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Article

Navigating the Great Transition – Lessons from Gaming our Futures

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Abstract

Navigating the Great Transition is an emerging futures game that aims to build foresight skills and provide insight into understanding the current global transition. The paper tests the influence of the game on foresight activity and explores whether there is a discernible difference between participants. The empirical research includes observations and several focus group discussions. The results show that gamification can fruitfully build future capabilities, even if the results are unexpected. The experience of foresight is fundamental, and the change in perspective is the most influential. Attitudes towards gaming and futures processes are not universal but vary according to both individual and cultural patterns worldwide.

Keywords

Foresight, Gaming, Futures literacy, Serious games

Introduction

Gaming the future is an increasingly popular and documented field of futures studies. The large number of advertisements, reports and contributions about experiences with futures games is notable and many new games are emerging that support foresight activities in the futures field. The reported positive reactions of these experiences suggest that gaming is rapidly becoming a valuable contribution to the renewal of the futures field.

Vervoort (2019) points out that future games have a long history, and Duke (2014) writes that gamification of the future emerged from the problem of how to adapt futures to business, political and urban studies, with futures games first appearing as methods of operations research in strategic management. Using games in futures has had different core issues in different times such as forecasting, strategic planning, exploration of futures' scope, scenario building, complex social problems, technology, and skill development (Kristóf, 2006; Kristóf & Nováky, 2023).

Since gaming is used in many fields we should ask: is it trendy to design and adapt games in the futures field as a part of pop-futures, or do we face times and challenges where the experiment and features of games provide deeper insight and better or new understandings both of foresight and of our times? We think, as Candy (2018) underlines, that gaming is not just trendy but is becoming a necessary complement to the practice of foresight for many reasons such as the lack of time / energy available for real acquisition of academic knowledge needed to master concepts, the dichotomy between experience and concepts, or the will and the desire expressed by many of new generations to find new ways and means of thinking about the future.

Rosa & Sweeney (2019) also highlight that the diversity of perspectives in futures studies demands diverse tools and media, which is also in line with some features of games such as ambiguity, universality, and social creation that help gaming support future-oriented research. They can also change perspectives by not designing games and experiences for, but rather with, people. Dufva et al. (2016) found that 'serious' games can enhance foresight by creating engaging experiences and increasing interaction between participants.

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Understanding the nature of our times

However, building foresight capacity through games is just one benefit of their use. As futures games have always reflected their times, there is a critical call for gaming the world of today's generations and diverging global development (Dannenberg & Fisher, 2017): what the authors define as a new great transition in our world. Climate change, the technological revolution emerging ahead of existing social structures, frameworks and thinking, and the increasing speed of feedback mechanisms via complex networks, are just some developments underpinning this transition. Frustration felt by many people about such phenomena has led to them perceiving them as real future images (Raskin, 2010, Kanger, 2022). People are looking for new ways of thinking and new mechanisms for coping with and navigating through change (Gáspár et al., 2003) in the present. Foresight is an essential part of this search, both in terms of 'pop futures' (Slaughter, 2021) and in terms of debates about the ontology, epistemology and methods of futures studies (Miller-Poli-Russel, 2018; Poli, 2010). The risks, uncertainties and opportunities of open systems, which favour entropy, draw the attention of many to consider what does not yet exist (future) or could exist (alternatives).

Origins of foresight games

One area of relevance to the development of futures thinking and literacy through games is that of learning games, known as 'serious games'. Buckminster Fuller (2004) did not invent this term, but the authors regard his development of the World Game as foundational. What he envisioned with his 'serious game' was a place where people could compete or cooperate to "*make the world work, for 100% of humanity, in the shortest possible time, through spontaneous cooperation, without ecological offense or the disadvantage of anyone*."

Developed in the 1960s, the World Game was designed as a tool to promote learning that "*would facilitate a comprehensive, anticipatory, design science approach to the problems of the world*"; it emphasised a comprehensive understanding of systems, a global perspective, and participatory and collaborative approaches (Buckminster Fuller Institute, 2024). Hayward & Candy (2017) write that in addition to these learning outcomes from using games in general, serious games also bring a design philosophy to a topic that includes personal and social learning and ethics, soft skills, personal and interpersonal skills, applied ethics, and social awareness (Pereira, G. 2012).

One context in which these serious learning games are used is in education to enhance educational outcomes including in the futures field. Outcomes of these games can significantly enhance the use of our foresight such as:

- enhancing the general enjoyment of learning;
- developing positive attitudes by enabling learners to maintain positive attitudes to learning, even when subject matter is difficult, complex or polarising;
- fostering engagement by allowing learners to remain motivated and invested, delving deeper into complex and ambiguous material; and
- promoting problem-solving by encouraging collaboration in the practical experience of navigating different and new ideas to reach workable agreements; and
- improving self-awareness by actively engaging with complex issues, finding ways to work with others who think differently, and identifying actionable options, and increase their sense of self-efficacy and agency (Vandercruysse 2012).

