Translational Systems Sciences 28

Toshiko Kikkawa
Willy Christian Kriz
Junkichi Sugiura *Editors*

Gaming as a Cultural Commons

Risks, Challenges, and Opportunities

Springer

Translational Systems Sciences

Volume 28

More information about this series at https://link.springer.com/bookseries/11213

Toshiko Kikkawa • Willy Christian Kriz • Junkichi Sugiura
Editors

Gaming as a Cultural Commons

Risks, Challenges, and Opportunities

Springer

Editors
Toshiko Kikkawa
Keio University
Tokyo, Japan

Willy Christian Kriz
Department of Management and Business Administration
FHV University of Vorarlberg
Dornbirn, Austria

Junkichi Sugiura
Keio University
Tokyo, Japan

ISSN 2197-8832 ISSN 2197-8840 (electronic)
Translational Systems Sciences
ISBN 978-981-19-0347-2 ISBN 978-981-19-0348-9 (eBook)
https://doi.org/10.1007/978-981-19-0348-9

This Springer imprint is published by the registered company Springer Nature Singapore Pte Ltd.
The registered company address is: 152 Beach Road, #21-01/04 Gateway East, Singapore 189721, Singapore

Preface

When we began to plan this book in the summer of 2019, we intended to focus on relatively neglected areas of simulation and gaming (S&G), i.e. cultural aspects and ethical issues, in addition to providing readers with a basic overview of S&G. Although the educational effects of S&G, related methods such as gamification, and serious games have been studied and are gaining recognition, their negative aspects are often overlooked. For example, there is always a risk of manipulation by games if they are designed with malicious intent. Ethical codes for game designers, facilitators, and educators must be established on the basis of academic research. Consideration of the ethics of games is essential for S&G researchers and educators, as well as the general public, because games have been used for propaganda purposes in the past and could be so used again in the future.

Immediately after our proposal was accepted by Springer Publishing, the world changed greatly because of the coronavirus 2019 (COVID-19) pandemic and is still changing at the time of writing of this preface. Because of accompanying lifestyle changes, the publication schedule of this book was delayed substantially, although the objective did not change. We, the editors, greatly appreciate the authors' efforts to finish their chapters in this difficult situation and especially appreciate the staff at Springer for their understanding of our situation and for their patience.

In its examination of cultural aspects, the book contains knowledge accrued by the S&G community over more than 50 years. In Part I, "Culture in gaming and simulation", after introducing the fundamental terminology, extensive interviews with researchers and analyses of immersive contemporary board games are presented. This part also covers diverse topics from the perspectives of gender and Japanese culture. Although women working in the S&G field have gained some recognition, their role has generally been somewhat ignored and was only officially discussed for the first time in 2019 at the International Conference of the International Simulation and Gaming Association held in Warsaw, Poland. Japan has been attracting attention in the context of board games because of its many independent game designers and expanding market. By focusing on comparatively overlooked

and neglected aspects of S&G, this book outlines future opportunities for researchers and educators and also increases the awareness of S&G of the general public.

In Part II, "Education", two authors introduce case studies illustrating how games are used in education. One case study pertains to the provision of education to children on diversity in society, and the other explores education on cultural differences using the same game. Chapters 8 and 9 address the ethics of S&G in the context of education and/or societal issues.

Part III, "Manipulation in games", is the final part and discusses the negative aspects of games. Given that games have previously been used for propaganda purposes, especially in the political context, we must be sensitive to the fact that games can be used to manipulate and facilitate certain ends. Moreover, professionals and educators using games may manipulate participants subconsciously.

Games have rules, as do our societies. In the past 2 years, we have become more aware than ever of the fact that we live in societies governed by rules, in which we are the actors. Before COVID-19, we were not fully conscious of this fact. New rules such as mask mandates and vaccine passports, among others, have been introduced, and we have changed our lifestyles accordingly. We have continued to question whether we are "good" actors in society, and whether the new rules are appropriate and based on sound science. How can we justify the prioritisation of certain people when resources are limited? S&G can be one tool for answering such questions and exploring alternative futures through game play and debriefing.

The authors and editors will be satisfied if our book promotes the application of S&G to research and education, along with further consideration of the issues that we present.

Tokyo, Japan — Toshiko Kikkawa
Dornbirn, Austria — Willy Christian Kriz
Tokyo, Japan — Junkichi Sugiura
January, 2022

Contents

Contributors

Olga Bostan, Ph.D. Institute of Anthropology, Leipzig University, Leipzig, Germany

Gordon Calleja, Ph.D. Institute of Digital Games, University of Malta, Msida, Malta

Thomas Eberle, Ph.D. Department Pädagogik/Institut für Erziehungswissenschaft, University Erlangen-Nürnberg, Nürnberg, Germany

Toshiko Kikkawa, Ph.D. Keio University, Tokyo, Japan

Willy Christian Kriz, Ph.D. Department of Management and Business Administration, FHV University of Vorarlberg, Dornbirn, Austria

Elyssebeth Leigh, Ph.D. Faculty of Engineering and IT, University of Technology Sydney, Sydney, NSW, Australia

Heide K. Lukosch, Ph.D. Human Interface Technology Lab NZ/Hangarau Tangata, Tangata Hangarau, University of Canterbury, Christchurch, New Zealand

Hiroyuki Matsui, Ph.D. Kyoto University, Kyoto, Japan

Mieko Nakamura, M.A. Faculty of Sociology, Ryutsu Keizai University, Ryugasaki, Ibaraki, Japan

Claudia Schmitz Cenandu Learing Agency, Antweiler, Germany

Junkichi Sugiura, Ph.D. Keio University, Tokyo, Japan

Marieke de Wijse-van Heeswijk, Ph.D. Business Administration, Section Intervention Methodology, Radboud University, Nijmegen, The Netherlands

Part I
Culture in Gaming and Simulation

Chapter 1
Gaming Simulation: Terminology and Fundamentals

Willy Christian Kriz, Junkichi Sugiura, and Toshiko Kikkawa

Abstract The aim of this chapter is to introduce the basic terminology and methodology of gaming simulation. We describe the main building blocks and elements and the steps in the gaming process. Also, we discuss a concept from Jan Klabbers who pointed out that the actors in a gaming simulation represent two distinct branches of science: the design and analytical sciences. We show the interconnections, differences, and commonalities of gaming and simulation game design with other widely discussed concepts and terms, such as serious games and gamification. Finally, we refer to some historical aspects and cultural issues.

Keywords Gaming simulation · Design science · Analytical science · Game design · Serious games · Gamification · Historical aspects · Cultural issues

1.1 Introduction: Terminology and Methodology of Gaming Simulation

According to Klabbers (2009), a *game* is a form of *play*. Sutton-Smith (1997) pointed out that there is considerable ambiguity about the meaning of these terms. When discussing *gaming simulation,* we refer to games that are used as models of reality and deal with well-defined subjects (in terms of context and content). A *model* is a description and representation of a (real) system, or its processes, and can help us understand how the system works or might work. A *simulation* refers to the process of simulating an existing real system by reproducing a set of conditions (Klabbers, 2009, p. 24).

W. C. Kriz (✉)
Department of Management and Business Administration, FHV University of Vorarlberg, Dornbirn, Austria
e-mail: willy.kriz@fhv.at

J. Sugiura · T. Kikkawa
Keio University, Tokyo, Japan
e-mail: jsugiura@keio.jp

T. Kikkawa et al. (eds.), *Gaming as a Cultural Commons*, Translational Systems Sciences 28, https://doi.org/10.1007/978-981-19-0348-9_1

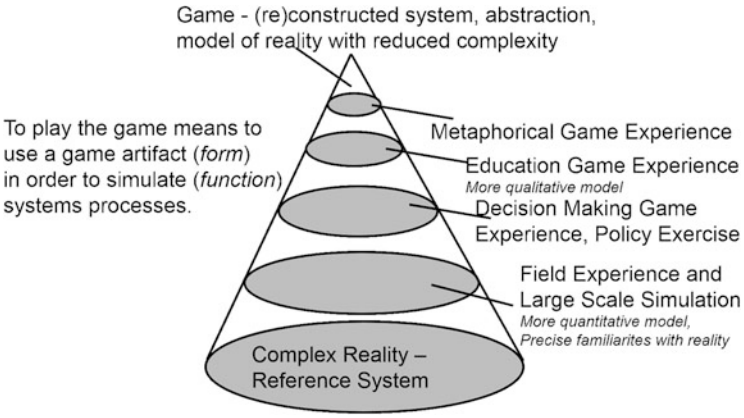

Fig. 1.1 Different forms of gaming models. (Based on Duke, 1974; Duke & Geurts, 2004)

Referring to Duke (1974) and Klabbers (2009), playing a *simulation game* involves using game artifacts (form) to simulate (function) the system processes of a complex reference (real) system. Simulation games represent dynamic models of real situations. A game reconstructs important aspects of the reference system; therefore, it is an abstract model of reality with less complexity and fewer details. Several different levels of abstraction are possible, from very abstract metaphorical games and educational games, whose underlying models are mainly qualitative, to large-scale simulation, with quantitative models and precise correspondence with reality for decision-making purposes. Duke (1974) refers to a "cone of abstraction" to illustrate these levels (see Fig. 1.1; see Chapter 2 of this book).

Games simulate social dynamics (e.g., communication processes through actors using rules), as well as the dynamics of the resources depicted in the reference system. In simulation games, the scope of communications and actions between the actors is broadened by linking them to technical and material processes that mirror the social system's resources. The main goal of simulation games is to simulate the actors' decision-making processes and demonstrate the consequences thereof within social systems (e.g., within an organization). *Gaming simulation* can be defined as simulation of the effects of decisions made by actors assuming roles that are related to a system of rules, with explicit reference to resources that authentically symbolize the existing infrastructure and available resources (Rizzi, 2014a).

Despite their diversity and variety, all simulation games contain three fundamental elements. The prototype gaming simulation combines *role-play* and *simulation*. Like real socio-technical systems, also simulation games include *actors, rules,* and *resources* as building blocks (Checchini, 1988; Klabbers, 1999; Rizzi, 2014b).

- *Simulation and resources:* Simulation games mimic the processes, networks, and structures of specific existing systems. With a simulation, it is possible to replicate and investigate system processes that cannot be carried out in real life. These processes include simulations of military maneuvers and disaster

situations, as well as flight simulators for pilot training. Simulation games thus offer an opportunity to make the best possible use of limited resources and to make the long-term effects of decisions tangible and transparent. Simulation games encourage holistic and interconnected critical thinking, as well as understanding of the systems.

- *Roles and actors:* Besides the simulation itself, role-playing is an integral element of simulation games. In every real-life system (e.g., an organization), the actions of people or stakeholders with different interests, information, and perspectives are interrelated. It is precisely this interaction that simulation games replicate. In addition to mirroring real-life systems, simulation games incorporate players who assume specific roles (based on the roles of real-life actors). They have a certain freedom in terms of how they fulfil the role and interpret the situation. The modern concept of the hybrid simulation game allows real human actors to interact with simulated actors.
- *Game rules:* Game rules determine what the players are permitted to do, including their interactions, communication, and feedback, and define constraints (thus determining the allowable actions). The game rules may also affect resource availability (Klabbers, 2009). As early as the 1930s, Johan Huizinga characterized humans as "Homo Ludens" and saw games as a fundamental human achievement. Unlike pure play, such as a soccer match or poker game, simulation games represent reality. Therefore, the frequent criticisms of simulation games are unfounded: that they are merely play and that gaming is related to gambling. Simulation games use well-defined gaming forms (e.g., role-play, rule-based play, etc.) to simulate real-life systems.

Simulation games are experiential (taking place in a low-risk environment that is safe and error tolerant) and involve problem-based learning environments based on qualitative and quantitative models of (dysfunctional) reality or alternative hypothetical futures. They allow learners and decision-makers to play different roles, act according to a set of rules, make decisions, and predict the effects of those decisions (including long term and side effects) on the simulated system and its resources. Gaming simulation methods are used for creating knowledge and enhancing competencies in an authentic way and for facilitating problem-solving and decision-making by working out the consequences of different strategies. Through gaming simulation, interventions for real systems are developed and alternative futures are explored (Kaneda et al., 2016). Through implementing and transferring the results of game play and debriefing, gaming contributes to the transformation of organizations and has a social impact in real-life systems (for details about games for learning, see Sect. 1.6).

Figure 1.2 illustrates gaming simulation's use of games to simulate system dynamics. Game artifacts are designed as an abstract qualitative and/or quantitative model of a real reference system. In the design process, a set of system elements is represented into a set of gaming elements. Through play and debriefing of the game, participants can practice and experience system's behavior and human interaction and understand the effects of their decisions. Players represent actors of the reference

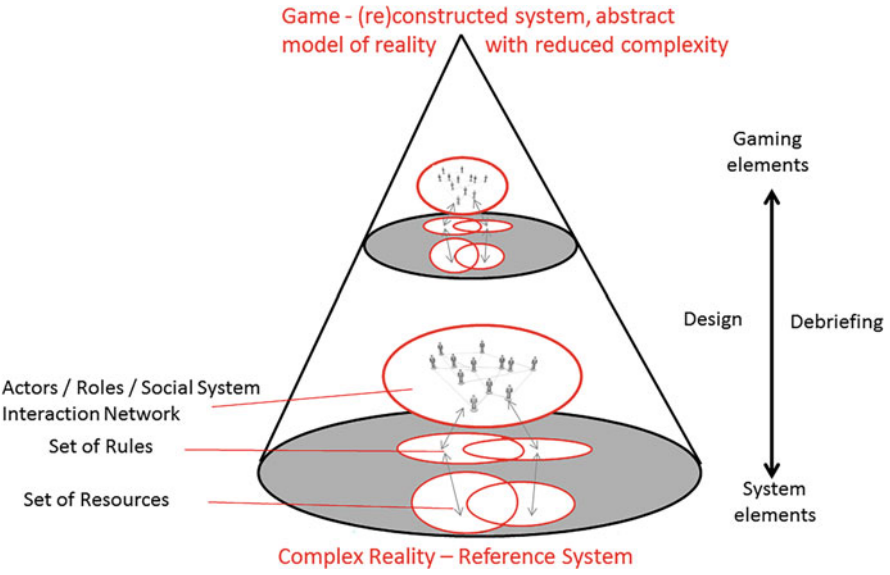

Fig. 1.2 Building blocks of games and real systems. (Based on Klabbers, 2009; Duke, 1974)

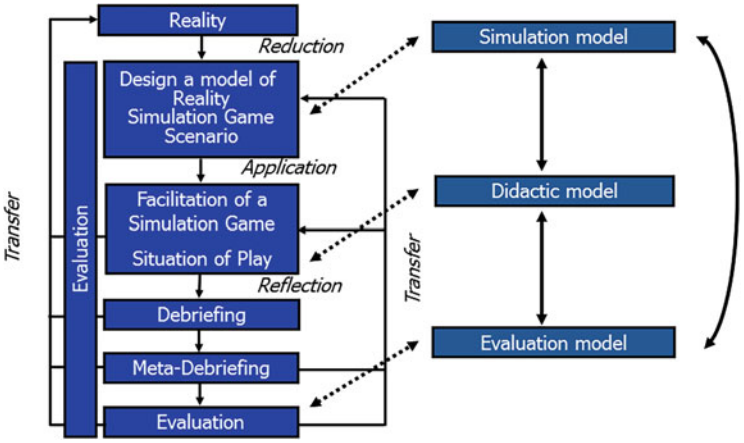

Fig. 1.3 Process of gaming simulation. (Based on Kriz, 2003, 2011)

system and interact while playing different roles, applying rules, and utilizing resources (Klabbers, 2009).

Figure 1.3 depicts gaming simulation as processes. Some aspect of reality is selected as a reference system for the *design* of the simulation game artifacts. Here, a specific case is transferred into a specific *game scenario*. The simulation game is designed as a reduced and abstract dynamic model of reality. In the design part of the

process, a *simulation model* is created that defines the relationship between system and gaming elements.

The designed game is played by participants, as facilitated by trainers, educators, and consultants. Debriefing is conducted to enhance the learning process and apply newly gained insights, knowledge, and skills (for more details on debriefing, see Sect. 1.6). In this part of the gaming process, known as *facilitation and debriefing*, a *didactic model* is applied (Kriz, 2010). This model defines how the game is used by a specific target group and within a specific learning or organizational context.

In the second phase, i.e., debriefing, referred to as *meta-debriefing* and *evaluation*, a *transfer* is supported, which encourages players to further reflect on the linkages between the game and reality. In this part of the process, an *evaluation model* is applied that describes how the potential effects of the game are investigated and how and why the game works in given contexts (Kriz & Hense, 2006; Hense & Kriz, 2008).

By inviting stakeholders and opinion leaders to participate in the design process and to participate in or observe the play and debriefing, they contribute as agents and actors. Transformative ideas, insights, skills, and innovations may be transferred from gaming situations into the real world.

1.2 Gaming Simulation as Science of Analysis and Science of Design

The disparity between conventional academic research on gaming and simulation and research based on actual experience has been criticized. The conventional academic research carried out in this field has focused on developing and improving domain-specific knowledge by using simulation games in experimental environments (gaming, simulation, and behavioral laboratories). By contrast, actual experience in this field involves the transfer and dissemination of knowledge obtained via simulation games with clearly defined audiences and a well-defined context of use. Klabbers (2003, 2006) uses the terms *science of analysis* and *science of design* to describe these two different approaches (see Fig. 1.4).

The theory-driven science of analysis approach uses games and simulations as scenarios to test theories pertinent to various domains, such as education, social psychology, politics, and economics. The main aim of the conventional science of analysis approach is to develop general scientific concepts and context-independent knowledge. Accordingly, the external validity of findings is of primary importance to this approach. Research carried out using the issue-driven science of design approach, on the other hand, emphasizes the usability of simulation games. In this approach, games and simulations are studied with the aim of promoting and evaluating their development and use in practical contexts. Here, it is necessary to focus on local knowledge and unique, individual circumstances to derive customized solutions to practical problems.

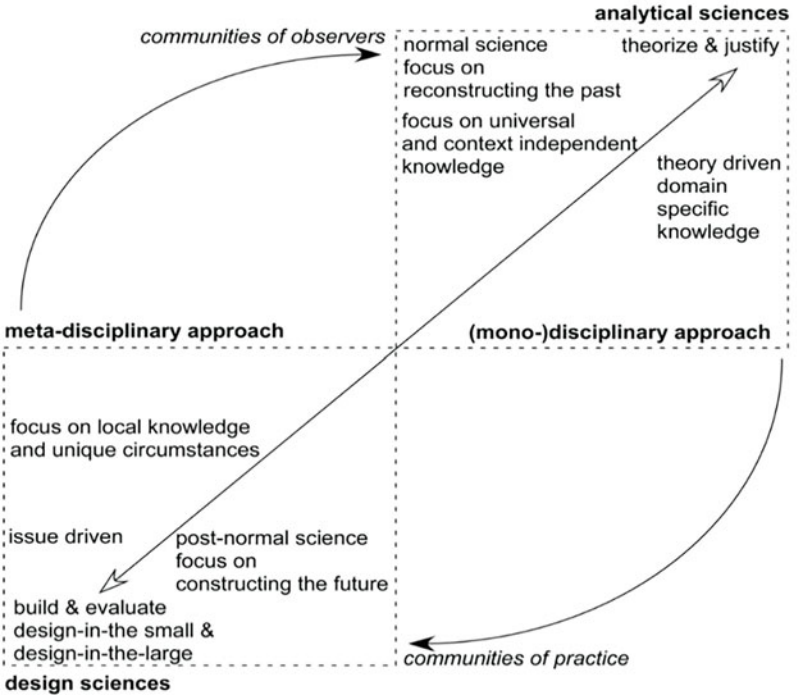

Fig. 1.4 Analytical science and design science Klabbers (2009, p. 191)

The science of design has two branches (Klabbers, 2003, 2006): *design-in-the-small*, which uses simulation games as artifacts to model real processes, and *design-in-the-large*, which uses simulation games to change actual dysfunctional situations, patterns of behavior, or structures. It is essential that artifact assessments evaluate simulation games as products and consider the effect of this on the process of transformation. In design science, the interplay of design-in-the-small and design-in-the-large is of primary importance. Design-in-the-small produces simulation games (gaming artifacts) as interventions or interactive learning environments, to enhance education and training of individuals and groups. Games can contribute to design-in-the-large-based changes of sociotechnical systems to create a *learning organization*; this is relevant to change management, digital transformation, and organizational development.

1.3 Gaming Simulation Applications

Based on the analytical and design sciences, gaming simulation applications can be grouped into the following categories (Kriz, 2017):

- Gaming simulation from an analytical science perspective use *games and simulations as scenarios to empirically test, justify, and develop theories* in specific domains (see above).
- Gaming simulation from the design perspective emphasize the *usability of simulation games.* Here, games and simulations themselves are studied, with the aim of promoting and evaluating their development and use in *practical contexts* (e.g., Greenblat & Duke, 1975; Naweed et al., 2018; Kriz & Manahl, 2018). This constitutes an interdisciplinary and practical approach to simulation game design (as science, art, and crafts) based on local knowledge of unique problems or challenges. Simulation games include computer simulations, behavior-oriented role plays with or without a computer-assisted simulation element, "hands-on" board games, and, more recently, digital and non-digital educational games, game-based learning, and web-based simulation games. Simulation games can also be described as *serious games*, and in terms of *meaningful play*. Gaming simulation applications are divided into three categories:
  - Many gaming simulation applications fall into the category of *education and training simulation games.* Using simulations and games as instructional and educational aids has a long tradition (e.g., Crookall et al., 1988; Leigh & Kinder, 1999; Percival et al., 2003; Kriz & Eberle, 2004). For example, simulation games are used for experiential teaching and learning. They promote knowledge acquisition, the development of skills, competencies, attitudes and values, and the understanding of complex relationships. In particular, they facilitate training in the performance of dangerous tasks in a safe learning environment. The focus of applications in this category is very often on individual learning outcomes.
  - Gaming simulation also has a long history of use for *simulation and game-based policy interventions* (e.g., Duke, 1974; Geurts et al., 1998; Duke & Geurts, 2004; Duke & Kriz, 2014; Tsuchiya, 2012). Simulation games support the testing and evaluation of alternative strategies and courses of action. Gaming simulation can lead to a better understanding and handling of the interests of different stakeholders. The focus of these applications is on collective rather than individual learning and improving the real decision-making of groups of actors and stakeholders.
  - Increasing importance is being attached to *gaming simulation as a core method for the design of complex sociotechnical systems* (e.g., Kriz, 2003; Shiratori et al., 2005; Lukosch et al., 2018). Meijer (2015) highlighted how a client often has a need for *organizational (re)design*, innovation, or improvement. Simulation gaming applications may facilitate the (re)design of organizational rules, structures, and performance, workflow processes, and human factors.

Analytical and design sciences provide a foundation for gaming architecture (Klabbers, 2018). Like physical architectural works and buildings, gaming simulation artifacts can be conceived of as a combination of art, crafts, and science. *Game science* in academia involves thorough scientific research and evaluation (through an

interdisciplinary combination of the analytical and design science approaches). *Gaming as craft* refers to techniques and methods for the design of game artifacts and for debriefing. This *craftmanship* aims to solve complex problems by considering the perspectives of different stakeholder. Games are to some extent pieces of *art* with the potential to transform reality and promote innovation and change in societies and organizations through reflection and co-construction of meaning and knowledge (Kriz et al., 2018).

1.4 "Serious Play" and Gaming Simulation: Historical and Cultural Aspects

"The discussion of the meaning of play, of the relation of play and work, and of the history and application of play to education is by no means full" (Johnson, 1907, p. vii). This quote, from the book *Education by Plays and Games* by George Ellsworth Johnson, was published more than 100 years ago and is itself based on even older studies, starting with Johnson in 1894. Like other books from the early twentieth century (e.g., *Games for the Playground, Home, School and Gymnasium* by Jessie Hubbell Bancroft, 1909), it shows that there is enormous enthusiasm for games as a serious educational tool, especially in the developing field of pedagogy; moreover, discussion has continued into the early years of the twenty-first century.

Authors and educators like Johnson described types of games and play that are considered today as serious games. This term was introduced in 1970 by Clark Abt, in his book of the same name. The term *serious games* seems to be used mainly by companies producing three-dimensional videogames and by researchers of digital games discussing the value and use of entertainment games for learning and education. Originally, the term encompasses all forms of games (e.g., outdoor games, board and card games, and face-to-face roleplaying games; Crookall, 2010).

Board games have been widely used from the seventeenth century for entertainment and education purposes. There are countless travel game artifacts illustrating a space or landscape (from single buildings to maps of cities, the whole world, and even the universe). Players move game figures around the board to simulate a journey, during which they obtain geographical or ethnological information, or other facts. Other games involve chronological information, and players imagine moving through time, during which they obtain information about historical events. Sometimes, games represent a metaphorical journey (e.g., living a virtuous life) or teach players how to have a good career. All of these games have roots in ancient board games, such as SENET ("game of passing"), played in Egypt in approximately 3000 BCE, which involves the mythological journey of the human soul into the afterlife.

In his famous book, *Homo Ludens* (1938), Huizinga discussed the interconnection of games with aspects of human culture and the meaning of *play* and its "opposite" term, *earnest*. He in fact argued that these two terms are not opposites.

Instead, earnest is equivalent to *not playing*, while *play* is not defined by being *not earnest* (Huizinga, 1955). Players can be playful and serious at the same time while playing a game. Klabbers (2009) remarked that the term "serious game" therefore causes terminological confusion that is still seen in the academic discourse. Researchers who use this term show limited interest in the proper terminology for discussing games. The term serious game is increasingly being used for creating a brand image for game marketing purposes. From a scientific and methodological point of view, it is a "nonsense" term; we prefer *gaming* or *game-based learning* (in an educational context).

