Participatory Speculative Design

From Navigating Climate Crisis Dystopia to Fostering Mindset Shifts

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1 Introduction

This essay presents *Participative Speculative Design* (PSD) as a vehicle for critically reflecting on a complex set of ethical, social, cultural, political, and environmental issues with the involvement of diverse, non-designer groups. This exploration delves into the question how PSD can assist in the analysis of the interplay between apocalyptic scenarios and indifference or surrender. Additionally, as a discursive approach, it raises the question of how PSD can encourage a shift in mindset concerning responsibility and foster a sense of agency.[1] Furthermore, this concept is exemplified through a case study involving a 12-week PSD course tailored for working professions to explore the potential future of communication in the year 2050, resulting post-normal scenarios with unsettling reactions to climate-related concerns and disruptive, transformative shifts in societal norms such as automatic luxury capitalism, ›empathAI‹ as governor of megapolis or seniors climatic migration to the North. They assume that a climate catastrophe has occurred, and people are disillusioned by the inability of decision-makers to prevent it. In these challenging contexts, however, business as (un)usual continues (Greenfield 2017, Chapter 10).

Speculative Design (SD) serves a dual purpose: It can serve as an entry point for contemplating possible, plausible, probable, and preferable futures as well as a critical assessment of current practices by reimagining the past, present, and future. It is based on the premise that recently the fields of design and foresight have been gradually converging and acknowledges a segment within future studies that employs imaginative techniques to address societal challenges (Ollenburg 2019, 52). SD methodology has under-

1 For the reflection on artistic research as a form of alternative production of knowledge see Miriam Tag's contribution »Gaia-Glottie. Neue Erzählweisen im mythopoetischen Myzel des Planeten« in this volume.

gone a ›participatory turn‹, it is presently being applied in diverse settings beyond just artistic and academic domains, as SD is now frequently embracing participatory methods and collaborative design techniques (Farias et al, 147–155).

As lecturers and design professionals, our understanding of the participants' experience throughout the semester have led to a deeper understanding of the inertia that the dystopia of climate crisis poses on individuals. Regular sharing sessions during the course, interviews conducted by students and the lecturers have revealed powerful insights into the potential and limitations of speculative methods and frameworks on individual and collective action, especially in a corporate framework. Various generational and educational levels of participants, the participatory methods of collective envisioning and the outcome-oriented process have led all to a reflection on the dynamics of decision-making, ownership and systemic thinking in a group setting, revealing that individual responsibility cannot be overstressed, however, it is important to think in terms of actionable and scalable future concepts in order not to discourage participants form a mindset shift. Furthermore, we are proposing an application of the experimental methods used during the course that ultimately can lead to a comprehensive and seamless application of speculative thinking in small-group ideation in corporate and intersectoral environments for a more meaningful and climate-conscious work process among employees.

1.1 Speculative Design

SD is opposed to normative, affirmative, or conventional design practices (Dunne and Rabby 2013, vii) as claimed by philosopher Benjamin H. Bratton: »SD is a zone where the tactical exceptions to norms can be granted and where, thereby, new norms are prototyped with some impunity« (2016, 82), it allows perspectives, alternatives, and scenarios that would have no place elsewhere.

SD is a platform for imagining and creating alternative sociotechnical narratives that challenge our current relationship with reality, opening discussion and debate about current and emerging issues. In other words, SD serves a dual purpose: firstly, it can serve as an entry point for contemplating possible, plausible, probable, and preferable futures, for creating speculative futures; secondly, a critical assessment of current practices by reimagining the past, present, and future (Auger 2013, 12), through alternative presents. It is based on the premise that the fields of design and foresight have been gradually converging in recent times and acknowledges the segment within futures studies that employs imaginative techniques to address societal challenges (Ollenburg 2019, 52).

SD, as a distinct design practice, has grown in popularity over the last two decades. However, the idea of critiquing and questioning mainstream product design principles through designed objects began to take shape as an anti- and radical design movement in the 1960s and 1970s, following earlier sporadic cases, originating in Italy, Austria, and England (Jakobsone 2017, 253). Collectives and designers such as *Archigram*, *Archizoom Association* and *Superstudio* relegated the user-functionalism aspect of modern design to the background, prioritizing (self-)reflexive modes of operation for the designer. They saw it as having aggravated social and environmental problems, rather than view design as a benevolent force. Instead of addressing a pre-defined problem, design was used to pro-

mote active and critical participation (Malpass 2002, 20), emphasizing the designer as a meaning-maker. The designed objects become ›talking objects‹, they are understood as narratives and transmitters of messages, their value is extending beyond (mere) utility (Schneider 2022, 134). They have envisioned both utopian and dystopian scenarios through various mediums, including photo collages, videos, drawings, writings, tangible objects, performances, and exhibitions. These approaches aim to introduce »foreign bodies into the system […] with the aim of attracting attention, or arousing interest, of serving as a demonstration and inspiring actions and behavior« (Superstudio [1969] 2003, 116). These projects were not proposed as an alternative to existing reality, but rather as a radical and critical reflection of reality (Dautrey and Quinz 24), i.e. they were used primarily as a communicative and political tool.

The next crucial episode was the emergence of the *Critical Design* movement in the early 1990s in the Netherlands and the United Kingdom with the first exhibition of the collective *Droog* at *Milan Design Week*, and *Dunne & Raby* at the *Royal College of Art*. Critical Design follows in the footsteps of radical and anti-design, and its »primary intention is to make us think: to raise awareness, expose assumptions, provoke action, spark debate, and even entertain in an intellectual way like literature or film« (Raby 2008, 94).

