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Learning, playing, and experimenting with critical food futures

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Imagining sustainable food futures is key to effectively transforming food systems. Yet even transdisciplinary approaches struggle to open up complex and highly segregated food policy governance for co-production and can fail to critically interrogate assumptions, worldviews, and values. In this Perspective we argue that transdisciplinary processes concerned with sustainable food system transformation need to meaningfully engage with critical food futures, and can do so through the use of soft scenario methods to learn about, play with, and experiment in futures. Specifically, soft scenarios contribute in four ways: 1) questioning widely held assumptions about the future; 2) being inclusive to multiple perspectives and worldviews; 3) fostering receptiveness to unimaginable futures; 4) developing futures literacy. Based on insights from a 5-year transdisciplinary action research project on sustainable food transformation across Asia, we demonstrate how these processes play out in narratives, serious games and interactive art featuring soft scenarios. We conclude by discussing the potential for collaboration between transdisciplinary and futures researchers, especially for transforming food systems.

KEYWORDS

food systems, transformation, scenarios, futures literacy, transdisciplinary

Introduction: Re-imagining future food systems and transdisciplinarity

Imagining sustainable food futures is essential to effectively transforming failing food systems. How food systems are failing their stakeholders, including producers, consumers and the living beings produced and consumed, is well understood (FAO, 2021; IPCC, 2022; McGreevy et al., 2022). Realizing sustainable food systems will not come through incremental adjustments that replicate the status quo and underlying values and logics, but by critically interrogating the foundations of the current food

system and catalyzing comprehensive transformation (McGreevy et al., 2022). As the editorial to this collection lays out, transdisciplinary approaches seek to foster food system transformation through new knowledge co-creation processes that in turn lead to action on the ground. Yet even transdisciplinary work struggles to open up complex and highly segregated food policy governance for co-production (Barling et al., 2002; Anderson et al., 2019).

The process of transdisciplinary research can be exceedingly challenging and fraught with obstacles. Ensuring cooperation and motivation among participants, the inclusion of diverse perspectives and needs in the process, arriving at joint problem and system definitions, and integrating knowledge in a meaningful way are just some of the issues that can derail transdisciplinary research (Scholz and Steiner, 2015). Transdisciplinary research for food policy development, for example, needs to build consensus between multiple, highly-segregated sectors of the food economy and work at the intersection of competing interests and demands. In addition, the need to address the challenges of transdisciplinarity while at the same time thinking about and planning for sustainable food futures is an essential yet understudied perspective in the transdisciplinary literature.

“Another world is possible”, the slogan of the World Social Forum and rallying phrase of activists engaged in transformative struggles in the early 2000s (Fischer and Ponniah, 2015), highlights another related issue transdisciplinary research has yet to fully address—the inertia of the status quo. John Robinson’s suggestion that environmental issues are not a failure of information but of the imagination, and the philosophical work of Cornelius Castoriadis on the necessity of the radical imaginary (“seeing something as it is not”) for questioning the status quo of society (Castoriadis, 1987) are highly relevant in this regard. Counterintuitively, this seems to apply even more to questions about what futures radical transformation toward sustainability ought to strive for.

To explain, we turn to research on futures, futuring methods and futures literacy, defined simply as the ability to “use the future” (Miller, 2018) or to “use an appreciation of projectivity to act upon the future” (Mangnus et al., 2021). Assuming what the future may look like, or in contrast, assuming nothing at all immediately limits what outcomes a process to envision sustainable futures as part of transformative transdisciplinary research might produce: “people’s fictions about the later-than-now and the frames they use to invent these imaginary futures are so important for everyday life, so ingrained and so often unremarked, that it is hard to gain the distance needed to observe and analyze what is going on” (Miller, 2018, p. 2). Whether a result of past experiences, failing to include diverse stakeholders, or not providing sufficiently safe spaces for expression, participants engaged in futuring may limit the perspectives and viewpoints they consider for discussion (Pereira et al., 2015; Hebinck et al., 2018). Radical futures that