Typical game artifacts in the early twentieth century have interesting roots. Elizabeth Magie designed The Landlord's Game board game, based on realty and taxation, in 1903, and patented it in 1904. It is generally regarded as the direct inspiration for the well-known game MONOPOLY. Magie designed it as a learning game with the goal of demonstrating how rents enrich property owners while at the same time impoverishing tenants. She intended to illustrate the negative aspects of private landholding monopolies. Magie hoped that playing her game would lead to greater understanding of unfairness. In 1934–1935, Magie sold the patent to The Landlord's Game to Parker Brothers, who started distributing the game MONOPOLY (the name of which denotes the domination of a market by a single entity). Players move around the game board, buy and develop properties (houses and hotels), and collect rent from their opponents with the goal of driving them into bankruptcy. Although nowadays played mainly for fun and entertainment, MONOPOLY was originally designed as a game-based learning activity. In addition, we can view it as an early simulation game because it aims to replicate real economic and social processes.

Ancient games dealing with war situations show how serious gaming can be. Early war games include GO (from China, about 400 BCE), CHATURANGA, and CHESS (from India, about 500 CE), and chess-like tabletop games such as Christoph Weickmann's NEWLY INVENTED GREAT KING'S GAME, from 1644. A further example is the BRUNSWICK WARGAME, developed in 1780 by Johann Christian Ludwig Hellwig. This game was originally entitled "Attempt of a tactical game based on chess and played by two or more persons." Hellwig's goal was to create an inexpensive and playable war game to teach and train military officers in the Prussian Army, to develop their strategic and tactical skills and simulate warfare in an authentic and realistic way (Nohr, 2014). Early business simulation games were frequently described as *business war games*. A famous example is the AMA TOP MANAGEMENT DECISION SIMULATION, the first computer simulation from the American Management Association (1956). Franc M. Ricciardi published a paper entitled "Business War Games for Executives." (Ricciardi, 1957). Another famous simulation game of the same concept showed that digital games and computer simulations do not necessarily provide a better model of reality than board games. The BUSINESS MANAGEMENT GAME of Gerhard Andlinger and Jay Greene (1958) was the first business board game to simulate a situation in which several companies compete within a market and included elements commonly seen in today's management games (e.g., market

competition, marketing, advertising, research and development, production, and finance).

These historical examples show that the label serious game is independent from gaming techniques and technologies. In principle, every game can be converted into a game-based learning activity. Games with serious learning elements that can influence real-world outcomes can be called serious games. The example of MONOPOLY shows that simulation games used as instructional activities need to take didactic principles (e.g., debriefing) into account. Furthermore, simulation games must have the potential to represent reality, by serving as case studies (Kikkawa, 2014). Games for entertainment purposes (both digital and non-digital) can be transformed into game-based learning with additional content and a debriefing element.

The well-known game SNAKES AND LADDERS is played all over the world, for fun and entertainment. It involves a game board which is comprised of a grid of numbered squares. Snakes and ladders are depicted on the game board, each connecting two specific board squares. Each player places their counter on the starting square and then takes it in turns to roll a die. If the counter lands at the bottom of a ladder, the player moves up to the top of the ladder. If the counter lands on the head of a snake, the player "slides down" to the bottom of the snake. The winner is the player who arrives at the final square first.

Several applications show how SNAKES AND LADDERS can be used for education purposes via the addition of domain-specific content. The snakes and ladders symbolize cause and effect relationships. For example, for childhood health education, text could be added next to the ladders such as "Fresh fruits—healthy child." For business education, text could be added next to snakes such as "Sales force lacks skills and motivation—lower sales and profit." SNAKES AND LADDERS is also often used for moral and ethics education. Moving the counter according to dice rolls symbolizes the idea of navigating the difficult journey of life. Ladders represent virtuous, good decisions, and snakes represent sinful or poor decisions. The game originated in India and was intended to educate players about the Hindu principles of karma, reincarnation, and *moksha* (final salvation). The game can in fact be classed as a simulation game, because it represents a real phenomenon and reflects a real process. However, it is not a simulation from the Christian perspective, because karma and reincarnation are not tenets of that faith. Nevertheless, Christian moral principles and rules can also be superimposed onto the game, such that it can still be used as for educational purposes.

The above discussion shows that the lines between entertainment, educational, and simulation games are thin. Because knowledge and social systems are constructed by humans, the classification of games depends heavily on cultural and social norms, roles, and belief systems. Games are often based on unconscious and implicit cultural phenomena. Consequently, applying a game to a new cultural context must be done with care. A game that works well in one context and is well-accepted by designers and players as a precise model of reality may fail utterly when used in a different cultural environment, and with a different target group. In a

divergent social system, a game may be seen as "false," and even inappropriate and offensive.

1.5 "Gamification" and Gaming Simulation Design

Gamification refers to the use of game design elements in non-game contexts (Deterding et al., 2011). Gamification uses game-based mechanics, parts, principles, and aesthetics. The purpose is mainly to engage and motivate players, provide rewards and real-time feedback, influence behavior, foster creativity, and support social networking, the sharing of information, and learning. When using elements of games, it is often not the goal to create a self-contained, complete game. Gamification often aims to improve employee performance, the organizational climate and brand, or customer retention (Kumar & Herger, 2013).

Gamification principles are based on game-based learning and relate to theories of learning, performance, motivation, and engagement (cf. Landers et al., 2018; Proulx et al., 2017; Deterding, 2015; Bedwell et al., 2012; Garris et al., 2002). The scientific basis for gamification is provided by educational and motivational psychology. Gamification involves more than just the game elements, such as points, badges, and leaderboards (Werbach & Hunter, 2012; Wardaszko & Podgórski, 2017; Monterrat et al., 2017), found in modern tools and applications (e.g., social media, smartwatches, health trackers, and hotel rating websites). Gamification aims to make specific content more gamelike (e.g., by adding narrative story elements and meaning to a book). The most comprehensive form of gamification involves converting content into a simulation game.

Practical gamification frameworks can support the game design process. Concepts like the Octalysis framework (Chou, 2015) can be useful for understanding the player's motivational and learning processes and can be applied for designing game artifacts. This framework assumes that there are eight core "driving factors": epic meaning and calling, development and accomplishment, empowerment of creativity and feedback, ownership and possession, social influence and relatedness, scarcity and impatience, unpredictability and curiosity, and loss and avoidance. Other concepts from the serious games and digital game design communities provide insight into the various elements and aspects required for successful game design (Schell, 2008; Salen & Zimmerman, 2004; McGonigal, 2011).

However, for the traditional gaming simulation research community, these gamification principles and mechanics are not new. For the design of simulation games, gaming-related principles are only one aspect of the science, art, and craft of game development. Simulation game designers also apply their competencies and experience in organizational design and use various skills and modeling and simulation techniques (e.g., agent-based and system dynamics modeling; Deguchi, 2004; Kaneda, 2012; Kriz & Manahl, 2016).

Regarding literature, modern "classics" provide profound insight into the game design process. Examples include *Gaming: the Future's Language*, by the founder

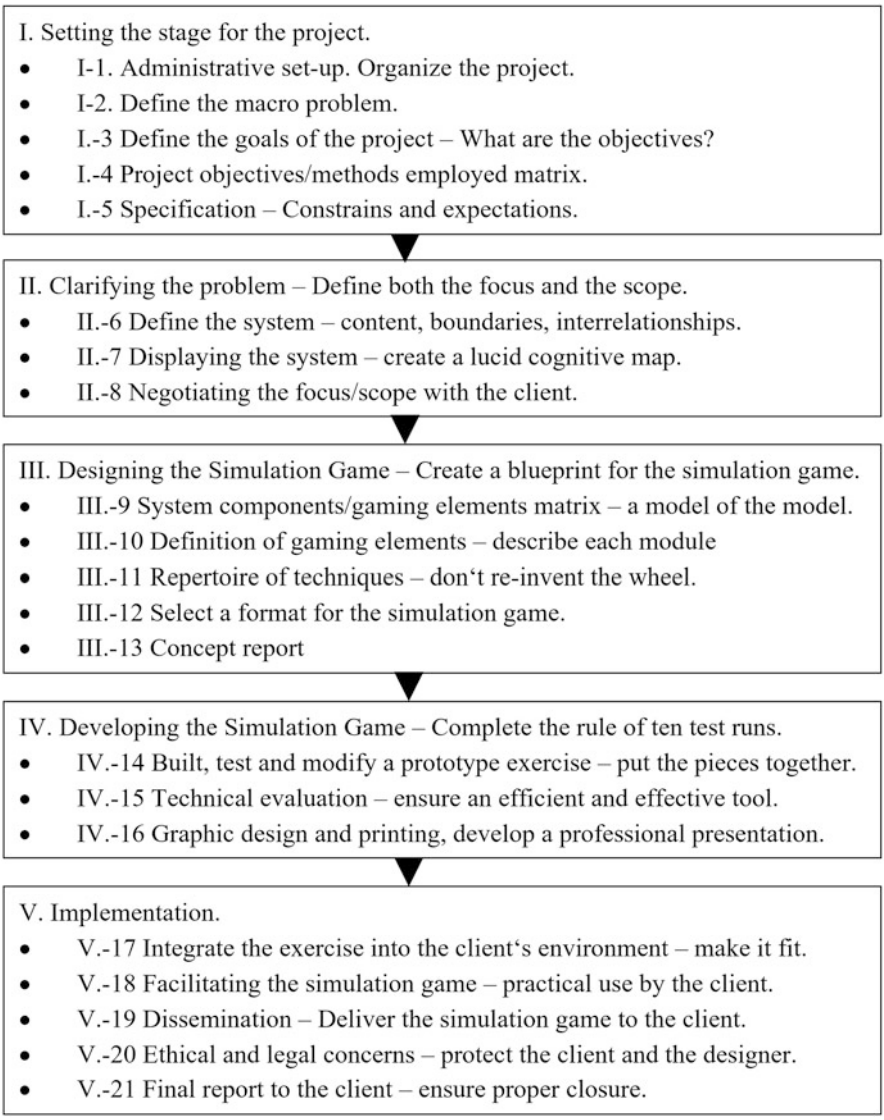

Fig. 1.5 Duke and Geurts 21 steps of simulation game design (based on Duke & Geurts, 2004, p. 277)

of the International Simulation and Game Association (Richard Duke, 1974), *Policy Games for Strategic Management* (2004) by Duke and Jac Geurts, the famous work of Cathy Greenblat entitled *Designing Games and Simulations* (1988), and the well-known book *The Magic Circle: Principles of Gaming and Simulation* (Klabbers, 2009). The widely acknowledged game design model of Duke and Geurts (2004)

Table 1.1 Comparison of Duke/Duke and Geurts vs. Greenblat phases of simulation game design

Duke (1974); Duke and Geurts (2004)	Greenblat (1988)
1. Setting the stage for the project	1. Setting objectives and parameters
2.Clarifying the problem—Define both the focus and scope	2. Model development
3. Designing the simulation game—Create a blueprint for the exercise	3. Decisions about representation
4. Developing the simulation game—Complete the rule of ten test runs	4. Construction and modification of the gaming simulation
5. Implementation—Ensure proper use by the client	5. Preparation for the use by others

involves five phases and 21 steps (see Fig. 1.5 and Table 1.1). Greenblat (1988) also included five main phases in the design process, reflecting the considerable overlap between frameworks.

Considering the "active substance of gaming" (De Caluwé et al., 2008) from a design science and structural perspective, the framework of Wenzler (2008) provides important insight that must be considered when designing a simulation game. Wenzler distinguishes four components: the context, participants, process, and environment. He further defines four subdimensions of each of these four main components. In total, his framework consists of 16 factors varying in complexity (each sub-dimension can be described by a five-point scale). This framework can be described in more detail as follows:

- *Context.* This refers to the nature of the problem or issue in the reference system addressed by the simulation game (ranging from easy and well understood to highly complex, ambiguous, and difficult to define); the objectives to be achieved by the game, ranging from simple knowledge or skills transfer (as in many games for training and education purposes) to knowledge and innovation creation (as in many games for research and policy consulting purposes); the type of model required for the simulation, ranging from purely qualitative to purely quantitative, or a combination of both; and the story and scenario of the game, ranging from very close to reality and highly detailed to more abstract, metaphorical forms differing from reality.
- *Participants.* This refers to the target audience, ranging from only a single player to a group (including large groups with several subgroups); the experience and proficiency level of participants within organizations, ranging from novices to experts, and from operational personnel to executives; the roles of the game actors played by the participants, ranging from their own real-life role to that of someone else, or even that of a system element (e.g., having a single player play the role of a large stakeholder, such as the government of a country); and the organizational and individual cultures of the participants, ranging from homogeneous to heterogeneous.
- *Process.* This refers to the interactions in which participants and facilitators are engaged. It is defined by the temporal characteristics of the nature of the game, ranging from real time to a condensed representation (e.g., 1 h of play represents

1 year in the context of the development of a real system); the nature of the in-game interactions and debriefing, ranging from a very direct and controlling facilitator style with rigid rules and detailed role instructions to an open and free-form gaming experience with self-organized rules and roles and considerable freedom to interpret and rearrange these during game play; the steps constituting the play process, ranging from a single step to a number of similar sequential steps or even to a complex design involving various different nested iterations; and the accounting system used in the game to track the performance and behavior of the participants, and the simulated resources and variables (ranging from purely qualitative to purely quantitative or a combination of both).

- *Environment.* This refers to the number of locations, ranging from a single location in which all participants play at the same time to multiple, interconnected places; the nature of the location, ranging from a physical, real-life facility to a virtual information technology-based environment, or a complex mixture of both; the materials used in the game, ranging from static material that does not change during play to material that transforms completely based on the results and progress of the game; and the means of representation, ranging from highly realistic and authentic to purely metaphorical and symbolic (e.g., artifacts and symbols to which meaning and fidelity are attributed).

1.6 Gaming Simulation and Game-Based Learning

Learning experiences should promote learners' personal development, capacity to question the validity of acquired knowledge, and sensitivity toward social processes. Unlike passive knowledge transfer, learners are drawn into an active, experience-based learning environment (Leigh & Spindler, 2005). The emphasis is on discovering what is personally important (Kriz, 2014; Schwägele, 2014). Simulation games enable self-organized and self-directed learning based on one's own experience, thus nurturing competencies and skills. Gaming simulation can be characterized as prime examples of cooperative, experience-oriented (Jones, 1997; Kolb, 1984), problem-based, and, primarily, self-organized (Kriz, 2010, 2014) methods of learning and education. The key principles are as follows (Kriz, 2010):

- Self-activation and learner activation (i.e., the autonomy of learners when designing learning activities).
- Learner orientation (i.e., building on the learners' previous knowledge and experience according to their interests [arousing curiosity]).
- Being close to real life (i.e., oriented toward reality; a key idea here is that thinking develops from practical action taken in realistic and authentic situations).
- Holism and purpose (i.e., enabling complete action sequences, systemic observation of interconnections, and the integration of cognitive, affective, and psychomotor processes while learning.

To support the acquisition of skills, simulation games provide practical and relevant learning environments, with realistic levels of complexity and scope for decision-making and action. A gaming simulation is an interactive learning environment that encourages the player to cope with authentic situations that closely mimic reality. It is also a form of social learning, because it promotes team-based problem-solving and addresses typical conflicts of interest.

Another advantage of simulation games is the immediate feedback on the effects of actions; the accelerated pace of simulations also promotes understanding of long-term effects. Simulation games thus provide experimental, experience-oriented learning environments. A single simulation game can be used in multiple contexts and newly acquired knowledge can be applied to unfamiliar domains. This learning from multiple perspectives promotes flexibility in the application of domain-specific knowledge. Learning from multiple perspectives provides players with the intellectual tools needed to transform new knowledge into action. Within games, participants not only deal with explicit knowledge but also experience and acquire tacit and embodied knowledge. In addition, situational and enculturated knowledge is obtained. The major rationale for using gaming simulation is not only to define objectives and strategies for achieving learning goals but also to implement the necessary actions. Furthermore, gaming simulation aims to analyze and assess responses to critical situations and make the consequences of decisions transparent (Kriz, 2003, 2014).

Gaming simulation research shows that learning is enhanced, above all, by reflection and transfer processes during and after a simulation game (Kriz & Hense, 2006; Kriz & Auchter, 2016). *Debriefing* is a widely accepted term for describing these processes (Nakamura, 2014; Tipton et al., 2016). Key debriefing processes include game analysis (What happened? What did the players feel?), game reflection (How can we explain the course of the game? How can we evaluate the game result?), transfer (How are the game and reality related? What aspects of the game were (un)realistic?), and learning effects (What did we learn? What decisions and solutions will I implement in my real-life, everyday work environment?) (Kriz, 2010; Thiagarajan, 1993). Participants can enhance their systems thinking and skills for understanding and changing systems through discussion of the lessons learned and problem-solving strategies applied during debriefing. Debriefing provides players with an opportunity to share multiple perspectives and construct common mental models through social interaction (Kriz & Brandstätter, 2003). Studies have shown the positive effects of debriefing on learning, attitudes, and performance (Kikkawa et al., 2019).

A typical gaming session involves stepping into a *magic circle* (see Fig. 1.6). Klabbers (2009) calls this the *macro cycle* of gaming, which is comprised of briefing, play, and debriefing. The play scenario corresponds to the *experiential learning cycle* phases of *active experimentation* and *concrete experience* (Kolb, 1984). Debriefing corresponds to the phases of *reflective observation* and *abstract conceptualization* in Kolb's model.

The iterative rounds/phases of play are called the *micro cycle*, in which players experience learning by executing and reflecting on action. There are four processes:

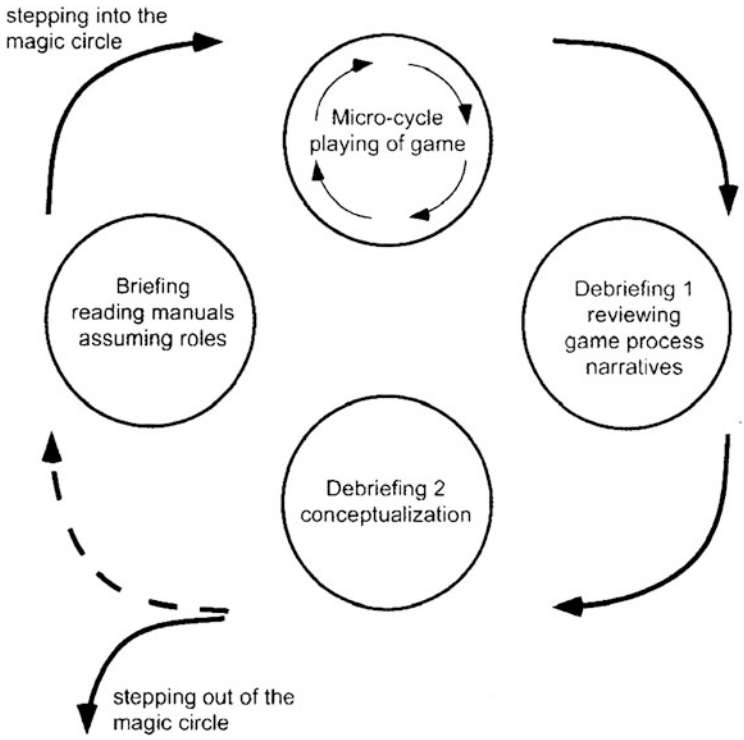

Fig. 1.6 Interconnection of gaming macro cycle and micro cycle (Klabbers, 2009, p. 55)

being involved in actions and interactions with other players; being involved in a continuous sense-making process regarding what is going on in the game and constructing meaning about one's own, and others', behaviors and decisions within the game; and cognitive and affective processes that lead to the emergence of new mental models or refinement/adjustment of existing knowledge, skills, attitudes, and values, which are very often not conscious and may influence decision-making, promoting flexible adjustment of one's own action repertoire during the flow of the play. New or alternative behavior and communication strategies are applied and tested in real time during the game.

To some extent, all aspects of Kolb's learning model are represented during game play. Nevertheless, debriefing is important to achieve a degree of "mental distance" from the ongoing game. Here, the task of the facilitator is to promote more deliberate learning and comprehensive understanding of the game in terms of its commonalities with and differences from reality. Through elaboration and dialogue, awareness of the four processes is obtained from the point of view of every individual player. The individual perspectives of the entire group of players are considered. This leads to a shared understanding of the underlying group dynamics and the game dynamics and conditions and context of the game session. Debriefing allows for additional meta-

communication and metacognition. Through analysis and sense-making, the game experiences are connected with existing scientific theories, domain-specific content, and professionally validated knowledge. Individual perspectives become transparent and traceable, and ideas and concepts are generalized and abstracted. Individual mental models are linked and shaped in a mutual social construction of reality. The whole process unfolding within the magic circle of gaming supports the further development of competencies and transfer thereof into the real world (Nadolny & Halabi, 2015).

Evaluation research has established how simulation games create a motivating learning environment, by requiring players to assume roles within the game. Role-taking fosters long-term interest in the educational content of the simulation game and promotes the acquisition of knowledge (Kriz et al., 2008; Hense et al., 2009; Knogler & Lewalter, 2014). For learning through gaming simulation, game design is also important. In the case of open games, the simulation model, rules, and course of the game are not specified a priori. Instead, they are co-constructed by the participants with facilitation by seasoned simulation game designers. The participants thus become "experts" who construct systems and pedagogical and didactic models, for a shared social representation of reality. This self-organizing learning environment not only reflects the contextual nature of knowledge but also the connection between perspectives and the changing contexts of knowledge (Klabbers, 2009; Kriz & Manahl, 2016).

Learning through games is important at both the individual and group/organizational level, as discussed above. Organizational and societal development can be described in terms of design-in-the-large with characteristic sequential phases (with feedback loops) including diagnosis, defining goals, development of change strategies, concrete planning, action, and evaluation. In all phases, gaming simulation can be used as a catalyst for reasonable change (Kriz, 2003). In the diagnosis phase, actual conditions are determined. Gaming simulation help players to understand existing organizational structures and workflow processes. For example, members and stakeholders of an organization can design simulation games in collaboration with gaming experts, to illustrate the processes and structures of the organization (a present-state simulation game). During game play and debriefing, organizational strengths and weaknesses can be identified, thereby fostering discourse on potential change strategies. The knowledge thus acquired, and the conclusions drawn, can be used to define goals and plan change measures. Gaming simulation allow us to test and discuss the consequences of alternative organizational structures. The desired changes can be illustrated in "vision/future-state simulation games." The real structures and workflow processes of organizations can be changed according to simulated structures and processes (Ruohomäki, 2002). For the implementation of change, training games can be used to improve the awareness, capacity, and skills of the workforce. Simulation games can also function as a medium of communication and be used to anticipate individuals' trajectories within an organization. They foster trust, because changes and their consequences become more tangible and emotions and resistance are addressed via structured debriefing. Finally, the

consequences of organizational changes can be evaluated with the help of simulation games.

Acknowledgments This work was supported by JSPS KAKENHI Grant Number 18K03014.

References

Abt, C. C. (1970). *Serious games*. Viking Press.
Andlinger, G. R. (1958). Business games – Play one. *Harvard Business Review, 36*, 115–125.
Bancroft, J. H. (1909). *Games for the playground, home, school and gymnasium*. Macmillan.
Bedwell, W. L., Pavlas, D., Heyne, K., Lazzara, E. H., & Salas, E. (2012). Toward a taxonomy linking game attributes to learning. An empirical study. *Simulation & Gaming, 43*(6), 729–760.
Checchini, A. (1988). Simulation is education. In D. Crookall et al. (Eds.), *Simulation-gaming in education and training* (pp. 213–238). Pergamon Press.
Chou, Y. (2015). *Actionable gamification: Beyond points, badges and leaderboards*. Octalysis Media.
Crookall, D. (2010). Serious games, debriefing, and simulation/gaming as a discipline. *Simulation & Gaming, 41*(6), 898–920.
Crookall, D., Klabbers, J. H. G., Coote, A., Saunders, D., Cecchini, A., & Delle Piane, A. (Eds.). (1988). *Simulation-gaming in education and training*. Pergamon Press.
De Caluwé, L., Hofstede, G. J., & Peters, V. (2008). *Why do games work? In search of the active substance*. Kluwer.
Deguchi, H. (2004). *Economics as an agent-based complex system. Toward agent-based social systems sciences*. Springer.
Deterding, S. (2015). The lens of intrinsic skill atoms: A method for gameful design. *Human-Computer Interaction, 30*, 294–335.
Deterding, S., Dixon, D., Khaled, R., & Nacke, L. (2011). From game design elements to gamefulness: Defining "gamification". In *Proceedings of the 15th International Academic MindTrek Conference: Envisioning Future Media Environments* (pp. 9–15). ACM.
Duke, R. D. (1974). *Gaming, the future's language*. Sage.
Duke, R. D., & Geurts, J. L. A. (2004). *Policy games for strategic management*. Dutch University Press.
Duke, R. D., & Kriz, W. C. (Eds.). (2014). *Back to the future of gaming*. W. Bertelsmann Verlag.
Garris, R., Ahlers, R., & Driskell, J. E. (2002). Games, motivation, and learning: A research and practice model. *Simulation & Gaming, 33*(4), 441–467.
Geurts, J., Joldersma, C., & Roelofs, E. (Eds.). (1998). *Gaming/simulation for policy development and organizational change*. Tilburg University Press.
Greenblat, C. S. (1988). *Designing games and simulations*. Sage.
Greenblat, C. S., & Duke, R. D. (1975). *Gaming – simulation: Rationale, design, and applications*. Sage.
Hense, J., & Kriz, W. C. (2008). Improving the quality of gaming simulations: Can we learn anything from evaluation? In I. Mayer & H. Mastik (Eds.), *Organizing and learning through gaming and simulation* (pp. 85–93). Eburon.
Hense, J., Kriz, W. C., & Wolfe, J. (2009). Putting theory oriented evaluation in practice: A logic model approach for the evaluation of Simgame. *Simulation & Gaming, 40*(1), 110–133.
Huizinga, J. (1955). *Homo ludens. A study of the play-element in culture*. Routledge & Kegan Paul. (Originally work published 1935).
Johnson, G. E. (1907). *Education by plays and games*. Ginn.
Jones, K. (1997). *Games and simulations made easy: Practical tips to improve learning through gaming*. Kogan Page.