By now, Speculative Design has become an influential way of thinking about the intersection of design and futures (Mitrović et al. 2021, 76–78). It became a category in its own right it has his own awards and it is the subject of different conferences, Primer, it has moved out of design circles and has been used by large companies such as *Google*, *Deloitte*, etc., and even the *European Commission* and *Greenpeace* to promote new technologies or raise awareness of environmental issues (Greenpeace International 2014).

1.2 Methodology of Speculative Design

According to futurist Jim Dator »›[t]he future‹ cannot be predicted because ›the future‹ does not exist. […] [B]ut alternative futures can, and should be, forecasted« (2019, 3). Futures and foresight methods have long been used in business and policymaking (Amara 1981, 27). The exploration of the different futures is based on the ›what if?‹ question. It assists us in navigating not just the future we hope for, or the future we expect, but also the future we fear might come true. As design strategist Corina Angheloiu states, the futures methods employed in business have been criticized (2017, S3216) for generating an uninspiring ›flatland‹ of futures (Schultz et al. 2012, 129). Through experiential scenarios, storytelling, and diegetic prototypes or ›provotypes‹, short for ›provocative prototypes‹,[2] design brings a much-needed richness to the speculative and visionary aspects of future thinking (Candy and Dunagan 2017, 166), as will be detailed later.

In the context of SD, a scenario is a narrative framework and sequence of events designed to envision future human experiences, facilitating deeper thought and debate about one or more futures beyond what statistical methods allow (Candy 2010, 3). Scenarios serve as a widely adopted tool to expand our »possibility space« (Miller 2006, 93), stimulating speculation about diverse and numerous alternative futures. Futurists over

2 Provotype refers to an object acting as a catalyst, provoking reflections from viewers, giving them the opportunity to touch, feel, and interact with possible futures (Morrison 2023, 219).

the years have spoken of three plus one main classes of futures: possible, plausible, probable, and preferable futures (Christophilopoulos 2021, 83), usually represented graphically in the form of a so-called ›future cone‹, which illustrates the variety of possible futures that emanate from the current moment in time and exists in various extended and iterated forms, complemented by several other futures (fig. 1).

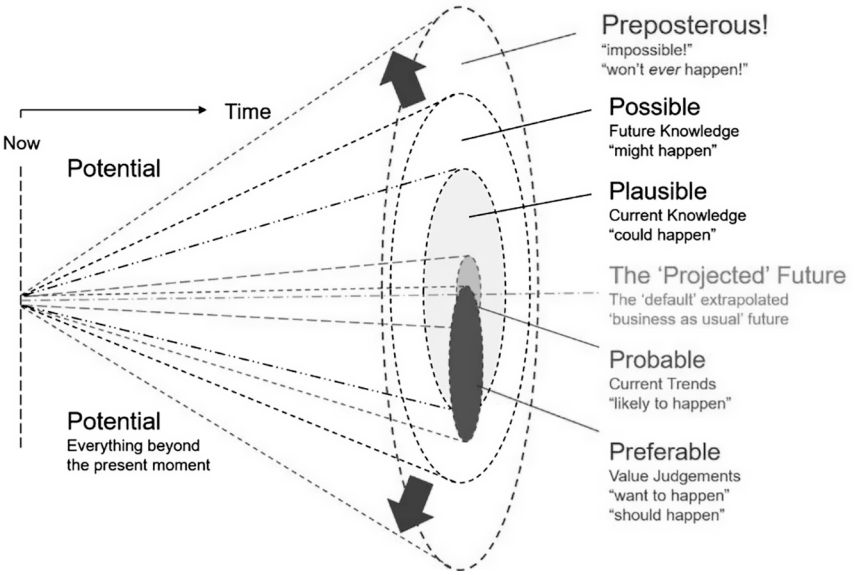

Fig. 1: Expanded Future Cone by Voros (2017).

Physicist Joseph Voros defines the different types of futures as follows:

> ***Possible futures.*** This class of futures includes all the kinds of futures we can possibly imagine – those which ›*might* happen‹. […]
> ***Plausible futures***. This class encompasses those futures which ›*could* happen‹ […] according to our *current* knowledge (as opposed to future knowledge) of how things work. […] This is clearly a smaller subset of futures than the possible.
> ***Probable futures***. This class of futures contains those which are considered ›likely to happen‹, and stem in part from the continuance of *current trends*. Some probable futures are considered more likely than others; the one considered most likely is often called ›business-as-usual‹. It is a simple linear extension of the present. […]
> The fourth class, ***Preferable futures*** is, by contrast, concerned with what we ›want to‹ happen; in other words, these futures are largely *emotional* rather than cognitive. They derive from *value judgements* and are more overtly subjective than the previous three classes. (2001, 2, original emphasis)

Developing scenarios should follow a meticulous and thorough process involving extensive information gathering, rigorous analysis, and critical interpretation. There are numerous potential techniques for generating scenarios, each presenting different approaches and variations.

The diegetic prototype is a future artefact that goes beyond the mental models of futures and turns them from verbal to visceral, helps affective engagement and embodied insights (Candy and Dunagan 2017, 139). Its deliberate use defined by Bruce Sterling, science fiction writer, is the suspension of »disbelief about change« (Bosch 2012, n. p.). As Julian Bleecker, one of design fiction's pioneers from Near Future Laboratory describes: they are »puzzles of a sort, a kind of object that has lots to say, but it is up to us to consider their meanings« (2009, 7). Bleecker states that effective future prototypes are »totems through which a larger story can be told, or imagined or expressed« (7).