critically examine what is taken for granted might seem so alien and implausible that they are discarded. Critical food futures, then, actively interrogate the underlying assumptions, values, and worldviews that reinforce how the current food system operates. In the context of food practices, its embodied and habitual nature further complicates extracting oneself from the trajectory of past experience and commonly-held assumptions to “see the food system as it is not”, thereby gaining the capacity to examine food through a critical futures lens. Different approaches to futures and thus to futures literacy have been used to engage with these challenges, tackling issues from future-inherent deep uncertainty to the role of the imagination to the lack of reflection about future-oriented work (Mangnus et al., 2021). Ahlqvist and Rhisiart (2015, p. 92) point out how futures methods becoming mainstream has not alleviated a lack of criticality in how empirically driven methodological choices “construct future-oriented knowledge” and how implicit assumptions, worldviews, and values go unquestioned in such processes. In our opinion, the simultaneous rise of transdisciplinary research and futures methodologies creates an opportunity to address the issue of criticality by exploring how both might be combined. This could help avoid reducing transformative efforts to reformist, incremental tinkering by procedurally impoverished imaginations or by shrinking away from the overwhelmingly vast possibilities of future worlds.

In more than 5 years of working on food system transformation as part of the FEAST Project [Lifeworlds of Sustainable Food Consumption and Production: Agrifood Systems in Transition, 2016–2021; continued as an NPO from April 2021 (FEAST, 2022)] at the Research Institute for Humanity and Nature in Kyoto, Japan, we witnessed stakeholders grapple with the ways local food futures simultaneously seem to hold endless possibilities (after all the future hasn’t happened!) yet hope for real change then suffers death by a thousand cuts (capacity of individuals to engage despite time poverty, a corset of multi-level governance permitting only the faintest of movements, a dominant global economic order dictating the need to (out)compete and profit for survival). Some days, another world and brighter futures seemed impossible to us, not just as researchers but as members of our local communities.

Building on these experiences, in this Perspective we argue that transdisciplinary processes concerned with sustainable food system transformation need to meaningfully engage with critical food futures and can do so through the use of soft scenario methods to learn about, play with, and experiment in futures. Among the many different forms of workshops and stakeholder engagements employed as part of the FEAST Project, soft scenarios (Garb et al., 2008) stood out as a way to critically approach food futures with stakeholders that allowed 1) questioning of widely held assumptions about the future, 2) being inclusive to multiple perspectives and worldviews, 3) fostering receptiveness to unimaginable futures, and 4)

developing futures literacy. “Hard” scenarios or simulation-based approaches often focus on making processes, drivers, trends, and impacts explicit and thereby risk reinforcing widely held understandings of future trajectories (Stirling, 2008).

In contrast, “soft” scenario approaches (Table 1) aim to critically interrogate the unquestioned values and assumptions that frame thinking about future trajectories by creating a safe and malleable, thus “soft” space for participants to consider critical futures. Narrative and story, interactive art, serious games, virtual reality, performance, and experimental workshop formats are just some of the ways in which scenarios of the future are being conceived. These soft scenario methods allow participants in transdisciplinary engagement processes to learn, play, and experiment with possible critical futures, making them more tangible, relatable, and plausible (McGreevy et al., 2021).

Using soft scenarios for learning involved getting to know—often through stories—the topic at hand, including relevant issues and points of contestation, and gaining an understanding of actors involved as well as their backgrounds and motivations. The mode of learning is immersive, experiential, and encourages reflexivity rather than being limited to exploring abstract representations of data. Learning through soft scenarios foster critical analysis by engaging with multiple learning styles, double-loop learning (Argyris, 2002), multi-modal embodied learning (Kuzmanovic and Gaffney, 2017), non-linear-thinking (van der Heijden, 2011), and the making explicit of mental maps (Berkhout et al., 2002).

Playing with futures as scenarios allowed participants to discover and be exposed to imagined worlds and feel something about them, getting familiar with the context and exploring choices play-fully without the burden of doing it “right”. In the words of Kuzmanovic and Gaffney (2017, p. 109–110), playing enables us to “inhabit uncertainty” and “can open up a range of possible futures that may not be so readily accessible through the usual channels of consensus reality”. Through play we can also inhabit other roles or personas or identities to create feelings of belonging and empathy that can lead to collective action (Chabay et al., 2019).