Serious foresight games

Several futurists who are creators of serious foresight games show how important they are for improving foresight capacity. Candy (2018), author of the game 'The Thing from the Future', argues that native, everyday foresight capabilities are the basis for later professional foresight activities and the democratisation of futures. Vidts (2023) concludes that the results of his online game 'Shuffle the Future' allows participants to critically contemplate social innovation and entrepreneurship in their respective and diverse new realities. Inayatullah (2017) demonstrates that futures games such as the Sarkar game, the Polak game and the CLA game can be used in the different steps of futures processes (Inayatullah, 2008) to explore diverse ways of knowing, enhancing engagement in futures thinking, and to foster participants' preparedness for the real world.

Futures gaming also extends to role playing and ways to include cognitive and emotional aspects of futures, long-

term visions, narratives and short-term decision making. Baena (2017) considers stage exercises as games, and the theatre as a framework for exploring the self through experiencing scenarios. The Teatro del Devenir ('Theater of Becoming') is a rehearsal of what participants might think, feel and behave when considering future situations.

This importance of building capacities through gaming was emphasised by Chen and Hoffmann (2017), who reported on the experience of changing futures curriculum by gamification. They found that games can be successfully integrated into well-known participatory futures methods – for example, futures wheel, world café – and enhance the learning capacity of students. Dufva (2016), designer of the online foresight game 'Circulate.Now', came to the same conclusion, insisting that foresight games can be used to generate new insights about alternative futures, especially if they are balanced between idea generation, information gathering and experience.

As mentioned earlier, there has been a strong connection between gaming and futures for some time. In France, the idea of a French serious game to introduce people there to futures thinking has been considered, fueled by the many futures games already flourishing in the field – but developing games often requires a significant amount of time, energy, and expertise. The development of a French serious game was, however, made possible during a COVID-19 lockdown.

An emerging serious foresight game: Navigating the Great Transition

The Navigating the Great Transition game, designed by Matthieu Denoual, Fabienne Goux-Baudiment and Kathryn McGlone, is a serious game that addresses both building futures capacities and understanding the nature of our times. After development, a research project to test the game was undertaken with different target groups, such as students, entrepreneurs, educators, organisations and families. This paper reports only on the use of this game with two groups: as an introduction to foresight among international master's students, and as a challenge to existing foresight knowledge among foresight educators and practitioners. We looked for what impressions, learning capabilities and messages participants articulated when they experienced a futures game embedded in our age. In addition, we looked to see if there is any perceivable difference among the participants by region, gender or prior knowledge, and conclude how these findings contribute to foresight education and practice.

In the following section of the paper, we explain the nature of and the rationale for the Great Transition as the focus of our game. Then we offer an insight into the details of our game - how the building blocks, aims and the process relate to the challenges of the Great Transition. Finally, we trace participant experiences by analysing the results and main lessons of the research.

The Great Transition

A 'Great Transition' refers to a prolonged period of global, comprehensive change that affects all dimensions of civilization, including societal, economic, political, environmental, cognitive, and spiritual aspects. For instance, transitions from nomadism to sedentarism, from oral to written communication, and from the theological autocracy of the late Middle Ages to the openness of the Renaissance have all been "great transitions", albeit on different geo-cultural scales. Such transitions encompass complete and irreversible upheaval of paradigms, knowledge, ways of living and working, and mentalities (Sorokin, 1937; Toynbee, 1947).

This pivotal concept is currently of interest because we are in the midst of one of these significant moments in human history (Vigni et al., 2022) as demonstrated by successive thinkers for almost a century (Sorokin, 1992; Capra, 1982; Raskin, 2002). As this period challenges existing paradigms and demands a rethinking of societal structures, technological advancements, and global interactions, it is important to emphasize the need for human participation in this historic process. Therefore, a holistic understanding and active engagement in shaping our futures amidst these transformative times is necessary.

