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Reimagining Wicked Problems Through Speculative Design: Collaborative Classroom Experiments

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Abstract Design can be explored by various agents—professional and non-professional designers—in different areas, through processes, which represent the creative and social territories inhabited by those agents. Design thinking principles have been increasingly adopted by public and private organisations, from various sectors, to tackle complex problems and envision solutions. Speculative Design can play a fundamental role in experimenting with unconventional approaches. The DXT ideation tool, hereby presented, is a methodological tool, which engages students and creative practitioners in a participatory design process that challenges conventional human-centred perspectives in Human-Computer Interaction. Rooted in the principles of Augusto Boal's Theatre of the Oppressed, it aims to respond to unsustainability, through societal innovative, ecological and inclusive solutions. As an exploratory pedagogical process, it explores dystopian future scenarios, with the help of generative AI. In doing so, it confronts the students with inexhaustible possibilities and the amplification of image generation, with few constraints. However, it also confronts them with the unpredictability of the outcomes of AI tools. For instance, while AI models can help diminish biases and prejudices, they can also inversely enhance them. Simultaneously, while speculative scenarios stimulate critical thinking around dominant narratives, revealing the possibilities of current trends, they challenge the conventional linearity between past, present and future.

Keywords Speculative design · Generative AI · Theatre of the oppressed

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1 From Conceptual Repositioning to Problem Framing

In *Wicked Problems in Design Thinking*, Buchanan (2016) points to the existence of multiple possibilities for conceptual repositioning in design. These dynamics occur systemically and in different situations, which can be recognised through signs, objects, actions, and thoughts. The author identifies four major areas in which design is explored by both professional and non-professional designers: symbolic and visual communication, material objects, activities and organised services, and complex systems or environments. Although these four areas of design thinking are structured around their respective spheres of knowledge, interests, and dominant trends, they are not confined to categories of visual communication, objects, services, systems, or environments, resulting from specific design processes; rather, they also represent the creative territories inhabited by all designers without exception, where the "dimensions of design thinking by a reconsideration of problems and solutions" are explored.

However, the idea that design is an activity shared by various social agents, whose initiatives are based on the same principles of creativity and reinvention of ways of interacting with the environment, is widely accepted nowadays. In this context, some designers with scientific knowledge, particularly those more attuned to this issue, have sought new ways of engaging with *empirical designers*, aiming for both to participate in the creation of objects and functions that contribute more effectively to society. Equally relevant is the increasing adoption of design thinking principles by both public and private organisations to tackle complex problems, acknowledging the effectiveness of different design methodologies and their capacity to generate solutions across various scenarios—an approach that is now recognised not only by businesses but also by a wide array of stakeholders (Manzini 2015).

When interconnected, the four areas of design identified by Buchanan (2016) do not prioritise any particular one, reflecting a dynamic interaction where signs, things, actions, and thoughts merge, driving innovation forward. Designers navigate these areas by reconsidering problems and solutions, often shifting their focus to uncover new dimensions. Since the late twentieth century, designers have been expanding their scope by incorporating into their equations less conventional variables within their field of action, fostering the emergence of new questions regarding the form and function of products, user experience, and holistic systems. This conceptual repositioning is evident across all design practices, driving innovation and addressing contemporary concerns such as sustainability, technology, and ethics.

In the process of reflecting on problems and solutions, speculative thinking plays a fundamental role in design, as it allows for the questioning of assumptions, the imagining of alternatives, and the exploration of possibilities that go beyond immediate and conventional solutions. Through experimental and unconventional approaches and testing predefined limits, this expanded logic enhances the creation of innovative scenarios for social, environmental, and technological challenges, providing a wider range of possible responses. Thus, speculative thinking in relation to *wicked problems* not only drives innovation but also cultivates a critical

discourse on the impact of design decisions on society, encouraging a more reflective and transformation-oriented practice.

While the different areas of design have fixed meanings that are recognised through theoretical foundations, serving as a basis for analysing existing knowledge, repositioning seeks an expanded field without insurmountable limits. Recognising the distinction between a design area and a positioning is essential, not only to ensure that design thinking is regarded as both a field of knowledge and a set of practices but also to highlight its capacity for uncovering new perceptions and possibilities to be tested. In this sense, a consistent approach to new design positionings, as well as their replication in new situations, constitutes a fruitful means of understanding the logic employed by various designers focused on the invention of new possibilities (Buchanan 2016).

