Article

Grasping the Tensions Affecting the Futures of Internet

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Abstract

The internet and the digital world at large has been promised to bring efficiency, understanding and happiness to humankind. However, what we see are filter bubbles, polarization, weaponized social media and cyber wars. Instead of tech-utopia there has been a fracturing of reality. In this article, we describe an approach based on anticipation studies, futures-oriented dialectics and cultural and societal studies on post-digital to combat this fracturing. Using this approach we ask what kind of assumptions are made about the futures of the digital world and what are the socio-cultural-technical tensions between these assumptions? By using a past but still topical depiction of the future of online communication as a guide we explore some assumptions and the underlying tensions and illustrate our framework. We conclude with a discussion on how to move forward with building an ethical and aesthetic relation to realities in the digital realm and in the intersection between digital and physical.

Introduction

"In a few years, men will be able to communicate more effectively through a machine than face to face", wrote Licklider and Taylor in 1968 in their article visioning what online communication could become (Licklider & Taylor, 1968). Written before the first message was even sent via ARPANET and decades before internet communication became commonplace, even trivial to many of us, the article is surprisingly clairvoyant and offers a window to the ideas that these internet pioneers had and what they worked towards. Licklider and Taylor vision that communication via computers will make people happier, more efficient and able to live a fulfilling life:

> First, life will be happier for the on-line individual because the people with whom one interacts most strongly will be selected more by commonality of interests and goals than by accidents of proximity. Second, communication will be more effective and productive, and therefore more enjoyable. Third, much communication and interaction will be with programs and programmed models ... And, fourth, there will be plenty of opportunity for everyone (who can afford a console) to find his calling, for the whole world of information, with all its fields and disciplines, will be open to him. (Licklider & Taylor, 1968)

These expectations, written over 50 years ago, still feel topical. The dominant story of the Internet has been the story of inevitable progress and growth, with the promise of happier, care-free lives, increased productivity and endless possibilities for the individual. This vision of a hyperconnected tech-driven world has colonised the future without giving space to consideration of what is preferable and for whom, and what might be some of the unexpected consequences of this progress. There is indeed a promise of opportunity for everyone who can afford it, but little considerations of what is the cost for the individual and the society.

We argue that many of the problems we face today with regards to internet and the digitalised world at large

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stems from this colonising unitary image of the future and the resulting hegemonic technology- and efficiency-driven discourse (see Miller, 2018; Sardar, 1993). The problems emerging with regards to e.g. privacy or security are often approached from the viewpoint of this image of the future and there is indeed a robust internet security industry and growing calls for self-regulation. And while concerns have been increasingly raised, the dominant image challenged and different dystopian futures explored in for example TV-shows and movies, the narrative of digitalization making the world more efficient and lives easier is still dominant with many companies and also many policy-makers. The combination of large tech-companies and "pop-futurists" (see Slaughter, 2002) imposing a future on people without asking and without creating accessible tools and the capability to navigate it has resulted in the phenomena we see today, e.g. polarization of online discussions, weaponised "franken-algorithms" and psychopolitics. The tools that are available, such as reporting bad behaviour, aim at best to mitigate the adverse effects, and not change the underlying structures that are causing the effects. Furthermore, the responsibility to cope with these effects has been put largely on the individual. Instead of tech-utopia there has been a fracturing of reality.

In this article, we suggest that the way to combat fracturing is to understand it. And to understand it we need a new approach, one that can embrace plurality and complexity and gives up on the mindset of analytical thinking and control. The approach we describe in this article aims to integrate the analytical identification of the causes of fracturing with experiential, ethical and aesthetic relation to the digital world. The approach draws from anticipation studies, futures-oriented dialectics and cultural and societal studies on post-digital. We shift the focus from linear trends and unproblematized progress to tensions and assumptions. To fully participate in a digitalised society requires a new epistemological approach, a skill-set we define as digi-grasping.

