthquake victims from collapsed buildings*. The important other named in the text is MIT and its researchers. Mentioning this kind of big players may help readers to value the technology as positive, as MIT is regarded a very trustworthy institution, especially concerning technology development. Besides the scenario of opportunities, there are also some risks (e.g. *surveillance*) that are represented as conditions to the future use of the technology – or something that needs to be



considered. This is in line of, for example, Fast and Horvitz's list of both concerns and hopes of AI [10].

Example (2) paints a positive picture of a new technology that combines radio waves and AI by offering several affirmative aspects on its future use. Yet, the opportunities and the usefulness of the technology is offered to companies rather than individuals in the text. Individuals may indirectly benefit from the use of this technology through major global or national players in specific situations.

#### 4.3. Scenario 3: Risks of blockchain

Even though blockchain is often presented as a solution rather than a problem or risk, there are also risk scenarios when it is applied to cryptocurrencies such as Bitcoin, which suffer from a bad reputation (e.g. [30]). In example (3), the risk scenario is less future-oriented than the opportunity scenarios. On the contrary, it describes what is currently going on in Bitcoin trading. The scenario is signaled by phrases with negative meanings, such as *already flowed far, should be identified, even in theory... only less than seven, by no means enough*. There is also an if-structure: *will be particularly interesting if*.

- (3) **The frantic trading with Bitcoin has already flowed far from the actual blockchain.** [--] IN PRINCIPLE, any transfer of bitcoin to another owner **should be identified** in the **blockchain** that maintains the Bitcoin database. According to the blockchain expert interviewed by HS, Bitcoin's blockchain system **is able to clear even in theory** only less than seven trades per second. **That is by no means enough** at the current pace of trade. **In practice, transactions are mainly settled** within trading venues, and ownership of Bitcoins may not be formally transferred to new owners at all until they are already resold. Many trading venues are still unregulated and there is no guarantee for users that pricing, clearing, and monitoring of transactions will take place in the correct order. During the short history of Bitcoin, trading venues have collapsed or simply disappeared and Bitcoins purchased by users have disappeared with them. **The situation will be particularly interesting if prices really collapse.** (HS 8.12.2017)

While the frame of opportunities could easily be interpreted in terms of TAM, this is more complex with the frame of risks, because after all TAM is a technology **acceptance** and not a rejection model. However, the model may be reversed for understanding the frame of risks, i.e. interpreting the factors that are presented as potential risks. Whereas *performance expectancy* refers to how helpful the technology is supposed to be, its opposite would indicate how risky, dangerous or obstructive it is. In example (3), the risk scenario is connected with the lacking capacity of the technology, and the large number and intensity of transactions (*frantic trading*) taking place leading to non-registered assets being sold again, the marketplaces being non-regulated and vanishing along with the Bitcoins of the clients. Thus *performance*

*expectancy* may be exchanged for *risk potential*. With Bitcoin the losing of all assets is presented as more or less an *imaginary* risk.

Comparably, the promises of *effort expectancy* in the frame of risks turn into describing how difficult and challenging the use of the technology is. However, the technological challenge is not described as something facing the individual buying and selling Bitcoins, but an obstacle for the marketplace. In this way, the risk scenario highlights limitations of blockchain technology. The best the technology can do is perform seven transactions per second, which is not enough for the Bitcoin market. The risk scenario develops in a chain of reasons and consequences, where effort expectancy turns into a fear of losses.

In example (3), social influence is represented by unnamed blockchain experts cited by the newspaper itself, or by predictions published in the international business press (Bloomberg). Both of these authoritative voices warn of potential disruption. Unlike the opportunity scenarios, the risk scenario does not offer any mitigating details at the end that would hint at an alternative course of events potentially reducing the risk. In that way, the risk scenario, which is imaginary in the same way as the opportunities are, is represented as non-imaginary and a rather probable consequence of the technology's limitations and the Bitcoin frenzy.

#### 4.4. Scenario 4: Risks of AI

AI mainly appears framed with risk scenarios in our data, possibly because AI remains abstract to most non-expert readers (see [7, 10]). Example (4) is from a business journal, but the topic of the text is entertainment. The scenario of risks is signalled by 1) a description of the spread of the app (*downloaded by more than 100 million people*), 2) a negative characterization (e.g. *almost unlimited and irrevocable rights to use images, its data may be transferred* to locations that have different legislation), and 3) potential negative consequences of its use (*may be used for road-side ads, advertising and surveillance*). We can see that the scenario is framed by combining hedging and future-oriented words with strong adjectives and adverbs such as *unlimited* and *irrevocable*, and a metaphor (*spreading like wildfire*).

- (4) Facebook is filled with funny pictures where a person suddenly seems to have aged a lot. [--] The growing old effect is due to an application called FaceApp. According to Forbes, more than 100 million people have downloaded the app to their device. The app is owned by Russian Wireless Labs and it was launched as early as 2017. Now it is spreading like wildfire. Few users of the application have read the user agreement. In it, the user **grants the application almost unlimited and irrevocable rights to use the images**. In addition, FaceApp has access to the person's location. The consumer is also reminded that **the data collected may be transferred outside the EU or the US**, i.e. to Russia, for example, where completely different data protection laws exist. Every user who uploads their images to the app thus gives FaceApp **an unlimited right to do**

**almost anything with these images.** According to Peter Kostadinov, editor of the PhonArena website, the user's **image may end up in a roadside advertisement** in Moscow, for example. However, according to Kostadinov, images are more likely to be used when a company trains artificial intelligence for facial recognition. **This technology can be used, for example, to target advertising or to supervise people.** In addition to photos, also other information about the user is transferred to FaceApp. FaceApp announces that it collects information about, among other things, browser history [--]. (Kauppalehti 18.7.2019)

On the basis of TAM and our extension to it, it is important to see how technology is presented as disruptive or non-essential. In example (4), the technology is described as very efficient, yet entertaining; hence, its usefulness is not speculated in relation to better work or business possibilities, unlike with many other AI technologies. Furthermore, the text frames the app as a potential source of mistakes if its risks are not understood, and if the rights and permissions document is not considered carefully (*effort expectancy*). The text offers knowledge about the *conditions* that contextualize the use of the app which facilitate its rejection; the app is associated with so many risks that individuals should not use it, not even for entertainment purposes.