Kaneda, T. (2012). On a formalization of agent-based social systems – As a common basis for modeling gaming simulation and agent-based social simulation. *Studies in Simulation and Gaming, 22*, 5–15.

Kaneda, T., Kanegae, H., Rizzi, P., & Toyoda, Y. (Eds.). (2016). *Simulation and gaming in the network society*. Springer.

Kikkawa, T. (2014). Gaming as the futures language case studies and development. In R. D. Duke & W. C. Kriz (Eds.), *Back to the future of gaming* (pp. 93–99). W. Bertelsmann Verlag.

Kikkawa, T., Kriz, W. C., & Sugiura, J. (2019). The effects of debriefing on the performance and attitude of Austrian university students and cultural differences to Japanese students. In R. Hamada, S. Soranastaporn, H. Kanegae, P. Dumrongrojwatthana, S. Chaisanit, P. Rizzi, & V. Dumblekar (Eds.), *Neo-simulation and gaming toward active learning* (pp. 515–524). Springer.

Klabbers, J. H. G. (1999). Three easy pieces: A taxonomy on gaming. In D. Sounders & J. Severn (Eds.), *Simulation & gaming yearbook* (Vol. 7: Simulation and games for strategy and policy planning, pp. 16–33). Kogan Page.

Klabbers, J. H. G. (2003). Simulation and gaming: Introduction to the art and science of design. *Simulation & Gaming, 34*(4), 488–494.

Klabbers, J. H. G. (2006). A framework for artifact assessment and theory testing. *Simulation & Gaming, 37*(2), 155–173.

Klabbers, J. H. G. (2009). *The magic circle: Principles of gaming & simulation* (3rd and Revised ed.). Sense Publishers.

Klabbers, J. H. G. (2018). On the architecture of game science. *Simulation & Gaming, 49*(3), 207–245.

Knogler, M., & Lewalter, D. (2014). What makes simulation games motivating? Design based research on learners' motivation in simulation games. In W. C. Kriz (Ed.), *The shift from teaching to learning: Individual, collective and organizational learning through gaming & simulation* (pp. 150–162). W. Bertelsmann Verlag.

Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development*. Prentice Hall.

Kriz, W. C. (2003). Creating effective interactive learning environments through gaming simulation design. *Simulation & Gaming, 34*(4), 495–511.

Kriz, W. C. (2010). A systems-oriented constructivism approach to the facilitation and debriefing of simulations and games. *Simulation & Gaming, 41*(5), 663–680.

Kriz, W. C. (2011). Qualitätskriterien von Planspielanwendungen. In S. Hitzler, B. Zürn, & F. Trautwein (Eds.), *Planspiele– Qualität und Innovation. Neue Ansätze aus Theorie und Praxis* (pp. 11–37). DHBW ZMS.

Kriz, W. C. (2012). Gaming simulation and ethics: Reflection on interconnections and implications. *Studies in Simulation and Gaming, 22*, 65–68.

Kriz, W. C. (Ed.). (2014). *The shift from teaching to learning. Individual, collective and organizational learning through gaming simulation*. W. Bertelsmann Verlag.

Kriz, W. C. (2017). Types of gaming simulation applications. *Simulation & Gaming, 48*(1), 3–7.

Kriz, W. C., & Auchter, E. (2016). 10 Years of evaluation research into gaming simulation for German entrepreneurship and a new study on its long-term effects. *Simulation & Gaming, 47*(2), 179–205.

Kriz, W. C., Auchter, E., & Wittenzellner, H. (2008). Theory-based evaluation of entrepreneurship education with simulation games. *Indian Journal of Economics and Business, 2008*, 19–33.

Kriz, W. C., & Brandstätter, E. (2003). Evaluation of a training program for systems-thinking and teamwork-skills with gaming and simulation. In F. Percival, H. Godfrey, P. Laybourn, & S. Murray (Eds.), *The international simulation and gaming research yearbook* (Vol. 11: Interactive learning through gaming and simulation, pp. 243–247). Edinburgh University Press.

Kriz, W. C., & Eberle, T. (Eds.). (2004). *Bridging the gap: Transforming knowledge into action through gaming & simulation*. Sagsaga.

Kriz, W. C., Harviainen, J. T., & Clapper, T. C. (2018). Game science: Foundations and perspectives. *Simulation & Gaming, 49*(3), 199–206.
Kriz, W. C., & Hense, J. (2006). Theory-oriented evaluation for the design of and research in gaming and simulation. *Simulation & Gaming, 37*(2), 268–283.
Kriz, W. C., & Manahl, W. (2016). Understanding and changing systems through hybrid simulation game design methods in educational contexts. In T. Kaneda, H. Kanegae, P. Rizzi, & Y. Toyoda (Eds.), *Simulation and gaming in the network society* (pp. 79–93). Springer.
Kriz, W. C., & Manahl, W. (2018). Gaming simulation as a science of design approach. In A. Naweed, M. Wardaszko, E. Leigh, & S. Meijer (Eds.), *Intersections in simulation and gaming. Springer lecture notes in computer science* (Vol. 10711, pp. 380–393). Springer.
Kumar, J., & Herger, M. (2013). *Gamification at work*. Interaction Design Foundation.
Landers, R. N., Auer, E. M., Collmus, A. B., & Armstrong, M. B. (2018). Gamification science, its history and future: Definitions and a research agenda. *Simulation & Gaming, 49*(3), 315–337.
Leigh, E., & Kinder, J. (1999). *Learning through fun and games*. McGraw Hill.
Leigh, E., & Spindler, L. (2005). Congruent facilitation of simulations and games. In R. Shiratori, K. Arai, & F. Kato (Eds.), *Gaming, simulations, and society* (pp. 189–198). Springer.
Lukosch, H. K., Bekebrede, G., & Kortman, R. (Eds.). (2018). *Simulation gaming. Applications for sustainable cities and smart infrastructures. Springer lecture notes in computer science* (Vol. 10825). Springer.
McGonigal, J. (2011). *Reality is broken. Why games make us better and how they can change the world*. Penguin Press.
Meijer, S. (2015). The power of sponges: Comparing high-tech and low-tech gaming for innovation. *Simulation & Gaming, 46*(5), 512–535. https://doi.org/10.1177/1046878115594520
Monterrat, B., Lavoué, E., & George, S. (2017). Adaptation of gaming features for motivating learners. *Simulation & Gaming, 48*(5), 625–656.
Nadolny, L., & Halabi, A. (2015). Student participation and achievement in a large lecture course with game-based learning. *Simulation & Gaming, 47*(1), 51–72.
Nakamura, M. (2014). The impact of relevant experience and debriefing questions on participants' perception of gaming simulation. In R. D. Duke & W. C. Kriz (Eds.), *Back to the future of gaming* (pp. 200–213). W. Bertelsmann Verlag.
Naweed, A., Wardaszko, M., Leigh, E., & Meijer, S. (Eds.). (2018). *Intersections in simulation and gaming. Springer lecture notes in computer science* (Vol. 10711). Springer.
Nohr, R. (2014). Play the Hellwig game. In W. C. Kriz (Ed.), *Proceedings of the 45th Conference of the International Simulation and Gaming Association* (p. 779). W. Bertelsmann Verlag.
Percival, F., Godfrey, H., Laybourn, F., & Murray, S. (Eds.). (2003). *The international simulation and gaming research yearbook* (Vol. 11: Interactive learning through gaming and simulation). Edinburgh University Press.
Proulx, J. N., Romero, M., & Arnab, S. (2017). Learning mechanics and game mechanics under the perspective of self-determination theory to Foster motivation in digital game based learning. *Simulation & Gaming, 48*(1), 81–97.
Ricciardi, F. M. (1957). Business war games for executives. A new concept in management training. *Management Review, 46*(1), 45–56.
Rizzi, P. (2014a). *On the nature of gaming simulation*. Scriptum.
Rizzi, P. (2014b). Between no-place and no-time. In R. D. Duke & W. C. Kriz (Eds.), *Back to the future of gaming* (pp. 59–65). W. Bertelsmann Verlag.
Ruohomäki, V. (2002). *Simulation game for organization development*. Helsinki University of Technology Press.
Salen, K., & Zimmerman, E. (2004). *Rules of play. Game design fundamentals*. MIT Press.
Schell, J. (2008). *The art of game design. A book of lenses*. Elsevier.
Schwägele, S. (2014). Gaming – An environment for learning and transfer. In R. D. Duke & W. C. Kriz (Eds.), *Back to the future of gaming* (pp. 242–255). W. Bertelsmann Verlag.
Shiratori, R., Arai, K., & Kato, F. (Eds.). (2005). *Gaming, simulations, and society*. Springer.
Sutton-Smith, B. (1997). *The ambiguity of play*. Harvard University Press.

Thiagarajan, S. (1993). How to maximize transfer from simulation games through systematic debriefing. In F. Percival, S. Lodge, & D. Saunders (Eds.), *The simulation and gaming yearbook 1993* (pp. 45–52). Kogan Page.

Tipton, E., Leigh, E., Kriz, W. C., & Crookall, D. (2016). Debriefing: The real learning begins when the game stops. In T. Kaneda, H. Kanegae, Y. Toyoda, & P. Rizzi (Eds.), *Hybrid simulation and gaming in the networked Society* (pp. 1–3). Springer.

Tsuchiya, S. (2012). Policy exercise for organizational transformation: A double-loop learning perspective. *Studies in Simulation and Gaming, 22*, 69–76.

Wardaszko, M., & Podgórski, B. (2017). Mobile learning game effectiveness in cognitive learning by adults: A comparative study. *Simulation & Gaming, 48*(4), 435–454.

Wenzler, I. (2008). Is your simulation game blue or green? In L. De Caluwé, G. J. Hofstede, & V. Peters (Eds.), *Why do games work? In search of the active substance* (pp. 41–50). Kluwer.

Werbach, K., & Hunter, D. (2012). *For the win: How game thinking can revolutionize your business*. Wharton Digital Press.

Chapter 2
Knowledge from the Great Ancestors: The "Cone of Abstraction"—Revisiting a Key Concept Through Interviews with Gaming Simulation Veterans

Willy Christian Kriz

Abstract This chapter describes one of the most well-known and cited concepts in the gaming literature, the "cone of abstraction". The cone of abstraction and game design methods are related. During the design process, it is important to develop game artefacts with an appropriate level of abstraction, complexity and aggregation. The original concept of Dick Duke is being discussed, and it is shown how it is understood by its main progenitors, among other key individuals in gaming simulation. Literature is used in which the cone of abstraction is discussed and illustrated through figures. In addition, ten interviews with veterans in the field of gaming simulation were conducted. They give ideas and arguments for enhancement, consolidation, critique, and practical advice.

Keywords Game design · Abstraction · Complexity · Aggregation · Multilogue

The aim of this chapter is to describe one of the most well-known and cited concepts in the gaming literature, the "cone of abstraction", developed by Richard D. Duke. Duke is also the founding father (and honorary member) of the International Simulation and Gaming Association (ISAGA) and wrote the influential book "Gaming: The Future's Language" in 1974, which is regarded by many as the "bible" of gaming literature.

In Chap. 1 of this book, which is concerned with gaming terminology and fundamentals, we introduced the idea of the cone of abstraction and discussed its fundamental elements (i.e. actors, rules, and resources) in relation to games and real systems (based on Klabbers, 2009; and Duke, 1974). We also provided an overview of gaming simulations, in which aspects of perceived reality are used as a reference system. In the process of game design, game artefacts serve as models of reality. This

W. C. Kriz (✉)
Department of Management and Business Administration, FHV University of Vorarlberg, Dornbirn, Austria
e-mail: willy.kriz@fhv.at

T. Kikkawa et al. (eds.), *Gaming as a Cultural Commons*, Translational Systems Sciences 28, https://doi.org/10.1007/978-981-19-0348-9_2

reduces complexity but still allows simulation of the main elements (and interrelations thereof) of the reference system. Gaming simulations allow players to assume realistic roles, make decisions, and manage resources according to the rules governing the reference system.

In the first chapter of this book, we mentioned the 21-step game design method of Duke (1974), which was further developed by Duke and Geurts (2004). The cone of abstraction and game design method are related. During the design process, it is important to develop game artefacts with an appropriate level of abstraction, as discussed in more detail below. In this chapter, we shed more light on the cone of abstraction by showing how it is understood by its main progenitors, among other key individuals in gaming. We introduce literature in which the cone of abstraction is discussed and illustrated through figures. In addition, several interviews with veterans in the field of gaming simulation were conducted. These individuals all have a scientific background, serving as lecturers or professors at universities, and also possess extensive experience as game designers and/or consultants.

The interviewees were as follows:

- Richard Duke
- Jac Geurts
- Jan Klabbers
- Dennis Meadows
- Sebastiaan Meijer
- Vincent Peters and Marleen van de Westelaken
- Paola Rizzi
- Shigehisa Tsuchiya
- Markus Ulrich
- Ivo Wenzler

2.1 The Concept of Richard Duke

In his famous book entitled *Gaming: The Future's Language*, Duke (1974) describes gaming simulation as a form of communication aiding understanding of complex systems, as well as the development of alternative ideas, concepts, and futures.

> For our purposes, gaming/simulation is defined as a gestalt communication mode, a Future's Language which combines a game-specific language and appropriate communication technologies with the multilogue interaction pattern. (Duke, 1974, p. 55)

According to the multilogue concept, game design, gameplay, and debriefing are carried out by a community of participating stakeholders, clients, designers, facilitators, players, and observers. In his 1974 book, Duke illustrated these processes (Fig. 2.1).

Paola Rizzi, a student of Duke (and former president and honorary member of ISAGA), refers to gaming as a "language" used for interpreting past and present

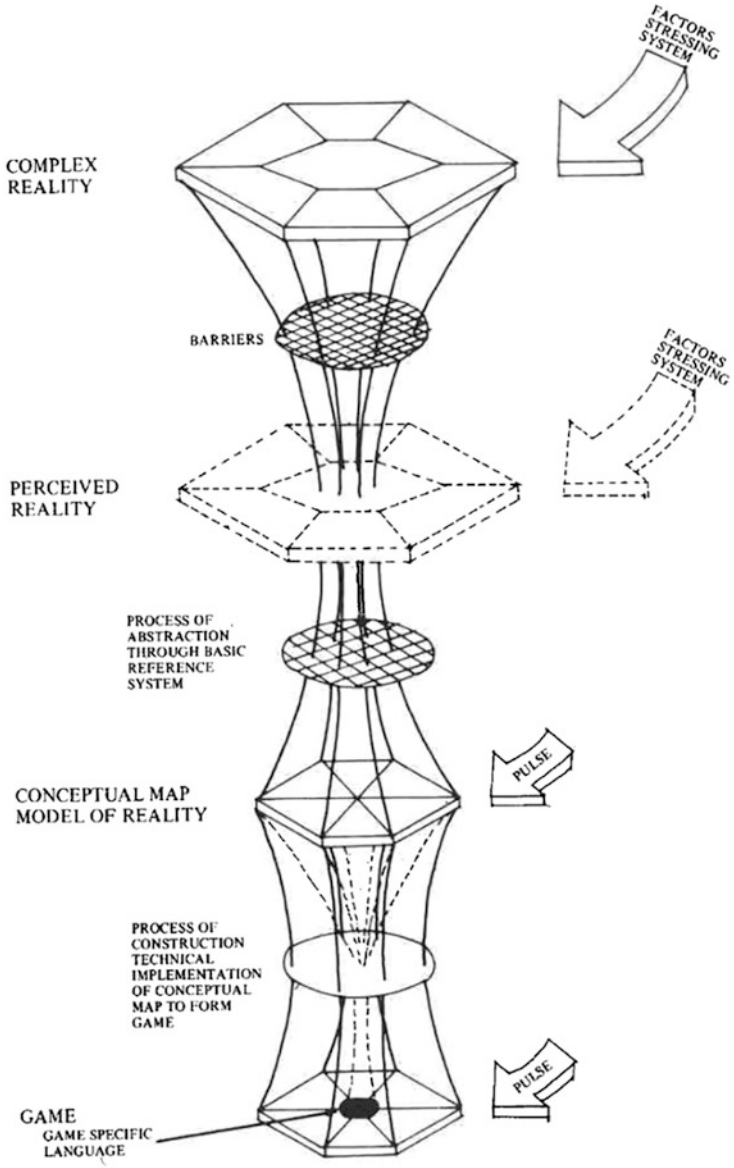

Fig. 2.1 Model of communication through gaming (Duke, 1974, p. 57)

circumstances, shaping the future and empowering participants to reach their goals (Rizzi, 2014). Also in the interview she refers to this aspect.

> Gaming simulation is ... continuously updated and in some way a dynamic, multidimensional instrument which allows the experience of the simultaneous presence of the past, of the present and the foreseeable future. ... One thing that we have to consider is

> that gaming simulation for me is also a sort of, let's say, language that is able to make the participants aware of the control of their own destiny, managing the complexity and ruling the uncertainty that accompanies it. (Interview with Paola Rizzi)

From a constructivist point of view, Duke asserts that human beings create their own realities, which are consciously or (more frequently) unconsciously biased due to certain perceptual filters, as well as cognitively and socially constructed mental models. The realities and perspectives of those involved in game design provide a basis for all subsequent discussions and arguments.

> Whatever reality may be, there are always barriers to its perception and the perceived reality which filters through those barriers becomes the basis for discussion. Because of the complexity involved, both abstraction and organization are required, and our internalized heuristics guide us in formulating a model of reality. (Duke, 1974, p. 58)

In this quote, Duke alludes to the fact that mental models, and especially those used for communication, require abstraction of reality. Step 7 of Duke's game design process involves creating written statements, visualisations, or conceptual maps (i.e. schematics; see Chap. 1 of this book; Duke & Geurts, 2004).

> This process of abstraction entails both the complex problem under consideration and the factors which are brought to bear the system .... Thy are called pulses and their existence allows the participants to gain insight into the abstracted system. Thus is, the participants explore reality through the consideration of iterative pulses of information which focus them in their different perspectives on a common or shared problem, issue, or alternative .... It is important to note that these pulses of information may be either designer induced and/or player induced, and they may be predetermined, random, or triggered by certain events or occurrences in the play of the game. (Duke, 1974, pp. 58–59)

It is important to acknowledge that, for Duke, gaming is a highly participatory activity, useful for solving complex problems and/or addressing existing dysfunctional systems. Although Duke did not focus specifically on simulation games for educational purposes, games are nevertheless suited for use as learning applications. Through gameplaying and debriefing, concepts can be absorbed and understood; moreover, alternative futures can be explored, and solutions to complex problems formulated. Duke viewed gaming as a multilogue communication modality underpinned by an iterative and shared process involving several feedback loops. Games can be used to introduce the factors and conditions underlying problems in a reference system. In the quote below, Duke refers to the interplay between game designers and players. He does not explicitly mention game facilitators, because in his projects the game designer always also acted as the facilitator. Based on their gaming experience, players can provide feedback and constructive criticism regarding the ability of a game to model reality. Although Duke does not use the specific term "debriefing" in the following quote, he is clearly alluding to that process. Whether a model constitutes a sufficient and useful model of reality or whether additional iterations are necessary can be determined through debriefing. Regardless of the degree of correspondence between the reference system and game world, play and debriefing promote understanding of the former. Thus, as an iterative process, gaming offers the opportunity to understand and (re)construct complex systems,

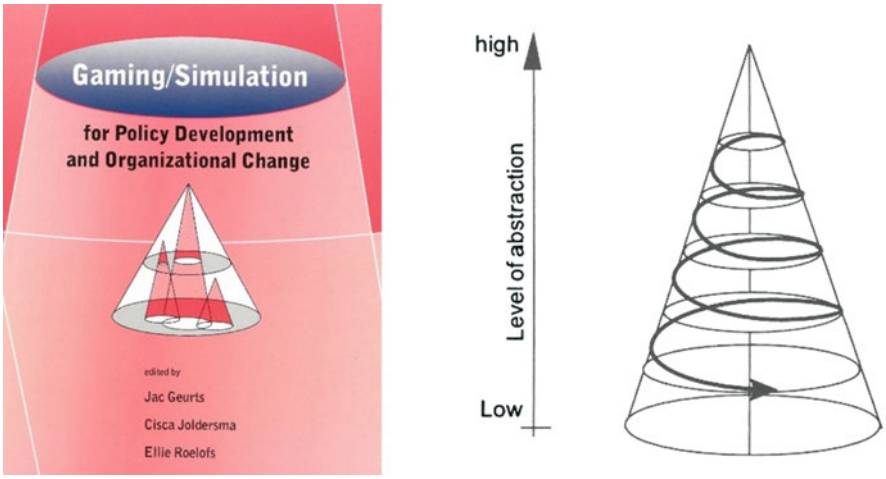

Fig. 2.2 (Left): Cover of the 1998 book by Geurts et al. (1998) depicting the cone of abstraction. (Right): An illustration of the cone of abstraction by Duke (1998)

processes, situations, problems, and interrelations and can give rise to new ideas for overcoming problems and for the transformation of systems.

> Communication through a gaming model entails not only multilogue among players, but also communication between players and designer. The game is iterative, involving cycles of play each of which mimics some real-world time phase but which varies in focus depending on the pulse of information used to trigger the multilogue .... Results must be reviewed, during the critique players must be encouraged to focus on the reality which the game model attempts to present. If there are challenges by the players, these must be resolved by offering evidence to sustain the model, or through the modification of the model to more accurately reflect the new understanding of reality. (Duke, 1974, p. 60)

In the ISAGA conference proceedings (1998), Duke further described his cone of abstraction concept, which is pertinent to the basic principles of gaming discussed above. The cone is also depicted on the front cover of the proceedings book by Geurts et al. (1998) (Fig. 2.2).

> I use something called the cone of abstraction. Which simply suggests that if you slice it at the top, it's like an upside-down ice cream cone. If you slice it at the top, the game may be too abstract and not sufficiently real to be convincing. If you go too deep into the ice, you say, sit down there*. It's just overwhelming complexity. It hasn't clarified itself for the client. (Direct quote from interview with Dick Duke; * he made a gesture of a virtual cone of abstraction in the air and with his hand indicated the upper and lower slice of the "upside-down ice cream cone").

In the above quote, Duke clearly shows that, with progression up the cone, games become more abstract as models of reality. Highly abstract models at the top of the cone may not be "real" enough to serve as convincing models, while games with a low level of abstraction might be too complex to play and difficult to understand.

> A gaming client will typically present an ill-structured problem; worse yet, specific objectives are often obscure and/or conflicting. In response to this typically confusing (and often urgent) client request, the gaming/simulation technique employed will typically approach the problem in a cyclical fashion. (Duke, 1998, p. 25)

Through discussions and exercises, Duke recommends that games with a high level of abstraction should proceed down the cone via an iterative process, i.e. the level of abstraction should be reduced. The details and specifications of a game can be refined with each new iteration, based on gameplay and debriefing.

> Initially, these are game-like to arrive at a holistic understanding of the complex problem. As understanding improves, more detail is added. . . . This can be thought as a spiral process in which the early activity is aimed at clarification of the problem statement and a number of other specific objectives; later, more detail is added to the mix. (Interview with Dick Duke).

2.2 Enhancement, Consolidation, Critique, and Practical Advice

The cone of abstraction is often used to explain the main facets of gaming simulations to newcomers and clients. As an example of a practical application, Eric Treske (former board member of ISAGA and chair of the Swiss Austrian German Simulation and Gaming Association [SAGSAGA]) adapted the cone of abstraction to market his consulting and game design company (intrestik, Munich, Germany), by modifying it to create a funnel. Complexity (Komplexität in German) is reduced through the funnel, and a simulation game (Planspiel) can help players explore strategies (Strategie), behaviours (Verhalten), and processes (Prozesse) (Fig. 2.3).

Another former student of Duke, Markus Ulrich (former board member of ISAGA and co-founder of SAGSAGA), refers to four different forms of game artefacts and situates them on the cone of abstraction (Capaul & Ulrich, 2003, p. 39). In the following list of various types of models, the German terms are also given, as they appear in the original work of Ulrich (see also Fig. 2.4):

- Abstract models (Abstraktes Modell): These are heavily abstracted models; such simulations address highly specific aspects of reality. Numbers used in these models have only a qualitative meaning. These simulation games can convey aspects of reality in a vivid way through the use of metaphors.
- Qualitative models (Qualitatives Modell): These simulation games represent reality in a qualitative way. Numbers used in such models are relational quantities.
- Scientific quantitative models (Wissenschaftliches quantitatives Modell): Simulation games based on these models use precise mathematical equations, which yield results that can be directly compared to actual quantities. These models can be used for scientific research as well as for complex simulation games.
- Real models (Real Modell): Here, reality itself serves as a model for simulation games, which are used for complex and technical training as well as for military exercises and safety drills.