The key questions we address in this article are what kind of assumptions are made about futures of the digital world and what are the socio-cultural-technical tensions between these assumptions? Furthermore, we discuss how to recognise and identify these assumptions and tensions and build an ethical and aesthetic relation to realities in the digital realm and in the intersection between digital and physical.

Theoretical and Methodological Underpinnings

Postnormal times

We approach futures through the lens of postnormal times (Sardar, 2010, 2015; Sardar & Sweeney, 2016). Sardar defines postnormal times as an "in-between period where old orthodoxies are dying, new ones have yet to be born, and very few things seem to make sense" (Sardar, 2010, p. 435). Futures - and the present - are seen not only as complicated and complex, but chaotic, contradictory and conflicting.

As the name suggests, in postnormal times the concept of normal is less and less useful. For example, what would be deemed normal in the internet - or vice versa what would be thought to be not normal for longer than the lifespan of a meme? How "normal" is it to routinely contact satellites and data servers from another continent just to know where the nearest cafe is - yet this is what we do with Google Maps. Or how quickly does face recognition move from surveillance dystopias to a way of dispensing toilet paper (see Statt, 2017)?

Postnormal times call for new methods and epistemological approaches that challenge the "manufactured normalcy field" (Rao, 2012) that limits our view on what might happen. One approach is to look at the extended present, familiar futures and unthought futures (Sardar & Sweeney, 2016; for an application on the internet see Sweeney, 2015). In this article we use an approach based on anticipation studies and future-oriented dialectics.

Anticipation studies

The starting point in anticipation studies is that any attempt to know the future is a form of anticipation (Miller, 2018; Poli, 2017). As Miller (2018, p.19) writes: "in practical terms the future only exists in the present as some form of anticipation". This shifts the focus from trends and scenarios to expectations, assumptions, mental models and our capability for interpreting, critiquing and imagining futures. What are the mental models and capabilities with which we approach and "use" futures and how do they limit and influence our behaviour and thinking?

In this article we are especially interested in how these anticipations are formed and what influences them. What are the implicit assumptions made when thinking about the digital world and its futures and where do these assumptions come from? What drives our behaviour and how do we construct, maintain and enact our image of the

futures of the internet?

New ideas and claims about futures, for example from scientific reports, Hollywood movies or company advertisements, are created around a strategic object, a topic of interest (Dufva & Ahlqvist, 2015). Explicated statements about futures and the accompanying metaphors influence mental models and what is deemed possible, and vice versa. Together these form what could be called an anticipatory system, a set of assumptions and ways of perceiving the world, which influences action and thus how the future will turn out.

In the case of futures of the digital world the strategic object could be artificial intelligence, platform economy or information wars. It gathers a group of interested people to discuss the topic, while at the same time framing the discussion and setting its boundaries. People have embodied mental models with which they approach the topic, such as "technology is progress" or "efficiency is good". Different groups have different mental models, leading to very different outcomes.

For democratizing the discussion and combating fracturing it is crucial to be able to challenge the existing mental models and enhance inclusion and dialogue. This requires shifting focus from trends to tensions as well as finding ways to make the topic understandable, accessible and experiential. Future-oriented dialectics provides an approach for exploring tensions while digi-grasping aids in making the tensions understandable.

Future-oriented dialectics

Furthermore, we are interested in how our assumptions about possible futures differ from each other and what are the tensions in possible future trajectories. In foresight and futures thinking the focus is often on change, either as inevitable megatrends or as separate alternative futures. Tensions, conflicts and contradictions receive less attention. One branch of critical futures studies, namely future-oriented dialectics (see Ahlqvist & Rhisiart, 2015), offers a framework to focus more on the tensions which influence how futures will play out.

Futures-oriented dialectics sees futures as "complex events or pathways that always embody contradictory trajectories" (Ahlqvist & Rhisiart, 2015, p. 98). As two or more trajectories collide a space of opening is created. This space of opening is crucial in determining which way the development will continue. Ahlqvist and Rhisiart (2015) distinguish three possibilities: synthesis, absorption and parallax gap.