Futures studies, particularly applied foresight, is the appropriate field to explore various possibilities for the future and mobilize human agency towards a shared vision of the future (Berger, 1964; Berger et al., 2007; Cournand et al. 1973). As a forward-thinking approach, it raises awareness of the diverse issues related to exploring the future to encourage action. However, this is a vast and complex field that requires a broad understanding of system dynamics, years of practice, and a deep cultural knowledge of various contexts. Therefore, it is difficult to train individuals in a two-day workshop, as it would require at least one academic year. In addition, the application of

this discipline often requires agile mental processes that can be challenging to understand through written materials, particularly when cultural assumptions are prevalent in most textbooks. Our game aims to contribute to a method that has been shown to have positive results when thinking about our futures and has the following objectives:

- to help people intuitively understand what the Great Transition is, without resorting to over-elaborated concepts;
- to allow people who were not familiar with foresight to practice it; and
- to create a high-quality experience for participants, though we were not game design experts - we assumed that participants would already have game experiences particularly through video games.
- To achieve these goals, we have developed four key topics to explore which are described below.

A simplified representation of the Great Transition Game

One of the most difficult stages in the design of the game was to make the concept of the Great Transition accessible to everyone. The dynamics of the Great Transition were described using the metaphor (Inayatullah, 1998) of subduction in geology, which is related to plate tectonics as shown in Figure 1.

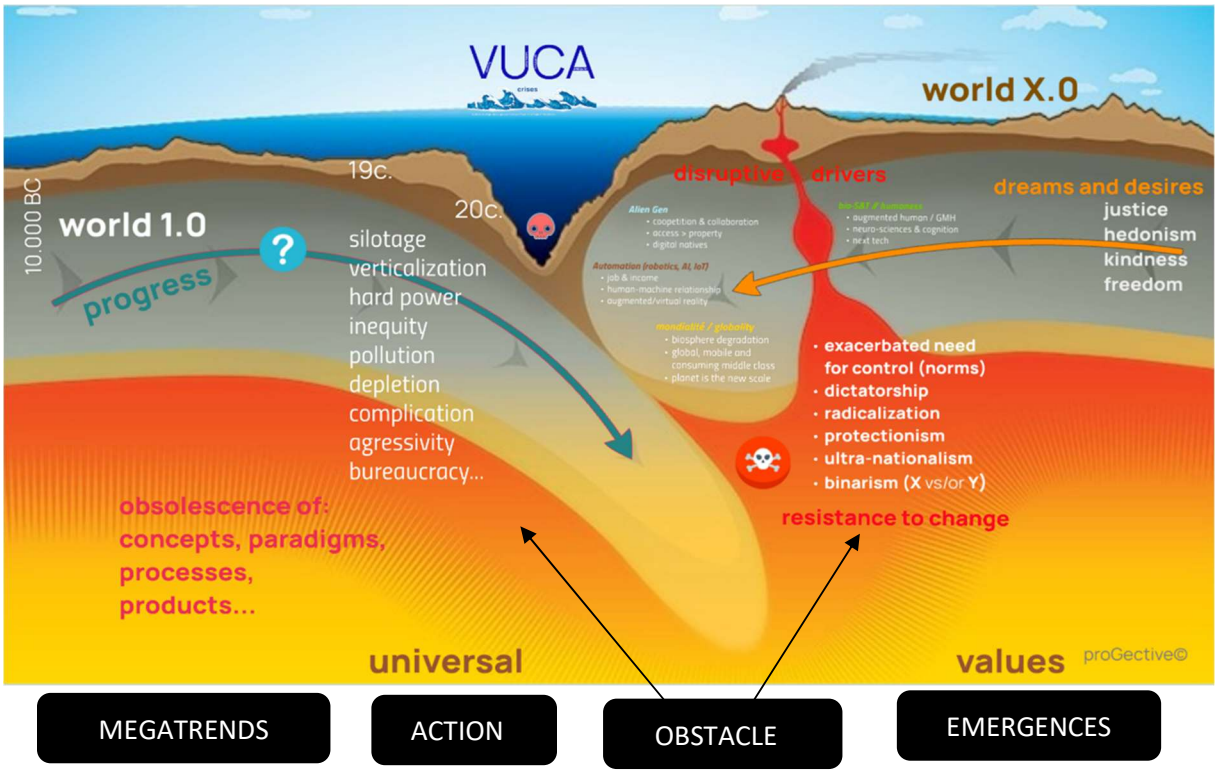


Fig. 1: The Great Transition – a subduction metaphor Goux-Baudiment (2018)

Figure 1 also shows the four key factors that facilitate a systemic approach to the game, as described below:

- Megatrends are the structural driving forces that shape the world, both past and present, on a global scale. They are change-related and have wide, significant impacts (increasing number of educated people, increasing systemic interdependencies, development of chronic diseases, etc.).
- Emergences describe new, structural trends that have been around long enough to be considered more than just a passing fad. As changes progress, they are not well-known, and their long-term consequences need to be explored (personal well-being, communitarianism, increasing use of drones, etc.).