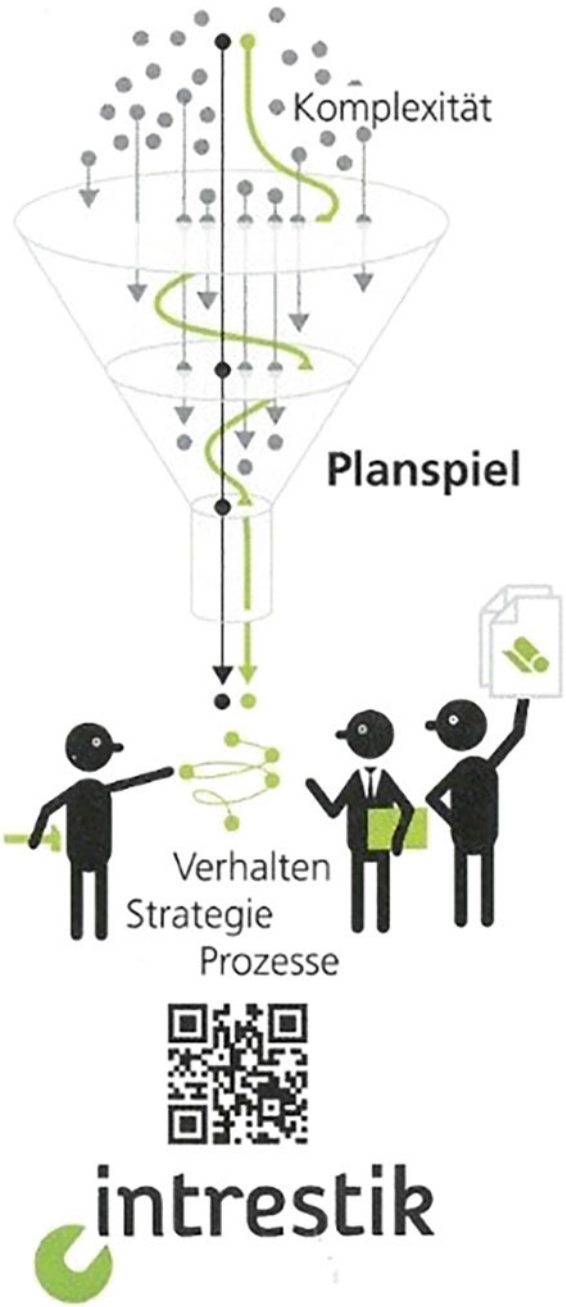

Fig. 2.3 The cone of abstraction depicted as a funnel in an advertisement for the company intrestik (2014)

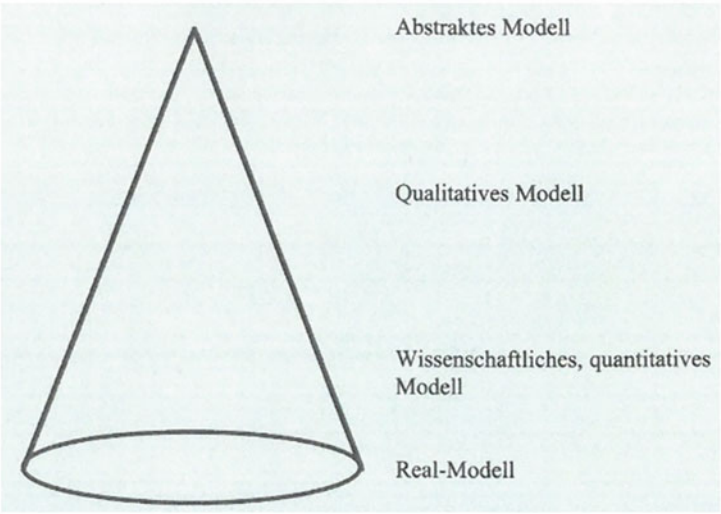

Fig. 2.4 Games positioned on the cone of abstraction (Capaul & Ulrich, 2003, p. 29)

Although there is a need to reduce complexity, this can conflict with the requirement for realistic representations of reality, comprehensible to game users. According to Ulrich, clearly defined learning objectives are needed when determining the appropriate level of abstraction and degree of complexity for simulation games. Complexity should not be reduced to the point where real connections, interactions, and dynamics are no longer recognisable (Capaul & Ulrich, 2003, p. 28). In our interview, Ulrich also expressed that the level of abstraction in a game should be equal among all of its elements.

> Well, in brief, I feel if you want to convey generic knowledge, generic system characteristics, you may have to go up in the cone of abstraction. If you want really to transport substantive content in a game, you may go down the cone of abstraction. So that's one aspect, and another aspect has also to do with the target audience. Sometimes it helps to have specific cases and not just an abstract concept. And so you may go in some way down the cone of abstraction with specific examples yet standing for an abstract concept. But I learned that at some point for certain target groups, it's difficult just to deal with red, blue and orange tokens, for instance. I also feel as a developer, it's crucial to be consistent in the level of abstraction. It immediately destroys a game if you have a let's say, high abstraction and all of a sudden you have an event card like "and last year, the GDP grew by two percent". Now, it's like killing the game. (Interview with Markus Ulrich)

Different types of games were also situated on the cone of abstraction by Duke and Geurts (2004) (Fig. 2.5). They differentiated between policy exercises, large-scale simulations, and field exercises. Policy exercises are used for organisational learning, policy development, and consulting and for affecting change and transformation in sociotechnological systems.

> During our interview, Paola Rizzi stated that the aim of policy exercises is to facilitate systems development via gameplay experiences and debriefing. Both qualitative and

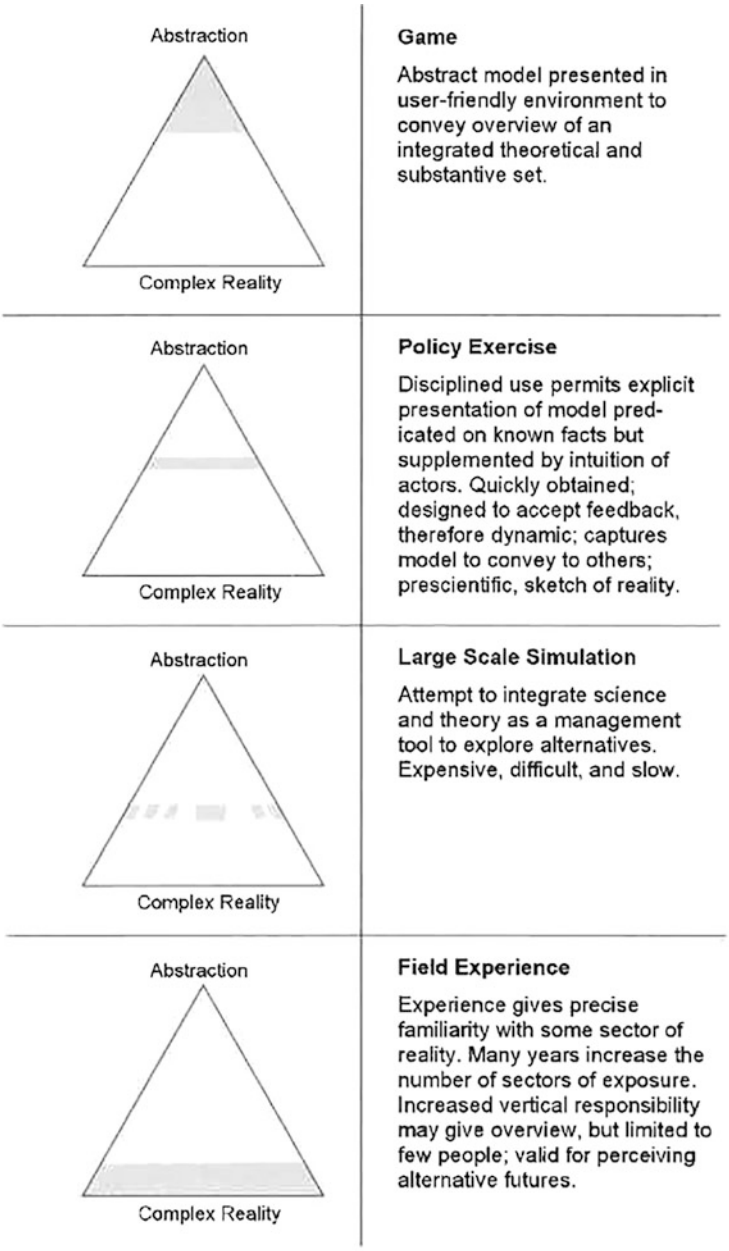

Fig. 2.5 Positions of simulation games on the cone of abstraction according to Duke and Geurts (2004, p. 37)

> quantitative modelling approaches can be used to this end. Debriefing helps stakeholders transform organizational and social systems, make decisions and resolve conflicts. Games designed for education and training purposes provide embodied knowledge and promote understanding of abstract and metaphorical concepts. For such games, debriefing is focused on the emotional, motivational and cognitive processes of the players. Games designed for skills training tend to be more complex and are based on real models.

Jac Geurts (former ISAGA president) described how the objectives of a game should be tailored to the target group by using an appropriate level of abstraction. Some of the game design of Duke and Geurts was concerned with behavioural training, necessitating close emulation of reality and less abstraction.

> The games that we built . . . . there is a lot of detail. And there is a client there and there is all that, you know, there's a lot of detail. So you go in Dick's terminology low on the corner of abstraction, as low as possible, almost, you know, as low as it is still doable and functional. . . . That creates this imitation work environment that people immediately recognize as carrying the same complexities as their daily work. (Interview with Jac Geurts)

In contrast, policy exercises are more abstract; the target group are managers and specialists within organisations, who often have different backgrounds and work in different departments, but must nevertheless find a way to work together.

> This is the policy games. The deciders usually work more at a distance from the operational work, you know, they are office people, people who see data. And these are not workers and people who run from one meeting room to the other. And there are often people that work in . . . completely different disciplines . . . . People have to work with each other and they are all high on the cone of abstraction in their particular discipline . . . they have quite often already pretty disconnected in their discipline from the daily routines. But in the discipline of somebody else, they hardly know anything about it, and they walk around with a lot of prejudices about other disciplines and other organizations. So there we have to think a lot about an abstract format, you know, a higher cut through the cone of abstraction . . . . Let's say as high as possible that everybody can still connect because imagine sometimes you have the CEO in one room with your financial guy. They live not only in different worlds, but they also live on different levels of the cone of abstraction. The financial guys usually are more practical. The CEO has forgotten almost every detail. So if I give the CEO too much deeper detail, he says, this is not my work. And so I have to lift up the financial man a little bit to become a little bit of CEO. And I have to push the CEO down a little bit to start seeing the version of the financial man. (Interview with Jac Geurts)

Sebastian Meijer (past chairman of ISAGA) described the cone of abstraction as a "strategy versus operations type of model". He also alluded to the varying levels of understanding between stakeholders and experts, especially at the outset of a project. This can be especially challenging in the case of an ill-defined problem, as seen in the case of "volatility, uncertainty, complexity, and ambiguity" (VUCA). Here, several cones of abstraction may be needed.

> It's a fantastic concept to explain how you can simplify. So in that sense, of course, I also use it if I tell the one to one class on gaming. But it doesn't work if I stick to it. . . if you want to design a simulation, you need to take away all the aspects that are not necessary for that particular context. Which is great if you know exactly what the boundaries of those systems are. But at least in my work, I usually don't know. And let's say that the detail, the dominating detail in a particular situation is something that can be different for every type of expert. And if you haven't represented that detail in your simulation, they will say it is

> wrong. . . . I don't think that the cone of abstraction is wrong, but you need to think of it in a in a multi scale way . . . . It's a classic strategy versus operations type of model. But the real question, I believe, is can we zoom in and out on the relevant parts of the system when it's necessary? And what are the design principles that we need to do for that? Because you want to focus on those parts that are relevant, but you don't want to exclude those parts that might be relevant. And at the same time, just practically you can't build everything in and there is no way of validating these large-scale computer models. And then you get into the same question what is the level of detail that you want? Because all of these experts want to add something else . . . . And it puts some pressure on the modeller . . . . (Interview with Sebastiaan Meijer)

Shighisa Tsuchiya (a honorary member of ISAGA and former board member of ISAGA and JASAG) worked closely with Richard Duke and Dennis Meadows. In several articles, he linked system dynamics modelling with gaming simulations.

Dennis Meadows is the former president of both ISAGA and System Dynamics Society and has designed classic simulations pertaining to the limits of growth, the commons dilemma, sustainability, and climate change. In our interview with Meadows, he emphasised the potential utility of using abstract, metaphorical games over long periods of time (i.e. decades). Games that emulate reality more closely use more specific information and situational data, but these data quickly become obsolete when the real-world situation or data change. Knowledge acquired through games pertinent to specific problems cannot necessarily be transferred to other situations, systems, or contexts.

In the interview Meadows points out some benefits of combining systems dynamics modelling and gaming:

> A game needs to be connected with or based on a model, which is valid. If you take a false model and build it into a game, people will learn false lessons. System dynamics as a discipline, which teaches you how to build useful, interesting, good models doesn't tell you anything about a gaming system. Gaming has never been part of system dynamics, but people who study systems managed to learn how to build models. . . . And I did that for many years until I understood that although building a model helped me to understand it, typically it didn't help anybody else. So I tried to think, how can I help other people understand what's inside his model? And in order to do that, I have to embed the model in a game. . . . If people have to interact, they make guesses, they make decisions and see what comes back. Then they start to learn the contents of the model. (Interview with Dennis Meadows)

Along with other members of the ISAGA network, Tsuchiya played a key role in combining system dynamics with gaming. In the design phase, full system analysis can be conducted using tools developed in systems science. One of the most important design steps according to Duke is the creation of a conceptual map or schematic. Tsuchiya points out that other techniques from system dynamics modelling, such as the causal loop diagram, can be used to display and define systems, elements, and their interrelations. He also stresses the importance of the debriefing phase, which involves translating the modelled processes back to the real world. Through this process, participants develop new understanding and update their mental models; a so-called "aha" moment (of sudden realization, inspiration, insight, recognition, or comprehension) may even occur (Fig. 2.6).

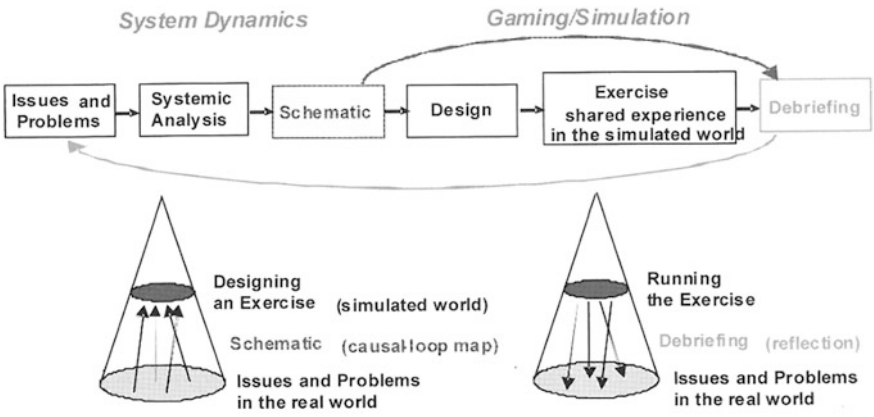

Fig. 2.6 The link between system dynamics and gaming simulations (Tsuchiya, 2012, p. 70)

> I like Professor Dukes description of cone of abstraction. There are a lot of real problems and we can not deal with them directly, so we create games in abstract form and let the participants play the game and then in debriefing we bring back to the real problems and they will understand "AHA". Games should be as abstract as possible, but it needs a reflection from the real world and this maybe makes them able to realize in the debriefing. And especially in Prof. Duke's idea participation of an interest group in the design is very important. That is what I learned from him. (Interview with Shigehisa Tsuchiya)

Vincent Peters (former ISAGA president and chairman, founder of SAGANet) and Marleen van de Westerlaken (former ISAGA president and board member) designed games together and also provided game-based consultancy services. They used the system dynamics approach as a basis for modelling and game design. Similar to some of the other interviewees, they view systems thinking and modelling as crucial steps in the design process when simulating real-life situations (Peters & van de Westelaken, 2008). They also describe how different conceptual levels of the cone of abstraction can be linked. For example, through systems analysis, real-world stakeholders and actors can be defined and assigned roles in simulation games. The complex interrelations between resources and forces in real-life situations can be transformed into a system dynamics causal loop model comprising subsystems, rules, and gaming elements (Fig. 2.7).

Peters and van de Westelaken indicated that a high position on the cone of abstraction should ideally be maintained when developing a game model. To achieve this, rigorous discussion with clients and stakeholders is required. Games maintaining a high position on the cone of abstraction have the potential to bring participants out of their comfort zone, thus enabling change and learning. Also, with a higher level of abstraction, there are clear gaps between reality and the game world, which can be filled by the player to create meaning. A game occupying a low position on the cone of abstraction has a risk to be considered less concordant with reality. Even when only a seemingly minor detail of the game world is viewed as inauthentic by the player, the entire game may be rejected.

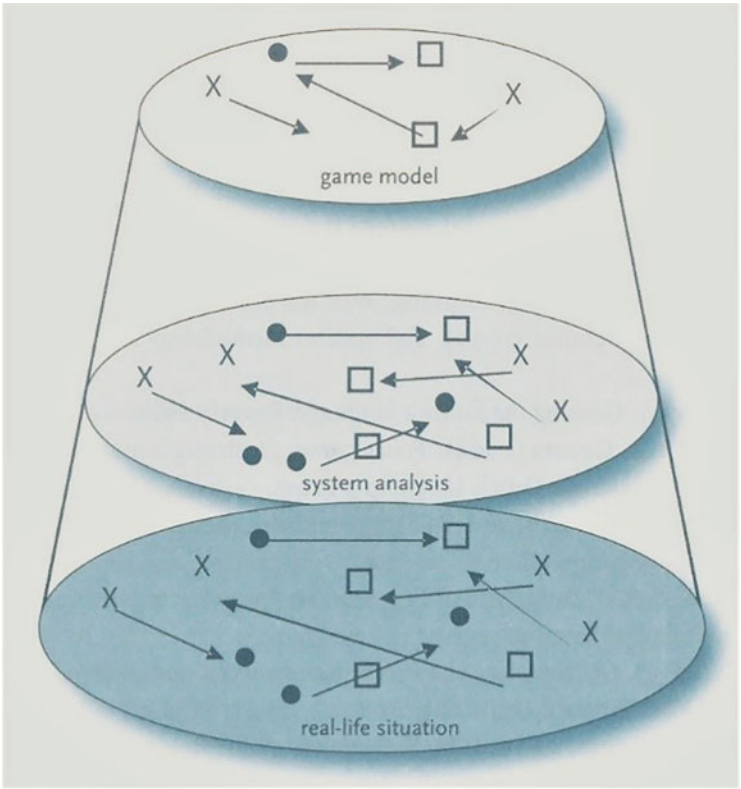

Fig. 2.7 The link between real-life situations and game simulations, as mediated by system analysis (Peters & van de Westelaken, 2008, p. 163)

> Well, then I guess all the projects we did, it was a point of discussion with the clients. And you cannot ask them, which level do you want, because they don't know... My starting point was most of the time that we have to use a metaphor to get people out of their comfort zone. But if a metaphor wasn't useful for that situation or those participants or deadlines, then we would go more to a system that was similar to reality. But it was just talking with the client and trying to understand and to feel, what can they cope with? ... Like we had the game with ... people who are working in government and they have to say whether somebody can build something from their kind of expertise. So it's building permits, and we decided if we would go into a more system or reality level, people would say this game isn't correct because in reality, it's like 12 centimeters instead of 10. And we said, OK, we cannot make it so specific because people are going to take their experience from the real world into the game and trying to. If things were not working, they would be saying the game isn't right, instead of looking at the process which was happening in a game. So we said we have to use metaphor because otherwise they would be discussing the other things and we wanted them to discuss how is our cooperation going, how do we have to organize that kind of things... So we had to put them in our own worlds with our rules instead of the rules of the real world ... I think for us, if we're talking like this, is that a metaphor is more on the higher level. (Interview with Vincent Peters and Marleen van de Westelaken)

Ivo Wenzler is another former student of Richard Duke, who worked for many years as a senior consultant and partner in leading consulting firms that employed gaming simulations for large projects. He considers simulations to be highly effective for communicating with clients (Wenzler, 2008) and explained how gaming can be useful for dealing with certain real-life problems and situations.

> The things that I'm still almost religious about is that if I am asked to develop a simulated reality game or a simulation or something, I am always trying to first develop a model of that reality to be able to help myself and the clients decide on which level of abstraction actually is useful or is needed for the problem at hand. So when I'm talking with my clients, I'm almost always presenting a couple of things like the cone of abstraction and saying the same thing as Dick said, it's an ice cone upside down. And then on which level you make a decision to slice . . . . How can we making it as simple as possible or as complex as needed to actually achieve? And there is no magic formula. But it is a thorough discussion and trying to understand the core of what they are trying to impact. (Interview with Ivo Wenzler)

Wenzler also provided some practical advice regarding how to decide on the level of abstraction for gaming simulations. He stated that it is important to consider potential outcomes and results in advance and that the game must align with the primary objectives of the client. Wenzler stated further that simulation games can generate knowledge, awareness, and understanding ("to know about something"), foster skills ("to be able to do something"), and provide motivation to take action ("to be willing to act differently").

> So very quickly, the primary focus of every design process was what it actually needs to happen afterwards . . . . Games are always for players, so the players should do something. It's one of the first questions that I ask my clients, let's imagine it's Friday and we have this intervention game that you want us to develop. What should the people playing it do differently on Monday? . . . And then you start talking about three things that you can impact with people. You can either impact their understanding or knowledge or awareness of something. The second thing you can impact the skills, competencies, capabilities. And the third is the behaviors. Am I willing to act? So once we do find it is about knowledge or awareness or it is about skills or it is about the behaviors, then it is easier to define at which level of abstraction. (Interview with Ivo Wenzler)

Finally, Wenzler stated that it is not sufficient to think only about one dimension of reality when designing games according to the cone of abstraction model and stressed the importance of differentiating between non-human and human-related factors of reference systems when designing gameplay.

> Also one thing which was evolution of my thinking is that you are not talking about a single kind of abstraction. Because one cone of abstraction we used to define how detailed or how specific should the model of reality reflect reality? But this is just: do I have the same number of roles as a reality? Am I using the same data as reality and am I following exactly the same process as in reality? So it's all about the, let's say, non-human factors. So it's almost like to what level of detail am I describing my reality. The other cone is the behavioral. It's the people and the interactions between the people. Because you can make a very simple representation of reality where you only have from, let's say, in reality 100 roles you have only three. Simple but the interactions and behaviour of the players will be real and will be at the level of 100 percent . . . . So you have the fidelity of the what you call it, a reference system, but you also have the fidelity of the players that you put in a reference system. And you cannot say that if I make a very generic representation of a reference system that this will

> drive only a very generic actual behaviour. It can be very detailed and very real. (Interview with Ivo Wenzler)

Jan Klabbers was chairman of ISAGA for almost three decades; he also served as its president and remains a honorary member. His contributions to gaming simulations (Klabbers, 2009, 2018) are considered equally important as those of Duke. In our interview, Klabbers expressed thoughts on realism and fidelity similar to those of Ivo Wenzler. Firstly, he stressed that it is important to take account of the differences in perspective between designers and players. Secondly, he stated that despite being essentially abstract and metaphorical, a gaming simulation can also be experienced as highly authentic. Moreover, the realism and fidelity perceived by the individual player may not directly correlate with the actual degree of abstraction of the game.

> We all know that we cannot define all rules of correspondence between game and reality, the reference system, because that would mean that the game is identical with the reference system and would have the same complexity . . . You take out of the reference systems those aspects that are relevant from the point of view of the issue. So, it's always a selection, and the selection means that you reduce complexity to the point that you're going to handle what is at stake, with a game as an image of the reference system . . . .
>
> And actually, when the game will be played, excuse me, then the locus of control shifts from the designer to the player. . . . At the end the players define if they have grown more familiar with what has been put into the game? Or do they feel uneasy because it's a way of representing the reference system, which is very unfamiliar to them? So, when we talk about and think about fidelity, the question is: fidelity from which point of view. Is it the point of view of the designer or from the point of view of the players? Eventually the players define the level of fidelity of a game . . . . That's a quite interesting example I learned a couple of years ago from a colleague dealing with gaming simulation and health care in developing countries. They were thinking about alternatives to teach and train young nurses to safely give injections. In developing countries, they do not have the same kind of advanced training facilities as we have in Western hospitals. But still, these young nurses had to learn to deal with the natural resistance of the human skin to give them the same feeling on what kind of pressure do they need to exercise with the needle to give the injection. They choose oranges, which were widely available, as an analogue model: different form, similar functionality regarding the human skin. I would say that an orange provides a high-fidelity model of the human skin from the viewpoint of both learning to give an injection, as well as to prevent hurting the patient. Young nurses feel very uncertain and insecure on how much force to exercise to give an injection. If they use too much force, it will hurt the patient. If they hesitate then they must try again several times, which is also not very convenient for the patient. So, in that case, the teachers used whatever was available in the African country: oranges. The skin of oranges—as analogue model—provided a high-fidelity gaming exercise for the purposes of training young nurses. (Interview with Jan Klabbers)

During our interview, Klabbers also said that, from his perspective, the main issue in game design is not determining the appropriate level of abstraction but, rather, the appropriate level of aggregation. The cone of abstraction is also applicable to the concept of aggregation. While abstraction refers to inductive thought and the factors underlying general ideas, rather than ideas relating to a particular object, person, or situation (and where debriefing might play a role in the process of deduction), aggregation pertains to the level of detail required to map attributes of the reference system to the game world. The degree of aggregation depends in part on the timeframe of the simulation game and its target users. Below, we provide a longer

excerpt from our interview with Klabbers, to illustrate his perspective more effectively given its importance for deepening our understanding of gaming simulations and the practical applications thereof. In the excerpt, Klabbers alludes to the issue of demographics (population dynamics) to define his position.

> We could look into the issue of demographics, population dynamics, and you can say, I only look at the total number of people in the country. You collect the size of the total population, the numbers of new-borns and immigrants entering the country, and the people dying or leaving the country. So, then you would focus on the highest level of aggregation, just the total population. You might also think, well for many of my questions this is not sufficient. I need to know more detail. I need to differentiate between gender, making a distinction between men and women. . . . That's the second level of aggregation. Then you may decide to continue disaggregating the population: making a difference between age groups, and subsequently between social classes. By disaggregating, you add also more detail and allow more differences in terms of the population dynamics. That differentiation process raises the question about the typical time horizon that fits best each level of aggregation. The time horizon to describe the changes within and between different age groups is different from a time horizon of the total population. And so, a consequence of choosing a certain level of aggregation is that you'd have to deal with choosing between different time horizons. Moreover, you should be aware that every level of aggregation defines the sort of questions you can address. Such a modelling procedure sets the conditions for developing for example a simulation game on family planning. If you intend to develop a demographics game and want to address questions in terms of social class and mobility between classes, then you need to have the right level of aggregation, the level that enables you to address these kinds of questions. So, these modelling questions refer less to a process of abstraction and more to a process of aggregation/disaggregation, to properly model the referent system. It is the level of aggregation that defines the level of detail that you can address and need to include in the game design . . . .
>
> Highly aggregated representations, in general, stretch over a longer time horizon then highly disaggregated representations. When you start a game design and begin with conceptualizing the subject matter at the reference system, the first question is: what is the appropriate level of aggregation to deal with the issue at stake? That level defines the time horizon of the game. You also are aware that for each level of aggregation, varying groups of actors or stakeholders are involved, that should be included in how the game is being designed, keeping in mind the linkages between actors, rules, and resources. Eventually these actors represent the people—the target group—that you invite to become players of the game. (Interview with Jan Klabbers)

To conclude this chapter, we will give Richard Duke the last word. In his interview, he stated several times that game design is an iterative process with many feedback loops (between modelling, prototype testing, gameplay, debriefing, and evaluation). Determining the appropriate levels of abstraction, aggregation, detail, and complexity is an ongoing process involving communication among all stakeholders. The challenges, tasks, efforts, activities, exercises, and reflections involved can be stressful, but may lead to new insights into how to resolve real-life problems and give rise to visions of alternative futures.

