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Knowledge and Space

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Chapter 4

Futures Consciousness as Vaccination Against Misplaced Futures



Sirkka Heinonen

Future! What are you? Where are you? I'd like to get to know you—can we meet? When and where? Such questions may seem either philosophical or funny, depending on the listener's viewpoints and background. Nevertheless, they pertain to a core human interest: We have always thought about the future, in the shorter or longer term, from a narrower or wider perspective. Today, after millennia of various futures thinking and predictions, the universities of a few countries have included futures research as an academic discipline.¹ Futures research, also called “futures studies,” has its origin in the innate human desire to address the future. We have moved from prophecies and planning into a scientific field of anticipation and foresight, with its theoretical frameworks, methodologies, regular conferences, and peer-reviewed journals.

In this section, I give an introduction on the origin and nature of futures thinking and related phenomena, positioning them with a view to the book's main topic of “placing the future.” For this purpose, I define and describe concepts such as futures literacy, futures consciousness, and futures resilience. I also present futures studies as a discipline in relation to the related fields of foresight and anticipation. In the second section, I then examine the five pitfalls of misplacing futures and how futures consciousness is a vaccination against them. In the third section, I present the convolution of people, places, and purposes by giving four geospatial scenarios on possible futures. Finally, in the fourth section I discuss the potential of Digital Meanings Society as a preferred future where futures resilience is the vessel to navigate in the hybrid world of physical/virtual/digital spaces.

¹Notably in Finland and the USA (Texas and Hawaii). Finland also has a national foresight system working as a dynamic process (Heinonen, 2023a; Heinonen et al., 2023a; Heinonen & Pouri-Mikkola, 2024).

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In this chapter, I introduce and reflect on the modes of futures literacy and the various ways of developing futures consciousness, based on futures research. Futures literacy means using the future in the present-day context. Futures consciousness means systematically developing the futures thinking and anticipation capacities that arise from futures literacy. Futures resilience is emerging as a key element within futures literacy. Those using it fearlessly embrace, and not shy away from the risks and uncertainties. These concepts comprise the future's front pillars.

With so many influences and drivers at play, the pathways to the future are serpentine. We need roadmaps to navigate to the future, ideally co-created to make a better world for all species. The future's temporal nature means that it is the younger generations who are making it. Their voices should be heard concerning what kind of habitats for the future are to be constructed. Simulacra of futures can be constructed in the present to be experienced and immersed in, for example, in the physical form of four rooms according to four depicted scenarios. This is to demonstrate possible futures in order to help decision-making and choices for futures strategies, that is, resolutions on preferred futures and concrete steps towards them. Researchers of futures studies traditionally position the future in the Futures Cone, delineating the location and borders for possible, probable, and preferred futures. However, a more appropriate location would be in a Futures Sphere, introduced in this chapter.

Finally, I present a new theoretical framework for society, a Digital Meaning Society that serves as a hub where people, places, and purposes meet. When plunging into the virtual geography and space of the Metaverse, digitalization should be an enabling tool while serious efforts should first be made to crystallize meaningful activities for humans, human/technology/nature interfaces, and the planet. This is a prerequisite for having a future.

Perennial Human Interest in Futures

Human beings have always been interested in thinking about the future. In Ancient Greece and Rome—and long before that in Mesopotamia—they mainly conducted this search through astronomy. The Greeks established an oracle tradition in Delphi, where statesmen consulted the oracle before making any strategic decisions. It was a political institution, based on the oracle's interpretations of divine insight. This tradition lives on in the name of an expert survey method for foresight—the Delphi technique (Linstone & Turoff, 1975). Another historical example is Egypt, where anticipating the flooding of the Nile was vital for agricultural purposes (Schwartz, 1996). In religions and cultures worldwide, prophecies of the coming world and events abound. In the modern world, scholars have, however, now moved the interest in futures from prophecies and divination into a scientific field of anticipation and foresight, with its theoretical frameworks, methodologies, regular conferences and peer-review journals. This was started in the USA of 1950s, when scholars developed the scenario method for making manuscripts of the future in strategic and

military-oriented studies (Bell, 1997). Ossip K. Flechtheim, a German lawyer, writer, and political scholar, coined the term “futurology” as a systematic and critical treatment of questions about the future as early as 1943. He set this new field’s foundations and ambitious goals as (1) preventing wars and guaranteeing peace; (2) preventing famine and poverty; (3) preventing oppression; (4) enhancing democracy; (5) ending the extortion of nature and enhancing its conservation; (6) fighting against alienation; and (7) creating the new *homo humanus* (Flechtheim, 1972). These objectives are still valid, as reflected in the 15 Global Challenges by the Millennium Project (Glenn, Florescu, & The Millennium Project Team, 2017), a global think tank on co-creative futures, as well as in Sustainable Development Goals by the United Nations. Flechtheim’s seventh goal is missing from these two modern frameworks, but perhaps it is exactly what should be revived to make the other goals more attainable. A similar attempt for enhancing humans was made by a Japanese scholar, Yoneji Masuda, in the 1970s.