The concept of *wicked problems* emerged as an alternative to linear design approaches characterised by the definition of a problem followed by its phased resolution—a reductionist process that fails to reflect the true relationship between thinking and execution, given that this dynamic is complex and varies according to each situation and its idiosyncrasies. Beyond being complex, design problems are indeterminate and may pertain to any aspect of human or more-than-human life. A significant characteristic of the design approach lies in the fact that designers begin this process by identifying or creating a "quasi-subject matter, tenuously existing within the problems and issues of specific circumstances." This is followed by the stages of ideation, prototyping, and testing, which ultimately lead to the design outcome. "A quasi-subject matter is not an undetermined subject waiting to be made determinate. It is an indeterminate subject waiting to be made specific and concrete" (Buchanan 2016).

Design practice is not centred on generating singular solutions for a given problem, although there are areas of design with a strong technical rigour where highly optimised and objective solutions are applied, approaching a more exact form of reasoning. Particularly in its more creative and interdisciplinary dimensions, design rarely focuses on a single solution to a problem. In order to generate more meaningful projects, designers have developed working methods to manage the indeterminate nature that characterises the search for a solution, applying reasoning patterns such as *deduction*, *induction*, (normal) *abduction*, and *design abduction. Deduction* and *induction* are essential for predicting and explaining real-world phenomena, yet they are insufficient for developing new ideas. In design and other productive professions, *abduction* is the predominant reasoning pattern, with *design abduction* being even more specific (Dorst 2015).

On the one hand, *deduction*, regarded as the most solid form of reasoning, follows a logic of cause and effect, where the elements of a given situation and their interactions are understood, allowing for the prediction of outcomes. While the calculations may be complex, deductive reasoning is reliable because it employs known elements and relationships to forecast results, which can be verified through observation. *Induction*, on the other hand, entails discovering patterns by observing elements and their interactions without prior knowledge of the underlying laws. Hypotheses are proposed to explain phenomena, and subsequently tested through predictions and observations,

thereby combining *induction* (the creation of hypotheses) and *deduction* (the testing of predictions). Although *induction* is often presented as a purely deductive form of reasoning, it is, in fact, a creative act essential for scientific progress.

Abduction is the process of introducing a new element into a problematic situation to achieve a desired outcome. It begins with a basic understanding of the intended result and aims to generate value through the new outcome. It is especially well-suited for problem-solving that is based on experience, in which the desired outcome and the method for accomplishing it are clear, but the specific solution must still be developed. This method operates within established relational patterns and does not query the method itself. Although it is effective in numerous instances, it is predicated on a conventional reasoning framework that does not inherently encourage innovation (Dorst 2015).

Design abduction seeks new solutions by questioning existing methods. In this approach, designers simultaneously develop new elements and the relational pattern required to achieve a given objective, testing and refining both aspects in parallel. Rather than employing conventional processes, the methods used in project development must be created and evaluated together, iteratively leveraging alternative solutions. The use of an experimental and speculative methodology, the expansion of a concept to frame the problem, and the establishment of social interactions are distinctive principles when compared to other forms of reasoning. The expansion of a concept to frame the problem is a moment of ideation that considers multiple possibilities before arriving at something more concrete, which is then evaluated through various design processes. The use of an experimental and speculative methodology aims to simulate different possibilities for addressing the problem, relying on the development of research mechanisms that facilitate reflection on the issue and the testing of solutions. Lastly, the creation of a dynamic of social interactions is an integral part of the design process itself, through which the stakeholders involved share different understandings of the problem-solution (Dorst 2015).

A central characteristic of *abductive design thinking*, particularly in questioning the recurrent interactions within a problematic situation, is the creation of a *frame* that enables an alternative perspective on the problem and enhances the potential for innovative solutions (Dorst 2015; Schön 1983). In order to construct an innovative and appropriate *frame*, the outlining of a problem establishes the conditions necessary to generate the desired solution, taking into consideration the significance of the material to be developed and the existing information about the problematic situation. This process is comparable to *induction*, in which a relational pattern is proposed and experimented with, followed by the introduction of a new element, resulting in the development of a feasible and realistic solution (Dorst 2015).