> So having done a schematic, you know your system components, you put them into the matrix and now you have to find out how and what elements the game world has to assist you in integrating them into the game and in the process. If you're aware of this concept of the cone you have an opportunity to do an iterative evaluation of the complexity of the game . . . . You know, we always have at least five test runs, hopefully 10 . . . . If you see that the game

> is too complex or not convincing enough, whatever it might be, you do an analysis by going back to the components and find out which of these have to be highlighted more vigorously in the game, which can be backed off. For example, do you have a rule that actually played in the game or can you simply simulate? You can simulate it by just having chance cards that you pull, or if you have a rule, then you have to have a much more elaborate instructions to the person playing that role ....
>
> One of the things that we haven't talked about yet are specifications. If the client comes to you with a problem and there's a context in which exercise is going to be used, we can put specifications in there. How many people ... will they have available? How much time can be allocated? Can it be ... on a computer? Or must it be entirely visual? And then it's not uncommon to have a list of 25 to 30 specifications. As you're doing a "system component / gaming element matrix", you go mentally ... with a checklist back your specifications and say, if I have this matrix with these characteristics defined in it, can I play it in the three hours and with the specification says three hours? OK, now sometimes you have to argue with the client to change the specification. (Interview with Dick Duke)

To guide the design of gaming simulations, Duke provided steps and suggestions regarding the use of schematics, system components/gaming elements matrix, and agile prototype testing (see Chap. 1 of this book). These steps ensure a design approach via an iterative and participatory process involving feedback and evaluation (Duke & Kriz, 2014). The goal is that the final gaming simulation is meaningful for all stakeholders and has an appropriate level of complexity according to the cone of abstraction.

Acknowledgement I thank Jan Klabbers and Toshiko Kikkawa for their feedback and improvement of this chapter. I thank the named colleagues that were interviewees for this chapter.

References

Capaul, R., & Ulrich, M. (2003). *Planspiele. Simulationsspiele für Unterricht und Training*. Tobler.

Duke, R. D. (1974). *Gaming, the future's language*. Sage.

Duke, R. D. (1998). The gaming discipline as perceived by the policy and organization sciences. In J. Geurts, C. Joldersma, & E. Roelofs (Eds.), *Gaming/simulation for policy development and organizational change* (pp. 21–28). Tilburg University Press.

Duke, R. D., & Geurts, J. (2004). *Policy games for strategic management*. Dutch University Press.

Duke, R. D., & Kriz, W. C. (Eds.). (2014). *Back to the future of gaming*. W. Bertelsmann Verlag.

Geurts, J., Joldersma, C., & Roelofs, E. (Eds.). (1998). *Gaming/simulation for policy development and organizational change*. Tilburg University Press.

Klabbers, J. H. G. (2009). *The magic circle: Principles of gaming & simulation* (3rd and Revised ed.). Sense Publishers.

Klabbers, J. H. G. (2018). On the architecture of game science. *Simulation & Gaming, 49*(3), 207–245.

Peters, V., & van de Westelaken, M. (2008). The management approach: Thinking in systems. In L. De Caluwé, G. J. Hofstede, & V. Peters (Eds.), *Why do games work? In search of the active substance* (pp. 151–164). Kluwer.

Rizzi, P. (2014). *On the nature of gaming simulation*. Scriptum.

Tsuchiya, S. (2012). Policy exercise for organizational transformation: A double-loop learning perspective. *Japan Journal of Gaming Simulation, 22*, 69–76.

Wenzler, I. (2008). Is your simulation game blue or green? In L. De Caluwé, G. L. Hofstede, & V. Peters (Eds.), *Why do games work? In search of the active substance* (pp. 41–50). Kluwer.

Chapter 3
Board Game Immersion

Gordon Calleja

Abstract This chapter explores the nature of immersion, both as a concept and an experience, and considers the applicability of this phenomenon to board games. Through the chapter, I will be challenging the application of the term immersion to all forms of engaging experience, as is often the case in the literature on digital games and, more recently, board games, to argue that we need to reserve the term to refer to the more specific experience of game world habitation. This chapter ends with a consideration of the key aspects of board game immersion that leads to a proposed definition of the phenomenon that is both clear and specific to the experience in question.

Keywords Board games · Immersion · Transportation · Agency · Board game experience

3.1 Introduction

There is something utterly captivating about the experience of inhabiting a fictional world, even if that experience is fleeting. I have argued (Calleja, 2006, 2007) that one of the main reasons that fictional worlds have been created, inscribed, and shared through time is exactly to enable such experiences of otherworld habitation. Different media tend to be stronger at enabling different aspects of this experience. The most intense instantiation of this scenario is a fictional reality that is experienced in such a complete manner as to make it virtually indistinguishable from physical reality, sometimes total immersion, which has been popularized in film through the Matrix (Wachowski & Wachowski, 1999) trilogy. The closest we have come to such an experience are segments of certain virtual reality (VR) applications and installations; the more widespread versions of which have been pushed by the digital game industry through the recent increase in uptake of VR headsets. While less

G. Calleja (✉)
Institute of Digital Games, University of Malta, Msida, Malta
e-mail: gordon.calleja@um.edu.mt

T. Kikkawa et al. (eds.), *Gaming as a Cultural Commons*, Translational Systems Sciences 28, https://doi.org/10.1007/978-981-19-0348-9_3

perceptually intense and immediate in facilitating a sense of immersion, non-VR digital games, or at least those that take place in virtual environments that afford a sense of habitation, are the most widespread, easily accessible, and captivating manifestation of immersion to date.

The appeal of immersive experiences has made them one of the holy grails of game design, especially in mainstream titles that have the large enough budgets and sprawling development teams to create richly simulated, sprawling virtual worlds for players to inhabit. Needless to say, this is not the only thread in design nor the only deeply involving experiences digital games enable, but certainly one of the more sought-after and discussed forms. As I mentioned above, other media forms also enable a sense of being in a fictional world, but digital games are particularly strong in making the player feel both spatially present and kinesthetically active in the world. The possibility to act meaningfully while embodied in an avatar that is spatially located in the fictional world makes the sense of habitation particularly powerful. It is not hard to argue that such experiences are both more easily attained and sustained and more perceptually powerful than their equivalent, imagined versions in other media.

Outside of digital games, live action role-playing games (LARPs) and immersive theater performances also enable powerful experiences of fictional world habitation, in this case by transforming the physical space and its inhabitants into a fictional world and having player and non-player characters act out interactions consistent with their character in the world. LARPs tend to require a substantial amount of effort to set up from the organizers as well as from the players to participate. The number of people that can participate in a LARP is also limited, and thus they are not as widespread an enabler of fictional world habitation as digital games, or even VR applications.

RPGs, on the other hand, require less effort to set up and run. Their main draw tends to be exactly the potential for immersion through collective imagination and communication between players and the game masters that both create the world and the stories therein, as well as act out the characters players meet (Fine, 1983). RPGs enable a form of collective storytelling and improvised acting that, together with the game mechanics and the game master's interventions, create a living world that players inhabit together. While this requires everyone around the table to sustain the imagined world and the specific environment the players find themselves in, when this harmony of imaginative faculties occurs, players tend to experience what Gary Alan Fine (1983) has termed engrossment, or the sense of enacting a fantasy self and losing themselves in the game (4). Engrossment is Fine's term for role-playing-based immersion.

While RPGs are easier to set up and run than LARPs, they still require that, at least one player, the game master prepares the session and runs it. In the case of campaigns, a series of linked sessions that can last anywhere from a few weeks to many years (Calleja, 2022) the amount of work involved for the game master is considerable, especially if they build their own world and design their own scenarios. Board games, on the other hand, do not require any preparation or, for the most part, a game master taking the role of a facilitator rather than a player. The group

simply takes the components out of the box, sets the game up, and learns the rules, and they can enjoy the game together.

There is a vast variety of board games; some are completely abstract, such as Chess or Azul (Kiesling, 2017), while others contain sprawling fictional worlds that can take hundreds of hours to explore and complete, such as Gloomhaven (Childres, 2017) or Near and Far (Laukat, 2017) and a whole sea in between. Board games today simulate most imaginable situations and themes positioning the player in various perspectives ranging from an omniscient entity controlling the formation of planets to a society or people or an individual exploring a fictional world. As the experience of immersion, as I will be using the term here, is dependent on a fictional world that affords a sense of habitation through anchoring the player in a single entity at a time, not all board games have the potential to engender it. In fact, a relatively small portion of the board game universe allows for experiencing immersion. As Marie-Laure Ryan rightly argues, "For immersion to take place, the text must offer an expanse to be immersed within, and this expanse, in a blatantly mixed metaphor, is not an ocean but a textual world" (2015, p. 9).

By textual, Ryan is here referring to a designed work that is encoded in signs in a medium that can be interpreted by others, not simply alphanumeric, or verbal, text. Many board games do not contain a textual world at all. Just to give a few examples, Azul (Kiesling, 2017) or Codenames (Chvatil, 2015) does not contain a textual, fictional world beyond the most basic fictional wrapping that gives a bare-bones theme for the game divorced from its mechanics and gameplay. This is because this gameplay does not require a world to take place in, focusing instead on other operations such as solving puzzles or interaction socially with other players. Other games do represent space, but do not embody the player in a character, which makes it hard, if not impossible to have a sense of inhabiting the world.

Before I explore how this subset of the sprawling family of board games enable this experience, I will need to clarify what I mean by the term, as it has been one that has been rather problematic within both academic and industry discussions of the subject (Calleja, 2011). While still sparse, academic discussions of board game immersion are unfortunately rethreading the same challenges that surrounded decades of debates on digital game immersion. Given the fascination this topic has for players, designers, critics, and academics alike, it seems useful to address this confusion and forward a clear conception of board game immersion. The rest of this chapter will do just this. It starts with a brief overview of the concept as it has been used in virtual environments and digital games, along with an outline of its problematic dimensions. I will then explain why these problematic dimensions arose in the first place and then focus on research on immersion and board games, which is equally problematic in its conception of the experience. I will then work towards my own definition of immersion that is focused on the experience of fictional world habitation that the term was employed to refer to.

3.2 What Is Immersion?

In common parlance, the term immersion is either used in its literal sense of being submerged in a different material substrate, usually a body of liquid, or the metaphorical sense of being deeply mentally involved in an activity. Confusion around the usage of the term in relation to digital games—and now to board games—lies in the overlap of these two meanings of the term.

Janet Murray in Hamlet on the Holodeck (1998) adopted the first, literal sense of immersion (as submergence) and turned it into a metaphor for being transported into a simulated space—specifically, to account for the experience of virtual or fictional world habitation:

> The experience of being transported to an elaborately simulated place is pleasurable in itself, regardless of the fantasy content. We refer to this experience as immersion. Immersion is a metaphorical term derived from the physical experience of being submerged in water. We seek the same feeling from a psychologically immersive experience that we do from a plunge in the ocean or swimming pool: the sensation of being surrounded by a completely other reality, as different as water is from air, that takes over all of our attention, our whole perceptual apparatus. (p. 98)

Murray's formulation of immersion is the most-cited definition of the phenomenon across disciplines. Many players, academics, and designers use the term, as Murray does, to refer to the experience of fictional world habitation. However, one of the main sources of confusion about the term lies in the fact that others use the second meaning of the term, employing immersion to signify deep involvement in a medium or activity. To complicate matters further, the habitation sense of immersion requires deep involvement, but the latter only serves as a prerequisite for the former. A game of Azul (Kiesling, 2017) might capture my attention and involve me deeply, but it has no fictional world to transport me to, and thus I cannot experience immersion, as Murray (1998) or Ryan (2015) described it.

To illustrate the point, let's consider a board game that does afford the experience of immersion in its fictional world habitation sense: Captain Sonar (Fraga & Lemonnier, 2016). In Captain Sonar, two teams of up to four players each sit on either side of a dividing screen. Each player takes on a role as one of the specialized crew of a submarine: Captain, Chief Mate, Radio Operator, and Engineer. Each role involves its own mini-game that links to the others. Together, players navigate the submarine around the game area, trying to locate and shoot down the enemy submarine in real time. Captain Sonar has the ability to make players feel as if they are in the command room of a submarine and thus experience a sense of immersion in its fictional world. For me to have this experience, I first need to have learnt the game mechanics, so that I can interact with the game system and other players meaningfully. In order to do this, I must first pay attention to the game enough for me to involve myself in the relevant forms of involvement. In the case of Captain Sonar, I direct my attention to all the involvement forms outlined, until I have internalized its game play. Given the considerable cognitive load this involves, I am most likely deeply involved in the game. I will use the term involvement to refer

to this part of the experience since it is a cleaner and more accurate term that is consistent across nominal and specialist uses within fields that deal with human experience, like psychology. We can easily communicate the intensity of involvement—that is, the amount of attentional resources I am dedicating to the game—simply by stating the degree through adjectives such as high/low or deep/shallow. However, a higher degree of involvement does not automatically result in immersion. Just because I am deeply involved in the game does not necessarily mean that I feel immersed in the game world. That has the potential to occur if the process of playing the game allows me to generate an emergent narrative that roots me in the space of the game. Given that immersion has a more specific sense of simulated or fictional world habitation, I will reserve the term for that experience.

If we use immersion to refer to both the Azul and Captain Sonar experiences, we are going to have a hard time understanding what we mean by the term, resulting in conceptual confusion that undermines both our understanding the experience of fictional world habitation and designing for it. To make matters worse, the two senses of the term are often used interchangeably, making it hard, if not impossible, to figure out what phenomenon is being discussed. While one would expect such looseness of terms in general conversations on the topic, especially when it is such a subjective and ephemeral experience, it is surprising that such confusion also exists in academic work on the subject.

A popular paper on immersion written by Laura Ermi and Frans Mäyrä (2005), for example, starts by using the more specific formulation of immersion as habitation, citing Murray's conception, and then confusingly switches to its more general sense of involvement. This switch happens because they base their resultant model of immersion on interviews with children playing games. The research participants' interpretation of the term is obviously not informed by research or analysis, representing instead a general understanding of the term. The problem here is that Ermi and Mäyrä set off with an investigation of the experience of immersion as transportation outlined by Murray, and then end up defining the term as it is used colloquially, rather than the specific experience itself.

Ermi and Mäyrä acknowledge the variety of experiential forms present in gameplay by providing a multidimensional model based on three modes of immersion: sensory, challenge based, and imaginative. They hold that sensory immersion relates to engagement with the representational, audiovisual layer of games. Challenge-based immersion stems from the employment of both mental and motor skills in overcoming challenges presented by the game. Imaginative immersion seems to be a catchall category that encompasses all types of imaginative activity directed towards a game, from identification with a character to engagement with the narrative and game world. Given that Ermi and Mäyrä interpret immersion as a general form of involvement, it's worth noting that these categories describe various modes of involvement, not modes of inhabiting game environments.

Similarly, Brown and Cairns (2004) claim that the term immersion should be reserved for the "intuitive use of the word" (p. 1298), that is, to "describe the degree of involvement with a game" (p. 1298). This is a curious path to take, given that the term had already accumulated a more specific meaning in a number of fields at the

time they wrote their paper (Ijsselsteijn & Riva, 2003; Laurel, 1991; Murray, 1998; Ryan, 2001; Slater, 2003; Waterworth & Waterworth, 2003; Witmer & Singer, 1998). This adherence to the more general sense of the term as involvement is rather puzzling, if not counterproductive, since the more intuitive and clear terms to use would be literal ones such as involvement or engagement, not a metaphorical one like immersion. As Marie-Laure Ryan explains, immersion has been adopted so widely that it has lost its specific conceptual meaning:

> The term immersion has become so popular in contemporary culture that people tend to use it to describe any kind of intensely pleasurable artistic experience or any absorbing activity. In this usage, we can be immersed in a crossword puzzle as well as a novel, in the writing of a computer program as well as in playing the violin. Here, however, I would like to single out and describe a specific type of immersion, one that presupposes an imaginative relationship to a world projected by a text. (Ryan, 2015, p. 9)

Like Ermi and Mäyrä (2005), Brown and Cairns also base their model of immersion on interviews carried out with players, asking them what they understood by the term immersion. The resulting data is a snapshot of what players mean by the term immersion not an investigation of a particular experiential phenomenon. The problem arises when Brown and Cairns use the accumulated data to claim that they have mapped the actual experiential phenomenon and forward a model that claims to explain the experience.

Many studies that are aimed at clarifying the nature of immersion suffer from this lack of distinction between popular and technical uses of the term, expecting their participants to explain the meaning of a term that is an academic conceptual tool that helps us understand an ephemeral yet compelling experience. If a researcher asks a nonacademically informed participant to report their level of immersion in a game and then asks them what they mean by immersion, they cannot expect the participant to give a solution to understanding the experiential phenomenon being investigated. Instead, what they might learn about is what that specific participant, within their specific social and cultural context, understands by the term immersion. What is being explored is an individual's understanding of the term in its common, nonacademic, and nonspecialist sense, not the experience that such specialist terms were adopted to signify in the first place!

More recently, Timea Farkas et al. (2020) take a similar approach to Brown and Cairns in examining board game immersion. The aim of their paper is to "construct a theory describing how board gamers experience immersion" (para. 21). Farkas et al. base their model of immersion on interviews with five players and analyze online forums where immersion was discussed. Unsurprisingly, they found that players understood immersion in very different ways and proceeded to group different interpretations of immersion into five categories: engrossment, contextual engrossment, embodiment, contextual submergence, and submergence. These arbitrarily named categories are rather confusing, given that each of them refers to different aspects of board game involvement. Engrossment refers to involvement in problem solving, which the researchers characterize as the game's challenge. Contextual engrossment refers to engagement with the game challenge, informed by the game's fiction. Embodiment refers to the game's ludic challenges combined with

the role-playing aspect of the game. Here, the player feels like they are a character in the world. As such, what Farkas et al. refer to as embodiment is similar to engrossment, the character frame of RPG involvement described by Gary Alan Fine (1983), and has some overlap with the more specific sense of immersion I am using here. Next, we have contextual submergence, which describes engagement with the game's fiction and narrative, without needing to be present as active agents in the game world. Finally, submergence refers to involvement with narrative that is written into the game by the designers, at times in a passive way. Farkas et al. clarify that this form of immersion can occur without the player acting in the game world at all, only taking on the role of a passive spectator. Farkas et al. plot these categories of immersion along a continuum ranging from engrossment, and thus involvement with the game's mechanics, to submergence, or engagement with scripted narrative. What I am calling immersion in the middle of these two.

Aside from embodiment which aligns with the more specific sense of immersion I am adopting, there are already clearer existing terms to refer to the experiences pertaining to each of Farkas et al.'s categories. If engrossment is all about decisions relating to the game rules and mechanics, it would be clearer to label it as such. More problematically, as I have already pointed out, engrossment already has a specific and widely cited meaning related to role-playing and game world habitation, as established in the work (1983). Submergence relates specifically to pre-written, or scripted, narrative, and it would be much clearer to describe it as a form of narrative involvement. The fact that Farkas et al. claim that submergence is a form of immersion through narrative that can be experienced without even playing the game is even more problematic. Spectating a game rather than having the potential to act within it involves an altogether different form of engagement. As over two decades of research in game studies has shown, the set of relations between an object and an audience is of an altogether different type than that which characterizes engagement with cybertexts, of which board games are a part. Finally, if we had to take the model presented by Farkas et al. as a complete model of involvement, it would still be lacking, ignoring a series of key forms of involvement such as, among others, collaboration, competition and togetherness, materiality, and emotional affect.

Like Ermi and Mäyrä (2005) and Brown and Cairns (2004) before them, Farkas et al. (2020) perform a survey of interpretations of the term and then go on to claim that they are describing the experience that the term signifies. In so doing, they relegate the term immersion to its general, broad use as a synonym for engagement:

> Based on our findings, many players' experiences could be defined as engagement as opposed to immersion. However, as found by Denisova et al., these terminologies overlap when defined by video game players also. We therefore accept engagement as a form of immersion. (para. 71)

Problematically, Farkas et al. collapse immersion, in the specific sense of the experience of fictional world habitation, into the far more general sense of involvement.

Sarah Lynne Bowman (2018) similarly aims to establish a model of immersion, this time more specifically for tabletop role-playing games. Like the above theorists, she conceives of immersion as a form of engagement or involvement. While Bowman acknowledges the problematic nature of conceptualizations of immersion, and briefly describes the relationship of absorption, engagement, and involvement to immersion, she does not clarify how these synonymous terms are different from immersion. Bowman's work is particularly problematic as the model of immersion she proposes is based on my Player Involvement Model (Calleja, 2011) in all but one of the dimensions of involvement, and conflates immersion with involvement, when the entirety of the book where the model is outlined stresses the importance of distinguishing between involvement and immersion. Bowman starts each section of her model by describing her version of one of the dimensions in my involvement model as an equivalent type of immersion. Aside from the problematic nature of mis-representing others' work, it is worrying that over a decade of discussions around the problematic nature of immersion, researchers like Farkas et al. and Bowman are still using terms that refer to the general direction of attention towards an activity like absorption or involvement, with immersion, a term that has more specific meaning within the fields these authors are contributing to.

It is crucial for researchers seeking to deepen our understanding of player experience in both digital and analogue games, to distinguish between involvement (or its synonyms engagement and absorption) and immersion. Immersion refers to a particular type of experience that is not adequately captured by terms like involvement. Immersion is neither equivalent to attention nor a form of involvement per se, but an amalgamation of various involvement forms, with the requirement of aligning the player with a character in a game world that affords habitation. In the following sections, I will forward my own conception of board game immersion that highlights the specific experience of fictional world habitation the term was initially recruited to signify.

3.3 Defining Board Game Immersion

Now that I have given a brief outline of the challenges of immersion as a concept, I will move on to considering the experience of immersion in board games in order to arrive at a working definition. In the rest of the chapter, I will be using immersion to refer to the experience of being in, or inhabiting, the fictional world of a game, not the more general sense of immersion as deep absorption, or involvement.

Board game immersion is a challenge experience to conceptualize as it lies somewhere between the experience of immersion afforded by digital games (or at least those that enable such an experience—not all do) and the sense of transportation in literary works. In In-Game (Calleja, 2011), I argued that the experience of fictional world habitation enabled by virtual environments, and thus digital games, is qualitatively different from the imagined sense of being in a fictional world afforded by non-ergodic media like film and literature, due to the fact that the player is

spatially and agentially anchored within the fictional world through the avatar in a way that is not just imagined by the player, as is the case with film and literature, but is acknowledged by the system and other players within the simulated world. This is not just a difference of intensity of experience, but of the type of experience altogether. Board games are in between the experience of transportation made possible by literature and film and the experience of perceptual and imaginative immersion made possible by digital games. Like digital games, board games are cybertexts where a mechanical system upholds the fictional reality beyond the imagination of the player or players involved, and where interactions with that world occur in a feedback loop with it. On the other hand, unlike digital games, the habitation of the fictional world, the players navigation thereof, and interactions and events therein are animated by the players' imagination in interaction with the game mechanics, physical components, artwork, narrative, and communication with other players. Thus, like digital games, the fictional world is not just represented, as is the case with non-ergodic media, but simulated, but the software that runs this simulation, so to speak, is the players' collective consciousnesses guided by the elements that make up the board game.

In my distinction between ergodic (digital and analogue games) and non-ergodic media (film and literature, among others), I have used the term transportation to refer to the imagined sense of inhabiting a fictional world where we cannot exert agency in. This term is a useful one to keep in mind, as it elucidates the difference between imagining being in a world and being in a feedback loop with a systemically upheld world. The concept of transportation was coined by Richard Gerrig in his book titled *Experiencing Narrative Worlds* (Gerrig, 1998). Here Gerrig uses the metaphor of transportation to refer to the literary equivalent to immersion. Gerrig describes transportation as the reader's movement from what he calls the world of origin to an otherworld projected by the text. The reader performs actions in their imagination in that world and returns back to the world of origin. While Gerrig acknowledges the active role of the reader, the actions he describes the reader doing are not equivalent to actions that change the state of the world in question, since the literary worlds he is focusing on do not have a mechanical structure that can be reconfigured, as is the case with cybertexts like digital games, board games, or RPGs. What he is referring to with actions is thus the process of decoding the text, not performing within the world.

Gerrig's concept of transportation is only useful where games are concerned to differentiate between games that invite us to imagine inhabiting the world without being embodied within that space or having the system acknowledge our presence, and those that do. An example of the former would be a football management game where we can imagine ourselves as the manager of the team having talks with the team, going home late to our families due to the stress of the job etc., without the system actually simulating that spatially and agentially. In a game like Fallout 4 (Bethesda Game Studios, 2015), on the other hand, we don't simply imagine ourselves walking around a post-apocalyptic wasteland looking for bottlecaps to buy a shiny new pistol, but can actually navigate the virtual space of the world and interact with it and its inhabitants to meet that goal. The system recognizes our

presence within it and our agency is bound to the avatar that we control, allowing us to take meaningful actions within the world, and thus reconfiguring its makeup. The first is an example of transportation in a digital game, and the second an example of immersion. While the sense of being in a board game world is facilitated by the imagination in similar ways to transportation, the fictional engagement is interwoven with the mechanical system and with other players' actions. The presence of a feedback loop between mind and fictional world creates a different configuration of mediated experience than one where the reader is solely an interpreter of a fictional world that cannot be reconfigured and, importantly, which does not allow for an exertion of agency within it.