The main ontological question concerning the future is obvious: Does the future exist? It is one dimension of the continuum of time, but in what *ways* does it exist? Psychologically, the future exists in our thinking and intentions. In analogy to Claude Lévi-Strauss’s statement (1964) on myths’ often-unconscious influence on our cognition—“myths think in us”—I wish to claim that “futures think in us.” We have explicit intentions of exploring the future in our mind and thoughts. We also have an unconscious bond to tomorrow’s unfolding, influenced by our assumptions as well as other’s views on the future. Accordingly, the future is not merely a physical quantity: It is the land of dreams, hopes, and fears (De Jouvenel, 2004). Here it assumes a spatial property, it is located. An extreme case or niche of such locational future is a utopia, which is literally a place that does not exist (Simon, 2025; see Chapter 6). Recently, a debate has emerged concerning this position of the future—the future has become endangered. For the first time in history, humans face the possibility that the whole of humankind could become annihilated. The future has become a target for existential risks. Toby Ord (2020) reminds us that it takes only one existential risk to be realized for the extinction of humankind to take place.

The epistemological key question for futures studies is: Can one gain any knowledge about the future? And if yes, what kind of knowledge would that be, and how can it be acquired through futures signals? Because the future has not yet happened, one can neither predict it nor gain any exact data or knowledge about it. What one can gain, however, is approximated insights. This is called *foresight knowledge*. Evidence is based on the seeds of the future that are already present in today’s societies. Through horizon scanning of the changing world, one can identify so-called futures signals that point to various developments. They can be strengthening the trajectories of present directions of development, or they can be signaling discontinuities and emerging disruptions of society, in economy, politics, environment, culture, and technology. Such horizon scanning should therefore cover both visible or strong futures signals, such as mega-trends, or trends and “invisible” signals such as weak signals and black swans. Weak signals form a category of futures studies that is ambiguous, often overlooked and requiring peripheral vision (Day & Schoemaker, 2006; Hiltunen, 2010). However, weak signals can be

powerful drivers of change if they start to strengthen. A weak signal is the first sign of an emerging phenomenon that may or may not grow stronger. A black swan is a sudden, unexpected event that dramatically impacts society (Taleb, 2007).

Humanity is living in an increasingly turbulent and fuzzy world. Futures scholars have labeled it a VUCA world, where volatility (=V), uncertainty (=U), complexity (=C), and ambiguity (=A) are dominating characteristics (see, e.g., Kaivo-oja and Lauraeus, 2018). These four elements compel us, as humans, to struggle to make sense of the changes happening around us. In such a world, it is therefore even more important to develop foresight capacity into *futures literacy* (Miller, 2018). Futures literacy means the skill to imagine, identify, and use futures. With it, one masters the various ways the futures are used in the present, that is, one uses futures for today's decision-making. It should also be deepened in the form of exploration of improbable and uncertain trajectories and as proactive preparation for futures. We should not, however, panic or become paralyzed in confronting the challenges of the VUCA world. On the contrary, we should boldly embrace change and uncertainty. If we want to survive, we must trace the trajectories of the unknown land of futures. One can even ask: "Is uncertainty the key to understanding futures?" Learning to embrace and live with uncertainty instead of attempting to evade it is a key to futures resilience (Heinonen, 2022; Karjalainen, Heinonen, & Taylor, 2022a; Karjalainen, Mwangiru, Salminen, & Heinonen, 2022b). By building foresight capacity to achieve futures literacy, we will confront the ultimate challenge and opportunity of futures resilience. *Futures resilience* is the capacity to survive emerging challenges, obstacles, risks, and crises, to emerge from them relatively unharmed, to learn from them and then renew one's activities.

General futures thinking can be deepened into systematic futures thinking and futures literacy through futures studies education. The concept of futures literacy heads for developing further into futures consciousness, which is also based on futures research. Futures consciousness means systematically developing one's futures thinking and anticipation capacities that arise from futures literacy. Futures resilience can thus be acquired as an ultimate and strategic goal of futures mindset. Futures resilience was a key topic studied in the RESCUE Project (Real Estate in Sustainable Crisis Management in Urban Environment),² whose authors, of which I am one, anticipated several crises and "rehearsed" their impacts in futures workshops. The three-year project (2021–2023) was coordinated by Aalto University, partnered with the University of Turku and University of Tampere, and funded by the Research Council of Finland. The urban environment is full of places, whether built, green, blue, or digital. They are more or less vulnerable to various crises that may take place. The project's authors aimed to study and look for policies, strategies, technologies, solutions, and applications that would enhance these places' crisis resilience (Toivonen, Rashidfarokhi, & Kyrö, 2021; Toivonen, Heinonen, Verma, Cataño-Rosa, & Wilkinson, 2024). An interesting approach was to organize "futures

²About the project, see more at <https://www.rescue-finland.com/> and at <https://www.utu.fi/en/university/turku-school-of-economics/finland-futures-research-centre/research/rescue>.

cliniques” (Heinonen & Ruotsalainen, 2013), where participants with very different backgrounds—representatives of companies, academia, public administration, NGOs, art, media and citizens—were invited to immerse themselves in an imagined crisis in a real physical place within the urban fabric. In one case, participants probed this on site in the Helsinki shopping mall TRIPLA, which is a major intersection of business, housing, and mobility (railway station). The crisis chosen for this exercise was a total electronic black-out. Interestingly enough, the small groups came up with creative solutions for how to cope. Furthermore, different groups saw the place itself rather differently—some perceived it as a trap, others as a safe place and fortress against the crisis (Heinonen et al., 2024). We also experimented with introducing a polycrisis—a combination of more than one crisis hitting one place at the same time (Heinonen et al., 2023b).