Among the most relevant aspects influencing the efficiency of a *frame* are the resultant image of the problem and its social dimension. The development of an appropriate *frame* for a given problem produces an image that incorporates the diversity of issues under analysis, potentially even raising new questions that may have emerged in the process. The understanding generated through this image functions as a common denominator for discussing the problem and possible solutions. Whether for

a team of designers or for project stakeholders, it is crucial that a *framing* be "thought-provoking and lively, engaging people's imagination so their thoughts readily move along in the proposed direction." The shared understanding within a coalition of designers working towards problem resolution must be collectively recognised, with its effectiveness depending on the alignment of logical approaches. This dynamic involves the generation of metaphors and patterns of interaction that come to be designated as a *frame* once they begin to make sense as a shared comprehension of a given nexus between problem and solution (Dorst 2015).

The search for a conceptual repositioning in *framing* a problem, emerging from the expansion of a particular point of view, stands out as a key element in design thinking when dealing with complex problems, enabling the designer to speculate, *frame*, and *reframe* the issues under analysis. This is a process through which the designer envisions new actions, functionalities, and relational patterns to achieve a previously identified objective, following an exploratory and iterative trajectory. The creation of a dynamic of social interactions for exploring and applying concepts, analysing different perspectives, and generating new ideas is a highly significant aspect of the design process, through which all participants share different understandings of the problem-solution while simultaneously fostering innovation. In parallel, the development of metaphors that represent a speculative approach to the problem and its social dimension functions as a form of *punctum* (Barthes 2020 [1979])—the unexpected detail resulting from a divergent perspective, whose effect is to trigger an emotional response capable of driving disruptive solutions.

2 A Speculation-Based Pedagogical Framework Beyond the User/Designer Dichotomy

A methodological framework for speculatively exploring *wicked problems*, particularly in the field of UX/UI design for sustainable Human-Computer Interaction (HCI), is the Digital Experience Theatre (DXT) ideation tool,[1] which was developed as part of a research initiative at IADE, Universidade Europeia, with the active participation of students who helped test and improve its first versions. Through this iterative process, DXT evolved as a pedagogical and research-driven tool that aims to empower designers to rethink the role of technology in creating more inclusive, sustainable, and community-centred digital experiences.

Rooted in the principles of the Theatre of the Oppressed (TO), the tool engages students and creative practitioners in critical reflection and participatory design processes, challenging conventional human-centred perspectives in HCI. By integrating elements of societal innovation, the DXT encourages the conceptualisation of digital solutions that respond to ecological and sociocultural dynamics, fostering more inclusive, community-driven, and humanity-centred outcomes. Through speculative scenarios generated with different text-to-image AI models, the tool not only

[1] *DXT—The Digital Experience Theatre*, https://dxt.cargo.site/

questions prevailing assumptions about digital interactions but also empowers participants to envision alternative futures that prioritise holistic sustainability and collective well-being.

The TO methods developed by Augusto Boal, including the *newspaper theatre*, *invisible theatre*, and *image theatre*, were the main inspirations for the DXT research, through which designers and creatives of digital interfaces are considered user/*spect-actors* rather than merely user/spectators. Boal's dichotomy between *spect-actor* and spectator, to which we associated the user figure, facilitates the transformation of the individual, who, as a witness, begins to assume a more pivotal role as a protagonist.

The spectator traditionally transfers responsibility and agency to the actor-protagonist, who subsequently thinks and acts on their behalf. This process of transforming the spectator into *spect-actor* represents a form of liberation for the former, who, no longer confined to passive reception, is able to establish a relationship of critical freedom with the spectacle and assume a transformative role within social reality (Peixoto 1980).