Finally, experimenting with futures provided the experience of seeing options appear, change and vanish, as “detailed interventions [are] experimented with by participants embodying the future” (Mangnus et al., 2019). These reciprocal processes of experimenting in the future to enact and change the present are often facilitated through data-driven models or scenarios, interactive scenario creation, or serious gaming. Through this style of experimentation, policy ideas and action plans can be improved and reflected upon to ensure a reflexive co-construction of possible and desirable futures.

With these three aspects in mind, soft scenarios are a hybrid approach to future literacy building that draws upon deep, experimental and critical futures approaches. In turn this hybrid approach does “not presuppose an active, formative engagement with the future as such, but rather bring(s) people together

around a reflexive deconstruction of images and imaginaries of the future” (Mangnus et al., 2021).

Insights from FEAST: Learning, playing and experimenting in action

To demonstrate how soft scenarios contribute to learning, playing and experimenting with critical futures, we highlight case study analyses (McGreevy et al., 2021) conducted between 2017 and 2020 in Japan and Thailand as part of the FEAST Project (Table 2). The FEAST Project utilized a multi-method participatory action research approach to explore the realities and potential for bottom-up sustainable agrifood transition at sites in Asia. Over the course of the project, FEAST created partnerships with food system stakeholders to envision desirable and plausible futures and to initiate local food policy and food citizenship-oriented experiments and actions. Specific soft scenario methods deployed during FEAST and included in the cases described below are interactive art exhibitions, digital and tabletop-based serious games, and food practice-focused visioning and backcasting workshops to allow for critical perspectives to emerge. The focus in the following sections lies on the role of learning, playing and experimenting during the collaboration of food system actors and researchers in a transdisciplinary process. The learning and playing sections center on work conducted in partnership with stakeholders in Kyoto City to co-initiate local food policy institutions (Food Policy Council) and discussions on desirable local food systems. The experimentation section details a multi-phase process of visioning, scenario-building, role-playing, and backcasting future food practices and policy for Bangkok.

Learning: School lunch 2050 exhibit

Assumptions about the future are necessarily based on what we know. However, food systems and food policy are complex and researchers and non-academic stakeholders alike are often only aware of some aspects while remaining ignorant of others. One prominent example is the implication of climate change on food futures, an issue now requiring dedicated evaluation by large expert teams to even outline how far-reaching consequences of (for example) limiting temperature increase to 1.5°C might be. Learning in ways that situate knowledge in everyday experiences and practices rather than simply presenting abstract numbers can thus help question the very assumptions the futures hitherto taken for granted or presumed plausible were based on. In a Kyoto exhibition of possible future school lunch scenarios [now also available online (School Lunch, 2021)], participants, including but not limited to students and their parents, interfaced with four future scenarios (Gardens, Illusion, Desperation, and Gamble). These scenarios

TABLE 1 Examples of soft scenario methodologies and how they encourage learning, play, and experimentation with futures (adapted from McGreevy et al., 2021).

Studies covering methods and providing evidence for...	...learning about futures	...playing with futures	...experimenting in futures
Interactive art installation (Bendor et al., 2017)		x	x
Storytelling scenario workshops (Bowman et al., 2013)	x	x	
Narrative expression case studies (Chabay et al., 2019)	x	x	
Design fiction (Antonsen and McGowan, 2021; Hebrok and Mainsah, 2022)	x	x	
Performative theater (Heras and Tàbara, 2014)	x	x	x
Prehearsals and pre-enactments everyday experiential labs (Kuzmanovic and Gaffney, 2017)	x	x	x
Digital and table-top role-playing games (Dolejšová, 2019; Mangnus et al., 2019)	x	x	x
Serious games (Ritterfeld et al., 2009)	x	x	x
Futures forum emphasizing art and design (Selin, 2006)	x	x	x
Mixed interactive media (games, video, animation, workshops) (Vervoort et al., 2010)	x	x	x
Worldmaking (Vervoort et al., 2015)		x	x

represented success and failure in limiting global warming as well as reliance on or independence from the global capitalist-industrial food complex through plates of food: Satoyama¹ soup and edible school garden grown vegetables, Filipino purple yam flavored New-Zealand cow-free powder milk, bananas grown locally in Kyoto alongside cricket tofu steak, or a medical cube to dissolve microplastics alongside microbiome-building supplements and CRISPR²-bug bits instant soup. Far from science fiction gone off the rails, all components were based on research and extrapolated trends, issues and debates already happening around climate impacts on future diets, giving parents and students (and thus potential future grandparents and parents) much to digest.