1.3 Critique of Speculative Design

The motion of SD to mainstream has many pitfalls from overemphasis of the style, the aesthetic of the future to the creation of dull and predictable or self-possessed scenarios, appropriation of the future by corporations in order to promote their products or by privileged groups as Mitrović points out (2015, 84–86). There is a special danger of slipping into so-called »Western melancholy« (Mitrović 2018, n. p.) through detachment from »the real world« and escaping into dystopian scenarios (Thackara 2013).

The SD scenarios often appear dystopian in nature. This genre often faces criticism for its tendency to catastrophize the future, scientific advancements, or technological progress. It is accused of being unrealistic, thus pushing the speculative scenario towards the preposterous (Auger et al. 2021, 20). Understandably, dystopian narratives appeal to speculative designers for several reasons: dystopian elements are used to avoid the narrative becoming boring. By introducing antagonistic forces, designers prompt audience empathy, fostering immersive discussions about future contexts. Professionally produced movies and TV series, which are hard to compete with in terms of the budgets and production values, appear frequently. These dark fantasies, such as *Black Mirror* (2011-), *Silo* (2023-), *Station Eleven* (2021) or *The Last of Us* (2023-) to mention just a few, as well as the past decade's dark and dystopian environmental and political narratives have become our everyday reality – in the form of disruptive innovations such as Neuralink, AI-generated deep fakes or robot dogs on patrol. Not only film and TV series, but also literature and video games are finding it challenging to portray the strangeness and apocalyptic visions of our current projected reality. What is the role of SD in this context?

Whether teaching speculative or conventional design, it is crucial to consider and address the potential negative outcomes of our actions. Each prediction, whether in user behavior, social organization, technological advancement, material innovation, or economic trend, brings about unintended consequences. SD provides a framework to visualize and explore these consequences. It should also move towards highlighting the positive aspects of dystopian visions, thus encouraging innovative social and political transformations.

1.4 Participatory Turn in Speculative Design

In recent practice, a ›participatory turn‹ can be observed in SD. Participatory methods in design in general have become mainstream, widely used by practitioners, educators, and newcomers as well, resulting in new, hybrid modalities of design practice. According to Ilpo Koskinen et al., speculative design has moved out of the »showroom« and into the »field« (2012, 89), also suggesting its increasing accessibility as an approach. This ›field-based‹ inquiry is fueled by the need to include more and more diverse stakeholders in both design and futuring in order to include multiple agendas. ›Stakeholders‹ include all agents participating in the process with their own agenda, also implying that their participation requires active participation. Speculative design increasingly incorporates participatory modalities and co-design techniques, moving away from individual speculation to collective vision-crafting. This shift addresses the normative question of why speculative futures should be solely determined by designers, tearing down embedded power structures of industry and production. As Dunne and Raby highlight: »The days of designers dreaming on behalf of everyone have passed« (2013, 164). Engaging diverse stakeholders and including marginalized communities in this vision-crafting not only challenges dominant narratives but fosters mutual learning and can lead to a more sensitive, less anthropocentric future. The inclusion of a multi-lens and possibly more eco-centric approach can be reached through integrating marginalized voices highly impacted by issues such as climate change, in order to shape new realities (Nagele et al., 11). PSD processes focus on inclusivity, sparking social debates and grounding outcomes in local contexts. However, challenges persist, such as identifying appropriate participants and timing, as well as managing stakeholder receptivity to radical design implications. While some difficulties are not unique to PSD, the nature of participatory practices presents specific challenges. A preliminary exploration of participation in PSD projects aims to delineate various forms and degrees of involvement, laying the groundwork for understanding the complexities of designing speculatively with others. As Pedro Gil Farias and others emphasize, PSD processes can contribute to balancing power relations or to spark mutual learning, they are also strongly process oriented opposed to non-participatory forms of speculative design, which remain focused on the quality of the designed artifacts (Farias et al 149). This process-oriented quality also implies the need for new ways to evaluate its framework and impact.

In order to comprehensively widen the circle of stakeholders in PSD, defining marginalization and vulnerability proves useful. Agendas such as the Millennium Development Goals 2000–2015 and the 17 Sustainable Development Goals articulate aspects of global development that center around vulnerable groups, societal challenges, and consequences of climate change (UN, 2000 and 2015). There are several ways to define the meaning of *disadvantaged* or *underprivileged* in terms of communities, and thus, understand the circumstances they face. Duncan Green argues for a multidimensional understanding of poverty and vulnerability that takes into account the sense of »powerlessness, frustration, exhaustion, and exclusion from decision-making« (2008, 7) experienced by people living in poverty, describing it as a »symptom of deeply rooted inequities and unequal power relationships, institutionalized through policies and practices at the levels of state, society, and household« (27). From an intersectional

standpoint, gender, class, ethnicity, sexuality, and age are identified as aspects of an individuals' identity that are linked to different forms of discrimination, and which can prevent individuals from accessing resources and services, including education – and making decisions about their lives (Crenshaw [1989] 1991, 140).

Introducing the intersectional perspective to PSD could potentially enhance challenges of participation of different stakeholders as this theoretical lens helps identify a set of complex barriers and vulnerabilities preventing certain groups from exerting control over their future vision-crafting. Identifying and emphasizing these barriers already helps tackling the power imbalance and prioritizing the inclusion of marginalized groups and amplifying the needs of more-than-human actors can lead to a more complex but also more future-proof vision.

2 Methodology

2.1 Participatory Design Methods

Participatory methods in design have been widely used in the latter half of the 20th century and in contemporary design practice, they are heavily ingrained in both market-based and more experimental activities, focusing on the (mainly) human experience of interacting with the designed environment. Especially in the realm of futuring and vision-crafting, it is essential to focus on living organisms that will populate the future in question. While this essay does not aim at presenting an in-depth review of participatory and human-centred design (HCD) practices, it is important to highlight a few key concepts that clarify the role of a PSD approach which was later integrated in the methodology of the course.