The DXT ideation tool works as an exploratory pedagogical process guiding design students to reflect on their roles as users/spectators, which is an artificial division that reduces the complexity of design interactions. Based on the TO, which emphasises participation, reflection, and transformation, the DXT involves students in speculative interactions with generative AI models to demonstrate the fallacy of this dichotomy. The idea of a clear separation between users and designers is based on the idea that the latter are the only ones with agency for creative projects and the former only interact or passively consume their products, services, or systems. This viewpoint, however, misses the role of users as empirical designers (Manzini 2015) and mainly the role of professional designers as both creatives and users. The intrinsic nature of the designer role is revealed by this entanglement of agencies, in which meaning, functionality, and creativity are generated as a result of social interaction between the diverse actors and contextual reframing efforts.

This is a praxis that aims to be both a reflection of the human and more-than-human conditions to be transformed and a form of reflection in action that mobilises designers and creatives of digital interfaces to develop disruptive ideas. In working with generative AI, students speculate collaboratively between themselves and with the AI, reinforcing the idea that design is always shaped by distributed agencies—including technological, social, and ecological forces. This methodology for digital interface design through a specific ideation tool like the DXT, combining critical reflection to reframe *wicked problems*, is a model for provoking the *oppressed consciousness* and thus generating the desired societal transformation toward a sustainable future for HCI. This pushes students to move beyond linear problem-solving and embrace design as an evolving dialogue, where authorship is fluid, roles are interchangeable, and the act of creation is not about control but about negotiation, responsiveness, and adaptation within complex systems. Through this pedagogical process, students learn to see design not as a unilateral act of producing for users but as an emergent practice of co-construction that extends beyond human-centred paradigms, fostering more inclusive, participatory, speculative, and humanity-centred approaches to technological development.

After conducting user research to gather meaningful insights into a *wicked problem*, students reframe the design question using the DXT ideation tool, employing dystopian speculation to discover fresh viewpoints and question established beliefs. This aligns with the concept of *agonism*, a framework that deepens the understanding of dissent by cultivating diverse perspectives that highlight both the urgency and fragility of social contexts while also proposing potential alternatives. Unlike antagonism, which frames conflicts as circumstances that cannot be reconciled and with no common ground, *agonism* cultivates a space where opposing viewpoints can engage in dialogue, allowing for the development of a shared understanding (Mouffe 2009; Disalvo 2012). Manipulating these tensions creatively to boost innovative solutions, particularly through dystopian speculation, DXT's agonist approach emphasises that disagreement and the existence of diverse perspectives are fundamental to understanding humanity. This process seeks to promote dialogue, negotiation, and collaboration among students with diverse perspectives, ultimately resulting in more comprehensive and inclusive design outcomes during the subsequent design solution phase.

The speculative co-creation of imagery utilising text-to-image AI models leads to a systematic process where student groups are categorised into *conductor-designers* and *agonist-designers*, which are essential roles for the effective functioning of the ideation tool. The *conductor-designers* initiate the process of creating the first image representing a *wicked problem* worst-case scenario, which triggers the image-based dialogue with the *agonist-designers*. The *agonist-designers* engage with the *conductor-designer's* dystopian speculation, reinterpreting the same image or concept, conducting both design players in the sequential co-design of a dystopian visual representation and respective problem reframing. After exchanging ideas or opinions in order to reach an understanding about the selected problem, in a process that takes approximately an hour and a half, the group is supposed to gain awareness of a specific issue and be better prepared to concentrate on designing solutions addressing the *wicked problem* that initiated the discussion.

3 Creating Dystopian Future Scenarios With Text-to-Image AI Generation

In the DXT co-design process, students engage in the co-creation of speculative dystopian scenarios through text-to-image AI generation. This co-design of imagery is combined with *The Image of the Rainbow of Desire* method (Boal 1994). In this Boal's method, after the selection of the problem to be tackled by the group, the protagonist creates the images and presents them to be subsequently reproduced by the participating characters who are playing the role of agonists. The latter can then produce new images from the protagonist's point of view. The adaptation of Boal's method results in the division of students participating in the DXT co-design process into two roles: *conductor-designer(s)* and *antagonist-designers.*

A dialogue develops between them based on dystopian ideas embodied in images. The *conductor-designer(s)* lead the process and present an AI generated dystopian image to the *antagonist-designers.* The latter then manipulate the presented image, ideally deepening its dystopian nature. In this step, each participant can create their own image, trying to do so through what they imagine to be the perspective of the *conductor-designer(s).* As in Boal's original method, the images are presented together – in this case in a grid – and the *conductor-designer(s)* intervene in them with keywords that aim at identifying critical problems and possible solutions, replacing the original "confidential monologues" envisioned by the dramaturgist, which brought to light the protagonist's desires. The antagonist-designers then incorporate the new ideas by creating new images.