First, it is possible that a synthesis is found from the contradictions. For example, as the trajectories of value of privacy and increasing gathering of data collide, new legislation such as the GDPR (General Data Protection Regulation) could be seen as an attempt for synthesis. Second, one of the trajectories might become (or remain) dominant and absorb other trajectories. For example the value of privacy could be absorbed by the hunger for more data as we keep on clicking "yes" on the numerous requests for allowing cookies and the use of data.

Third, the tensions between the trajectories might remain unsolved and create a parallax gap. This means that there are fundamental unresolvable differences in perspectives. These could be due to worldview, mismatch between scientific understanding and experience or social antagonism (See Žižek, 2006). The differences could stay parallel - that is in interaction and debate - or diverge leading to a fragmentation of realities.

Digi-grasping

What then are the skills needed to cope with postnormal times, become aware of assumptions and understand tensions and contradictions, especially regarding the internet? We suggest that digi-grasping could be one such skill. Digi-grasping is "active sense-making and existing in a world that consists of both a digital and a physical world" (Dufva & Dufva, 2019). It employs "other ways of knowing" (see Wildman & Inayatullah, 1996) and broadens the approach to digitalization to account also for the embodied experience of digitalised society. It distinguishes four modes of being and doing in the in-between of the digital and physical world: ignorance, awareness, questioning and creativity.

The dominant mode is often that of ignorance, of not really being aware of the influence of digital technologies and digitalised society in our everyday lives. However, people have become increasingly aware of at least some of the phenomena and issues related to internet and the digital world. This is a prerequisite for gaining more agency for intentional action towards a more preferred future of the internet. One can also start to question the assumptions and design choices made in digital technologies and their implementation to society. Why does this program or platform function the way it does? Who does it benefit? The fourth mode is to imagine and create alternative

structures. However, it should be noted that these modes are not always in that linear order (Fig. 1). One can, for instance, start creating something in the digital realm and thus become aware of the issues and then start questioning the hierarchy.
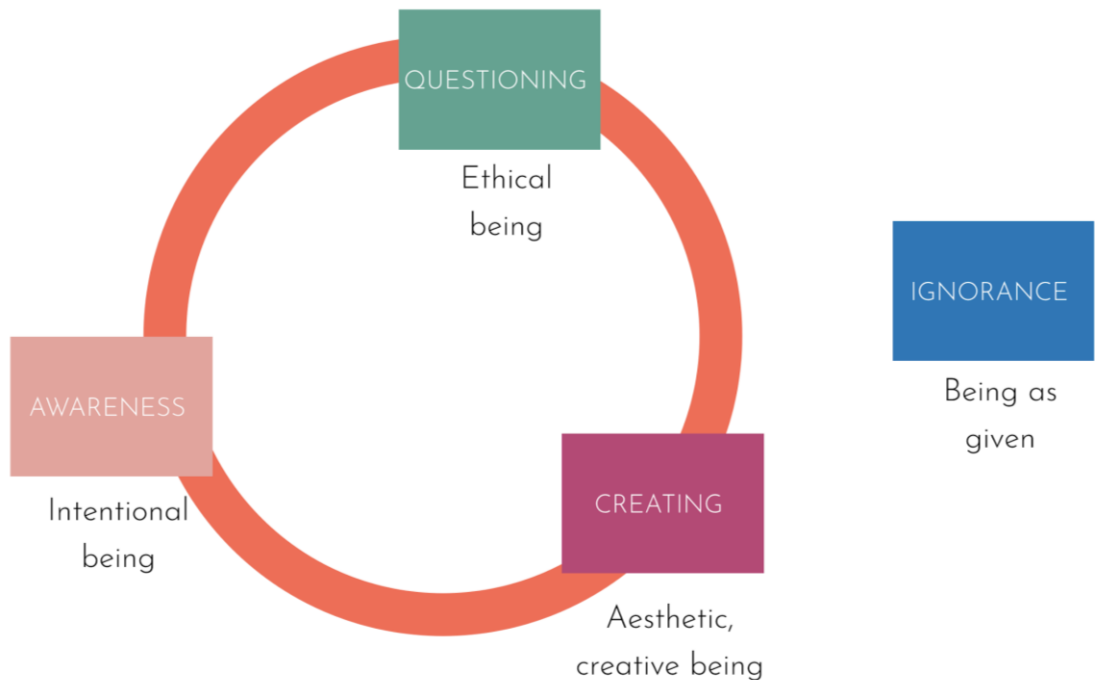