In my exploration of immersion, I keep referring to the concept of agency. As this is a crucial part of the experience, it is worth taking a moment to clarify it. By agency I mean the ability to perform actions through game mechanics that affect the state of the game world and its inhabitants. Janet Murray (1998) defines agency as the "satisfying power to take meaningful action and see the results of our decisions and choices" (p. 126). While we often do see the results of our decisions and choices in board games, this is not always the case. Some games ask us to take certain decisions and then record our choices in some ways or other, like placing a face-down card into a particular deck without looking at it, as happens after certain narrative decisions in Detective: A Modern Crime Board Game (Przemyslaw et al., 2018) or The King's Dilemma (Hach & Silva, 2019). There are also consequences our actions might have for other players that we might not be aware of, such as when I select an action that blocks other players from taking it in a worker-placement game. I will thus use Anthony Giddens' (1984) definition of agency here:

> Agency refers not to the intentions people have in doing things but to their capability of doing those things in the first place (which is why agency implies power: cf. Oxford English Dictionary definition of an agent, as "one who exerts power or produces an effect"). Agency concerns events of which an individual is the perpetrator in the sense that the individual could, at any phase in a given sequence of conduct, have acted differently. Whatever happened would not have happened if that individual had not intervened. (p. 9)

Giddens defines agency according to the ability to act, decoupling this ability from the consequences thereof, which can be both unknown and unintended. C. Thi Nguyen, in his book on agency in games titled Games: Agency as Art (2020), argues that games are a method for capturing forms of agency and sharing them with others. In so doing, Nguyen argues that games give us a library of agencies, allowing us to develop ourselves by practicing them in a collective, social manner.

Board games that afford immersion thus provide a particular subset of the agential library: forms of agency mediated through a character in a game world. The types of mechanics, components, and other elements that structure the game fiction in such games thus revolve around this form of embodied agency. The social aspect of this agential experimentation and learning is an important part of this process. Board game agency is enhanced when other players are involved in the same game world, both because this reinforces the sense that the game world has a life of its own and because the player is aware that their actions affect others—and that they, in turn, are affected by other players' actions.

This exertion of agency reconfigures the world both for the acting player and others in that world, which creates a very different sense of being in a fictional world than what is possible in media like literature and film. There is a fundamental difference between the experience of imagining oneself within an imagined scene and being able to act within that imagined scene in a way that is systemically validated, with mechanical consequences for one's actions. The presence of others within that mechanically structured fictional world further strengthens our sense of habitation, since the imagined reality is shared and upheld by other minds. Sharing a common fiction requires a negotiation of, and agreement on, what is going on in that fictional world and how actions taken within it will change the state of that fictional world not just for the actor but also for others inhabiting it. The mechanical system acts as a mediator of this negotiation, serving as a form of reality engine that establishes how things function in that world.

Gathering the threads discussed so far in this chapter, we can now formulate a definition of board game immersion as follows:

> Board game immersion is the imagined habitation of a mechanically structured, spatially represented fictional world through embodiment in a single entity that is able to exert agency in accordance with the rules of that world.

3.4 Conclusion

Several designers interviewed for a book on board game experience and design (Calleja, forthcoming) commented on the creation of immersive experience as being a source of great satisfaction. This is not to say that games which afford the experience of immersion are inherently better than games that do not. Board games are incredibly varied in nature and they afford a variety of different experiences. In many ways, though, the design of board games that not only afford, but try to create rich immersive experiences, is its own beast, and a challenging one at that. Generating the sort of mental images in players' minds that make the game world feel alive and rich with the potential for creating an ongoing narrative is tough. Doing so while embodying a player in a single entity tends to be much harder than aligning them with a group or nation, since the latter are more abstracted positions that are less demanding in terms of the tight weave between mechanics, fiction, and narrative. Embodying a player in the position of a single character becomes more and more challenging the more finely one aims to simulate time and space. If time is represented as passing minutes or seconds at a time, the mental images in players' minds will tend to be richer as long as the rules do not get in the way and the mechanics and fiction remain consistent with each other. However, this becomes harder to achieve the more actions need to be simulated to give the players a convincing sense of agency in a particular represented situation. The more fine-grained the simulation needs to be, the more rules the designer needs to implement to generate those mental images, making the game rules harder to internalize and the game turns more complex, taking up attentional resources from the formation of

mental images in the player's minds. The tightness of representation between fiction and mechanics also becomes harder to sustain as players are more likely to experience inconsistencies between them as jarring than, for example, a game where turns represent weeks or months in the life of a nation.

A system which has a strong potential for providing a sense of immersion is one which has streamlined rules that are easy to learn, or at least intuitive enough to remember and put into play once learned, which give players a great sense of agency while generating a rich fiction and emergent narrative, all without creating clashes between mechanics and fiction, or preventing players from acting in the ways they would want to act in that particular situation in the fictional world. A great example of this is X-Wing (Little, 2012). X-Wing creates a sense of immersion so effectively because the mechanics simulate the fiction in an intuitive manner, while still giving interesting choices and zooming in to time in slow motion. X-Wing simulates what players expect from piloting a spaceship, mostly informed by movies and digital games, and it does this with a high degree of imaginative fidelity.

Immersion is not afforded by all board games. In fact, the number of board games that have the potential to create this particular experience are in the minority when one considers the totality of board game titles that are published every year. Nevertheless, the experience is one which is highly sought after and many designers aim to create a focused sense of immersion in a particular situation or slice of fictional reality in the game world.

Board games that afford immersion do so by simulating a more focused situation or slice of a game world, ranging from the specificity of a contained micro-experience like drowning in Deep Sea Adventure (Sasaki & Sasaki, 2014) to the intensity of collaboratively piloting a submarine in Captain Sonar (Fraga & Lemonnier, 2016), all the way to the sprawling adventures of Gloomhaven's (Childres, 2017) fantasy world. As Gary Alan Fine argued in Shared Fantasy (1983), the sense of inhabiting a fictional world supported by a mechanical system and shared with other players is often fleeting and requiring effort to achieve, but a magical and unique experience that players will seek and return to time and time again.

References

Bethesda Game Studios. (2015). *Fallout 4*. PC: Bethesda Softworks.

Bowman, S. L. (2018). Immersion and shared imagination in role-playing games. In J. P. Zagal & S. Deterding (Eds.), *Role-playing game studies : Transmedia foundations* (ix, 484p). Routledge.

Brown, E., & Cairns, P. (2004). *A grounded investigation of immersion in games*. Paper presented at the CHI 2004, Vienna.

Calleja, G. (2006). Techno-mediated other worlds. *Technoetic Arts: A Journal of Speculative Research, 4*(2), 129.

Calleja, G. (2007). *Digital games as designed experience: Reframing the concept of immersion*. Doctoral Thesis, Victoria University of Wellington, Wellington.

Calleja, G. (2011). *In-game : From immersion to incorporation*. MIT Press.

Calleja, G. (2022). *Unboxed: The experience and design of board games*. MIT Press.
Calleja, G. (forthcoming). The binary myth. In J. R. Sageng, T. L. Mandt, & H. Fossheim (Eds.), *The philosophy of computer games*. Springer.
Childres, I. (2017). *Gloomhaven*. Cephalofair Games.
Chvatil, V. (2015). *Codenames*. Czech Games Edition.
Ermi, L., & Mayra, F. (2005). *Fundamental components of the gameplay experience: Analysing immersion*. Digital Games Research Association. Retrieved from www.digra.org
Farkas, T., Wiseman, S., Cairns, P. A., & Fiebrink, R. (2020). A grounded analysis of player-described board game immersion. In *Paper presented at the annual symposium on computer-human interaction in play* (pp. 427–437).
Fine, G. A. (1983). *Shared fantasy: Role-playing games as social worlds*. University of Chicago Press.
Fraga, R., & Lemonnier, Y. (2016). *Captain Sonar*. Matagot.
Gerrig, R. J. (1998). *Experiencing narrative worlds : On the psychological activities of reading*. Westview Press.
Giddens, A. (1984). *The constitution of society: Outline of the theory of structuration*. Polity Press.
Hach, H., & Silva, L. (2019). *King's dilemma*. Horrible Guild.
Ijsselsteijn, W., & Riva, G. (2003). Being there: The experience of presence in mediated environments. In W. Ijsselsteijn & G. Riva (Eds.), *Being there: Concepts, effects and measurements of user presence in synthetic environments*. Ios Press.
Kiesling, M. (2017). *Azul*. Plan B Games.
Laukat, R. (2017). *Near and far*. Red Raven Games.
Laurel, B. (1991). *Computers as theatre*. Addison-Wesley.
Little, J. (2012). *Star Wars: X-Wing miniatures game*. Fantasy Flight Games.
Murray, J. H. (1998). *Hamlet on the holodeck: The future of narrative in cyberspace*. MIT Press.
Nguyen, C. T. (2020). *Games: Agency as art*. Oxford University Press.
Przemyslaw, R., Trzewiczek, I., & Lapot, J. (2018). *Detective: A modern crime board game*. Portal Games.
Ryan, D. (2001). Visualising perception using travel as narrative. MA Thesis, RMIT University
Ryan, M.-L. (2015). *Narrative as virtual reality 2: Revisiting immersion and interactivity in literature and electronic media* (2nd ed.). Johns Hopkins University Press.
Sasaki, J., & Sasaki, G. (2014). *Deep sea adventure*. Oink Games.
Slater, M. (2003). *A note on presence terminology*. Presence-Connect. Retrieved from http://presence.cs.ucl.ac.uk/presenceconnect
Wachowski, L., & Wachowski, A. (1999). *The Matrix [Film]*. Warner Brothers Pictures.
Waterworth, J. A., & Waterworth, E. L. (2003). *The Core of presence: Presence as perceptual illusion*. Presence Connect. Retrieved from http://presence.cs.ucl.ac.uk/presenceconnect/index.html
Witmer, B. G., & Singer, M. J. (1998). Measuring presence in virtual environments: A presence questionnaire. *Presence-Teleoperators and Virtual Environments, 7*(3), 225–240.

Chapter 4
Women (and a Little Bit of Culture) in Simulation Gaming

Heide K. Lukosch, Claudia Schmitz, and Olga Bostan

Abstract The relation of gender as a cultural construct and games is a complicated one. Research addresses questions of gender representation, influence of gender on game design and development, facilitation, and game preferences. Market research shows that female game developers are still underrepresented in a booming industry. Research into game play and learning by gaming draws conflicting pictures—from competitive male players to female gamers with steep learning curves. In this contribution, we discuss four perspectives through which gender and simulation games are connected, namely, the player as a woman, the female game character, the developer of the game as a woman, and the female facilitator. We refer to related work and our own experiences. However, we aim at initiating a discourse on this topic with our questions rather than providing answers. We hope that readers will develop their own perspective on the relation between gender and simulation gaming and how more diversity would contribute to this field.

Keywords Simulation gaming · Gender · Women · Facilitation · Diversity · Equality

4.1 Introduction

When we talk about gender topics in the world of simulation and gaming, a lot of the content is driven by harassment, sexism, and bias. Since the "Gamergate" incident (Chess & Shaw, 2015; Massanari, 2017; Mortensen, 2018), when social media were

H. K. Lukosch (✉)
HIT Lab NZ, University of Canterbury, Christchurch, New Zealand
e-mail: heide.lukosch@canterbury.ac.nz

C. Schmitz
Cenandu Learning Agency, Antweiler, Germany
e-mail: claudia.schmitz@cenandu.com

O. Bostan
Institute of Anthropology, Leipzig University, Leipzig, Germany

T. Kikkawa et al. (eds.), *Gaming as a Cultural Commons*, Translational Systems Sciences 28, https://doi.org/10.1007/978-981-19-0348-9_4

misused to promote anti-feminist activism in the games industry, it is common knowledge that this field of practice and research struggles with finding its own approach towards diversity, inclusiveness, and equality, when it comes to gender representation and work. Gaming as an industry is more than just fun—it's big business. The market research firm NewZoo estimated the mobile gaming sector hit $68.5 billion in 2019. It is estimated that the global gaming market will amount to 268.8 billion US dollars annually in 2025, up from 178 billion US dollars in 2021. North America is set to remain the top-grossing gaming market worldwide despite strong growth in the Asian region. In-game purchases are estimated to account for the more than 74 million US dollars worldwide in 2025. When looking into the number of players of video games, it's about 60% male and 40% female. Statistics tell us further that 75% of developers of video games worldwide between 2014 and 2017 are male and about 22% are female and 3% are transgender/others. We must note that most of the data available comes from market research, not from scholarly sources (Nieborg & Hermes, 2008). As data from different market researches yield similar results, these results can be seen as trustworthy though.

Yet, somehow, in the otherwise diverse, global, and professional network of simulation and gaming, topics around gender and (simulation) games aren't discussed at large—as if to protect the own group from discomfort and possible negative tensions. This avoidance might be a reason why the ISAGA network did not address this topic for almost 50 years with an open discussion. When using the search term "gender" in the journal site of SAGE's Simulation & Gaming journal, 222 results were shown (data from 14.06.2021). However, when looking into the titles, only eight paper titles include "gender." The majority of the papers focuses on gender preferences (e.g., Cassell & Jenkins, 2000; Carr, 2005) or different effects of games related to gender (e.g., Nadolny & Halabi, 2016; Hopp & Fisher, 2017; Yörük Açıkel et al., 2018). One young woman at the 50th ISAGA conference in Warsaw 2019 raised the question directed to the representation and role of female game scientists and practitioners within the network and asked for a spontaneous meeting during the conference. The broad title of this meeting was "Women in Games." The allocated meeting room filled up quickly. It was obvious that the setting was different to the rest of the conference: While being moderated by one woman, all participants were sitting in a circle and many stories and experiences were shared with each other. It was not easy to get the "hot topics" out immediately. The contrary happened. One of the members who was with the organization from the very beginning jumped in and made a clear statement that there was never any harassment or negative initiative towards women within ISAGA. She praised the men who supported her research and one could get the impression that she tried to avoid any discussion right away in nervous agitation to protect the men in the network. Luckily the conversation opened up and it became clear that the topic "women and games" had been a taboo in the ISAGA network. A number of related questions, focused on simulation games, have not yet been addressed, such as the following: "Do women play different than men? Are games designed by men biased? Are there hidden social manipulations in the way female characters are introduced in the games? Does it make a difference if a woman is the facilitator or a man? What happens to a group in

a game, when there is a minority of women playing?" All of a sudden it was clear that these questions are relevant and important not only for the network itself but also for the profession and education. If there is a cultural or ethical bias, this needs to be addressed, and the network needs to work towards solutions. Work on gender and games can be found in the scientific literature; however little is known about its effect specifically in the domain of simulation games. This is what inspired us to look closer into literature, combine it with our own experiences, and formulate some recommendations for future work within ISAGA.

Our main aim is to improve the debate around the development and use of simulation games in organizational contexts and to make both their study and their implementation and usage as inclusive as possible. Our intention is not to blame one gender side or to emphasize stereotypes. We also acknowledge the fact that gender is a cultural construct and that there are more and more individuals who cannot identify themselves with these. In our opinion, we first need to shed light on some of the misalignments that hit female-identifying (or nonbinary) individuals more often than those identifying themselves as male. Gender gaps, game content, and other data that is openly accessible will be used to underpin our thoughts. We hope to be provocative in our statements so to start an open and constructive dialogue between gamers, researchers, and practitioners. We will approach games through four different lenses:

1. The player as a woman.
2. Female game characters.
3. The developer of the game as a woman.
4. The female facilitator.

4.2 The Player as a Woman

In the commercial sector, the need to find out what women like and what they expect from a game is essential for business. In academia, researchers have examined the types of games that men and women prefer to play and whether they have different preferences for distinct game elements, especially in relation to video game play. Studies show, for example, that male players prefer competition, while female players prefer collaboration (Kivikangas et al., 2014). In their study, Kivikangas et al. (2014) found that male players indeed preferred competition over collaboration, but could not find the opposite for the female players. Jenson and de Castell (2010) could not find that distinction, too, as the girls in their study also reported to enjoy competition in game play. Hamlen (2010) provides an overview of research showing numbers on game play leading to assumptions that boys tend to play video games much more often than girls just around 10–15 years ago. She also emphasizes that differences in game play may have implications for the use of technology and technology-related careers in later life:

> It is thought that girls' lack of interest in video games and other technologies may later hurt their chances of entering technology-related fields and their ability to utilize the technologies needed to complete tasks needed for particular careers and activities (Hamlen, 2010: 294).

Eglesz et al. (2005) explored game play preferences in adults, finding that male video game players like playing in teams more than female players. Their results suggest that males report more often than females that they are motivated by challenge, the acquisition of new games, and the need for variety. From a business of market research perspective, we again see a blend of similarities and differences in gaming habits. Generally, both genders seem to favor similar types of games. Men and women both list strategy games as one of their top three genres on PC, console, and mobile. Additionally, the favored franchise on each platform is the same: Candy Crush Saga on mobile, Call of Duty on console, and World of Warcraft on PC.

There is a lot of interest to better understand what motivates people to play games and whether distinct player types can be differentiated, not only along gender lines, and including the field of simulation games. From a playing and experience perspective, the model of Bartle (1996) and his four player types of achiever, explorer, socializer, and killer is one of the most accepted ones and has since been combined with Kolb's (1984) learner types and applied to games for learning (Konert et al., 2013, 2014; Hamdaoui et al., 2018). Lopez-Fernandez et al. looked into video games addiction, including the ability of young girls and boys to play video games. Their result is as follows: It is not about the gender—but the time the kids use to play and the types of games they prefer. In that study, the authors, too, found that the boys play much longer than girls (Lopez-Fernandez et al., 2019). Dindar (2018) summarizes a number of studies into game play preferences, stating that males seem to prefer game types such as shooter, strategy, and role-playing games, while female players tend to like board, puzzle, and skill games. His analysis shows that, even in 2018, a gap between game play time still exists between the genders, with male participants in their study reporting to play more often and having higher perceived gaming skills.

While a number of studies as mentioned above exist that explore the use of video games, it is difficult to find data for business games used in professional training. The abovementioned studies may impact this field, especially when we think of designing games for a diverse group of players, taking into account different preferences and motivations of players.

One of the authors, Claudia Schmitz, can connect her observations from more than 20 years of facilitating business board games in international companies with the purpose of talent and management development, based on scientific insights. When she started in the early 2000s to facilitate business board games in the industry, Claudia worked for engineering companies like Bombardier, Daimler, SAP, and Microsoft. As the training sessions and their structure represents a microcosmos of the company itself, it was no wonder that there were hardly any women in the training sessions. In sessions with 18 individuals (representing an average group size for a session), there was perhaps one woman on average—which makes about 6% of the group. Yet, 1 woman and 17 men is a very unbalanced group structure and Claudia observed behavior specific to most minorities in groups: They try to adapt. But there was one difference. If this one woman was from Human Resources or Finance department and felt outside their comfort zone in a now male dominated environment, they often showed a very passive and service-oriented

behavior. On the other hand, if the only woman was a scientist or engineer, she was used to male colleagues and competition in the field and was sometimes even dominant in the game. Often, the group had to be made aware of the imbalance, and the session started with a slightly provocative welcome such as the following: "Congratulations to the group—you have one woman on your board" or "What is going on here, there is not one woman in the group!" Depending on the culture of the company, this was considered "normal," and the fact that most of them had never thought about this under- or non-representation of female colleagues was strange to say the least.

From these early days, some improvements have been made in large companies. The session-composition since around 2010 has grown to approximately 30% female participants, and some companies reached a 50:50 balance in 2020, according to Claudia. As some companies have a clear goal to promote women in management, the bonus of managers depends on their efforts to get more women up the career ladder. Even when this is a company indicator for all managers, there are still significant country-specific differences, depending on the culture, structure, and history.

Most of Claudia's clients organize workshops with EMEA groups (people working in Europe, Middle East, and Africa). Usually, the group is composed of a mix of European Union (EU) nationals. A repeating identified pattern is that women who are educated in the eastern part of Europe (ex-GDR, Poland, Russia) are more engaged, active, and leading the games than German, Dutch, or British women. When it comes to Southern European countries, the women selected by their bosses are usually not the ones taking over an active role and often do not represent a management role, but rather the HR or Marketing department. From Claudia's observations, one can easily get the impression that there is no desire to develop the professional skills and knowledge of these women and that they delegated solely with the intention to fulfil a gender quota. In Claudia's experience, these women usually play safe, try not to engage with the men at the table, and do service jobs. In the break, they tell the "real" stories about their bosses and the overbearing behavior in a male-dominated world. The dominating culture in the real world is very much reflected in the way companies select players, how these players behave, and, finally, what they learn. When the women do not take their roles in the games seriously and do not fully engage, they leave without having gained major educational insights. If they observe a game instead of playing it, they are out of the learning zone.

One author, Heide Lukosch, designs and researches simulation games since more than 12 years. She often worked in male-dominated domains, too, such as the police, fire fighting services, and the transportation domain. While she also observed an imbalance in numbers of men and women during her game sessions, a look into the data of the game sessions could not reveal any significant difference in game play performance or preferences—if any, the results were often surprising and showed that contrary to common belief, in two particular studies, the female players outperformed the male players in a game session with a digital game or had a steeper learning curve within the game when being less experienced game players (Lukosch et al., 2017; Lukosch & Cunningham, 2018). This is in line with studies showing that

boys seem to be more interested in the use of games for learning, yet others state that girls show at least the same performance and engagement in serious games as boys (Fraga-Varela et al., 2021). However, the same study summarizes the result of some research as a difference in playing styles, but not in performance, and that "women collaborate and are more willing to accept experiences with serious games, while men are more competitive" (Fraga-Varela et al., 2021: 2).

For one subtype of simulation games, wargames, that simulate strategies and are often used in military training, but also in business, 99% of its designers and players are men, according to the PaxSim site. An article on this type of games, which can be considered a subtype of simulation games, summarizes answers the author previously had posted to wargaming forums, trying to explore the reasons for the low number of female players in this area. There were many thoughtful reactions, but also some really disturbing answers of male players, such as the following:

- Women prefer shopping for shoes.
- Women prefer wine and manicures.
- I [contributor] was trying to impose "quotas."
- That encouraging more women to wargame was like demanding more male shop clerks at Victoria's Secret.
- If women were interested, they would form their own clubs.
- That it was good to include women, unless they were those pushy "social justice warrior" types.

We want to acknowledge that these comments might be highly biased, and selected from internet forums, not from (evidence-based) peer-reviewed sources. However, this article shows that female players and designers are highly underrepresented in the field of wargaming and that there seems to be a strong opinion about what the reasons for this are. Simulation games are slightly different—these games are often introduced by the management or the HR department of an organization, and as Claudia's examples show, it is often the preselection within an organization that determines who (and of which gender) participates in the workshop and plays the business game. As research community, we should acknowledge this, as well as the influence each player provides to the game experience, and that more diversity will lead to a richer learning outcome.

4.3 Female Game Characters

Within a sample of (entertainment) games studied, Williams et al. (2009) found that 40% did not include any female characters at all. Furthermore, the same study found that in games that did include female representation, these were in secondary roles with females portrayed in overly sexualized ways or as victims of aggression. Another study showed that male game characters engage more frequently in leadership and achievement-based tasks compared to females (Thompson & Zerbinos, 1995). Kaye and Pennington (2016) emphasize the risk that comes from such

representations and how they can form a certain image of female characters and female players. It is also undeniable that games are becoming increasingly important in popular culture (Nieborg & Hermes, 2008). Popular culture is influencing how "we" perceive ourselves and what "we" think is expected from members of a culture—for example, from girls and women. Culture is created by people who follow a pattern. People do so because the "right" or expected behavior is the key for recognition, for rewards, and for social acceptance. Behavior learned in a culture is also represented in games. Games themselves are part of culture, including their settings, their characters, their heroes, and heroines. Thus, a cultural perspective on games helps us to identify the cultural identity of games and of gaming as practice (Nieborg & Hermes, 2008).

When we talk about female characters in games, we can see many parallels to literature and the film industry. Remember the American film Alien (1979) with Sigourney Weaver as Ripley? Perhaps the first female action hero of mainstream American cinema. In the film script, the role was defined as a male and only later changed to a woman. Perhaps this makes the behavior of the heroine so natural? There is also another early example from Japan: *Lady Snowblood* is a film from 1973 with the actor Meiko Kaji. The film is based on the manga series Snowblood and tells the story of Yuki who takes revenge. However, we can even go back to Greek mythology to find examples of one of the most common female game types—the so-called damsel in distress (King & Douai, 2014; Hayes, 2020), with Andromeda as the most famous example. Andromeda was tight to a rock when Perseus sailed by, fell in love, and came to a rescue. Fairy tales such as Snow White or Sleeping Beauty follow this scheme, as does the story of the movie *King Kong* (1933). Princess Peach, character in many Nintendo games, follows the same pattern—captured by the "evil" side, Mario as superhero has to come to her rescue.

However, not all game characters follow this scheme. Even the earliest female characters in video games show characteristics of heroines—like the "sexy" bounty hunter Samus Aran, called a female human. She is the heroine of the science fiction adventure game series Metroid (1986) by the Japanese company Nintendo. She is a typical Manga girl and often presented wearing a little bikini only. More known to the public is Lara Croft. She is a fictional character and the main heroine of the video game franchise Tomb Raider, from 1996 onwards. She is presented as a highly intelligent and athletic English archaeologist who loves ancient tombs. However, even these heroines are presented very differently than their male counterparts—they are often relegated to the role of sexy companion rather than lead character (Gittelman, 2014). Lara Croft was created by a team at British developer Core Design that included Toby Gard. In this context, the story of designer Gard is an interesting one, who is said to have refused to make the heroine sexy. Gard tried to follow his own idea of how to present women in the games, and in 2014 Gard founded a new studio called Tangentlemen. However, as the name almost reveals—it is a game studio, at least by then an all-male game studio. And here we arrive at an important point—how can men create characters that are real women, and not a fictional outcome of men's fantasies? This question bothers female designers as well. In 2014, Ayla Arthur, @fourarmsdemon, asks herself and her colleagues why this

happens over and over again. Male characters have some personality, but female actors all "look like cookie-cutters with long legs, small wastes and big chests" (medium.com).