Five Pitfalls of Misplacing Futures and Futures Consciousness as a Vaccination

In which space are we placing the future? My claim is that there are five grave pitfalls of misplacing futures. Through futures consciousness, one can avoid such stumbling blocks and become immune to falling for misplaced futures. Firstly, the future is frequently placed somewhere “out there”—far ahead on the horizon—even though the future is present here and now, in our mind, imagination, and aspirations. Paradoxically, the present is “thick” with the future (Poli, 2011). Secondly, the future is not placed in any one specific place or location—it is ubiquitous, that is, in many places, in many manifestations, in many contexts, existing as several alternatives, even parallel futures. The future is consequently omnipresent. Accordingly, it is not a utopia that does not exist anywhere. Roy Amara (1981) has also developed three key principles of futures studies to illustrate the plurality of futures. His first principle is that futures cannot be predicted—they can just be anticipated. His second principle is that there are several futures. His third principle is that we, as humans, can have an impact on the future.

Thirdly, a pitfall of misplacing the future can occur from too narrow or too straightforward looking. The future is not positioned linearly or automatically, nor determined. It can have unexpected trajectories, influenced by our vision and action. The pathways to the future are twining under various influences and drivers, and we as humans need roadmaps to navigate to the future. My claim is that in anticipation processes we need to increasingly address the “un-futures” that merit closer inspection. These un-futures—that is, the unlikely, unexpected, uncertain, uncommon, unknown, unspoken, unthinkable, and undesirable—help us address and rethink often ignored, hidden, forgotten, or forbidden futures (Heinonen et al., 2022). For example, the topic of euthanasia has been unthinkable, or at least very uncommon, in societies where the practice of ending a patient’s life, or ending their suffering, poses a serious ethical dilemma. However, this stance has been alleviated when the rights

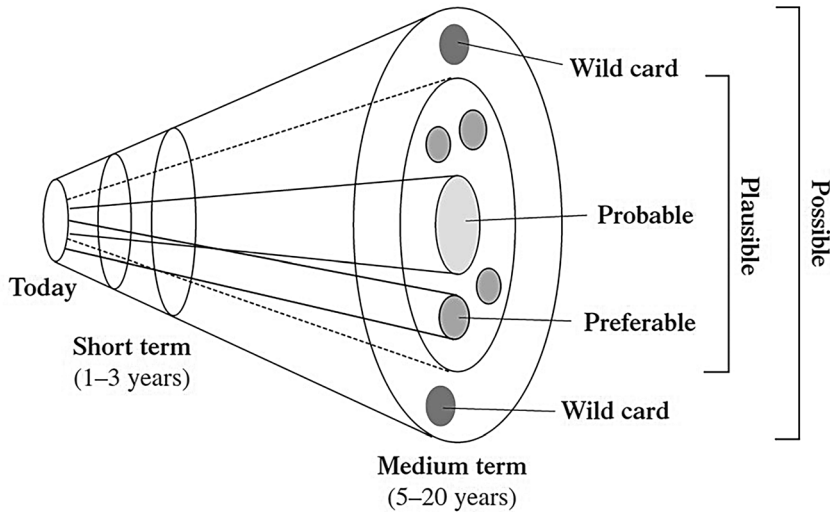


Fig. 4.1 The Futures Cone. Adapted from Bezold and Hancock (1993, p. P). Copyright 1993 by WHO. Adapted with permission

of a suffering patient are accentuated. In the future, euthanasia may become a norm—literally, it means “good death.” Another example is full unemployment. There may exist mechanisms in the future—such as universal basic income—through which unemployment may not be undesirable. Of course, this is an extreme future image and definitely not shared by all, but it has been claimed (see Dator in Ch. 2.9, in Heinonen et al., 2023c).

Fourthly, the future is not a place. Rather, I propose that it could be conceived as a collectivized person embodied in futures space—an agent-based social construction, ideally co-created to cater for a better world for all species. Amara’s (1981) above-mentioned third principle is that future can be affected. As such, he emphasizes the role of actors—shedding light on their agency to make futures happen. The future’s temporal nature means that young generations are making the future. Their voices should be heard concerning what kind of habitats for the future are to be constructed. Simulacra of futures can be constructed in the present that participants can experience and immerse themselves in, for example, in the physical form of four rooms according to four depicted scenarios. This is to demonstrate possible futures in order to help decision-making and choices for futures strategies, that is, resolutions on preferred futures and concrete steps towards them. Fifthly, the scholars of futures studies traditionally position the future in the futures cone, delineating the location and borders for possible, probable, and preferred futures as Figure 4.1 depicts (Bezold & Hancock, 1993; Voros, 2003, 2017).

The futures cone has different variations (Gall, Vallet, & Yannou, 2022), but it is basically opening up towards futures and comprising the potential of various kinds of futures—possible, probable, and preferred ones. The area covered by probable futures inside the cone is more narrow than that of possible ones. A preferred future

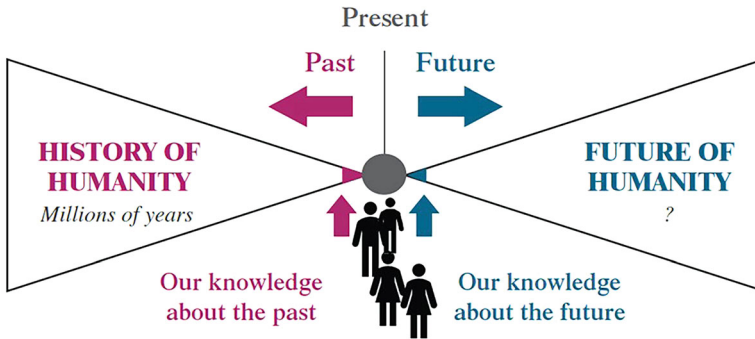


Fig. 4.2 Juxtaposition of the futures cone and history cone. Source: Design by author

can overlap with some possible futures and a probable one, or be beyond both of them. The futures cone is useful in demonstrating such difference in futures. However, an even more appropriate location for futures would be in juxtaposition with the history cone as illustrated in Figure 4.2.