Fig. 1: The relationships between the different modes in digi-grasping.

A simple example from education: A teacher might be interested in the questions of privacy and surveillance in the post-digital era. She might have read a news article stating how certain kinds of eyewear or jewelry restrict the face algorithms on working (Morse, 2019; Studarus, 2019). She then might start a class by doing anti-face-detection eyewear-jewelry with the students. This might lead to awareness of the multiple issues within face detection, such as ownership of face data or face detection algorithms racial biases (Devlin, 2017; Kuehn, 2015). This, in turn, might lead to questioning the ethics of such procedures. Alternatively, the teacher, or the class together might start finding out different ways to be unnoticed. This might lead looking Hito Steyerl's video work "How Not to Be Seen: A Fucking Didactic Educational .MOV File" (Lekelly99, 2017) or showing Shinji Toya's work" Paint Your Face Away" (Toya, 2019) where participants can manipulate their image on the computer screen until the face-detection algorithm does not work anymore.

What is noteworthy is that digi- grasping focuses on the in-between of digital and real and merges critical thinking, experience, as well as creation. As such, it takes alternative perspectives than media literacy, as it incorporates embodied and phenomenological attitude to the whole process of knowledge creation. Thus, it does not only focus on digital skills, troubleshooting or critical thinking (see for e.g. EU's Riina, Punie, Carretero, & Van Den Brande, 2016), but on the experience (Intellectual, experiential, emotional, aesthetic) as a whole. Therefore, the aspect of creating is understood as experiential activity happening in the post-digital domain, thus not only producing knowledge of the post-digital or digital artifacts such as multimedia or software, but rather, the creation is understood to deepen the doer's connection to the surrounding world. As Hayles has pointed out that the relationship between data and material is not a real and unreal one (Hayles, 2017) nor is it binary in any form (Bassett, Kember, & O'Riordan, 2019), rather digital forms an intricately mediated experiences between multiple (gendered, categorized) subjects and objects.

One of the main assumptions behind digi-grasping is that creativity and experience are key to building an

aesthetic and ethical attachment to society (Dufva & Dufva, 2019). Such an attachment is needed to complement the analytical approach to understanding the digital world, combat fracturing of realities and for building inclusive futures. It is essential to be able to understand multiple perspectives on the level of the heart as well as the mind.

Assumptions and Tensions Around the Internet and the Digital World

What could be said about the assumptions and tensions inherent in the vision of the internet and more specifically how it shapes our communication and understanding of reality? In order to illustrate our approach we highlight some assumptions and tensions using the quote by Licklider and Taylor (1968) as a structure. Even though written already in 1968, the vision they articulate describes key promises of online communication and the digital world in general that are still repeated. As it is also concise and further removed temporally than current visions, it may also be easier to assume a critical stance towards it. However, it should be noted that the aim is not to give an exhaustive list of all the assumptions related to the digital world, but rather to give an example of what examining an image of the future related to the digital world could entail.