Since it is considered a school subject like any other, lunch time is actually treated as a learning experience in Japan. School lunches are provided by nearly every elementary and middle school and have widespread cultural significance. Through eating school lunches, Japanese are introduced to national and local food culture, nutrition issues, and respect for natural cycles. Encountering such a ubiquitous meal reinterpreted in very different ways and in presented as a tangible display created an opportunity for questioning assumptions about how food might change in the future. Taken-for-granted staples, such as rice, miso soup, or iconic fruits or vegetables may not be available

1 A term commonly referring to traditional mosaic landscapes in Japan that incorporate agricultural fields and rice paddies, forests, grasslands, and waterways.

2 Standing for “clustered regularly interspaced short palindromic repeats” and referring to DNA sequences utilized in gene editing.

depending on the severity of climate change or attention paid to local food security and this was a shock for many participants.

Playing: Food policy council simulator serious game

Perspectives and worldviews are strongly dependent on our daily-life roles in the food system. Are we consumers seeking to save by shopping around and keeping an eye on sales? Parents concerned about pesticide residues and ultra-processed food marketed to children? Small-scale producers struggling with increasing competition by cheap imports and vertical market integration? Or are we policy makers trying to enact change on a shoe-string budget while working around the issue that no section of the local government sees itself in charge of food? Even without expanding the circle to non-human stakeholders (Rupprecht et al., 2020), transdisciplinary food projects often struggle to include multiple perspectives and worldviews, an issue that is increasingly tackled by setting up municipal food policy councils (Baldy and Kruse, 2019; Van de Griend et al., 2019; Rivera-Ferre et al., 2021). In addition, institution-building takes time and trust. In the serious game “Food Policy Council Simulator”, community members with different roles in the food system participated in a role-play exercise that allowed them to swap roles (Mangnus et al., 2019). They worked together to address real-world local food issues by taking on new perspectives (“roles”), explored and negotiated while building empathy for different views on future worlds and organizational capacity for developing policy proposals

TABLE 2 Soft scenarios in action and their effects (adapted from McGreevy et al., 2021).

Effects Soft scenarios	Assists participants in questioning widely held assumptions about the future	Enables the inclusion of multiple perspectives and worldviews	Expands receptiveness to unimaginable futures	Develops futures literacy
School Lunch 2050 exhibition (see http://kyushoku2050.org)	Questions implicit assumptions of food security and continuity by showing how climate change and biodiversity loss may impact the menu; Demonstrates rarely considered tension between heavily imported vs. locally sourced food system	School lunch is a common experience for everyone, enabling a vicarious experience beyond individual perspectives	Engages the senses through art, tangible menus (“seeing is believing”); affective response to “Would I eat this?” and “How did we/our society get to this point?”	Show four possible future trajectories in an easy-to-understand format, modeling a way to “use the future”; Reveals the relationship between climate change and food economy through diverging outcomes
Food policy council simulator serious game (see Mangnus et al., 2019)	Demonstrates the complex nature of food policy in contrast to common simplistic media portrayal; Introduces the interaction of various actors involved in the food system and case studies of good practice in multiple countries, thereby questioning the assumption that “it can’t be done”	Role-playing style accommodates anything players can imagine, including fictitious roles able to intentionally introduce diverse worldviews; Role-playing characters promotes empathizing with others	In-game negotiation with other players facilitates discussion of collectively desired future and offers place for social learning; Role-playing elicits affective responses to possible futures/policies	Build organizational capacity to use the future amongst players; Introduces random disruptive elements that impinge upon the effectiveness of planning, thereby fostering capacity to anticipate and deal with uncertainty
Participatory practice-oriented food policy process (see Kantamaturapoj et al., 2022)	Scenarios explored the interplay between technology (A.I., V.R.) and socio-cultural values, highlighting disruptive potential of socio-technical and socio-cultural changes	Scenarios derived from multi-stakeholder, reflexive process; Role-playing characters promotes empathizing with others and adopting new perspectives	Role-playing future narratives elicited affective response; Narratives assist avoiding reflexive dismissal of too-strange futures; Focus on everyday practices facilitated backcasting process	Policy ideas focused on changing practices in integrated and intentional ways, as opposed to simply aggregate individual behavior and choice

(“rules”), all without recreating the stifling atmosphere pervasive in formal participatory engagement processes. Some of the same game participants later established a Food Policy Council in Kyoto, Japan.