Furthermore, addressing futures within a big picture means taking history into consideration. This could be illustrated through a cone looking backwards to history. History and future are like mirrors of time in space, thus closely connected. Moreover, in history, there is a special niche of past futures. This means studying futures images and views that past actors in history have had. For example, in my dissertation (Heinonen, 2000) I reflected on what kind of approaches to future and progress prevailed in the ancient world. Greek philosophers represented two competing schools of thought as regards the future of humankind. Some followed the model of historical decay, viewing the future as the remnants of what was once an original Golden Age. The Ancient Greek poet Hesiod, one of the best-known authors of this line of thought, described this past as a paradise-like place where people lived a lavish and happy life. This myth of the lost Golden Age can be associated with a biological view of history, one where the earth ages and eventually dies like human beings. Such chronological primitivism contained the idea of ancient humans having lived more happily than contemporary ones. The second model for perceiving the future world to unfold was that of cultural progress. Promoters of this school of thought, especially favored by the Epicureans, believed humanity has arisen from primitive beginnings and was continuing to develop for the better. The idea of progress has strengthened throughout the centuries and is the foundation for the modern obsession with logic of economic growth. The third model of thinking was that of cyclic development. In particular, the Stoics perceived the development of the world to consist of successive periods of decay, which after their full cycle start the process anew. This cyclic model may also comprise both of the above two models within a cycle. Thus, a cycle always ends in a natural catastrophe (world fire) and then starts a new cycle, where the process is iterated.

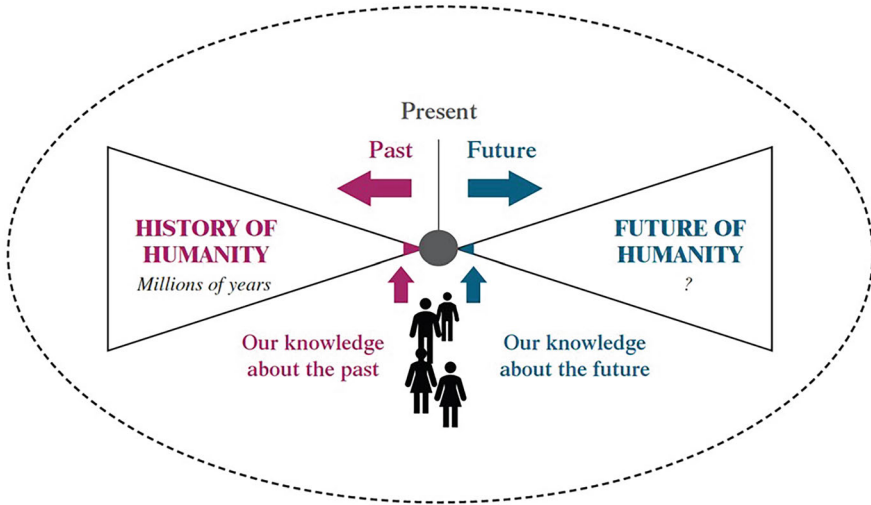


Fig. 4.3 Futures sphere—comprising the futures and history cone. Source: Design by author

Another lens to past futures is to look at what forecasts and predictions have been made and how wrong they have turned out to be. Of the myriad possible examples, it suffices to remember that Ken Olsen, founder of Digital Equipment Corporation, is said to have predicted in 1977 that there is no reason anyone would want a computer in their home. The list of false predictions is endless, but its value is limited to entertainment. The point of futures studies is not to predict anyway, but to anticipate what might be possible within certain premises. Besides, there are several examples of forward-looking visionaries in history, such as Jules Verne and Leonardo da Vinci, who sketched a prototype for a submarine and an airplane. Further, it is interesting to reflect upon whether humanity has learned from past futures. An example is given by the Covid-19 pandemic. Futures researchers frequently spoke of the possible outbreak of a global pandemic, in seminars, workshops, and reports. Yet their warnings received no serious attention. However, humanity should be capable of learning from history—if we do not learn early enough from anticipation, then ultimately the crises themselves may do the trick (Karjalainen et al., 2022a, b).

The two cones as illustrated in Figure 4.2—the futures cone and history cone—could be fused into a sphere comprising all aspects of time, that is, past, present, and the future as embedded in Figure 4.3.

A similar extended representation of the futures cone has been proposed by Christophilopoulos (2021), who expanded this kind of approach into the “cones of everything,” emphasizing the alternativity of all-directional time conceptions (see Fig. 4.4).