When we look at entertainment games as cultural artifacts, they contribute to our perception of aspects like gender, age, race, and culture. However, this of course also holds for serious or simulation games. There are only very few studies on the representation of characters, including their gender, in simulation or serious games. If any, studies in these fields focus on the use of games and differences in gender, player types, or former experiences and expectations (see, for a summary, Fraga-Varela et al., 2021). However, there are many aspects in simulation games that relate to the representation and perception of gender—not only the use of male and female characters but also the profession they represent (Are male characters representing the doctor, the manager, and the female ones the nurses and secretaries, or is there a mixed picture painted?) and the use of inclusive language, making women more visible in games. Because simulation games are used for learning in its widest definition, it is important to show the diversity of human life—across and within gender boundaries, to show characters that enable learning not based on stereotypes and sexist imagines, but enable critical reflection on what females and males represent in our society, and in the systems that form the reference for games, and for the learning happening when playing them.

4.4 The Game Developer as a Woman

Since Gamergate, the discussion around women in the games industry has changed and has become more open to point out problems and challenges that need to be addressed by an industry that aims to be a diverse, inclusive, and a safe work space for everyone. The rapidly increasing interest of women in gaming as a pastime led to the development of an extensive body of research exploring their experiences and preferences as players (Cassell & Jenkins, 2000; Carr, 2005) as well as the representations of women in games (Ivory, 2006; Kennedy, 2002). However, significantly less efforts are invested into understanding the experiences of female game designers and their contribution in the gaming industry. Perhaps one of the most illustrative and familiar to the reader example of this is the game of Monopoly. The game, originally titled "The Landlord's Game," was developed by Elizabeth Magie Phillips in Illinois and was patented in 1904 with the intention to educate about the greediness in the real estate market of the early days of last century (NPR, 2015). Nonetheless, most of the credit is usually attributed to Charles Darrow, who claimed ownership of the idea three decades later, leaving Elizabeth Magie Phillips's contribution unacknowledged until after her death. The trends in the gaming industry in the past two decades showcase similar patterns. According to a survey conducted in 2005 by the International Game Developers Association (IGDA), female-identifying game developers represent only 11.5% of the gaming industry workforce. In addition, the report also identifies a significant pay gap, women earning on average

approximately $9000 less than men in equivalent job positions. While by 2019 the number of female-identifying game developers has doubled, reaching 24% of the survey respondents (IGDA), there remains no doubt that the industry is still heavily male dominated.

An explanation of the underrepresentation of women in gaming is offered by Fullerton, Morie, and Pearce (2007). The authors introduce the concept of "hegemony of play," referring to the exclusive power structures within the game industry that limit the conception of play and player by catering to a primarily white, male-dominated audience. In doing so, the production environment fails to address the needs and preferences of "minority players," such as women and girl players, as well as perpetuates a set of exclusive cultural beliefs and norms regarding game and game play. It is precisely because the majority of mainstream games are created by men and target a male audience that male players are more likely to identify as gamers and to pursue a career as developers themselves (Ochsner, 2017; Deuze et al., 2007).

The underrepresentation of women in the game industry starts, as Weststar and Legault (2018) explain, at the very beginning of their career path as game developers, with the initial phase of exposure (or lack thereof) to games. Increasingly more research claims that the different interest in the types of games played by girls and boys are not explained by the gendered preferences, but rather by a different level of skills (Jenson et al. 2007; Carr, 2005; Weststar & Legault, 2018). In fact, when girls are given the platform to play and develop their abilities, such as a girls-only video game club (Jenson et al., 2011), they exhibit behaviors traditionally attributed to males. When pursuing an education in game-related fields, women too appear to be outnumbered by their male counterparts, only 25% of the student respondents to the IGDA (2015) identifying as female.

Once they entered the gaming industry, female game designers are faced with a multitude of barriers on their paths. Ochsner (2017) sheds light on some of the main aspects disadvantaging female game developers by analyzing the #1ReasonWhy Twitter conversation, launched in 2012 as a response to one user's question: "Why are there so few lady game developers?" Based on a qualitative analysis of the numerous contributions of Twitter users from across the gamer community and the game industry, the author identified three main themes. Firstly, women are evaluated based on different standards than their male counterparts and often by criteria "other than their professional contributions and accomplishments" (Ochsner, 2017: 529). These concern their appearance, clothing, and relationship with men, among many others. Secondly, women do not benefit from the same acknowledgement of their expertise and status, in comparison to their male colleagues. Many of the analyzed tweets contain stories of how women were assumed to be "tagalong" wives or girlfriends, their expertise is denied in hiring situations, and they are assumed to be "in the wrong class in institutionalized educational spaces" (Ochsner, 2017: 535). The last identified theme is that women's voices in the game industry are silenced and made invisible. Often, this takes place through harassment at work, in online play, in educational settings, at industry events, and in the online community. The author explains that harassment became a cultural norm, and women who speak up against it are frequently not taken seriously. As a result, they avoid complaining and

reporting these instances altogether, out of fear of losing their jobs and harming future employment opportunities. Based on the testimonies shared through the #1ReasonWhy Twitter conversation, the need to address the hardships faced by women in the game industry becomes evident.

An impactful way of shaping the culture of gaming into an inclusive space is through design. Games, Albrechtslund (2007) explains, represent realistic settings that allow players to engage in a dynamic process of "sense-making." In other words, they allow for a platform of reconfiguration of the players' worldview, having the potential to directly engage and challenge their values and belief systems. In a similar manner, Flanagan (2009: 6) claims that simulation games can provide the "cognitive and epistemological environments" that facilitate the engagement in issues concerning aspects of the real life in meaningful ways. This occurs due to the fact that individuals seek the fulfillment of the same motivational needs in game worlds as they do in real life: autonomy, competence, and social relatedness (Visch et al., 2013). As games become increasingly more representative of the culture as a whole, the need for developing games that enable responsible play increases (Flanagan, 2009).

One possible way to fulfill this goal is identified by Back and Waern (2013). The authors advocate for a gender-aware approach to game design, which involves an in-depth understanding of everyday practices of the target group. Unlike the "pink" design strategies, identified and criticized by Cassell and Jenkins (2000) (e.g., games involving setups centered around the topics of cooking, dressing up, makeovers, etc.), an approach to constructing games that takes the actual preferences of women into account leads to the development of games that girls would like to play, without necessarily ascribing them features that represent stereotypical aspects of female play. This is especially important in pervasive games, as these are not confined to computer screens but rather engage with the ordinary world (Back & Waern, 2013). A suitable example is the game Codename Heroes, in the design of which Back and Waern (2013) focused on game mechanics (rather than the story content), in an attempt to avoid the risks of being perceived as female-coded, but most importantly to encourage players to perform the activities and strategies they would enjoy and reward that behavior. The game included elements such as collective play, a certain level of secrecy (that would enable control of whom the player choses to enter in contact with, as well as lower the risk for embarrassment in public situations), an environment in which gift giving is possible (but not necessary), and a player structure that prioritizes achievements over status.

While there is still a long way to go towards achieving gender equality in games, we have identified certain attempts in the industry that pave the way towards this goal. One initiative that invest efforts to raise the number of female game developers is the Facebook campaign #shetalksgames, launched in 2018, focusing on promoting women in the video games industry. In 2019, they opened up their perspective and included women in the gaming industry, not limiting it anymore to video games. The campaign works with storytelling—hundreds of women tell their story on why they work in this field, what is important for them, and how their journey looks in the world of games. These stories reveal hard work, long trajectories, wins, and pride.

This new network is supported by Sheryl Sandberg, COO of Facebook and founder of Lean-In and Option B, both initiatives for women. Their mission, as she explains, is building a global gaming community that encourages and inspires women in the gaming industry.

An earlier initiative with a comparable objective is European Women in Games, created in 2011 with the intention to acknowledge the achievements of women in the European games industry. The winners are recognized during the annual European Women in Games Conference. The network today has ambassadors in 36 countries and became a network for professionals with 5000 members in May 2020. Two examples of females in this network are Frederique Doumic, CEO of OUAT Entertainment, which she cofounded in 1999 in Angouleme, France. OUAT Entertainment creates and publishes video games for women and kids, referring to them as "casual games." Louise Murray is the Head of Fable Franchise at Microsoft Games Studio Lionhead, where she has been leading the development on Fable 3. Previously, she was awarded the BAFTA Award in the Action Adventure category for her work on Fable 2 in 2009.

Fortunately, a positive picture is also painted when looking at our own professional organization, ISAGA. In June 2021, from 107 members in total, 41 were identified as female (38.32%). Many of them are senior lecturers, professors, and/or experienced game designers and facilitators from all over the world. Simulation games in the community of ISAGA are commonly used for education and (professional) training, decision-making, research, and other "serious" purposes. They provide a general language and relate to the play aspect of human culture (Klabbers, 2006). They provide engaging and safe environments and are highly accepted tools especially among the younger generation. Only very few studies look into the relation between gender and simulation or serious games (e.g., Lukosch et al., 2017; Lukosch & Cunningham, 2018). However, our own experience shows that while many game designers of simulation and serious games are women, especially when we talk about games for learning, many developers of these games still are men—mainly because they come from disciplines with a high number of male representatives, such as computer science or software engineering.

4.5 The Female Facilitator

In simulation games, the facilitator plays an important role (Schwägele et al., 2021). The facilitator prepares a games session, supports the game play, and facilitates the debriefing or reflection phase(s) during a game session. In this role, a facilitator has a huge impact on the results and effects of a simulation gaming session. Again, there is unfortunately only little research on the role of the facilitator in simulation games and even less on the influence of gender on simulation game facilitation.

Hence, we have to look into the business side of games again—starting with the very facilitation of games, the one of casino games. An interesting study by Karin Weber (1998) about female facilitators in the gaming industry highlights the

situation of female senior executives and their career path in the casino industry. The study discusses reasons why females are underrepresented in the high management of casinos and finds explanations in their behavior, in bias and discrimination, despite the same level of abilities and education of both genders. The story is not different from other women who like to climb the ladder to the top: automotive, IT, or the service industry reveal accounts of women who are disadvantaged yet make it to the top in small numbers.

Facilitation in games research is a niche topic, and thorough research is limited. On the Australian site "The Commons—The Social Library," Holly Hammond shares her experiences of what happens in discussions and why men often have a higher percentage of contributions in a seminar or conference than the women have. She argues that this might be the case because men are socialized to speak up, while women often are not. More importantly, she also shows what a facilitator can do to encourage more women to take part in a discussion. For example, a (female?) facilitator can balance a discussion, when the first questions and statements are from men. She would simply ask "And what do women think about this—let me hear from you" and point to a woman in the room. A facilitator could also deliberately take the first question or comment from a female participant, to also encourage other women to step up and contribute.

The US military has strict diversity rules. In the governmental research organization RAND, women work in the war game design department. One of them, Becca Wasser, is a senior policy analyst at RAND Corporation and states in a New York Times Magazine article on war games:

> *This eye toward inclusivity can also be seen when women run games, as female facilitators are more inclined to encourage different voices to contribute to discussion and in turn gain a greater range of insights into the particular problem at hand. It is not so much that female war gamers approach the critical problems differently or focus a game on "soft" security issues like gender and humanitarian affairs. Rather, they are likely to have different perspectives, based in part on their experiences navigating a man's world. By not having female game designers, facilitators or players, opportunities to uncover new and innovative strategies are falling by the wayside.*

Claudia's own experiences as a female facilitator for the last 20 years is that women run simulations different than men do. In her experience, most men like fun, competition, and winners. These stereotypes are driving the session and the learning. Male facilitators please the expectation and make them feel good, talking about the fun and supporting the competitive atmosphere. This was the standard for many years, but it is changing. The change comes not from the game industry or facilitators' insights, but rather from the customers. The Human Development departments try to change their mindset inside the company towards diversity and collaboration. The "old boys" games are out. In a complex interconnected world with global trade and intercultural settings, we need to be more diplomatic, more aware of the system, and we need to identify the win-win solutions to cooperate. Games and facilitators with win-lose mindsets are unable to bring new perspectives. Opposite to this, Claudia's observations are that when women facilitate games, they can swing around the model structure and the facts and figures. Women tend to reflect more and bring

the focus on behavior, mindset, and the goal itself. Usually, it is not about winning but about surviving, finding a niche or catching the momentum. But winning means also building up a clear strategy and setting it up on a solid structure. In theory, men and women facilitators have a similar belief about what a good facilitator should do, but the reality is different. Male facilitators like to be the stars of the show, building up time pressure and speed. They can be like a dancing Darwish, swirling around and getting anybody excited. It is all about their own expectations on what makes a good game and what is fun, being rewarded with a loud round of applause at the end. Good show. Great seminar. Everybody is happy. But did the participants learn?

When Claudia facilitates, she usually asks: What is the goal of the game? And the answer today is, "We want to learn how to run a business." The intention is, thus, not just to win but also to observe, reflect, conduct a root cause analysis, and identify potential scenarios. Claudia finds working together with male co-facilitators being often difficult, as men in game sessions like to drive speed in the simulation and do not like the interruptions for transfer, reflection, and observation. Claudia also experiences little room for cooperation. Nonetheless, the goal of the gaming sessions is first and foremost learning. Therefore, Claudia's preferred co-facilitator is another woman. In her experience, communication has proven to require significantly less effort, so much so that the facilitators can understand each other even without using words. They can balance their respective weaknesses, stop each other, and bring moments of thinking on the events that took place during the simulation. This is a very personal reflection that male partners never really understood. They are best friends and share a lot, but working together on stage is not an option for her.

Heide has facilitated games with both male and female colleagues. Both models worked well, and she does not have a preference. While two female facilitators may indeed be more patient and let more room for reflection, that very much depends on the style of the facilitator, not their gender. To enable participants to open up during a gaming session, especially during debriefing and reflection, it might be helpful to have a diverse representation in the facilitator team—related to gender, culture, age, skills, and knowledge about the field the simulation games is addressing.

4.6 Conclusion and Discussion

We used many examples from the entertainment games field, from popular and social media and from the business domain to discuss the relationship between women and games. Our own experiences and observations show that the representation, game play, design, and facilitation of simulation games in relation to gender is an overlooked field of research. Therefore, we needed to make use of related fields, but moreover have been able to pose important questions rather than providing insightful answers.

In this contribution, we explored the relationship between simulation games and women, starting from a panel discussion held at the ISAGA conference 2019, looking into the scientific literature, and added our personal perspective to it. We

want to provoke you as a reader with our perspectives, so that you start developing your own approach to this topic and maybe include this perspective (more) in your own doing and playing. We identified four main areas of interest—women as players, as characters, as game developers, and as game facilitators. While gender is only one aspect (and a societal construct) that might or might not influence how we behave, how we play, and what we learn from a simulation gaming session, it is one that has a large effect on the group composition of many simulation gaming sessions, especially in corporate environments. Approached as a cultural artefact, the way gender is represented in games also shapes how "we" think we should behave, react, and look. In still too many games, female characters take over the role of the inactive "damsel in distress" that has to be rescued by her male counterparts and/or inhibits an inactive, serving role (administrator/secretary/service in any kind). Games made by a mainly Western, white, and male community of game developers represent their worldview and what they think the "average" player expects from a game. The discussion on inclusiveness, on the one hand, and the toxic work environment in the games industry is one to still continue and hopefully will lead to better working circumstances for all involved in the industry. Finally, how we facilitate games and how we address the target group and their composition and how the session participants can benefit from diversity is a responsibility of all who work with simulation games—regardless of their gender, age, cultural background, worldview, or geographical location. In the first book on simulation games, Richard Duke (1974) called them a "multilogue language" that connects disciplines and people—and we hope that they still have this power that we all can leverage to learn and work together.

References

Albrechtslund, A-M. B. (2007). Gender values in simulation games: Sex and the sims. In *Proceedings of CEPE 2007: The 7th International Conference of Computer Ethics*. Philosophical Enquiry Center for Telematics and Information Technology.

Back, J., & Waern, A. (2013). "We are two strong women"—Designing empowerment in a pervasive game. In *Proceedings of Digra 2013: Defragging Game Studies*.

Bartle, R. (1996). Hearts, clubs, diamonds, spades: Players who suit MUDs. *Journal of MUD research, 1*(1), 19.

Carr, D. (2005). Contexts, gaming pleasures, and gendered preferences. *Simulation & Gaming, 36*(4), 464–482. https://doi.org/10.1177/1046878105282160

Cassell, J., & Jenkins, H. (2000). *From Barbie to mortal Kombat: Gender and computer games*. MIT Press.

Chess, S., & Shaw, A. (2015). A conspiracy of fishes, or, how we learned to stop worrying about# GamerGate and embrace hegemonic masculinity. *Journal of Broadcasting & Electronic Media, 59*(1), 208–220.

Deuze, M., Martin, C. B., & Allen, C. (2007). The professional identity of gameworkers. *Convergence, 13*(4), 335–353.

Dindar, M. (2018). An empirical study on gender, video game play, academic success and complex problem solving skills. *Computers & Education, 125*, 39–52.

Duke, R. D. (1974). *Gaming: The future's language*. Sage.

Eglesz, D., Feteke, I., Kiss, O. E., & Izso, L. (2005). Computer games are fun? On professional games and players' motivations. *Educational Media International, 42*(2), 117–124.

Flanagan, M. (2009). *Critical play*. MIT Press.

Fraga-Varela, F., Vila-Couñago, E., & Rodríguez-Groba, A. (2021). Serious games and mathematical fluency: A study from the gender perspective in primary education. *Sustainability, 13*(12), 6586.

Fullerton, T., Morie, J. F., & Pearce, C. (2007). *A game of one's own: Towards a new gendered poetics of digital space*. In Proceedings DAC, Perth.

Gittelman, E. R. (2014). *Gender issues and the Boy's Club Hegemony of video game development* [Bachelor thesis]. The School of the Art Institute of Chicago.

Hamdaoui, N., Khalidi Idrissi, M., & Bennani, S. (2018). Modeling learners in educational games: Relationship between playing and learning styles. *Simulation & Gaming, 49*(6), 675–699.

Hamlen, K. R. (2010). Re-examining gender differences in video game play: Time spent and feelings of success. *Journal of Educational Computing Research, 43*(3), 293–308. https://doi.org/10.2190/EC.43.3.b

Hayes, A. (2020). *The damsel in distress: Gendered spaces, power and subversion in video games* [Doctoral Dissertation]. The University of the Witwatersrand.

Hopp, T., & Fisher, J. (2017). Examination of the relationship between gender, performance, and enjoyment of a first-person shooter game. *Simulation & Gaming, 48*(3), 338–362. https://doi.org/10.1177/1046878117693397

International Game Developers Association. (2005). *Game developer demographics: An exploration of workforce diversity*. International Game Developers Association.

International Game Developers Association. (2015). *Developer satisfaction survey*. International Game Developers Association.

Ivory, J. (2006). Still a man's game: Gender representation in online reviews of video games. *Mass Communication and Society, 9*(1), 103–114. https://doi.org/10.1207/s15327825mcs0901_6

Jenson, J., & de Castell, S. (2010). Gender and digital gameplay: Theories, oversights, accidents, and surprises. In D. Kaufman & L. Sauv (Eds.), *Educational gameplay and simulation environments: Case studies and lessons learned* (pp. 96–105). IGI Global.

Jenson, J., de Castell, S., & Fisher, S. (2007). Girls playing games: Rethinking stereotypes. In B. Kapralos, M. Katchabaw, & J. Rajnovich (Eds.), *Proceedings of the 2007 Conference on Future Play* (pp. 9–16). Association for Computing Machinery [online].

Kaye, L. K., & Pennington, C. R. (2016). "Girls can't play": The effects of stereotype threat on females' game performance. *Computers in Human Behavior, 59*, 202–209.

Kennedy, H. (2002). Lara Croft: Feminist icon or cyberbimbo? On the limits of textual analysis. *Game Studies, 2*(2).

King, A. E., & Douai, A. (2014). From the "damsel in distress" to Girls' games and beyond: Gender and children's gaming. In J. Prescott & J. E. McGurren (Eds.), *Gender considerations and influence in the digital media and gaming industry* (pp. 1–17). IGI Global.

Kivikangas, J. M., Kätsyri, J., Järvelä, S., & Ravaja, N. (2014). Gender differences in emotional responses to cooperative and competitive game play. *PLoS One, 9*(7), e100318.

Klabbers, J. (2006). *The magic circle: Principles of simulation & gaming*. Sense Publishers.

Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development*. Prentice-Hall.

Konert, J., Göbel, S., & Steinmetz, R. (2013). Modeling the player, learner and personality: Independency of the models of Bartle, Kolb and NEO-FFI (Big5) and the implications for game based learning. In *Proceedings of the 7th European Conference on Game Based Learning (ECGBL)* (pp. 329–335).

Konert, J., Gutjahr, M., Göbel, S., & Steinmetz, R. (2014). Modeling the player: Predictability of the models of Bartle and Kolb based on NEO-FFI (Big5) and the implications for game based learning. *International Journal of Game-Based Learning (IJGBL), 4*(2), 36–50.

Lopez-Fernandez, O., Williams, A. J., Griffiths, M. D., & Kuss, D. J. (2019). Female gaming, gaming addiction, and the role of women within gaming culture: A narrative literature review. *Frontiers in Psychiatry, 10*, 454. https://doi.org/10.3389/fpsyt.2019.00454/full

Lukosch, H., & Cunningham, S. (2018). Data analytics of mobile serious games: Applying bayesian data analysis methods. *International Journal of Serious Games, 5*(1), 19–36.

Lukosch, H., Kurapati, S., Groen, D., & Verbraeck, A. (2017). Gender and cultural differences in game based learning experiences. *Electronic Journal of e-Learning, 15*(4), 310–319.

Massanari, A. (2017). # Gamergate and the Fappening: How Reddit's algorithm, governance, and culture support toxic technocultures. *New Media & Society, 19*(3), 329–346.

Mortensen, T. E. (2018). Anger, fear, and games: The long event of# GamerGate. *Games and Culture, 13*(8), 787–806.

Nadolny, L., & Halabi, A. (2016). Student participation and achievement in a large lecture course with game-based learning. *Simulation & Gaming, 47*(1), 51–72. https://doi.org/10.1177/1046878115620388

Nieborg, D. B., & Hermes, J. (2008). What is game studies anyway? *European Journal of Cultural Studies, 11*(2), 131–147.

NPR. (2015, March 05). *Ever cheat at monopoly? So did its creator: He stole the idea from a woman*. Retrieved on February 18, 2022, from https://www.npr.org/2015/03/03/382662772/evercheat-at-monopoly-so-did-its-creator-he-stole-the-idea-from-a-woman

Ochsner, A. (2017). Reasons why: Examining the experience of women in games 140 characters at a time. *Games and Culture, 14*(5), 523–542. https://doi.org/10.1177/1555412017709418

Schwägele, S., Zürn, B., Lukosch, H. K., & Freese, M. (2021). Design of an impulse-debriefing-spiral for simulation game facilitation. *Simulation & Gaming, 5*(2), 10468781211006752.

Thompson, T. L., & Zerbinos, E. (1995). Gender roles in animated cartoons: Has the picture changed in 20 years? *Sex Roles, 32*, 651–673.

Visch, V. T., Vegt, N. J. H., Anderiesen, H., & Van der Kooij, K. (2013). *Persuasive game design: A model and its definitions*. Retrieved from http://gamification-research.org/wpcontent/uploads/2013/03/Visch_etal.pdf

Weber, K. (1998). Women's career progression in the Las Vegas casino industry: Facilitators and constraints. *Journal of Hospitality & Tourism Research, 22*(4), 431–449. https://doi.org/10.1177/109634809802200407

Weststar, J., & Legault, M. J. (2018). Women's experiences on the path to a career in game development. In K. L. Gray, G. Voorhees, & E. Vossen (Eds.), *Feminism in play* (pp. 105–123). Springer.

Williams, D., Martins, N., Consalvo, M., & Ivory, J. D. (2009). The virtual census: Representations of gender race and age in video games. *New Media&Society, 11*(5), 815–834. https://doi.org/10.1177/1461444809105354

Yörük Açıkel, B., Turhan, U., & Akbulut, Y. (2018). Effect of multitasking on simulator sickness and performance in 3D aerodrome control training. *Simulation & Gaming, 49*(1), 27–49. https://doi.org/10.1177/1046878117750417

Chapter 5
The Current Status of Japanese Game Players and Its Impact on the Society

Hiroyuki Matsui, Junkichi Sugiura, and Toshiko Kikkawa

Abstract In this chapter, the results of a survey on the Internet on the current status of Japanese tabletop gamers are discussed. Tabletop games refer to board games, card games, role-playing games, and wargames. They are also known as nonelectronic games and unplugged games. Although the survey included questions about digital games in Japan so as to compare them to tabletop games, they are not discussed in detail. In recent years, the market for tabletop games has expanded. The Game Market, which is the biggest tabletop game event in Japan, is held three a year. Its increase in popularity is evidenced by the fact that 22,000 participated in the 2018 autumn market. Most of the Game Market's exhibitors are independent game designers. However, reasons for the increasing popularity of tabletop games have yet to be explored. Accordingly, two surveys, the first in June 2018 and the second in September 2019, were conducted with active gamers between the ages of 20 and 69 years. The results revealed that most active gamers are in their twenties and thirties, thus indicating that the relatively younger generation could accelerate this recent trend. Furthermore, men tended to be more active gamers than women. The younger generation and men had more positive attitudes toward games. Frequent players, who were mainly men, evaluated games positively. They also agreed that games have connections to the real world and game experience can be useful in the real world.