Victor Papanek's seminal work *Design for the Real World* (1984) resonates as a foundational text in the discourse of HCD and SD). Papanek underscores the profound societal ramifications of design decisions, urging designers to acknowledge their social and moral implications. However, critiques highlight the oversimplification of design's transformative potential within complex socio-political contexts (1984, 12; Clarke 2021, 85–98).

A distinct framework for understanding HCD emerges from the scholarship of Victor and Sylvia Margolin, who conceptualize design as a catalyst for shaping social processes. Their work draws parallels between design practice and social development, emphasizing elements such as engagement, analysis, design, implementation, evaluation, and ongoing iteration. Participant observation, borrowed from social development methodologies, emerges as a pivotal tool for navigating complex societal issues within the design process (Margolin and Margolin 2002, 26; Conklin 2003, 15).

Lucy Kimbell and Joe Julier broaden the scope of SD in *The Social Design Methods Menu* (2011), defining it as a practice-oriented approach aimed at generating usable products and services with a positive societal impact. They stress the importance of resource efficiency and iterative improvement through dialogue-based processes. Similarly, *Social Design Futures* presents social design as a flexible framework for addressing community needs through design-based solutions (Kimbell and Julier 2012, 5; Armstrong et al., 20).

In essence, SD encompasses attitudes, processes, and outcomes aimed at mitigating social inequalities arising from various intersectional factors such as class, ethnicity, disability, and age. This approach aligns closely with the principle of inclusive design, which seeks to address the needs of both the majority and marginalized groups. Moreover, the fluidity and adaptability inherent in social design methodologies underscore the absence of universally applicable solutions, emphasizing the importance of context and community specificity (Kimbell and Julier 2012, 14).

Moreover, the ethical dimensions of SD necessitate a nuanced understanding of impact and responsibility. Design-driven processes must prioritize long-term community engagement, emphasizing mutual respect and shared values in partnerships. Additionally, designers must adopt a reflexive and critical stance towards their practices, embracing uncertainty and plurality in pursuit of meaningful societal change (Kimbell 2020, 5). In navigating the terrain of SD, it is essential to acknowledge the limitations of individual agency. Adam Thorpe and Lorraine Gamman's concept of the ›good enough‹ designer underscores the importance of responsiveness to societal challenges while acknowledging the inherent constraints of design interventions. This perspective aligns with the democratic ethos of social design, emphasizing collaboration and empowerment within community contexts (Thorpe and Gamman 2011, 220).

Despite the sophistication of HCD design methods, practical limitations persist. In a capitalist market, such approaches prioritize profitability over user-centricity, perpetuating power imbalances where profit concerns overshadow user needs (Design Thinking, IDEO 2015) Jussi Pasanen notes designers' limited decision-making authority, resulting in profit-driven agendas prevailing over user-centric values (Pasanen 2019). This dynamic is evident in initiatives like Airbnb and Uber, initially aimed at enhancing user experiences but ultimately contributing to negative societal and environmental impacts. Airbnb fosters mass tourism and increases carbon emissions, while Uber exploits drivers by avoiding employee benefits. This anthropocentric focus neglects non-human perspectives, perpetuating wasteful and unsustainable practices, urging designers to shift their focus toward more inclusive, multifaceted design approaches, engaging multiple viewpoints in the process.

The rise of participatory practices in design is deeply rooted in the cultural transformations of the latter part of the 20th century, catalyzed by shifting post-modern politics, societal norms, and cultural dynamics.

In the realm of design, the concept of Participatory Design (PD) has gained prominence as an approach that integrates stakeholders—such as customers, employees, partners, citizens, and consumers—into the design process to understand their needs and develop more insightful solutions. Unlike artistic participatory practices, where participation often entails outsider communities actively engaging in the creative process itself, Participatory Design frequently restricts such involvement to activities like problem-mapping, early ideation, or testing and prototyping. This delineation between participatory artistic practices and PD underscores the varying degrees of user involvement across different contexts (Lee 2008, 34). Yanki Lee distinguishes between Participatory Design and co-design, highlighting differences in their proposed levels of user engagement. Participatory Design, while involving outsiders/non-designers to a certain extent, may inadvertently perpetuate tokenism if genuine inclusion is not ensured. Tokenism,

the superficial appearance of inclusivity without substantive involvement, can be particularly detrimental when dealing with marginalized groups. Lee advocates for a shift in focus towards the practicalities of design participation, prioritizing the ›how‹ of participation over mere considerations of ›why‹ or ›should people participate‹ (Lee 2008, 49).

In contrast, co-design endeavors to incorporate users throughout the entire design process, aiming for a more equitable distribution of power. While the level of user participation may still vary based on factors such as preferences, competencies, or situational specifics, co-design endeavors to foster genuine collaboration and shared decision-making, thereby ensuring more meaningful user engagement.

2.2. Participative Methods in Multistakeholder Scenarios

The basic principles of the course drew inspiration from futurology, scenario building, speculative design and design fiction, while maintaining a critical lens. Participants – students as well as Magyar Telekom (MT) employees – were asked to craft possible and desirable future scenarios in Hungary in 2050, focusing on social and technological aspects of telecommunication. For this, they used tools commonly used in the fields of design, economics, and market research such as design research (desk research, future probing, modified Speculative Design Canvas based on the Business Model Canvas) structured ideation, storytelling (science fiction, speculative literature, critical exercises), world-building (horizon scanning, forecasting, futures triangle), borrowing exercises from open-source speculative design and design fiction toolkits (storyworld, narrative design, future design, critical thinking), such as SpeculativeEdu (2019).