> First, life will be happier for the on-line individual because the people with whom one interacts most strongly will be selected more by commonality of interests and goals than by accidents of proximity. (Licklider & Taylor, 1968)

One of the expectations around the internet was that it would bring the world together and connect people with similar interests. Physical distance is no problem in the information superhighway where no matter your interests, you will find someone with similar interests. The underlying assumption is that commonality of interests equals happiness. What is not taken into account is the dynamics of always finding support for one's views and not being challenged. These dynamics have manifested themselves in filter bubbles and polarization of viewpoints, even though similar problems were already hinted in the 90s (Negroponte, 1996; Pariser, 2011; Sunstein, 2017).

By doing away with the "accidents of proximity", online communication also easily becomes decontextualised. Cherry-picked events and anomalies become comparable to scientific and evidence-based knowledge. The boundary between fact and opinion has become - and is actively being - blurred.

Two tensions can be identified. The first is between the trajectory of strengthening of bubbles of like-minded people and the need for strengthening dialogue across viewpoints. Being in bubbles might provide happiness in the short-term, but for democracy to work more dialogue between different viewpoints is needed. Dialogue and breaking filter bubbles may also bring serendipitous insights (Sunstein, 2017). The internet provides ways to break bubbles and enables bringing very different viewpoints to the same discussion, but at the same time the current channels and practices are biased towards increasing polarization and misunderstanding (see Rushkoff, 2010, 2019).

The second tension is between the trajectory of increasing amount and access to scientific knowledge and the increasing emphasis on individual experiences and anecdotal evidence. The internet makes information easier to access, but it also leads to information overload. Access to information does not automatically lead to increased understanding, or increase one's capability to make sense of the information - indeed the opposite may be true (Lynch, 2016). Increased access may create confusion and enhance cognitive biases.

Thus it is perhaps no surprise that the discussion around post-truth and alternative facts happens in a time where there are more scientifically produced knowledge easily available than ever before. It is also worth noting that even though we theoretically have access to more information than ever before, our access is mediated by large technology companies such as Google and Facebook. We are growing ever more dependent on their information infrastructures and the sorting of the vast amounts of data their algorithms provide. Who we interact with and how is thus not so much selected by commonality of interests, but by what creates most engagement and drives ad revenue.

> Second, communication will be more effective and productive, and therefore more enjoyable. (Licklider & Taylor, 1968)

Another promise of the internet, or perhaps digitalisation more generally is that of efficiency, effectiveness and productivity. The assumption here is that these are desirable and technology that provides these attributes is

unproblematic and good. Technology is seen as progress or in some cases even something that will save the world.

However, there is a tension between the trajectory of technology making lives easier and the trajectory of technology becoming a source of alienation. Technology comes in between human interaction and the relationships to machines increase while the relationship to humans decrease. We become disconnected from each other in a time of increasing connectivity. But that connectivity is towards machines, not human. In the words of Sherry Turkle, we are alone together (Turkle, 2017).

> Third, much communication and interaction will be with programs and programmed models which will be (a) highly responsive, (b) supplementary to one's own capabilities, rather than competitive, and (c) capable of representing progressively more complex ideas without necessarily displaying all the levels of their structure at the same time-and which will therefore be both challenging and rewarding. (Licklider & Taylor, 1968)

On the upside, interaction with machines is promised to be enjoyable and beneficial. Machines will complement us, not replace humans. The assumption is that technology is without bias - or that the bias can be taken into account - and that technology can be an objective addition to our capabilities. But will the technology adapt to us or will we adapt to technology?

We highlight two tensions related to interaction with machines in the digitalised society. The first is about opacity and transparency. At the same time as we gather more data and are better able to make sense of it, the ways of making sense of the data are becoming more opaque. In a sense we know more but don't know how we know more. We have an illusion of knowledge: we think we know more than we do, because we treat knowledge others possess like our own (Sloman & Fernbach, 2018). Furthermore, just searching the internet may increase the belief in our own knowledge, even on things we didn't search for (Fisher, Goddu, & Keil, 2015).