AI tools applied to the domain of images have sparked highly controversial responses, ranging between distrust and fascination. These two reactions stem from the same condition: the unpredictability of responses alongside a relationship of similarity/dissimilarity. In this regard, it would be appropriate to recall Walter Benjamin's position in his *Doctrine of the Similar* (Benjamin and Tarnowski 1979 [1933]), where he advocates for greater attention to the reproduction of processes that generate similarities rather than to the similarities themselves. That is, from Benjamin's reading, we can recover an interest in the relationships that stimulate new formalisations, making them a principle of validation.

The way AI tools enable the conception of future scenarios—which in the DXT method are embodied in dystopias—is based on straight connections within their processes, producing results of unpredictable dissimilarity, while still ensuring internal coherence. It is within this interval—between the expected and its realisation in an unforeseen form—that lies the potential for discovery in the ideation process. Moreover, the challenge arises from a textual formulation aimed at visual identification. In this process of converting text into image, Dürer's famous engraving of a Rhinoceros (1515) is often recalled, as it was created solely based on a textual description from an Indian painter, without Dürer ever having observed a specimen of the animal. The imaginary world he generated, while not completely severing its connection to a real-world reference, is shaped by a set of elements that could be considered speculative. Yet, the image was accepted as a faithful representation for centuries. W. J. T. Mitchell, who dedicated significant attention to the transformation of textual descriptions into images in his books (Mitchell 1986, 1994), including Dürer's engravings, emphasised the power of images to construct new territories in the realm of possibility. The collage practices advanced by Dadaist, Surrealist, and Constructivist artists further expanded the imagination by integrating into their discourse the *uncanny*, the notion of cut, rupture, and fragmentation, but also montage as an exercise of re-signification and the conquest of a new order.

By making use of AI technologies, this exercise is amplified, broadening the frontiers of possible image generation. As Manovich (2023) argues, rather than being based on a *skilled artistic act*, AI tools derive their strength from an inexhaustible and powerful network of images and data, making them the ideal domain to create without any kind of constraints. Students who engaged in the experimentation of the DXT ideation tool are confronted with outputs that are not so free from any kind of

constraints. While experimenting with different text-to-image AI models, they were faced with the problem that AI-generated content tends to amplify societal stereotypes. Even though there are variations between various models and tools, there is a tendency for inequality in terms of gender, age, and race representations that reinforce social biases. This is also seen when specifically addressing personality types, professions or occupations, and geographical locations. Nevertheless, findings from these models also indicate that making use of prompt expansion schemes can effectively increase diversity (Naik 2023). Prompt expansion techniques, complemented with the use of appropriate semantics, allow broadening or refining the scope of a prompt to generate more relevant—in this case, more diverse—outputs from the AI model. However, expanded prompts, which take into account biases such as those related to gender, age or race, might not always work in resolving prejudices and stereotypes and might inversely introduce new biases, deliver wrong and weird responses, or produce outputs with lower image quality and inconsistencies (Naik 2023). Despite the many possibilities outlined, it is crucial to consider these responses not as final results—where they might be deemed limited by a lack of detail or rational grounding—but as provocative instruments within ideation processes.