As a general tendency, all methods used throughout the course were applied in a participatory and interdisciplinary manner, but certainly, in general design practice, some of these methods are not necessarily considered participatory.

The course schedule reflected the following structure, somewhat diverging from the Double Diamond (DD) model descriptive of Design Thinking (DT), popularized by the British Design Council (BDC, 2005).

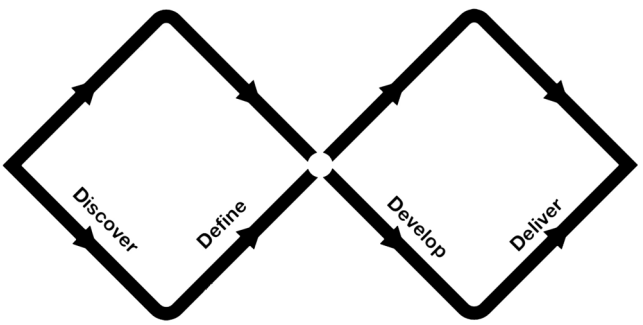

Fig. 2: Double Diamond model, British Design Council (2005). Source: British Design Council website.

This DD model is characterized by the alternating divergent and convergent phases, symbolized by the opening and closing parts of a diamond shape (fig. 2) Here, for the purpose of adapting the process better suited for a speculative design process, an extended, Triple Diamond Model was applied (fig. 3), where the first diamond represents the background research, the second one represents the world-building, and the third one represents the normative design process with a tangible outcome.

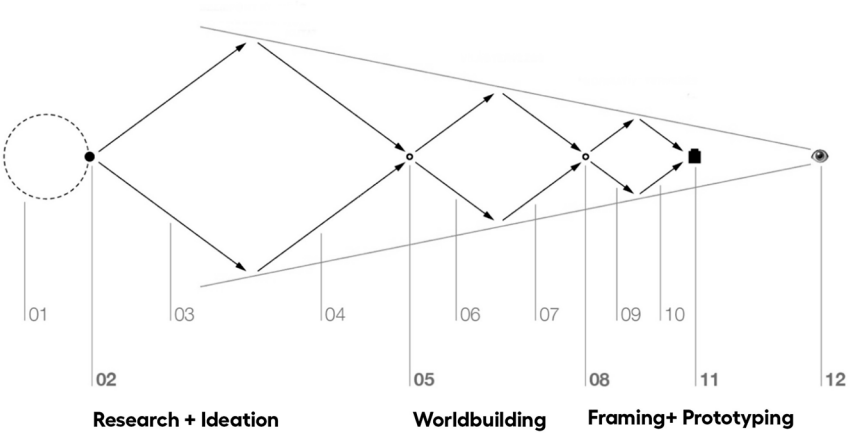

Figure 3: TD model, adapted from DD by authors.

The alternating divergent and convergent phases in the DD and TD model represent cognitive strategies of widening and narrowing focus: research (discover) and ideation (develop) as widening, framing (define) and conceptualizing/prototyping (deliver) as narrowing. The additional diamond world-building aspect consists of imaginative world crafting (divergent) and definitive narrative building (convergent). These cognitive strategies inherently impact participants' thinking process, ensuring that they frequently change focus and try to craft a well-founded concept.

The course workflow followed the outline presented below:

1. **Introduction:** lectures on design research, social design, speculative design and futurology, involving external experts on speculative design and future studies– 2 classes
2. **Research:** Framing through technological and social aspects, future present and past projection, – 2 classes
3. **Conceptualizing:** Future world-building, persona crafting – 2 classes
4. **Prototyping:** concept development and testing, narrative crafting– 2 classes
5. **Presentation:** design and production of a visual presentation to the future concept– 2 classes

In all modules described above, students and MT employees were asked to cooperate and frequently share their progress with other groups to seek external opinions and help them critically reframe their concepts in development.

The participatory aspect of the work process impacted working groups on two levels: firstly, it led participants to include more personal, embodied knowledge in their inquiry; secondly, it resulted in a shared understanding of different stakeholder positions in pursuit of an inclusive, multifocal agenda and future vision. Since participants represented various professional backgrounds (graduate students in design, telecommunication company employees), various seniority levels (students, early career designers, intermediate and senior employees, leadership) and various backgrounds (age, gender, social status, etc.), this multi-stakeholder SD process resulted in a more inclusive and critical conceptualization compared to others with homogenous target groups. Naturally, establishing democratic participation rules in the beginning is necessary, and it proved helpful in maintaining the more critical and less privileged voices of student participants as opposed to more dominant and established participants from the company. However, this also facilitated critical self-reflection in corporate participants.

2.3 Novel Tools Developed During the Course

Several novel tools that helped to reflect on certain aspects of the project were developed in an experimental manner throughout the course, such as the Timeline Crafting Template (TCT) the Speculative Design Canvas (SDC), Thematic Framing Cards (Health, Security, Education), Future Crafting ›Attitude‹ (Growth, Collapse, Discipline, Transformation) Cards and Emotion Mapping (Disgust, Frustration, Happiness, Embarrassment, Horror, Enthusiasm, Gratitude, etc.).

The Timeline Crafting Template (TCT, see fig. 4) allowed groups to build their scenarios based on various time aspects (Present, Past and Future) through a variety of considerations representing parts of that world. The use of this template led groups to start out from the present, examining aspects such as the defining political establishment, leading social strata, ideology, social structure, economic model, etc. This tool is based on the expanded futures cone (Voros; see section 1.2.)

The TCT tool has proven useful during the research phase, where groups used it as a guide for projecting their visions of current cultural, geographical and social trends towards the past to identify patterns or tendencies, then, using various factors as drivers of change, they projected these same visions towards the future. The future cones served as a guide for newcomers to SD, as participants tried navigating the fine line between probability, plausibility with their design processes mostly based on their positionality – students often gravitated towards ›preposterous‹, while corporate participants leaned more towards plausible or probable future scenarios.