Through the role-playing game experience, participants were invited to walk in the shoes of someone else and empathize with their situation and worldview. All participants were interconnected in the local food system in some way, but may be invisible or seemingly irrelevant to one’s role or position. For example, a government representative in charge of public health may not have ever taken the time to think about what urban farmers needs are or how there may be hidden synergies that between urban food security and healthy eating that could be supported through unique policies. Playing a role encourages building empathy with other worldviews and human (and non-human) needs. The additional layer of a gamified simulation of a food policy council allowed participants to play with possible food policy ideas, imagine how those policies could address local needs, and how possible futures might unfold based on actions taken now. Participants’s sense of agency to impact local food system change was fostered through the safe space of play and gaming.

Experimenting: Participatory practice-oriented food policy process

What if you could eat fresh, healthy meals at home without having to cook? Expanding receptiveness to futures that lie outside the easily imagined can open doors to new potential solutions for problems seemingly wicked within the limits of what looks possible. A multi-phase process of interlinked workshops including visioning, scenario evaluation, and transition pathways brought together consumers, experts and policy makers to tackle sustainable futures of food purchasing, eating out and home cooking in Bangkok using a social practices perspective (Kantamaturapoj et al., 2022). Participants dared each other to leave common sense behind, experimenting with scenario narratives featuring a smart but sharp-tongued personal artificial intelligence shopping assistant steering the protagonist family toward sustainable and healthy food options, an open-air restaurant where dinner can only be paid for with agricultural products pooled and then prepared on-site, and a communal kitchen equipped with a M. O. M (My Optimal Menu) robot tracking and providing meals based on individual members’ health needs. This experimentation process enabled policy ideas to realize urban food sustainability in Bangkok to go beyond conventional approaches emphasizing individual behavioral change. Instead, ideas embraced multi-sectoral and systemic strategies that capture how food practices emerge as the result of social, cultural, economic, and technical contexts (Kantamaturapoj et al., 2022).

Within this series of workshops that included envisioning desirable futures, devising scenario narratives of future food practices, role-playing the narratives, and backcasting policy and intervention ideas to reach the ideal futures, participants were able to draw links between the way current practices shape everyday life and how they would like to see them in the future. Using a social practice perspective (Shove et al., 2012; Spurling et al., 2013), the materials, meanings, and competencies needed for a practice to be performed and how these elements interacted with existing policy, markets, technology, and education became the space in which to experiment. For example, resurrecting the practice of home cooking in the future could mean emphasizing food education for a new generation of cooks, creating communal spaces to share cooking and eating, or slowing down the pace of urban life in Bangkok. Each (or all) of these options are theories to elicit societal change and need to be accompanied by different policies or interventions to recraft, substitute, or rebundle existing practices over time. By mixing visioning, immersive futures narratives, and backcasting processes, theories could be tested and receive feedback from participants residing in fictional futures in a reflexive process. This feedback builds futures literacy and was essential in, ultimately, choosing desirable pathways toward future food practices (Kantamaturapoj et al., 2022).