- Obstacles are typically viewed as negative aspects or dysfunctions of development that must be overcome (increased scarcity of natural resources, nomophobia, exponential growth of waste, etc.).
- Actions are movements or phenomena that anyone can use to build a better future (crowdfunding, simplicity, gamification, etc.).

These factors offer three distinct advantages. First, they help to think about the Great Transition by asking questions such as: which megatrend will survive the transition? What emergence will have the most game-changing impact on the future? How to build a world X.0 (post-transition) using positive actions that eliminate obstacles towards a better future? Second, they are simple enough, as presented in the game, to be accessible even by teenagers. And third, they require confronting objective and subjective ways of thinking.

Megatrends and Emergences are objective categories that state facts. In contrast, Actions and Obstacles are subjective categories. For example, 'bureaucracy' may be considered a positive action in a poorly organised country, while 'simplicity' may not be considered positively in a poor country.

These factors were transferred to cards used in the games described in this paper.

A game master running the game

Each game was led by a Game Master. Their role was to set the context by explaining what Great Transition is, to explain the rules of the game step by step as the game is installed, and to manage the flow of the game. The Game Master's role is particularly important in answering players' questions, which may be about the rules of the game or about understanding the cards.

Very simple basic gameplay mechanics

Game mechanics can be defined as "methods invoked by agents, designed for interaction with the game state. (…) Designers create the basic mechanics for the player correlating the central challenges of the game with the set of mechanics useful for overcoming them" (Sicart, 2008). After several trials, the designers of the Grand Transition Game (Denoual, 2022) decided to use very simple mechanics:

- the Game Master deals each player a random hand, then draws a random challenge and throws a die to determine the place (a continent) and future time horizon (+ 20, 40 or 100 years from the actual date of the game) in which the players find themselves;
- each player must then solve the challenge using all the cards in their hand within the time limit; and finally
- they then communicate their solution using a medium chosen at random.

Several versions of the game have been developed from this basic design to adapt for different types of players and for different purposes. The *aperitif game* is played very quickly and develops inventiveness. The *company game* is played in pairs and encourages cooperation. The *family game* seeks fun and disruption. The *serious game* leads to concrete roadmaps, etc.

In addition to sharing the same game mechanics, these different versions promote the three essential criteria for building any future scenario: plausibility, relevance and coherence (Godet, 2000).

Methodology

By February 2024, 580 people played at least one game of 'Navigating the Great Transition' (all versions combined), and 52 game masters have been trained and have hosted games. This paper reports on a focused selection of the participants to enable relevant comparisons. We used the ‘Fast-Forward’ version of the game and reduced the analysis to two different groups of players. One is a group of master’s level business students who are internationally diverse, representing all regions of the world, but who are not trained in futures studies. The other group is made up of participants in the World Futures Studies Federation World Conference, held in October 2023: a group of about 100 people who already have prior knowledge and experience in the futures field.

Regarding data collection methods, the sample was too small for significant questionnaire analysis, and the ratios did not properly represent genders and regions. Hence data collection was primarily via documented qualitative observations and focus group discussions. Staying true to the nature of gaming, observations are made in terms of

action research and interactive group discussions. Analysis was enabled using a previously constructed questionnaire for French players (Denoual, 2024) and which defined clear observation criteria to assess the effects of gaming and the learning outcomes. Table 1 provides an overview of these criteria and qualitative clustering of participant responses, reactions and observations was categorised by these criteria in the analysis.

Table 1: Observation and discussion criteria

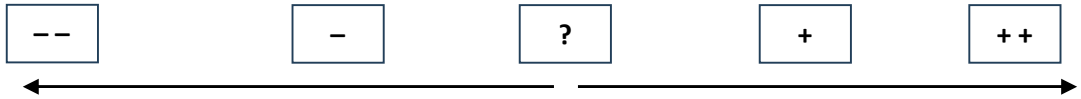
Impressions	first emotional reactions
Gamification	
Preference	gamification vs. frontal presentation
Opening up	release and involvement
Imagine	over present assumptions but plausible
Competition	effect of competition on learning
Learning	gaming supports or constrains
Learning	
Knowledge	awareness of the basic concepts of foresight
Skills	implementation of forward-looking approach
Value	importance and usefulness of foresight
Confidence	ability to apply foresight
Motivation	commitment to apply foresight
Game activity	awareness of the game elements and process
Takeaway	lessons and messages

Results and Discussion

First impressions

Discussion started with unfolding the initial impressions of participants. Keywords (Table 2) are listed and structured by emotions linked to them. Words in bold are mentioned by many participants in the two groups. The contributions from the WFSF world conference participants are in italic.

Table 2: First reactions: how did you feel about gaming futures?