4 Speculation and Temporality Within the Digital Experience Theatre

The integration of speculative design and temporality within the Digital Experience Theatre (DXT) challenges the conventional linear trajectory of technological progress. Traditional digital transformation presupposes a future that extends from the present in a predictable way, as time is understood as a chronological succession of events, a structured progression from the past to the future. However, the non-linear approach based on speculative pragmatism (Savransky 2017) and situated speculation (Dunne and Raby 2013) are strategies for realising transformative digital experiences through interaction between participants, uncertainty, and multiplicity. Likewise, other theoretical perspectives challenge this assumption, proposing a more complex, non-linear temporality, which is contingent, folded, and shaped by unpredictable events (Bergson 2002 [1896]; Foucault 1972 [1969]; Rovelli 2016; Serres and Latour 1995). Incorporating the approach of speculative pragmatism, situated speculation, and a practice with a performative dimension, DXT acts through a dynamic, complex non-continuous temporality in the development of digital experiences (Bleecker 2009; Candy and Dunagan 2017). It uses experimental images to drive innovation. The generation of dystopian scenarios through AI promotes critical reflection and creative conception based on problematic design situations. The ideation of innovative micro-utopian futures, through speculative experimentation, is a lever for ideation and transformative solutions that can contribute to a more sustainable future.

In relation to the idea of time in the context of the DXT project, Henri Bergson's concept of *la durée* (duration) questions mechanical and linear time by arguing that time is not an objective and measurable entity but rather a subjective and fluid experience. It establishes the difference between "mechanical time", which is divisible and quantifiable, and "lived time", which is elastic and shaped by perception (Bergson 1926). At DXT, this distinction becomes particularly relevant as the participatory method of UX/UI, metaphorically described as a rubber-band problem-focused ideation tool that shifts from dystopian to micro-utopian thinking, driving innovation in socio-technological design across multiple temporalities. In this regard, it is also important to highlight the fact that digital environments sometimes dissolve the limits between past, present, and future, allowing the coexistence of different temporalities in a single experience. Digital products developed as part of DXT's participatory workshops mirror this strategy, as user interactions shape the evolving narrative of digital platforms.

Foucault too, in his work *The Archaeology of Knowledge* (Foucault 1972 [1969]), considers that time is discontinuous and that it is through its ruptures, transformations, and contingencies that knowledge is constructed. His perspective stems from the defence of a discursive and fragmented temporality to the detriment of historical continuity. Similarly, through a speculative design approach and the creation of AI images, DXT unfolds in a temporality that is shaped by imminent experiences, interruptions, and interactivity rather than a linear sequence of events. This approach is crucial for designing digital products that promote an integrated model of economic, social, cultural, and environmental sustainability, thus responding to the needs of the community. The model of non-linear time advocated by Serres and Latour (1995) resembles a scarf that can be stretched or folded so that it can deal with moments that are far apart. In DXT, this non-linear temporality manifests itself through the creation of dystopian scenarios that allow for layered and intersecting temporalities (Manzini 2015), allowing users to experience past and future scenarios as co-present, moulded through emergent interaction.

Physicist Rovelli (2016) questions the traditional notion of time as a crucial structure of the universe. In his work *The Order of Time*, he argues that time is not a fixed entity but an emergent phenomenon and bases his conviction on the fact that he considers that the perception of time depends on relational interactions in quantum terms. Similarly, in DXT, time is perceived through the unpredictability of events resulting from interaction with participants, technological contingencies, and algorithmic processes. This approach utilises user-centred design methodologies that promote flexibility and contributions to the community.

Speculation, understood as a strategy and cognitive process, presupposes confrontation with the unknown, a concept explored by Gilles Deleuze (Halewood 2017) in his work *Difference and Repetition* (Deleuze 1968). The author values the power of difference, uncertainty, and becoming to the detriment of knowing reality only through linear temporality and representation. For him, the unknown is a space that generates ideas and futures, i.e. knowledge. In this sense, his speculative thinking promotes creative and innovative approaches to uncertainty. This vision is closely related to speculative design, speculative pragmatism, and, naturally, with DXT,

since they all act with uncertainty, experimentation, and dynamic processes of possibilities, enhancing experience, new ways of thinking, social organisation, and the imagination of alternative futures. In all instances, the unknown is seen as a creative stimulus for transformation and innovation.

The UX design process within DXT approaches situated speculation to develop ideation tools that reflect the contingencies and complexities of real-world digital interactions. The speculative narratives developed in DXT are shaped by users' interactions with sociocultural contexts and the limitations of digital tools. This approach is related to the concept of situated speculation, defended by Halewood (2017), who considers that speculative thinking always depends on context—institutional, technological, material, and social. By engaging with situated speculation, DXT focuses on imagining futures resulting from interaction, uncertainty, negotiation, and improvisation. This perspective is further developed by Wilkie et al. (2017) by framing speculative research as a pragmatic inquiry based on the possibilities and uncertainties that emerge from specific socio-technical arrangements. Moreover, DXT employs speculative design principles, which engage with possible futures rather than adhering strictly to a linear past-present-future structure.