Building receptivity for critical futures and futures literacy for transdisciplinary research to transform food systems

Questioning assumptions, considering multiple worldviews, becoming more receptive to the unimaginable—in all three cases, soft scenarios fostered participants’ futures literacy. In this Perspective, we have argued that transdisciplinary research should engage with critical food futures because such futures literacy in turn serves participants to successfully join in and navigate transdisciplinary efforts, where focus often lies on co-production and co-design processes. Mangnus et al. (2021) argue that being futures literate requires reflexivity: “critical awareness of different attitudes toward the future, including what can be known about it, how it affects the present, how to study and measure it, and how to create pathways for action”. We suggest this holds true for transdisciplinary research on sustainable food system transitions. For example, bridging gaps in stakeholder inclusion in co-design/co-production processes takes a similar approach to ensuring inclusive engagement with uncertain futures. A lasting lesson we took away from working closely with stakeholders across Asia to reimagine transformative food system futures was how useful and generative soft scenarios

were: while transdisciplinary projects are implicitly future-oriented, soft scenarios encourage consciously “using the future” (Miller, 2018) through learning, playing and experimenting by shifting emphasis from knowledge co-creation to future co-creation.

Scholz and Steiner (2015) identify some 46 various obstacles that transdisciplinary processes encounter in practice and at different stages in the transdisciplinary process. Through our experience, soft-scenario methods serve to address a number of areas that can prove problematic, in particular during the critical initiation, preparation, and core phases of the process. These issues include: “accepting the otherness of the other,” “including unconventional thinkers,” “joint system/problem discovery,” formation of “guiding questions,” “faceting the case/problem,” building “communication/shared language,” “methods of knowledge integration,” helping with “stakeholder identification,” and “selection of scenarios, evaluation perspectives, and evaluation criteria” (Scholz and Steiner, 2015, p. 657–659). In addition, we find that “limited perception of possible futures” or “futures literacy” are issues not visible present among the 46 transdisciplinary obstacles, which further supports the argument for more cross-fertilization between the futures literature and transdisciplinary studies.

The degree to which dominant food systems need to transform is unprecedented—all sectors of the food economy require “rapid and ambitious” change (Clark et al., 2020, p. 1). This is the driving force behind the need to focus on critical food futures. However, complete food systems transformation can seem like an overwhelming, almost unimaginable task. By assisting in “turning our attention not only to futures as they are presented, but also to “futures-in-the-making” or futures as they are made”, soft scenarios are a tool to challenge “predominant ideas about and conceptions of the later-than-now”, and “deliberately but sensitively steer images of the future in empowering—and ideally also environmentally-friendly and democratic—ways” (Mangnus et al., 2021).

Looking ahead, we thus propose close theoretical and practical collaboration between transdisciplinary and futures-oriented researchers and practitioners. Experimentation with soft scenarios methods in transdisciplinary settings is expanding into many different fields—comparing the effectiveness of these methods in generating useful and appropriate policy and intervention ideas. In particular, how these methods make assumptions about the future tangible and explicit, enable the recognition and appreciation of diverse perspectives and worldviews, expand receptiveness to unimaginable futures, and develop futures literacy. What are the barriers or enablers to further binding transdisciplinary policy development processes with immersive soft scenario methods and do these experiences yield more robust policy ideas than typical policy development

(Kantamaturapoj et al., 2022)? What seemed a particular hurdle in transforming food systems—their embodied and habitual nature—may, instead, pose an advantage. Through learning, playing and experimenting with critical food futures, many of our participants felt empowered to reassess their relationships with food in the present and arrived at a core principle for sustainable food systems that ended up becoming our project catch phrase: enough is as good as a feast.

Conclusion

In this Perspective we have argued that transdisciplinary processes concerned with sustainable food system transformation need to meaningfully engage with critical food futures, an approach to actively interrogate the underlying assumptions, values, and worldviews that reinforce how the current food system operates. Through three examples, we demonstrated how soft scenario methods can empower learn about, play with, and experiment in futures. First, an exhibition of 2050 school lunches explored climate scenarios and their effects on food, communicating future uncertainty and helping students to question assumptions about the future. Second, a serious game allowed participants to play with roles and rules in a local food system setting to appreciate the complexity stakeholder interactions while highlighting intervention potential. Finally, a series of workshops combining visioning, scenario narratives and backcasting fostered experimenting with alternative social practice outcomes and policy implementation pathways. Critical food futures thus foster food literacy, which participants of transdisciplinary co-production and co-design processes can draw upon to “use the future” in transforming food systems toward sustainability.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding authors.

Author contributions

CR and SM: conceptualized the paper and wrote the first draft of the manuscript. All authors contributed to workshops, data collection, data analysis, manuscript revision, read, and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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