– –	–	?	+	+ +
Confusing	**Challenging**	**Unexpected**	**Hopeful**	**Exciting**
Frustrating	Having no idea	Surprising	***Interesting***	***Creative***
Pressuring	Strange		***Enjoy***	Insightful
Stressed	Hard		*Fun*	Reflective
Worried	Uncertain		**Responsible**	Fascinating
Weird	Difficult		Useful	Innovative
Terrifying	Unusual		Lucky (that worry could	Fantastic
Nervous	Not simple		come to surface)	Revolutionary
Concerning	Further problems		*Solution finding*	*Eye opening*
Misuse	emerge			*Pedagogical*
Discouraging				*Loved*
				Stimulating
				Crazy mind

Many impressions reflected similar feelings and were collated into groups. The first grouping (left column) – ‘Confusing’ – is very negative and full of stress. They reflect a disruption of the existing mindset and perception;

an experience that does not fit the regular way of thinking and doing which triggers the psychical alarm system. The 'Challenging' grouping (second column) shows that while the first grouping (Confusing) expressed affective reactions, the 'Challenging' participants felt unpleasantness from a cognitive perspective. They experienced 'bumping' into problems and structures different from their regular way of life. This shift froze rather than motivated them. The third grouping (third column) 'Unexpected', highlighted the loss of their orientation, sending them into an empty space. For them, the game raised unexpected or surprising turns – but these students did not go further in explanation. The 'Hopeful' grouping (fourth column) enjoyed the challenge. They felt they could cope with the unexpected and had fun by finding cognitive solutions. The final grouping 'Exciting' (right column), experienced something novel, which induced extreme positive affective reactions.

Importantly, the reactions of participants referred to the same phenomenon: the *Emergence* cards, interrelated with *Obstacles* and *Megatrends*, forced them to think outside their regular frameworks. Additionally, the necessary *Action*, as a crucial part of the game, creates the pressure of not just thinking of something new but also 'manifesting' it in 'real' strategies and activity. All these require emotional maturity – mind, emotions and physical participation. They challenge not just the way of thinking but the underlying beliefs and cultural assumptions. The power of the ego is questioned – and this is indeed shocking to some. Another important lesson is that foresight – if it is taken seriously – is not without risks, and results cannot be taken for granted. The 'Confusing' and 'Exciting' groupings felt energised, but the application of this energy is different. It is the responsibility of the Game Master/trainer instructor to teach or support participants to move these energies from a destructive to a constructive, stimulating and creative direction.

Most of the first reaction key words of the world conference participants fell into the 'Exciting-creative' grouping. In addition, they highlighted aspects that the Business students in the second group did not mention - their reactions are less emotional. In contrast to 'fascinating, revolutionary or fantastic' they reflect more awareness and understanding – 'pedagogical, crazy mind, stimulating, solution finding' and they exhibited control over or channeling the energies of novelty. In other words, deep understanding and much practice of foresight, what most conference participant researchers, educators and practitioners had, contributes to making the most of the power of futures literacy.

Analysis of gaming and learning

Reflections on gaming

Table 3 summarises results of focus group discussions for reflections on gaming. Questions have been grouped by the use and efficacy of gaming and its relevance to learning. The sequence was agreed by participants, and we have also indicated the views by regions and by gender – chosen among male, female or undetermined – where it was significant. The general assessment of participants was positive both in terms of gaming and learning. The tables reflect our observations on slight though perceptible differences, which vary more by the different aspects of gaming and learning than by the features of participants.

All participants agreed that gaming is less stressful than regular classroom learning, and that they felt more involved in the activity. From a futures skills point of view, most of the participants agreed that they can create images different from the present structures while still being plausible. Therefore, they have developed the foundations of successful scenario building.

Our observations have also reflected some cultural patterns. Central European and East, Southeast Asian students were similarly positive but ambiguous about the use of gaming and its foresight application. This may come from traditional or more centralised cultures and social structures, which give more power to rational and formal choices and methods. Foresight, which demands an open-minded attitude as well as rational thinking, is not therefore taken for granted. One third of the participants (majority East Asia, China) preferred formal presentations as an introduction to foresight. Similarly, East and Southeast Asian students had mostly negative feelings with competition as a part of gaming, which did constrain their learning. We also noted that Central European students did not take an explicit position in the review process. This is similar to observations on social value ambiguities in Central Europe. The division of their societies and the tradition of centralised, but not commonly supported

governmental powers, have made many people wary of explicitly taking sides.

In terms of gender, female participants were less explicit in their responses, with a very significant number responding to the question about the competitive nature of a game. Male participants considered the exercise more of an adventure with open outcomes, while safe and foreseeable structures were more represented among women. It was very clear cut in the formal presentation question, where most women among East Asian students preferred a classical, structured introduction to futures.