Aspect \Timeframe	Present	Past	Future
Main motivations, social drivers			
Political establishment			
Leading social strata			
Ideology			
Social structure			
Economic MODEL			
Energy			
Technological development			
Culture			
State of the environment			

Fig. 4: Time-Crafting Template. Source: authors.

All further tools mentioned above, such as the Speculative Design Canvas, Thematic Framing cards, Transformation cards and Emotion Mapping were used in the Conceptualizing and Prototyping phase in an interconnected manner. The SDC created a framework for the design process, and it helped recording insights brainstormed by groups during participatory workshops. Originally used in Hungarian but presented in an English version below (fig. 5), this tool facilitated a multi-stakeholder process of narrative-crafting through the development of descriptive and visual content. The template features the elements of a research question, thematic framing, future crafting attitudes, recollection of influential circumstances, emotional impact, the description or visual representation of the concept developed by the team and the consequences of the concept as a driver of change through four aspects (technological, ecological, economic, social/political).

These tools, besides creating a clear framework for the intertwined workflow of multi-stakeholder groups also facilitated the comparison between different conceptual attitudes and outcomes, as well as their critical stance on future visions and the individual's impact on them.

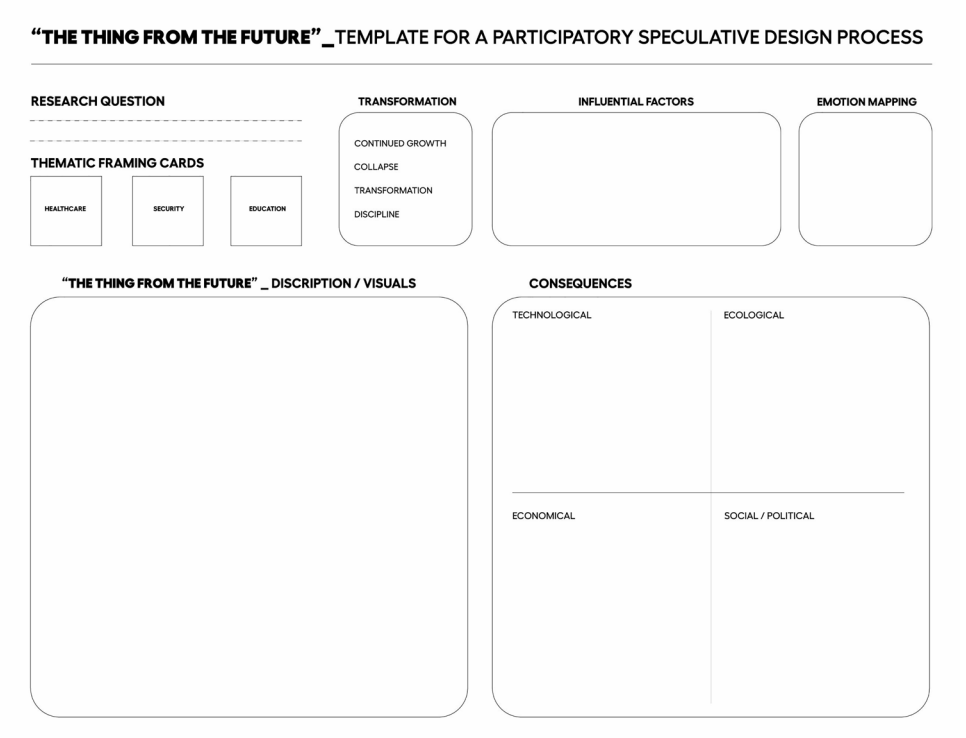

Fig. 5: SDC template. Source: authors.

3 Results

3.1 Participant Scenarios – Descriptions

The workshop yielded three post-normal, post-apocalyptic scenarios reflecting varied responses to climate-related concerns. Two scenarios adhere to the notion of continuous growth, while one presents a transformative shift in societal norms facilitated by disruptive technology. Each scenario starts with the premise of a climate catastrophe having occurred or currently unfolding. While lacking comprehensive detail, they each offer unique approaches for navigating life in these post-apocalyptic times, providing glimpses into potential futures. Below, all three scenarios are summarized by the authors.

Scenario 1 – In the realm of ›luxury brand liberalism‹ the year 2030 marks a cataclysmic turning point, as the climate catastrophe happened. Society finds itself in a state of desperation and disillusionment, particularly towards its decision-makers and politicians. Diseases, insect invasions, and famine ravage the populace, plunging the world into chaos. Out of this chaos emerges a new social order, centered around

the concept of Luxury Brand Liberalism. In this paradigm, traditional politicians are supplanted by brands, each vying for control and influence over the individual. Every newborn is assigned to a brand, akin to a rigid caste system. These brands offer distinct self-images, catering to various demographics such as geeks, artists, digital natives, sports enthusiasts, status seekers, partygoers etc. (fig. 6). Moving between these different castes proves challenging, as loyalty is highly prized, and deviations are met with penalties. A technological device, in the form of a digital eye implant acquired at birth, further solidifies one's allegiance to their designated brand. This implant, besides practical information, displays a desired self-image according to the brand's specifications, effectively internalizing its values and ideals within the individual.