The second is about ubiquity and transparency. The increasing amount of sensors in our environment and in our devices gather huge amounts of data. Data collection is becoming ubiquitous and also invisible. While there are growing concerns about this, there is also a growing desire for the services that this data gathering can provide, be it traffic information, energy saving thermostats or better maintenance of community infrastructure.

> And, fourth, there will be plenty of opportunity for everyone (who can afford a console) to find his calling, for the whole world of information, with all its fields and disciplines, will be open to him. (Licklider & Taylor, 1968)

What about the people living in the digitalised world, what is assumed of them? Usually they are depicted as curious, active, affluent, rational and capable. Everyone can find their calling, and everyone is searching for their calling from the world wide web of knowledge (which is nonetheless tilted towards the western way of life). While the internet has created new job opportunities or ways to make a living while expressing oneself, the questions of inclusion and ability to influence the development of the digital world grow more and more prominent.

There is an expectation for humans to be proactive and empowered citizens of the digitalised society - or risk being left behind. This collides with the trajectory of an increasing amount of people in need of special attention due to an aging population or mental health issues stemming from digitalisation itself. It is not just about who can afford a console, although access to digital technologies is one key question, but also about who can afford to be without the metaphorical console. Is there room for people not wanting to find their calling in the digital world?

There is also a tension between the messiness, ambiguity and creativity in human thought and action, and the technological precision and speed of digital technologies. In a time where anomalous thinking and human creativity are becoming more and more valuable, the media through which to channel this messiness are becoming more and more binary and precise. The average attention span of internet users has decreased from an estimate of 15 seconds in 2000 to 8 seconds in 2015 (Singer & Brooking, 2018). To be effective, a story or message has to be understood in seconds, which explains the success of memes and pictures. While the world is becoming more complex, the digital world favours simpler communication.

The consequence of this is the rise of simplistic and populist narratives, of kaleidoscopic assemblages of memes and slogans. What is lost are the nuances and things that do not fit into memes or 280 characters. In a frenzy to digitise everything the threat is that the inherent messiness will be lost. Can we find our calling, if we cannot

articulate and categorise it into a language that the internet speaks?

There are of course many other tensions that could be identified. Above we have chosen the ones that have a specific relation to the internet and epistemological fracturing. The internet, or more specifically current algorithms in social media platforms catalyse the formation of filter bubbles in a more targeted way than traditional media. And while the internet makes scientific knowledge easily accessible, it also makes anecdotal evidence ubiquitous, as it removes power from the traditional gatekeepers, such as journalists. The internet is also ubiquitous in a qualitatively different way than previous mass communication - we use it for banking, services, work etc. The question is thus not just about transmitting information, but more and more of the interactions of our lives are mediated by the internet. And the functioning of platforms and algorithms is not just opaque to the public, they are easily opaque to everyone.

Feeling and Understanding the Tensions

Above we have illustrated how to identify assumptions and tensions in visions of the internet; however, the point is not to provide a list of tensions, or let alone try to solve them. We cannot get rid of the tensions and assumptions. Indeed, each new vision and image of the future carries with it its own assumptions and tensions. However, we can become more aware of them and how they impact our daily lives. This is not just an analytical task but instead requires tapping into embodied knowledge, to feelings, emotions, and experiences. As such we follow the ideas of for instance de Spinoza (2018), Deleuze and Guattari (2005), Bergson (2004) and Sedgwick (2002) to consider feelings as affect, as embodied experience and thus as real as material or any other process.

Furthermore, following Deleuze and Guattari, we consider the digital processes, that are at the same time material (as in the silicon level) and intangible (as in algorithmic processes) as real but abstract, an assemblage of different parts and intensities (De Landa, 2011; Deleuze & Guattari, 2005; Guillaume & Hughes, 2011). As Sedgwick notes, these real but abstract processes have various contexts, textures, and motions that both move and are capable of moving; they affect the ways we perceive things (Sedgwick, 2002). The notion of affect is significant in the way it includes feelings and emotions to the theoretical analyses of experience.