In fact, the futures sphere as represented in Figure 4.4 could be propelled into a plethora of futures cones and history cones (see Fig. 4.5). In other words, the future of humanity could consist of not just one futures cone, but several alternative or

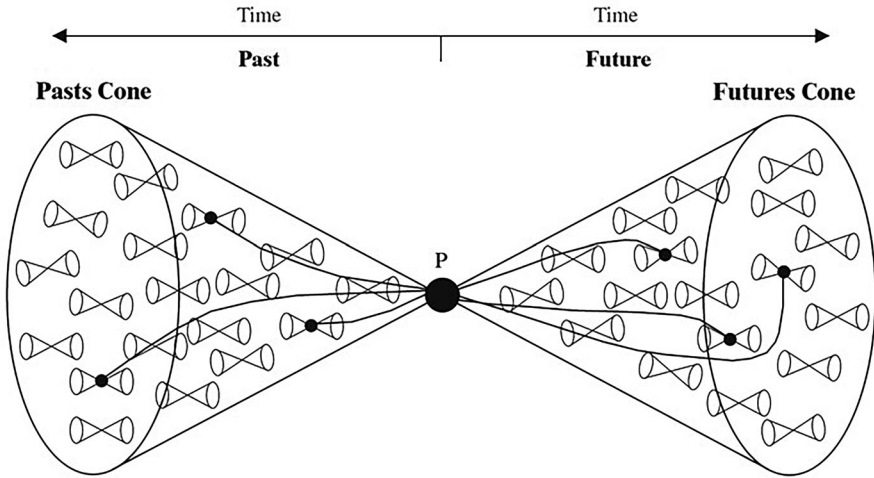


Fig. 4.4 The cones of everything. Reprinted from Christophilopoulos (2021, p. 87). Copyright 2021 by Journal of Futures studies. Reprinted with permission

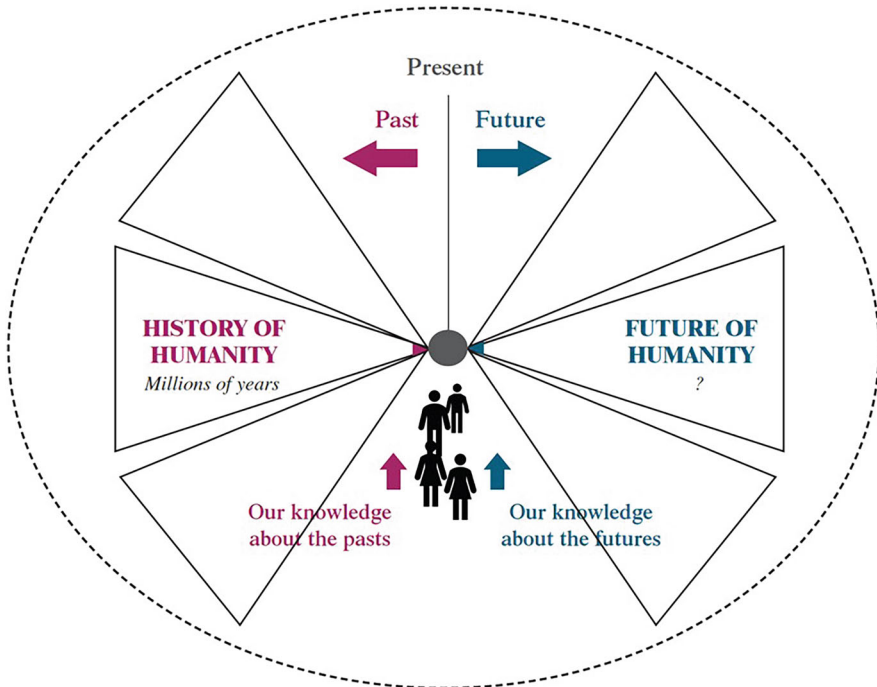


Fig. 4.5 Futures spheres covering several futures cones and history cones. Source: Design by author

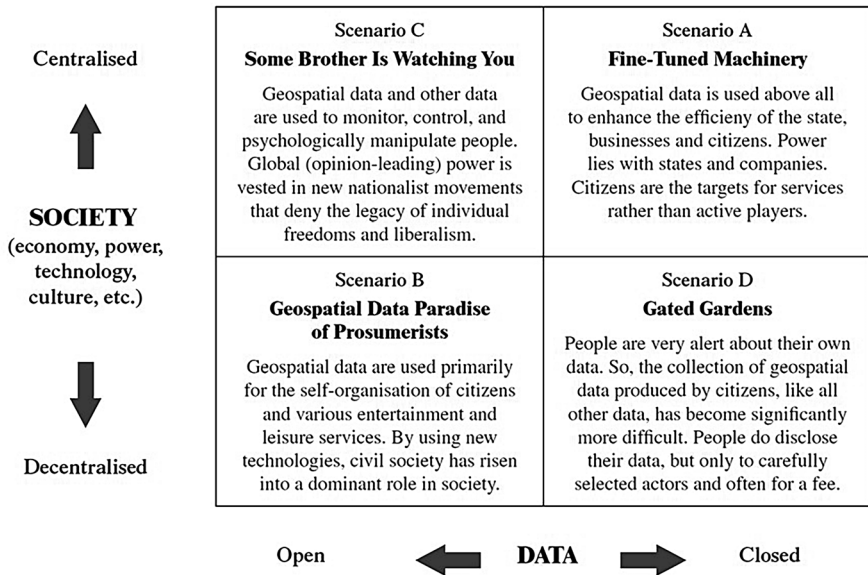
parallel cones. Likewise, the history cone would cover alternative and parallel history narratives, past futures, as well as contrafactual histories (What if Napoleon had won the Battle of Waterloo? What if the World Trade Center towers were not destroyed in the 9/11 attack?).