Table 3: Views on gaming by regions[1] in the sequence of agreement

	Gaming (criteria)	**Explicit**	**Less explicit**
The majority agrees	Release and involvement		Central Europe / F East Asia Southeast Asia
↓	Imagine fiction and plausibility		Central Europe / F East Asia Southeast Asia / F
	Frontal presentation instead	East Asia / F	Central Europe West Asia
	Gaming against learning aims		Central Europe / F South Europe / F
Most heterogenous	Competition against learning aims	East Asia / F Southeast Asia / F	Central Europe / F

Note: F stands for Female

Reflections on learning

This section summarises results of focus group discussions for reflections on learning during the gaming process. Table 4 reflects that all participants were satisfied, felt involved in the learning process and expressed successful takeaways. They evaluated the Great Transition game relevant for learning, and two thirds of the students felt completely motivated by the game to adapt foresight to their own field of interest.

We found more ambiguity with regards to the participants' experience in the direct adaptation of foresight. While students expressed that they understood the main concepts of foresight, and enjoyed dipping in futures, they also felt inexperienced. They were most positive with the value of using foresight to their own world but had less confidence to apply what they had learned. Females were less certain about gaming as a tool, they are much more positive about the value of foresight as well as feeling more motivated and capable of applying foresight.

These results highlight again that the development of futures literacy is a critical priority for the futures field. Building futures skills is core and cannot be achieved in one day training alone. Additionally, skill development is very closely linked to futures knowledge building, since different aims and use of foresight go hand in hand with different sets of futures skills (Juhász et al., 2023).

Similar to the observations on gaming, East Asian students were less satisfied about involvement in the game as a learning tool. This only refers to gaming itself, since the value of foresight and the motivation to use it were most positive among East Asian participants. The Central European participants too were less certain about the efficiency of gaming, while they were very positive with its relevance and felt involved in learning. The majority placed importance on the use of foresight and were motivated and confident to apply it. At the same time, they were most aware of their lack of foresight knowledge and skills necessary to adapt futures thinking to different fields. West Asian students clearly saw the relevance of gaming in learning foresight, felt involved in the process and were generally positive about the knowledge they acquired. They were much less confident, however, about the use of foresight and how to apply it.

In addition to analysis of regions and genders, we were looking for feedback on the relationship between gaming

and learning. Those who were most satisfied and involved in the game did not see formal presentations as a better alternative to introduce foresight. It was notable that those who expressed a preference for PowerPoint presentations instead of gaming, felt positive in the use of foresight and their capabilities to adapt, even though foresight was introduced to them by gamification. The last statement is in line with our findings above on East Asian students.

Table 4: Views on learning foresight by regions in the sequence of agreement

	Learning	**Explicit**	**Less explicit**
Majority agrees	satisfaction		East Asia
	involvement	West Asia Central Europe	East Asia
	relevance	Central Europe West Asia	Sout-East Asia West Africa
	motivation	Central Europe / F East Asia / F	
	value	Central Europe / F East Asia / F	West Asia
50%	confidence	(Central Europe) / F	South-East Asia West Asia West Africa West Europe
	knowledge	West Asia / F	Central Europe
Most heterogeneous	skills	F	West Europe Central Europe

Note: F stands for Female, for regions see footnote 1

Regarding futures skills and knowledge, skills to adapt foresight in contexts are understandably connected with personal confidence and motivation. However, they are also closely related to foresight knowledge. Participants who were positive about their acquired skills were more positive with knowledge as well, while those with less self-confidence with skills were less confident with knowledge. Interestingly, participants expressed higher self-confidence about their skills when they considered that games did not reduce their capacity to learn.

It appears that future games have the capacity to introduce foresight concepts and activities but are most effective when they provide the skills needed to use those skills in their lives. This result is supported by the finding that knowledge also goes together with confidence and motivation. Those who articulated less confidence in adaptation of skills clearly emphasised uncertainty about foresight knowledge, while being more positive in knowledge did not mean higher level of confidence to use. Motivation is also firmly correlated with confidence in knowledge about foresight, and repeats with those who found that they are capable of imagining plausible futures, but often, they still felt less confident about foresight knowledge.

Group Discussion Findings

We started our discussion by seeking responses on the game title by asking the question: what does transition mean for the participants and what difference 'great' makes. Though participants managed to articulate qualitative changes – in structure and/or in mechanisms – some additionally raised the increasing role of responsibility, both in terms of mapping changes and their own decisions that shape open systems. Defining the great transition was not difficult, but students mostly identified it in terms of global, 'far-away' issues. When we asked them to give examples from their personal lives, the reactions reflected that qualitative change is not taken for granted or necessarily accepted. Their stories, however, deepened a common understanding of the aim of thinking in terms of and experiencing novel futures.