As well as making it possible to explore how temporality shapes digital products, this approach also enables the investigation into how temporality acts on the expanded socio-cultural impact of creating digital future scenarios. Manzini (2015) emphasises the importance of social innovation in design, advocating participatory and sustainable solutions that address contemporary challenges.

Speculative design, as defined by Dunne and Raby (2013), is a forward-thinking approach that challenges normative assumptions by envisioning alternative futures. Unlike traditional design, which focuses on immediate problem-solving, speculative design fosters critical discussions about potential technological trajectories by encouraging people to question existing socio-technical paradigms. This method invites exploration of "what could be", enabling users, designers, and theorists to examine how emerging technologies might reshape cultural, ethical, and temporal dimensions of life. Opposing the goals for efficiency of traditional design, speculative design aims to provoke debate and reflection.

Dunne and Raby (2013) stress that speculative artefacts stimulate critical reflection to rethink dominant narratives, offering future scenarios that reveal the potential consequences of current technological trends. This engagement with alternative possibilities and uncertainty counteracts the deterministic view. This conceptualisation aligns with the broader theoretical framework of speculative pragmatism (Wilkie et al. 2017), which also challenges linear assumptions about progress and explores futures as emergent and contingent, grounding speculation in the material conditions of an unfinished present. This aligns with DXT, which doesn't just present a digital future but immerses participants in an evolving experience in which the past, present, and future interact dynamically (Auger 2013). Instead of having a solely receptive, passive attitude, the DXT user co-creates and negotiates possible futures within the performance of the experience itself. Speculative pragmatism recognises that digital futures are co-emergent with the present (Tonkinwise 2015), thus opposing the idea that digital transformation is a teleological process. Together, speculative design and

speculative pragmatism create a fertile space for questioning not only what is likely to happen but also what kinds of futures are desirable, ethical, or possible, based on current conditions.

5 Conclusion

The Digital Experience Theatre (DXT) ideation tool stands as an approach to tackle wicked problems through speculative design and collaborative classroom experiments. The proposed methodology engages students in participatory design processes inspired by Augusto Boal's Theatre of the Oppressed, particularly *the Image of the Rainbow of Desire* method, calling into question conventional human-centred perspectives in HCI, as well as leveraging critical reflection on the vocation of technology in creating inclusive and sustainable digital experiences. In this context, the concept of wicked problems is central, emphasising within the design thinking process the expansion of the designer's field of action to explore other territories and reconsider problems and solutions creatively.

Through a specific practice based on speculative co-creation with generative AI models, DXT allows students to conceptualise alternative futures that prioritise holistic sustainability and a sense of humanity. This collaborative process transcends the traditional user/designer dichotomy, highlighting the importance of distributed agencies in shaping design outcomes, where meaning, functionality, and creativity are generated by designers and users in an intersubjective effort. Thus, promoting dialogue, negotiation, and the exploration of diverse perspectives and sensibilities, as well as moving beyond linear problem-solving to embrace a more inclusive and humanity-centred practice, DXT facilitates the development of innovative solutions that address complex societal challenges.

The TO works as a mechanism to engage students in speculative interactions to boost participation, reflection, and the emergence of disruptive ideas, which is a dynamic that is facilitated with generative AI. The integration of dystopian scenarios and agonist approaches using text-to-image AI models enables the DXT to guide students to question established solutions to wicked problems and discover uncommon viewpoints. This use of AI tools amplifies the ideation process, despite challenges related to societal biases in AI-generated content, which are mitigated by using prompt expansion techniques to increase diversity and equity.

Ultimately, within collaborative classroom experiments, the DXT represents the transformative potential of speculative design in addressing wicked problems, in which students learn to understand design as an evolving dialogue where authorship is diluted in interchangeable roles, and the act of creation is about reflection, negotiation, and adaptation to complex systems.

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