Four Geospatial Scenarios on Possible Futures as Convolution of People, Places and Purposes

In this section, I present a set of four geospatial scenarios as a nexus of people, places, and purposes. They can be viewed as futures manuscripts from among the possible futures in a futures cone. People, places, and purposes will be convoluted in digital futures, as rapidly evolving and emerging technologies such as artificial intelligence (AI), big data, pattern/face/voice recognition (cf. Volume 19 Knowledge and Digital Technology), and the planned Metaverse affect the functionality, security, and resilience of geospatial infrastructures. Diamandis and Kotler (2020) emphasize that the only constant is change, and the pace of change is accelerating geospatial data from fertile soil for such innovations and new models for action. Geographic information will be used in almost all technological developments. How can this big wave of geographic information be managed, and what kind of societal regulation is needed? A first step towards searching for innovation is exploring what kind of digital futures may be forming. Such exploration can be conducted through scenario thinking and scenario construction (Wright, 2025; see Chapter 2). This is where a core question comes in: How will the convolution of people, places, and purposes redefine the concept of space and social interaction in digital futures? People are moveable actors—they no longer live in only one place. Because travel is easy, they can visit more and more places—digital and virtual alike. Hybrid spaces are also being formed (Heinonen, 2022; Karjalainen et al., 2022a, b). People now have various personae, real-world and virtual, and such delocalized existence will only expand (Diamandis & Kotler, 2020). Physical geography is convoluted with its technology-enabled counterpart—virtual geography. Batty (1997) thoroughly discusses how the concept of place and space expands through the addition of virtual dimensions. Place and space can be not only physical, digital, and virtual, but also psychological, cognitive, and even philosophical concepts.

For the first time in Finland, a government report on futures perspectives of geospatial data policy and the impact of technologies on geographic infrastructure was made by the Geospatial Research Institute (FGI) in 2017 (Ministry of Agriculture and Forestry, 2018). I contributed to this report, in which my colleagues and I constructed four scenarios for the use of geographic information and its role in society, aiming to support the government policy report on geospatial information (Muhli, Koskinen, Heinonen, Ruotsalainen, & Parkkinen, 2017). We constructed the scenarios by applying futures studies methodology, such as futures-oriented literature survey, two multi-stakeholder futures workshops, Delphi survey, futures

Table 4.1 Four societal scenarios of geospatial data



Note. Source: Design by author

wheels, futures tables, and explorative scenario building. We managed to develop and organize a plausible vision of how societal activities relate to the geospatial data infrastructure, meaning that the geographic information infrastructure can be used to cater to the changing needs of users. Scenarios are intended to support decision-making: They are not predictions, but tools and food for foresight processes and deliberating futures with all relevant stakeholders (see, e.g., Dammers, van’t Klooster, & de Wit, 2019; Bell, 1997). On the basis of such futures deliberation, preferred futures are chosen as objectives for societal transformation, aided by new technologies and digitalization. Scenarios stimulate strategic thinking, but fundamentally they are also learning and knowledge-creation platforms (Heinonen, 2018, 2021).

The four scenarios of geospatial data and infrastructures were embedded in the context of societal transformation. The two axes on which they were built are: the data being open or closed, and the use of data being more centralized or decentralized. The scenarios were entitled as 1) “Fine-Tuned Machinery,” 2) “Geospatial Data Paradise of Prosumers,” 3) “Some Brother Is Watching You,” and 4) “Gated Gardens.” (see Table 4.1). The timeframe chosen was 10 years—extending from 2017 to 2027.

Data’s transparency and closedness is defined by how much of said data—produced by the public sector, businesses, and citizens—is publicly and freely

available and applicable. The axis transparency-closedness also applies to geospatial data. In the scenario “Geospatial Data Paradise of Prosumers,” data is open, as power has increasingly shifted to citizens, and these welcome openness and data sharing. In the scenario “Some Brother Is Watching You,” data is open in the “Wild West” spirit: Controlling data has proven difficult because varying degrees of cybercrime are common, citizens are indifferent or powerless in managing their own data, and both governments and large corporations want as much data as possible. In the scenario “Fine-Tuned Machinery,” data is mainly owned and produced by companies and the public sector. The data of public administration organizations can be largely open, and companies can also open their data to others to promote their business, but corporate data is, for the most part, closed. Geospatial data generated by citizens is largely the property of global companies. In the “Gated Gardens” scenario, data is mostly closed, because citizens are extremely cautious about what data is passed on to whom and when.

Studying society’s fragmentation and concentration, in turn, can give a sense of whether an open civil society and vibrant ecosystems for small and medium-sized enterprises will be strengthened in the future, or whether there will be more centralized state- and enterprise-led development.

The development and application of geospatial data influences along what path a society will develop. In the scenario “Geospatial Data Paradise of Prosumers,” citizens and workers self-organize both in their leisure time and in their working lives. As a result, culture, economy, and power have become increasingly decentralized—a unified culture has become obsolete and been replaced by different communities and networks. In the “Gated Gardens” scenario, society is fragmented because people control their own data. Data is used to provide well-personalized services, and citizens protect their privacy. Both strengthen the social position of citizens. In the scenario “Some Brother Is Watching You,” society is concentrated, as states and large corporations have applied control mechanisms to consolidate their positions, and various totalitarian tendencies have intensified. In the scenario “Fine-Tuned Machinery,” society is concentrated, as citizens are reluctant to participate and expect the state and large companies to take care of the development and production of services. Both governments and companies are streamlining their operations to the top, and consequently closely control their data.