Another issue was the time horizons of the game. The 20-, 40-, or 60- and 100-years travel to the future seemed meaningless, and felt to be too far into the future to imagine with plausible, relevant and coherent content. However, after discussion of challenging and emotionally strong first impressions, they became aware that these time frames force them to understand how ongoing structures, mechanisms, mental programmes and assumptions are constraining for their thinking. By using randomly different places and continents, they recognised diverse abilities,

cultural and historic inheritances, natural, political or economic systems, and the importance of the embedding environment.

By using the different groups of cards – megatrends, emergencies, obstacles and action – the game helped newcomers to gain their first insight to the driving forces of foresight activities, and to experiential knowledge of the interactions in those activities. In addition, even though the number of cards in each group was relatively small compared to the richness of reality, there are an infinite number of card combinations. The role of the 'Win cards', which ask player groups to present their solutions or scenarios on behalf of a future world inhabitant, or by drawing, or in the form of a letter to a defined person, was, however, problematic. For the participants it was just for fun, to make the game more enjoyable. For participants clarifying that the physical manifestations of visions and how strategic activity can communicate with the preferred image in real life – what Jim Dator calls 'incasting' (Serra, 2013) – was less clear.

In response to the question of what the most difficult part of the game was, participants replied "time constraints". In the focus group discussion, they complained that if they had more time, a 'better', 'more plausible, or probable' and 'more systemic' solution could have been prepared by the groups. They argued that raising individual ideas, communicating images and building a commonly shared scenario from these, all each demand sufficient time. They stated that five minutes is 'nothing' for each round and seemed to make the futures exercise less serious.

However, when we asked them to recall their own reactions and behaviour, participants revealed that while it was frustrating in the beginning, the time constraint forced them to skip habitual thinking as a start and expand thinking to trust first ideas, 'strange images', and unconscious contents appearing in their minds. Many articulated that riding themselves of the burden of developing an explicit rational reasoning boosted creative thinking, making the scenarios comprehensive as well as changing most of the participants' attitude from frustration to excitement. Their reflections here indicate the success of the insistence of the designers of the game to have this time constraint -to enable shortcutting the conscious, cerebral mind and awaken this non-conscious faculty to focus on concrete solutions when in an emergency space called "simplexity" (Berthoz, 2012), where habitual thinking is not readily accessible.

All in all, it was clear that participant understanding of the game design enhanced their awareness of the foresight building blocks and the thinking processes use; hence the emergence of futures literacy was possible.

Participants' Takeaways

The last part of the focus group discussion – 'What is your takeaway?' – explored personal messages suggesting key areas of change and learnings. We identified four groups of lessons learned: communication, perspective, methods and action shown in Table 5.

Table 5: Groups of messages and key concepts

Communication	cooperation of ideas for better understanding, more effective analysis and positive attitude *group dynamics*
Perspective	Outward and *inward* radical changes both in extension of content (*horizontal*) and skills (*vertical*)
Methods	Controversial scenario building
Action	Walking on two legs Regaining our own agency

In terms of *communication* the main message was the enriching dynamics of sharing images. Many of the participants underlined that the group work of gaming improved the sharing of ideas. They experienced how something new emerges from individual ideas when they are not only individual ideas but instead influenced each other's ideas. Responses reflected empathetic communication with participants enjoying understanding other people's reality, while emphasising that resource sharing and communication also enriched academic thinking and research. In addition, it is not purely efficiency that increased by joint futures thinking, since there was agreement that participants also became more positive. Experienced futurists highlighted the dynamic positive consequences

of communication – first, it created spontaneous cooperation and second, it enhanced group dynamics and supported each member to break the borders of perspectives.

The group of messages on *perspective* changes contains most of the lessons found and was the richest in content. Clearly the most powerful influence from gaming the futures is the experience of perspective change and novelty perception. Interestingly, the university students are more focused on the outside world, how images reframe and influence the environment. Some emphasised learning to remain open minded to the unexpected, which reduces stress and hastens readiness to monitor and act promptly. Additionally, maintaining open perspectives does not expand just time horizons, it also unfolds the 'space', the potential of the present as well. In terms of the 'out there', one participant shared that expanded imagination improves skills for problem solving.

Instead of the external environment, world conference participants traced out the inward influence of changing perspectives, our cognitive and affective mechanisms. One student announced the general experience of how hard it is to let go of assumptions, which is a core challenge for foresight, since people usually are not aware of the assumptions behind their reasoning, reactions and behaviour. Foresight exercises can force people to articulate their assumptions, or as another student added, the assumptions of assumptions.