This scenario appears to be a collapse that triggers a profound transformation. However, upon closer examination, it reveals itself as a growth scenario despite the occurred climate catastrophe, and disenchantment of the people by the inability of decision-makers to prevent it. In these challenging contexts, however, business as (un)usual continues. The market replaces the state, reflecting an extrapolation of the current state of capitalism. As Greenfield describes his Stack Plus scenario: »Life goes on for them pretty much the way it does now: peppered by increasingly catastrophic weather events, unpredictable outbreaks of savage violence, and a nagging, inchoate sense of loss, but otherwise very much business as usual«. This reality »d[oes]n't care in the slightest if you're trans or poly or vegan or a weed smoker. In fact, they encourage the maximum possible degree of differentiation in self-expression and are delighted to serve all markets equally« (Greenfield 2017, chapter 10). The paradox of this scenario is how brands have survived the climate catastrophe and how they have continued to grow their power on the back of a collapsing society.

Scenario 2 – The second scenario is based on the same initial premise: a climate catastrophe strikes, resulting in extreme heatwaves in central and southern Europe. In response, efforts are made to address the impacts by relocating the elderly population to northern regions and accommodating them in nursing homes equipped with advanced communication technology for telepresence. This enables grandparents to maintain active connections with their families back in their original homeland (fig. 7). Through telepresence, grandparents can engage in activities such as cooking meals for their grandchildren from a distance or utilizing technology to assist with repairs. However, at times, the presence of elderly relatives may become unwelcome for young families, prompting the development of a device to mute them when necessary. Additionally, for those without familial ties, there exists a marketplace known as the ›granny market‹, facilitating connections and support among elderly individuals. This scenario, like the previous one, illustrates the theme of continuous growth, albeit with a greater emphasis on empathy and social sensitivity towards a vulnerable demographic, the elderly. The elderly depicted in our scenarios are those who have the means to relocate to protected areas, representing a small segment of the population. The lingering question concerns the fate of the remainder of society who lack the means for luxury migration.

Scenario 3–Society is grappling with the consequences of an unresolved climate issues. Humanity is predominantly concentrated in megalopolises, where life hovers on the brink of livability, presenting significant challenges. Cultural clashes stemming from migration emerge as the primary fault line in society, as these densely populated regions

accommodate a diverse array of cultures. Due to the coexistence of different communities originating from various places within the same geographical area, interpretations of signals may vary significantly. Communication becomes arduous and sometimes nearly impossible, inevitably leading to conflicts. To prevent or alleviate these conflicts, a new form of empathy enhancement, known as the ›empathy vitamin‹ is developed (fig. 8). Nano-bots, delivered in the form of a vitamin pill, carry an artificial intelligence program directly into cells, programmed to foster empathy in individuals. This technology finds application in administration, negotiation, cross-cultural interactions, and education. An accompanying application assists in administering the appropriate dosage for each situation, ensuring empathy is displayed when necessary. For instance, empathy becomes mandatory, rather than optional, when engaging in official administration. This scenario builds upon the same premise of a climate catastrophe, but it introduces a transformative shift facilitated by a disruptive technology that integrates psychology and mass behavior. The question persists regarding the ownership of this technology and the authority bestowed upon its possessors to wield such influence over people's lives.

3.2 The Impact of PSD

Our assumption regarding the impact of PSD on the concepts and the attitude of participants was primarily connected to the correlation between the application of participatory methods and the inclusivity and sensitivity level of the outcome. Based on personal feedback of participants, and several interviews recorded by a student the overall impact of participatory methods resulted in a wider attitude change in both student and working professionals regarding their future visions, their clarity on individual and collective responsibility regarding our climate future and identification of tangible ways they can and want to act towards in their professional and personal lives. As highlighted above in section 2.2., the primary impact of participatory methods in design is the multiplicity of viewpoints reflected in the outcomes, which, in this case trickles down to the synthesis of individual and collective visions regarding possibilities of action and responsibilities.

4 Reflection

The created scenarios illustrate an acceptance of the certainty of a climate catastrophe, yet they do not signify the demise of ordinary life or grim MadMax-esque scenarios. They acknowledge the climate crisis but they don't intend to focus on providing solutions for it. Instead, daily activities continue one way or another. Thus, indifference towards averting the worst-case scenario does not incapacitate us; rather, we endure and adjust, endeavoring to persevere in various ways.

In certain cases, while a climate catastrophe triggers societal collapse, it paradoxically leads to a growth scenario where capitalism and consumer culture thrive amidst chaos. *Scenario 1* exemplifies the sentiment expressed by Mark Fisher: »It's easier to imagine the end of the world than the end of capitalism« (2009, 1). This notion reflects resignation towards the inevitability of disaster, with individuals showing disillusionment and indifference, and decision-makers perceived as incapable of bringing about change.

This disillusionment, and the rigid caste system that emerges here, reflects the indifference, disinterest and hopelessness that exists in contemporary Hungarian public life. *Scenario 2*, on the other hand, presents a more nuanced response to the apocalypse, focusing on the adaptation and empathy towards vulnerable populations, particularly the elderly. Despite the continuation of elements of continuous growth, the scenario highlights concern about inequalities in adaptation strategies, suggesting a recognition of the ethical dimensions of response to climate-related crises. Another approach we can see is to introduce a transformative shift facilitated by disruptive technology aimed at addressing societal conflicts exacerbated by climate change, as seen in *Scenario 3*. This scenario suggests a proactive response to the apocalypse through technological innovation, emphasizing the potential for empathy and social cohesion even in the face of challenges. However, this techno-optimist scenario also raises ethical concerns about the ownership and control of such technologies, indicating a critical reflection on the implications of technological solutions.

Overall, the scenarios reflect a spectrum of responses to the apocalypse, from resignation and adaptation to proactive innovation, each highlighting different facets of societal development and the prevailing apathy towards preventing catastrophic events.