It should be noted that these scenarios are exaggerated “ideal types.” They are neither mutually exclusive nor forecasts, but a mapping of a landscape of possible futures. Most likely, the development of social and geospatial data will be a combination of these scenarios—and of a number of other, as yet unknown, trends and phenomena. However, studying ideal types and extreme ends (states of the scenario axes) helps make the different development options more clearly visible. Yet one must bear in mind that scenarios are not predictions, but manuscripts to alternative possible futures. For this reason, they also contain many features that seem unlikely from the current perspective. But it is often precisely those development trajectories that are surprising and previously seemed unlikely that are changing the world the most (Heinonen, Karjalainen, Ruotsalainen, & Steinmüller, 2017; Heinonen & Karjalainen, 2019a, b).

The scenarios are based on current empiricism: They are a projection of trends and weak signals observed in the present time into the future. Secondly, it is worth noting that although I have used these scenarios to describe the year 2027, signs of them exist in the present world. Efficiency and productivity already feature as dominant values in society today (Scenario A). Citizens are increasingly organizing new technologies themselves—such as Restaurant Days organized by the townspeople, or by popular movements behind politicians such as Donald Trump and Emmanuel Macron—and value experientiality and meaningfulness not only in leisure time but also at work (Scenario B). Different groups of hackers, mobile devices that collect different data continuously and spontaneously, mass data collection by the US National Security Agency (NSA), and the new intelligence powers planned for the Finnish security police are weak signals of a society where surveillance and espionage is much more needed. Data, in turn, is really becoming the “new oil,” fueling data companies like Google, Tesla and the S Group, which, together with the growing longing for privacy, could lead to the end of the open data era (Scenario D).

Furthermore and paradoxically, centralization and decentralization may happen simultaneously, in different ways and as different manifestations. Data is much more transparent than it was just a few years ago, but it is also piling up for a few players as more and more people trade, and incidences of cybercrime have made users more aware of the vulnerabilities of their “data lives.” The third consideration that opens up the scenarios is that Scenarios A and B are so-called continuity scenarios. They rest on the assumption that current strong trends (efficiency, citizen activation, openness, experientialism) will continue in the future. Scenarios C and D, on the other hand, are discontinuity scenarios. They rest on the assumption that a surprising event has disrupted and steered development away from previously predicted routes. Scenario C has moved away from transparency towards a ubiquitous control society. In Scenario D, on the other hand, the data economy has grown so significantly that society has shifted from open data to data ownership. Data ownership and management is the knowledge society’s currency.

Digital Meanings Society

Societal development evolves through different stages—humans moved from a hunter-gatherer society to an agricultural society, then to an industrialized society, and now to the current information or knowledge society (Webster, 1995). As a preferred future, the next phase could open up avenues towards the potential of a Digital Meanings Society. Futures researchers define the next societal phase in various terms—some speak of an eco-society, a digi-society, a dream society, or an experience society. In this section, I propose a Digital Meanings Society, where futures resilience is the vessel to navigate the hybrid world of physical/virtual/digital spaces. People are looking for meaningful activities, and digitalization is an enabler in that aspiration.

My ultimate goal, then, could be to probe what a Digital Meanings Society, where places and spaces are used with meaningful experiences, would look like (Heinonen, 2020, 2022). Places matter—and places can be evaluated according to the purposes and meanings attached to them. Geospatial data and information on various locations may help in this kind of futures exploration and learning—how one can use geospatial data to be proactively prepared for crises, to respond to them, and eventually rise out of them to renew society as crisis resilient. The full potential of places is revealed when they are perceived as complex hybrid entities of physical structures, digital elements, and (last but not least) related information and data, creating various experiences and meanings from using them. At the micro-level, people are seeing this development in their workplaces, where physical spaces and digitalized solutions collide. Possible futures of these solutions are studied in the research project T-winning Spaces 2035. People live in places, i.e., in cities or other communities. In the research project RESCUE (Real Estate in Sustainable Crisis Management in Urban Environments), we aimed at strengthening the preparedness and futures resilience of cities and communities in facing crises.

The scenarios of geospatial data as described above may provide elements and ideas for necessary policies, ones either modifying the present regulations or creating new practices and policies. I accordingly evaluate these scenarios as to their resilience against crises in society (Heinonen, 2023b). They opened up avenues for a medium-term future of societal developments of 10 years, that is, for 2027. I expect legislation and public administration to support preferred trajectories of development. A key question is how and to what purposes data in general, and geospatial data especially, is being gathered, refined, applied, governed, and controlled. Another relevant question is how the geospatial data can be used to boost national security and crisis resilience. To evaluate the scenarios' capacities for crisis resilience, I have chosen two major crises and "bombarded" each scenario with them. The first crisis is the Covid-19 pandemic. The second crisis is heavy cyberterrorism, shuttering society as a whole. How the four scenarios as presented above can resist or survive these crises (resilience as good, moderate, or poor) is an example of testing scenarios. Such evaluation can be repeated with a view to some other looming crises as rehearsal of futures. An everyday life analogue for such future crisis evaluation is browsing travel brochures before actually travelling to a location, as a kind of preview for the visit.