Some of the world conference participants also mentioned the embedding environment – where foresight was being applied. They drew attention to the different contexts that the gaming cards created, and how these differences opened new worlds for the same driving factors. The horizontal – widening horizon – and vertical – deepening skills – dimensions of improvement could also be detected among the inward approaches. One of the educated futurists reported on her experience of personal boundaries, while others mostly referred to the changes in content within boundaries. Others added that the long-time perspective of foresight exercises is good training for widening horizons. The vertical dimension refers to the capacities that thrive to create narratives for the future.

The third group of messages, *methods in foresight gaming*, is closely linked to perspective changes. Students articulated how surprising it was to realise that predictability, the regular way they think about the future, can be questioned and seemed to understand how scenarios emerge and what role they have in foresight. Students also mentioned they preferred scenarios, mainly because 'the present is not radical enough'. As we noted above, the most influential experience was the unexpected, triggered either by the contents of scenarios, or by the process used to create scenarios (or by both). Indeed, most students succeeded in moving from confusion to an exciting experience during the process. They found it is possible to detect paths of change and possible consequences by testing the process of emergence without risking that they become reality.

However, we observed that many participants, while recognising the differences between scenarios, evaluated or judged them by their present assumptions. Though students enjoyed playing with images they very uncomfortably moved out of the existing frameworks of their assumptions. This finding is fundamental from a futures perspective, as the core of foresight, since the origins, is identifying our current assumptions in order to be able to perceive and navigate change (Berger, 1964). Recent literature well recognises and raises to the front the primary role of assumption change (see e.g. Miller, 2018 or Conway, 2024).

Responses to the final grouping of messages – action orientation – is similar to previous findings. Some liked and highlighted the possibility to prevent 'fallow, old solutions' and to launch 'new business' in strategic activity. A very good summary of understanding foresight was that 'great transition needs great action'. The game provided a comprehensive view of the building blocks of foresight activity, and students could grasp clearly that to proceed to make fundamental changes in the present requires the capability of radical changes in perspectives and assumptions. But also critical is the will to make real the images, the lessons of building these images and the emerging realities resulting from the new perceptions of the present. Among the world conference participants someone summarised all these simply as foresight being 'mass freedomisation – a weapon of regaining our own agency'.

Conclusion

Many rounds of games practised with a great diversity of participants over time have strengthened the view that gamification can fruitfully build future capabilities, contribute to a better understanding of foresight concepts, and help people project themselves into future images. We also found that teaching through a serious game is a more

comprehensive tool than teaching through a frontal teaching course. It mobilises different ways to acquire new experiences and knowledge such as collaboration, imagination and playing. In the Great Transition game, the diversity of the cards used leads to experiments with the huge complexity of the VUCA times, and to apprehend change in a more systemic way.

However, it was also demonstrated that gamification is not a simple task, and just having imagination is not sufficient to create a serious game, especially in futures studies where a minimum of basic concepts must be mastered. So often with innovations the results obtained from playing the game were largely unexpected, as they were influenced not only by the game mechanics but also by the players' logic of use. Game designers can never foresee the whole set of applications of their games and can learn much of each experience.

In terms of futures, the results show that during the foresight process perspective change is the most influential shift. University students had very diverse and very heavy reactions to the change of mindsets. And even experienced futurists behaved the same way highlighting that perspective change is not to be taken for granted.

Hence experience is fundamental. It provides a deep understanding of future concepts, which pure cognitive articulation cannot reveal. This finding was strengthened even among experienced futurists. Challenging and reframing existing assumptions are central in futures literacy and foresight. Though these are well reported in literature and theory, practice reflects that experiencing is not evident at all. It was also notable to realise that cultural and mindset differences of global regions also underpin future skills and attitudes. Finally, a positive attitude towards gaming or the future is not universal, either within or outside the world of futures studies: it depends as much on the cultural environment as on the individual personality of the players.

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Footnotes

Countries represented as Central Asia: Kyrgyzstan; Central Europe: Hungary, East Africa: Kenya, East Asia: China, Middle Africa: Angola, Middle America: Costa Rica, North Africa: Tunesia, Morocco, North Asia: Russia, North Europe: Ireland, South Africa: South Africa, South Asia: Pakistan, India, Myanmar, South East Asia: Cambodia, Laos, Thailand, Vietnam, Indonesia, South Europe: Montenegro, Serbia, West Asia: Turkey, Syria, Azerbaijan, Jordan, Iran, West Africa: Nigeria, Ghana, West Europe: France, Spain, Italy

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