However, as an additional benefit, the working professionals of MT have repeatedly reflected on the change of their stance regarding climate anxiety, a deeper understanding and taking conscious action both in their personal lives and their professional activities. Neither participatory methods nor speculative design is a novel tool, and they are both widely used in corporate strategic planning; however, this usually does not trickle down below the leadership level. Therefore, involving intermediaries and senior working professionals through PSD has admittedly contributed to shaping these employees' mindset, and through placing both the mindset of a climate-conscious actionability and the incorporation of PSD into the company's toolbox is already creating an impact regarding the attitude towards climate issues and the future. Furthermore, in the context of corporate strategic thinking, it seems essential to embrace accidentality and uncertainty, and PSD has proven a useful tool to do so.

As reflected upon by participants, their engagement in the course activities has increased their willingness to view themselves as actors in the climate debate, which can be attributed to their increased knowledge on the subject as well as their experience of building future scenarios as possible decision makers. Narrative crafting – especially in a participatory manner – acts as a powerful tool facilitating the identification of participants with new roles or personas. This identification works through participants choosing their fictional characters as change or decision makers in their future scenarios, but it can also be connected to them understanding the interconnected causality of their present decisions playing out in future scenarios which they might as well be experiencing themselves, given that 2050 is a relatively close year. The timeframe's relatability has also increased participants' sense of ownership and responsibility toward their narrative-crafting and the changes they have implemented in their future scenarios.

On the other hand, a cross-fertilization could be observed between not only different disciplines, seniority levels but attitudes as well – the climate apathy mostly detected in MT employees merged with the active climate anxiety mostly detected among students,

which created an interesting array of various behaviors from resistant and critical, to skeptical, optimistic, or even hopeful.

5 Conclusion

As speculative design serves as a realm where normative boundaries are challenged, allowing for the prototyping of new norms with relative impunity. SD delves into the future by critically examining advancements in science and technology, presenting products, and societal interconnections through compelling scenarios. It aims to explore ethical and societal implications while encouraging stakeholders to reconsider the present's trajectory and their agency in shaping the future. SD can continue to serve as a catalyst for innovation and social transformation, offering insights and provocations that inspire meaningful change in our increasingly complex world.

As illustrated through presenting a multi-stakeholder course employing SD and PSD methods while thinking about the future of telecommunication, participants have engaged in transformative experiences helping them understand, reflect on and act towards a climate-conscious future through various aspects.

The exploration of various scenarios in response to the looming threat of climate catastrophe reveals a spectrum of attitudes and approaches, ranging from resignation to proactive innovation. Despite the acceptance of the inevitability of disaster in some scenarios, ordinary life persists, demonstrating resilience and adaptability. However, the scenarios also underscore the ethical considerations and inequalities inherent in responses to climate-related crises, as well as the potential for transformative technological solutions. The involvement of working professionals in participatory speculative design has shown promise in shifting mindsets towards climate-conscious action and embracing uncertainty. Furthermore, engagement in narrative crafting exercises has empowered participants to see themselves as active agents in the climate debate, fostering a sense of ownership and responsibility for the future. This interdisciplinary and cross-generational exchange has resulted in a diverse range of attitudes towards climate change, from apathy to anxiety, reflecting the complexity of addressing this global challenge. Overall, while the scenarios depict a range of responses, they also highlight the importance of collective action and innovation in shaping a more sustainable future.

In conclusion, SD and PSD can serve as a powerful vehicle to attitude-shaping towards climate action through facilitating evidence-based learning in the subject area, self-identification as a changemaker and a participant in imagined futures through narrative crafting, and ultimately lead to a more equitable through the application of participatory vision-building employing multiple stakeholders and representing usually marginalized voices futuring.

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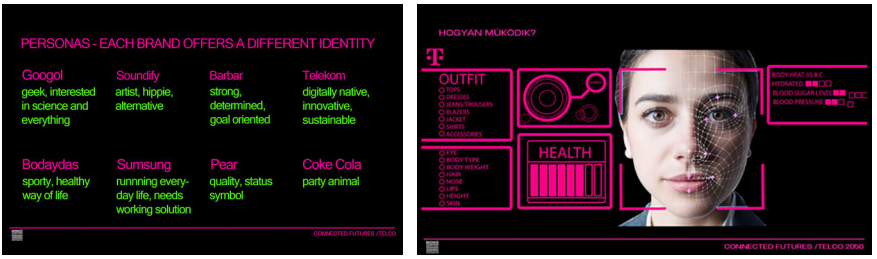

Fig. 6: Illustration for Scenario 1, designed by group members. Source: course participants.

Fig. 7: Illustration for Scenario 2. Source: course participants.

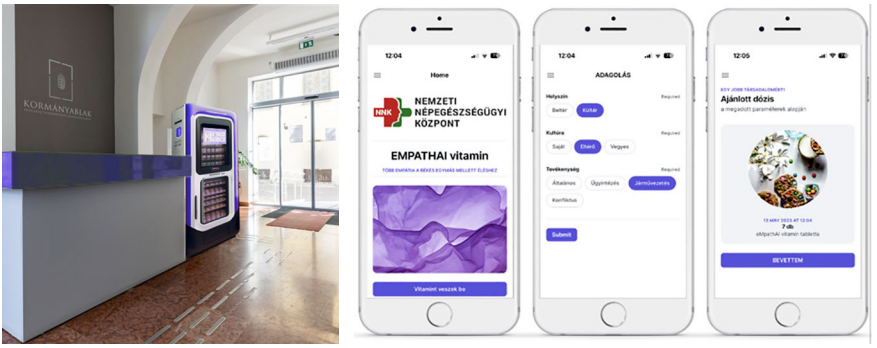

Fig. 8: Illustration for Scenario 3. Source: course participants.