One major element in this example is that it reveals a group of actors in voicing warnings (*Forbes, specialized journalists*) while others are to be protected (*consumers, individuals*) against the possible misuses of the app's collecting of individual data and images. Therefore, example (4) presents a negative picture of AI. The risks are speculated upon especially from the point of view of individuals, i.e. lay persons who do not benefit from using the app – on the contrary. The usefulness of the app is very limited to an individual, but to the company its potential is presented to be huge. The technological imaginary shows specific AI technologies for entertainment purposes as something you should avoid and reject, or at least consider very carefully before using. In this sense, our data reflects the “fear of loss of control of AI” discussed by Fast and Horvitz ([10], p. 968).

## 5 Discussion and Conclusions

In this chapter, we have presented an initial analysis model for studying how journalistic texts have framed and reframed two new technologies, blockchain and artificial intelligence (AI). Specifically speaking, we have tested how the concepts of technological and algorithmic imaginary and the Technology Acceptance Model (TAM) allow us to do this kind of analysis. The analysis is qualitative and focused on a limited dataset. Naturally, if these kinds of data were quantified through coding, we would most likely obtain a different view on the framing. Nevertheless, some initial findings can be discussed.

At a broad level, our results indicate that two conventional frames, the frame of opportunity and the frame of risks, are repeatedly used in journalistic texts discussing new technologies. This is a finding that confirms previous studies on similar themes (e.g. [10]). However, our data show that there are differences between how AI and blockchain are represented, and how pros and cons are balanced with each other in journalistic framing. While the negative perspectives and fears of AI are highlighted, blockchain as a newer technology is presented mainly through the frame of opportunities, as long as Bitcoin (or other cryptocurrencies) is not discussed. Therefore our contribution to this discussion lies in the comparative approach and in highlighting the journalistic framing.

From the point of view of making new technologies easy to understand for the general public, our study reveals the use of different popularizing devices (see [19]). The common frames, opportunities and risks, are indicative of the need to make these types of texts interesting to readers, for instance, through presenting them as engaging stories [35] or recognizable metaphors [12]. It is one of the starting points of popularization that journalists would rather paint with a broad brush the future applications of the new ideas than describe them in detail (e.g. [19]). This is illustrated by the scenarios we have analyzed: different means of concretization, examples, and metaphors are used to make the content accessible. This is how the technological and algorithmic imaginary is reproduced in journalism – it is an illustration technique for popularizing science or economic systems. In other words, journalists interpret and illustrate technology-specific knowledge [17] keeping in mind their target audiences.

It is evident that different tools for framing are used for different publics: a lay audience needs more clarification and concretization than business professionals, whose interests may journalistically be served by painting broad business opportunities or alarming warning signals. Interestingly, concretization seems to work at different levels. For example, a lay audience may need concrete descriptions of technologies and their potential uses, but if the technology itself remains abstract or a future imaginary more than anything else, journalists lack ways of concretizing the discussed issue in understandable terms. This reflects the representational and framing nature of media texts. Technological imaginaries are occasionally developed on the basis of sources that either give or gain information about the technologies at hand rather than of functions or uses of specific technologies ('choosing sources', see [3]).

However, it seems that there are broader agendas at play in technology journalism than just educating the public. The scenarios we identified illustrate that the advances of technology and their opportunities are introduced also to serve the specific interests of specialized audiences (cf. [3]). Novel technologies are discussed and explained in order for businesses to be successful in the innovation race, and for decision makers and funders to understand the potential gained through supporting the development of these technologies. Even national interests are often highlighted: a single country is represented as being involved in the innovation race, in competition with other countries.

The other side of the innovation race concerns risks, as both potential and imaginary threats exhibit news potential and engage readers. Presenting risks may have educational goals (such as "do not believe in getting rich quickly by buying

cryptocurrencies”), but it also protects prevailing societal institutions and structures, such as banks and technology companies with their specific business interests. The focus on risks in journalism is therefore associated with the maintenance of status quo in society. This finding ties in with Natale’s [23] notion of speculations in media representations being cultural visions and imaginaries with political potential. These representations can be explored as efforts to affect how readers see technological changes in society.

In conclusion, we emphasize that technological and algorithmic imaginaries can be seen as balancing devices that simultaneously both guide readers in sustaining their meaning-making regarding emerging technologies, and challenge them to see those technologies more contextually and societally [10, 11, 7]. All technologies have positive and negative aspects. By relying on and framing this balancing activity, journalism perpetuates the instability of technological discourse rather than displays it as something already set. Furthermore, it seems that through this ongoing technological discourse media and journalism guide people to envisioning and *imagining* a future where technologies play a pivotal part, but the questions of control and power are mostly left unanswered.

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