This is where digi-grasping comes in. We need a broader approach to understanding - and feeling - what the internet and digitalization are about. This includes becoming aware of what digitalization feels like, questioning how it works, and imagining and creating alternatives. Digi-grasping takes affect into account in a way traditional skills or theories of the digital often do not. Digi-grasping gives a voice to those affects created or impacted by digital devices, algorithms, or digital processes. Thus digi-grasping enables alternative discussions that besides the technological, practical, ideological, economic, or cultural aspects can take embodied experiences into account.

Heidegger (2009) and Merleau-Ponty (2012) proposed that being and doing in the world not only creates knowledge of the world, it also binds us into that world, connecting us aesthetically and ethically into that world; We not only rationally know the world but grasp it and its various intensities and relations. In the post-digital world, where real and digital are complexly intertwined in everyday life, the graspable aspect of actions is often left unnoticed, or deemed unimportant as the complex algorithms and the intricacies of them are considered more valuable. Digi-grasping aims to focus on just these overlooked aspects of digital experiences and lift them into the discussion.

However, because of the abstractness of the digital, not to forget the intertwinedness of the digital process with economic, social, and cultural interests, it is hard to grasp the digital. The different modes of digi-grasping form suggestions of guiding structures on how to approach these issues. As an example, one way to take digi-grasping in use is through art education. Art education is a field that combines concrete making together with abstract theorizing (Efland, Freedman, & Stuhr, 1996; Räsänen, 1999). Furthermore, art education is an embodied practice that deals with affects and experiences (Jagodzinski et al., 2017; Snellman, 2018). As such, art teacher can, for instance, start to discuss digital challenges such as deep-fakes by first showing and looking at deep-fake images and discuss them. The images can be placed into a historical, social, or cultural context. The students can start to create those images themselves and discuss how such a process feels. They can start to invent ways to fight against facial recognition - a crucial part of the algorithmic process to replace one's face. These inventions can then be exhibited and further discussed on. This process can take any number of forms and can move in the modes of awareness, questioning, and creating in various cycles, each time producing new ways to comprehend the post-digital world better.

What is significant in the above-mentioned example is that we propose digi-grasping as an intentional process that moves between the different modes of digi-grasping: awareness, questioning, and creating, utilising both the embodied knowledge as well as the more theoretical and technical skills. The process can take iterative forms and work in hermeneutical fashion, or they can be used only once. Furthermore, these processes do not require the teacher to be skillful in digital technology, instead be willing to navigate the post-digital world with the students. Similar iterative method can be applied to many other fields, for instance, as the formal education is emphasising phenomenon-based learning, digi-grasping can be one effective method in learning about digitality.

Conclusions

Postnormal times requires a better understanding of tensions and assumptions about futures. We have proposed that the discipline of anticipation and critical futures studies might provide the analytical frameworks and concepts that support this understanding. We have illustrated how to use the concepts of assumptions and tensions in deconstructing one past but still topical vision of online communication.

Furthermore, we have proposed digi-grasping as an alternative framework to evaluate the digital competencies, as well as to discuss the digital issues critically. Digi-grasping has the potentiality to raise such insights into the digital that might otherwise be left unnoticed. Moreover, it ties in the experiential knowledge creation - aesthetic and affective - as well as active creation into critical intellectual thinking.

In addition to analytically studying these tensions and assumptions, there is a need to focus on feelings and on employing other ways of knowing about the phenomena related to the internet and digital world at large. We have proposed that the concept of digi-grasping could be useful for responding to this need. It provides one framework for discussing and navigating the assemblage of contradictory and conflicting trajectories and for building an aesthetic and ethical connection to the digital world. By emphasizing doing, creating and feeling alongside a more analytical approach, one can create a broader understanding of what it means to live in a digitalised society and how to influence it.

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