In the following, I discuss how the four scenarios as presented above can resist or survive these crises (resilience as good, moderate, or poor), as concrete examples of assessing futures resilience. First, I study the scenarios' crisis resilience in the case of the pandemic. In Scenario A, "Fine-Tuned Machinery," the state and companies hold the power of using geospatial data efficiently, to serve citizens who remain passive objects rather than active players. During the pandemic, the government sets the strategy of efficiently tracking those infected. Accordingly, it can rapidly introduce geospatial data for identifying and informing those infected or vulnerable to infection. In this sense, Scenario A's crisis resilience towards the pandemic is good. If, however, those applying top-down measures are efficient but fail to pay attention to people's social wellbeing, the resulting resilience is moderate. In Scenario

B, “Geospatial Data Paradise of Prosumers,” the civil society is empowered and citizens self-organize the generation, use, and sharing of geospatial data. They get access to all geospatial data about where infection is spreading most heavily, testing is being conducted, and vaccinations given. Here, citizen resilience is good unless misinformation or disinformation intrudes into the use of geospatial data. The resilience then weakens, even to the level of being “poor.”

In Scenario C “Some Brother Is Watching You,” geospatial data is mainly used for controlling and manipulating people. Resilience is therefore poor, especially because extreme movements may come to dominate and distort the use of geospatial data. However, the high emphasis on controlling developments can create good resilience in terms of a swift recovery from the pandemic, as such control naturally applies to constraining the pandemic’s spread. In Scenario D “Gated Gardens,” people are very strict about their privacy and do not easily reveal data concerning their private lives. This makes it difficult for the authorities to monitor the situation of the pandemic and its trajectories. Resilience against the pandemic may thus be regarded as poor. It is also weak as applied to the overall situation and equality. Some people can afford expensive treatments and isolation contexts, but the majority have to cope on their own. Pandemic resilience may be good only for a very limited, exclusive group.

Secondly, the scenarios can be used to judge crisis resilience in case of cyberterrorism. In Scenario A, “Fine-Tuned Machinery,” the state and companies can jointly combat cyberterrorism. Citizens are at the mercy of cyberterrorist attacks. A lack of information and skills makes their resilience poor. However, companies see this as an opportunity to provide the people with products and services against the negative impacts of cyberterrorism. Governments can also support financially such activity. Therefore, the overall resilience may be esteemed as good. In Scenario B “Geospatial Data Paradise of Prosumers,” the citizens are self-organized and highly skilled in the combat against cyberterrorist attacks. They provide peer-to-peer assistance to relatives and neighbors who need help due to less skilled capacities for self defense. Thus, the people’s resilience against cyberterrorism is good. As the government may not be able to keep pace with the citizens’ defensive activities, the public level of resilience against cyberterrorism may be only moderate.

In Scenario C, “Some Brother Is Watching You,” geospatial data is controlling people, but also controlling all kinds of activities, including cyberterrorism plans. Therefore, the resilience is good. However, the resilience can be considered as only moderate in cases where the control is taken by extreme groups who become blinded by their own activity and fail to recognize planned incidences of cyberterrorism. In Scenario D, “Gated Gardens,” the resilience against cyberterrorism is poor, as the state lacks an overall picture of activities in the digital sphere. The digitally literate and skilled hackers’ resilience is good. In their own private bubbles, they are well equipped to defend themselves against cyberattacks.

With the above brief comparisons of the resilience of four scenarios to the pandemic and against a cyberattack, I have clearly shown that there are variations in the level and harboring of resilience. I do not presume that any scenario has

exclusively positive or negative impacts—each has different future conditions, and must be tested for vulnerabilities.

My ultimate goal is to probe what a Digital Meanings Society, where places and spaces are used with meaningful experiences, would look like. Places can be evaluated according to the purposes and meanings attached to them. I have based this idea of a Digital Meanings Society on an emerging movement, where the search for meanings and identity is increasingly embedded in all products, services, and practices (Heinonen, 2016, 2020)—even reaching the geospatial sphere. Halal (2021) proposes that, due to the mega-crises in which humanity is now, humans are finally moving towards an age of consciousness where responsibility is embedded in all businesses and use of technology. The sense of responsibility only emerges after learning from multiple crises and shocks (Heinonen, 2022). This would mean a plethora of opportunities for developing cities as resilient against crises, using all the potential of the geospatial data and infrastructure. The meaningfulness of visiting and “consuming” places, physical or virtual/digital, is the user end value and a preferred vision for geospatial information, one intertwining people, places, and purposes in a crisis-resilient portrayal for 2037. This does not happen automatically: It requires consensus and shared attempts by all stakeholders in society.

Digital Meanings Society is an ideal mental location for people to conduct meaningful activities. Yet it is no automation and remains hypothetical unless access is created for all people on the planet—a goal that first requires overcoming major global challenges. As anyone can guess, this is a tall order.

Conclusion

I have used this chapter to delve into futures studies, and into how this discipline could be applied to study the futures of geospatial data. To provide concrete examples, I presented four scenarios—all very different, but all possible and plausible. The main variables of these scenarios were the degrees of their data openness and the centralization of the society into which they were embedded. My aim in presenting them was to demonstrate how to utilize the current empiricism to explore the futures. Furthermore, I revealed how implications can radically shift when the main actor changes (be it the state, corporations, or citizens). However, I also noted that the constructed scenarios are characterized types and that the realistic image of the future is something of a hybrid. Moreover, I tested and assessed the scenarios’ futures resilience in two crises. However, it should be emphasized that studying only *possible* futures may not be enough—we should also strive to imagine those futures that are *preferable*. I described a digital meaning society as one such preferable future.

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