Keywords Gaming simulation · Methodology · Design science · Analytical science · Game design · Facilitation · Debriefing · Gaming types · Gamification · Serious games · Culture · Game-based learning · Ethics

H. Matsui (✉)
Kyoto University, Kyoto, Japan
e-mail: hmatsui@econ.kyoto-u.ac.jp

J. Sugiura · T. Kikkawa
Keio University, Tokyo, Japan
e-mail: jsugiura@keio.jp

T. Kikkawa et al. (eds.), *Gaming as a Cultural Commons*, Translational Systems Sciences 28, https://doi.org/10.1007/978-981-19-0348-9_5

5.1 The Rise in the Japanese Tabletop Game Market

In this chapter, the current status of Japanese tabletop game players based on a survey conducted on the Internet is examined. Tabletop games refer to board games, card games, role-playing games, and wargames. These are sometimes known as nonelectronic games and unplugged games. Although our survey included questions about digital games so as to compare digital to tabletop games, digital games are not discussed in detail.

In recent years, the tabletop games market has been expanding in Japan. It is believed that the market size ranged from 3,000,000,000 JPY (approximately 23,000,000 EUR and 27,000,000 USD) to 4,000,000,000 JPY (approximately 32,000,000 EUR and 36,000,000 USD) in 2018. However, this is still less than the Japanese digital Game Market, which is approximately 100,000,000,000 JPY (approximately 798,000,000 EUR and 900,000,000 USD). The reasons for this boom in popularity have as yet not been explored.

The Game Market (Game Market, n.d.), which is portrayed in Fig. 5.1, is a good example of this trend. At present, it is the largest tabletop game event in Japan and is held three times a year. When the market started in 2000, there were approximately 400 participants in a hall in Tokyo that only had a capacity for 250 people. While the event was held once a year in Tokyo until 2010, from 2011, it was held biannually. Furthermore, the market has also been held in Osaka since 2012. Moreover, the number of participants has increased accordingly. For example, in the spring market held in Tokyo in 2018, there were in excess of 22,000 participants across 2 days.

The key characteristic of this event is that although the exhibitors are primarily independent game designers, they are ordinary people. For example, out of a total of

Fig. 5.1 The Game Market

454 exhibitors on the first day of the Tokyo Game Market, 350 were independent game designers. Similar to Comiket, that is, the comic market held in Japan, it may be regarded as a grassroots event because it was founded by an elementary school teacher, who has now become a well-known game historian and game designer.

In addition to Game Market events, three booming situations are examined, namely, increases in the number of game cafes, game meetings, and commercial game events.

Game cafes are places where people gather to play games, and similar to ordinary cafes, they offer drinks and light meals. Furthermore, people can arrive at these cafes alone or with friends and find players with whom to play. Typically, game cafes have a time system in that people can play as many games as they want to within a certain time limit. New cafes are opening monthly, and thus, it is difficult to determine how many game cafes there are exactly. A site that maps these cafes revealed there were 344 in March 2019 (Map of game cafes, n.d.). Furthermore, the number of cafes has increased rapidly since the prevalence of Werewolf because this game requires more players than games that are usually played.

Formal and informal game meetings are either held once-off or periodically. Those who gather and play games may not necessarily be friends. These types of meetings are growing and libraries and other community centers have also begun to offer these events.

Commercial events such as Real Escape Games and Mystery Games have also been growing in popularity. Real Escape Games, which are held periodically, are run commercially and tend to attract young people. Furthermore, players are locked in a room from which they try to escape by solving puzzles embedded in the room. Mystery Games are similar to Real Escape Games in the sense that to win, players have to solve mysteries even though the games are held in open space areas, including towns and along certain train and bus routes. The events are commonly associated with the revitalization of towns as players explore and enjoy local places. However, this type of game differs from Real Escape Games in that they are more prevalent among middle-aged and older people.

One of the disadvantages associated with tabletop games is the difficulty of finding friends with whom to play. However, these venues and events provide ways to overcome this disadvantage.

Because of the increase in the number of gamers as well as the variety of game-related places and events, an evaluation of the current status of Japanese tabletop gamers has become imperative. No known systematic survey of tabletop gamers has been conducted. Accordingly, we conducted an online survey to collect responses from a variety of people so as to explore the current status and attitudes of Japanese tabletop gamers.

5.2 The Survey

Although one may deduce that a growth in the popularity of tabletop games has been accompanied by an increase in the number of tabletop game players, the actual number and characteristics of tabletop game players are unknown. Although we observed a preponderance of male and increased number of female participants at the Tokyo Game Market, quantitative data are needed to realize a precise understanding of the situation. Moreover, the reasons for these trends are also unclear because participants' motivation for playing tabletop games and/or participating in the Game Market has yet to be determined.

Accordingly, it is vital to evaluate the current status of Japanese tabletop game players. The purpose of our survey was twofold. First, we sought to obtain basic personal information about current Japanese tabletop game players. For example, the question of whether game players met the criteria of innovators outlined in the theory of the diffusion of innovation and whether diffusion was prevalent in the second stage such that early adopters become committed game players could be asked (Rogers, 1962). Second, we sought to understand players' attitudes toward games by examining communication specifically, for example, developing social relationships through tabletop games.

5.2.1 Method

Respondents. The respondents were recruited through an online panel provided by the NTTCom Online Marketing Solutions Corporation in Japan. This panel, which included 21,700,000 members in June 2017, is one of the largest Internet panels in Japan. The company's website (NTTCom characteristics of the survey monitors, n. d.) listed the demographic characteristics of the panel as follows: while 57.35% were male, 42.7% were female, and 0.4% were aged between 13 and 19 years, 4.2% between 20 and 29 years, 14.6% between 30 and 39 years, 27.1% between 40 and 49 years, 27.0% between 50 and 59 years, and 17.6% between 60 and 69 years, and 9.2% were 70 years and older. In addition, 40.9%, 20.1%, and 14.1% of the monitors lived in the Tokyo, Osaka, and Chubu metropolitan areas, respectively. The remaining 24.6% of the monitors lived outside these three largest metropolitan areas. In comparison to the National Population Estimates in Japan (2018) (Japan Statistics Bureau Monthly Report of the Population Estimates, 2018), while the percentage of males in our sample was higher than that in the population, the distribution of the monitors' areas of residence concurred with that in the census. NTTCom noted that the average age and social status of the monitors were higher than those of monitors in other online research companies.

We conducted two surveys: the first in June 2018 and the second in September 2019, with those between 20 and 69 years of age. Respondents from the panel who met the following two criteria were selected for the first survey: first, those who had

Table 5.1 Overview of the 2018 and 2019 surveys

Survey	2018	2019
Target area and sample size	1059 residents of the metropolitan area of Japan	1123 in the Tokyo metropolitan area, 326 in Kansai, 225 in Chubu, and 322 in four regional cities
Items related to tabletop game activities	– Frequency of playing tabletop games – People with whom respondents play tabletop games – Monthly expenditure for tabletop games – Game-related activities – Experiences of active participation of game-related activities	
Tabletop games vs. digital games	Reasons for playing games (11 items each)	
Attitude toward games based on Japanese cultural context	15 items	
Game experience scale		25 items

played tabletop games at least once in the previous year and, second, those who resided in the Tokyo metropolitan area, that is, Tokyo and its surrounding three prefectures. The area was selected because of its relative advantage of accessibility with regard to game events and/or game cafes. There was an equal distribution of age and gender among the 1059 respondents.

The following two criteria were employed to choose the panel respondents for the second survey: first, those who had played tabletop games at least once in the previous year and, second, those who lived in Tokyo, Osaka, Nagoya, surrounding prefectures, and regional areas, namely, Yamagata, Fukui, Yamanashi, and Okinawa. These areas were chosen because, similar to the Tokyo metropolitan area, they have relatively easy access to game events and game cafes and are home to famous game stores. There was an equal distribution of age and gender among the 1996 respondents.

Questionnaire. The questionnaire is comprised of two sections. In the 2018 survey, 15 items based on the Japanese cultural context were employed to measure attitudes toward tabletop and digital games. Three types of items were included: first, those that compare tabletop games with digital games because the latter tend to be more popular; second, those that examine social relationships involved in playing tabletop games; and third, those that assessed the relationship between games and the reality so as to address criticisms that gameplay may promote excessive gaming and/or players may confuse games with reality. It was noted that examining social relationships may be more prominent in tabletop than digital games, thus advantaging those involved in the former. Subsequently, 25 items that measure attitude toward games from the previous studies (e.g., Barbara, 2017) were employed in the 2019 survey. All items were assessed on a 5-point Likert-type scale, ranging from 1 (do not agree) to 5 (fully agree) (Table 5.1).

Childhood and current tabletop gaming experience were measured in the second section of both the 2018 and 2019 surveys by multiple choice questions. Frequency of play, variety of gaming activities such as buying tabletop games and going to the

Game Market and game cafes, people with whom the respondents played games, and activities other than playing games, including the rules of existing games, designing games, and hosting game events were assessed. Furthermore, in the 2018 survey, reasons for playing tabletop and digital games were measured. While in both the 2018 and 2019 surveys respondents' reasons for playing analog games were measured, reasons for playing digital games were evaluated in the 2018 survey.

5.2.2 Results

5.2.2.1 Characteristics of Japanese Tabletop Game Players

The frequency of game play per year is displayed in Table 5.2. The majority of the participants played once every 6 months, followed by once a year, and once every 3 months. Approximately 20% of the respondents were considered to be frequent game players as they played games between two and five times a month. In general, the male respondents had more experience than the female respondents and the younger respondents had more game-playing experience than their older counterparts.

While the respondents tended to play with their friends most of the time, the older respondents played with their families. Furthermore, the male respondents tended to play with their friends and female respondents with their family (Table 5.3). An examination of Table 5.2 reveals that the percentage of male respondents in their forties and older and female respondents in their thirties and older who played with their families was particularly high. This may be related to child rearing.

Table 5.2 Frequency of playing tabletop games (multiple choice)

	Men				Women					
	20s	30s	40s	50s	60s	20s	30s	40s	50s	60s
Once a year	14.0	15.0	17.0	19.4	14.8	18.7	16.7	19.0	29.0	20.0
	11.4	20.6	19.6	29.0	26.1	32,1	24.2	29.9	28.5	20.4
Once every 6 months	20.6	22.0	23.0	28.7	25.9	28.0	19.4	23.3	31.0	26.7
	35.4	28.4	23.1	32.5	25.8	28.6	18.0	24.1	43.1	39.8
Once every 3 months	17.8	19.0	5.0	13.9	16.7	22.4	13.9	25.0	13.0	15.2
	22.7	13.5	20.7	16.1	17.4	16.1	18.6	17.9	8.5	15.1
Once a month	15.0	20.0	15.0	21.3	25.9	15.0	19.4	13.8	12.0	15.2
	13.6	17.7	15.0	9.9	15.9	14.3	16.5	12.4	8.5	6.5
2–3 times per month	15.9	16.0	15.0	6.5	10.2	9.3	15.7	9.5	5.0	11.4
	4.5	7.1	12.7	7.0	7.2	5.4	11.3	8.4	7.7	6.5
3–5 times per month	15.9	8.0	15.0	8.3	6.5	5.6	13.9	9.5	10.0	9.5
	11.4	12.1	8.4	5.1	7.5	3.6	11.3	6.6	3.8	8.6
Other	0.9	0.0	0.0	1.9	0.0	0.9	0.9	0.0	0.0	1.9
	0.0	0.7	0.6	0.3	0.0	0.0	0.0	0.7	0.0	3.2

Upper 2018, lower 2019, unit percentage

Table 5.3 People with whom respondents play tabletop games

	Men					women				
	20s	30s	40s	50s	60s	20s	30s	40s	50s	60s
Friends	92.5	67.0	51.0	54.6	45.4	77.6	50.9	41.4	46.0	20.0
	81.8	66.0	49.9	50.0	45.5	80.4	47.4	33.9	36.9	30.1
Colleagues from workplaces	16.8	16.0	10.0	20.4	11.1	8.4	16.7	6.9	11.0	2.9
	9.1	17.7	15.0	11.8	12.0%	7.1	8.2	5.1	5.4	3.2
People whom I met at game meetings	15.9	13.0	10.0	2.8	4.6	4.7	9.3	0.0	3.0	3.8
	4.5	18.4	11.0	4.0	2.3	7.1	6.7	1.1	1.5	4.3
People whom I met at game events	12.1	7.0	7.0	2.8	0.9	6.5	9.3	0.0	1.0	1.0%
	6.8	12.1	8.1	3.0	1.4	5.4	5.7	2.2	0.8	1.1%
Family	27.1	43.0	77.0	67.6	69.4	57.9	71.3	84.5	82.0	85.7
	38.6	48.2	67.4	70.7	71.3	46.4	82.0	88.3	84.6	88.2
People whom I met at game cafes	5.6	4.0	6.0	0.9	0.0	1.9	3.7	0.9	1.0	0.0
	2.3	5.7	2.9	0.8	0.9	3.6	2.1	0.7	0.8	1.1
Other	1.9	3.0	1.0	0.9	5.6	2.8	5.6	2.6	2.0	1.9
	4.5	0.7	3.5	2.4	5.2	1.8	2.1	0.7	3.8	3.2

Upper, 2018; lower, 2019; unit percentage

Table 5.4 Monthly expenditure for tabletop games

	Men					Women				
JPY	20s	30s	40s	50s	60s	20s	30s	40s	50s	60s
0	33.6	40.0	43.0	55.6	53.7	54.2	50.9	66.4	74.0	77.1
	29.5	36.9	41.5	56.7	55.9	50.0	61.9	67.9	70.8	78.5
1–1000	27.1	27.0	33.0	29.6	26.9	24.3	25.9	25.0	12.0	14.3
	38.6	25.2	31.1	31.2	27.8	33.9	23.2	24.8	23.1	14.0
1001–3000	19.6	14.0	13.0	9.3	13.9	15.9	13.9	6.9	11.0	3.8
	18.2	19.9	15.3	6.7	10.7	10.7	6.7	6.2	6.2	3.2
3001–5000	9.3	16.0	6.0	0.9	2.8	1.9	7.4	0.9	2.0	2.9
	9.1	9.9	9.2	3.8	2.9	3.6	5.7	0.7	0.0	2.2
5001–10,000	7.5	2.0	3.0	2.8	2.8	3.7	0.9	0.9	0.0	1.9
	2.3	4.3	2.0	1.1	1.7	1.8	1.5	0.0	0.0	0.0
More than 10,000	2.8	1.0	2.0	1.9	0.0	0.0	0.9	0.0	1.0	0.0
	2.3	3.5	0.9	0.5	0.9	0.0	1.0	0.4	0.0	2.2

Upper, 2018; lower, 2019; unit percentage

Table 5.5 Game-related activities (multiple choice)

	Men					Women				
	20s	30s	40s	50s	60s	20s	30s	40s	50s	60s
Bought tabletop games	45.8	48.0	37.0	27.8	27.8	30.8	34.3	21.6	20.0	21.0
	34.1	41.1	40.3	22.0	18.8	25.0	26.3	21.5	19.2	11.8
Went to game cafes	26.2	24.0	16.0	11.1	7.4	15.0	13.0	3.4	4.0	2.9
	20.5	22.0	17.0	5.9	3.8	16.1	8.8	5.1	6.9	5.4
Went to the Game Market	24.3	24.0	15.0	6.5	3.7	8.4	11.1	3.4	4.0	3.8
	15.9	23.4	14.7	5.9	2.3	12.5	9.3	2.9	6.2	4.3
Joined game events, e.g., Real Escape, Werewolf	22.4	21.0	20.0	7.4	5.6	22.4	19.4	6.0	9.0	1.9
	4.5	15.6	14.1	9.1	1.7	16.1	14.4	5.1	3.1	2.2
Joined game party	15.9	10.0	9.0	6.5	6.5	8.4	8.3	3.4	5.0	2.9
	6.8	14.2	5.2	4.8	4.9	5.4	5.7	3.3	3.1	4.3

Upper, 2018; lower, 2019; unit percentage

Approximately 10% of those between 30 and 60 years of age played with colleagues from work. Most played in their own houses, followed by friends' houses, and cafes. However, playing in game cafes was more frequent among the younger than older respondents.

The money the respondents spent on tabletop games per month is displayed in Table 5.4. With the exception of male respondents in their twenties (2019 survey), the majority spent 0 JPY per year. This was followed by less than 1001 JPY and 1001–3000 JPY (100 JPY is equivalent to 8 EUR and 9 USD). This expenditure included buying games and fees for game events and game cafes. The younger respondents spent more money than their older counterparts.

The male respondents in their twenties and thirties participated actively in game-related events such as going to game cafes and game markets and joining game events (Table 5.5). They were also actively involved in purchasing new games. The

Table 5.6 Experiences of active participation in game-related activities (multiple choice)

	Men					Women				
	20s	30s	40s	50s	60s	20s	30s	40s	50s	60s
When playing card games, I sometimes change the rules	46.7	37.0	33.0	38.0	38.0	40.2	36.1	23.3	22.0	22.9
	38.6	35.5	39.2	35.2	33.3	35.7	35.6	27.7	32.3	26.9
I have designed game(s) myself	23.4	16.0	17.0	12.0	10.2	12.1	11.1	4.3	6.0	5.7
	15.9	17.7	16.1	11.6	8.7	10.7	6.2	6.6	2.3	5.4
I have experience to be an exhibitor at the Game Market	7.5	5.0	5.0	0.9	0.9	3.7	5.6	0.0	2.0	1.0
	11.4	12.8	4.6	3.5	1.2	1.8	5.7	1.5	0.8	1.1
I have been hosted a game party	8.4	3.0	4.0	1.9	0.9	3.7	4.6	0.9	1.0	2.9
	6.8	11.3	4.3	2.4	0.9	1.8	3.1	1.8	0.8	2.2
I offer places for games, including managing game cafes	7.5	5.0	3.0	1.9	0.0	0.9	3.7	0.0	0.0	1.0
	0.0%	6.4	2.9	1.9	0.3	3.6	2.1	1.5	2.3	1.1
I am a tabletop game retailer	5.6	2.0	3.0	1.9	0.0	0.0%	3.7	0.0	0.0	1.9
	0.0	5.0	1.2	1.6	1.2	1.8	3.1	1.8	0.0	1.1
I have experience collecting money through cloud funding	2.8	2.0	1.0	0.9	0.0	1.9	2.8	0.9	0.0	1.0
	0.0	1.4	0.9	0.3	0.0	0.0	1.0	0.4	0.0	1.1

Upper, 2018; lower, 2019; unit percentage

results further revealed that 17% of the respondents had participated in the Game Market held in Tokyo and/or Osaka. Although the male respondents participated more actively in game-related events, there were smaller differences between participation rates at commercial game events such as Real Escape Games and Werewolf.

In relation to experience designing games, over 20% of the respondents had designed games for all ages, including changing rules when playing cards (Table 5.6). Furthermore, the male respondents had more experience in designing games than their female counterparts. Approximately 10% of the respondents in their twenties and thirties indicated in the 2019 survey that they had participated in the Game Market as exhibitors.

With regard to the reasons for playing tabletop games, the younger the participants, the more likely they played tabletop games such as games as diversions (Table 5.7). While many people play tabletop games because they are easy to play, some play games to pass time. The 2018 survey revealed that approximately 15% of the respondents played games because they liked developing strategies and enjoyed conversing. The younger generations cited making friends as a reason to play games.

The reasons the respondents gave for playing digital games were similar to those for playing tabletop games (Table 5.7). Although the ability to play alone was one of

Table 5.7 Comparison of reasons for playing between tabletop games and digital games (multiple choice)

	Men					Women				
	20s	30s	40s	50s	60s	20s	30s	40s	50s	60s
Playing tabletop games diverts one from other activities	77.6	72.0	74.0	71.3	64.8	78.5	74.1	67.2	68.0	56.2
	80.2	63.7	68.4	52.9	41.8	80.4	77.5	57.2	48.6	41.2
I can make friends	29.0	17.0	11.0	13.9	9.3	10.3	15.7	4.3	4.0	4.8
	17.8	13.2	5.1	5.7	3.8	12.0	10.1	2.4	2.8	3.9
I like solving puzzles	20.6	22.0	9.0	10.2	12.0	15.9	15.7	6.9	9.0	6.7
	15.8	15.4	13.9	11.5	10.1	9.8	22.5	10.8	11.1	11.8
I like developing strategies	21.5	22.0	18.0	20.4	19.4	17.8	14.8	11.2	10.0	11.4
	12.9	20.9	20.3	14.9	6.3	12.0	21.3	2.4	9.7	5.9
I enjoy conversations during the game	27.1	17.0	32.0	24.1	25.0	31.8	17.6	22.4	27.0	17.1
	7.9	5.5	7.6	5.7	3.8	5.4	9.0	2.4	1.4	3.9
I can change the rules of the games (tabletop only)	15.9	9.0	10.0	10.2	13.9	6.5	8.3	6.0	3.0	5.7
	–	–	–	–	–	–	–	–	–	–
I can play games alone (digital only)	–	–	–	–	–	–	–	–	–	–
	36.6	33.0	36.7	32.2	50.6	52.2	42.7	43.4	27.8	49.0
We come to know each other by playing games	15.0	8.0	17.0	14.8	8.3	12.1	10.2	6.9	12.0	14.3
	5.0	3.3	5.1	2.3	0.0	4.3	7.9	2.4	0.0	2.0
I can kill time by playing	34.6	27.0	20.0	33.3	27.8	50.5	31.5	31.0	23.0	27.6
	38.6	39.6	46.8	56.3	41.8	55.4	46.1	51.8	40.3	56.9
I am happy when I win	13.1	6.0	10.0	10.2	10.2	15.9	9.3	11.2	9.0	8.6
	6.9	8.8	10.1	11.5	6.3	13.0	16.9	12.0	5.6	13.7
Tabletop/digital games are not expensive	14.0	9.0	10.0	11.1	13.0	18.7	6.5	6.0	12.0	7.6
	5.0	3.3	6.3	6.9	5.1	7.6	4.5	2.4	2.8	0.0
Playing tabletop/digital games are easy	27.1	26.0	33.0	44.4	55.6	46.7	41.7	48.3	50.0	58.1
	17.8	19.8	30.4	24.1	36.7	37.0	30.3	32.5	29.2	41.2
Other	0.9	1.0	4.0	3.7	1.9	4.7	5.6	7.8	5.0	10.5
	0.0	0.0	1.3	1.1	2.5	1.1	2.2	1.2	2.8	7.8

Upper, tabletop games; lower, digital games; unit percentage

the primary reasons for playing digital games, the younger respondents also cited making friends as a common reason for playing such games.

5.2.2.2 Attitudes Toward Games

The 15 items, which measured tabletop and digital games in general, were analyzed in relation to the five generation levels and gender (Table 5.8).

In relation to the frequency of playing tabletop games, the main effects of generation and gender were significant ($F(4,1049) = 5.00$, $p < 0.01$, $F(1,1049) = 17.87$, $p < 0.01$, respectively). Younger respondents played more frequently than their older counterparts and the male respondents played more

Table 5.8 Mean (upper) and standard deviation (lower) for each attitudinal measure

	Men					Women				
Item #	20s	30s	40s	50s	60s	20s	30s	40s	50s	60s
1. I want to collect information about new games	3.37	3.00	2.78	2.83	2.91	2.79	2.92	2.52	2.53	2.53
	1.26	1.39	1.29	1.14	1.11	1.33	1.38	1.14	1.13	1.21
2. My friends and I often play tabletop games	3.64	3.59	3.27	3.23	2.86	3.62	3.45	3.30	3.23	2.90
	1.10	1.23	1.25	1.03	1.08	1.26	1.34	1.18	1.15	1.32
3. My friends and I often play digital games	3.22	3.16	2.91	2.38	2.28	2.91	2.78	2.39	2.43	2.17
	1.14	1.21	1.27	1.10	1.01	1.13	1.42	1.05	1.07	1.09
4. Online game friends are equally important to me as friends in real life	3.38	3.13	2.98	2.53	2.24	3.03	2.80	2.34	2.29	1.95
	1.08	1.24	1.32	1.17	1.08	1.31	1.44	1.13	1.09	1.03
5. I am willing to play new games that I have never played	3.71	3.53	3.21	3.01	2.65	3.36	3.13	2.74	2.74	2.37
	0.97	1.14	1.18	1.11	1.05	1.18	1.33	1.17	1.17	1.16
6. Playing games is making good use of time	3.59	3.44	3.07	2.77	2.69	3.33	3.11	2.57	2.65	2.45
	1.06	1.06	1.22	1.08	1.11	1.26	1.30	1.11	1.05	1.07
7. The contents of the games reflect the real world	3.36	3.26	2.93	2.77	2.57	3.00	2.83	2.59	2.70	2.46
	1.07	1.08	1.15	1.07	1.01	1.06	1.35	1.08	1.03	1.05
8. Playing games is useful in the real world	3.34	3.24	2.95	2.71	2.65	3.08	2.97	2.60	2.72	2.48
	1.03	1.06	1.12	0.99	1.04	1.09	1.30	0.97	1.08	1.01
9. I am aware that I am not in the real world when playing games	3.16	3.23	3.11	3.20	3.21	3.27	3.31	3.39	3.51	3.21
	1.16	1.05	1.15	1.02	1.06	1.17	1.34	1.16	1.06	1.13
10. I sometimes feel guilty when playing games	3.50	3.32	3.18	2.87	3.03	3.27	3.17	2.93	2.83	2.85
	1.08	1.06	1.16	1.13	1.10	1.12	1.27	1.12	1.09	1.10
11. I have had experience of soliciting friends with whom to play games	3.18	2.97	2.79	2.30	2.25	2.67	2.58	2.36	2.28	1.99
	1.10	1.20	1.14	1.10	1.10	1.19	1.33	1.10	1.08	0.95
12. I cannot say no when I am asked to play games by my friends	3.46	3.36	2.98	2.51	2.41	3.21	2.82	2.46	2.34	1.94
	1.09	1.18	1.29	1.11	1.24	1.40	1.43	1.17	1.17	1.05
13. I have made friends by playing games	3.63	3.65	3.51	3.55	3.69	3.63	3.78	3.51	3.52	3.86
	1.04	0.98	1.11	1.17	1.07	1.06	1.10	1.07	1.18	1.08
14. I can control my playing time	3.34	3.19	2.96	2.44	2.25	3.05	2.74	2.28	2.23	1.98
	1.10	1.23	1.26	1.13	1.03	1.27	1.38	1.14	1.08	0.94
15. I want to increase my available time for playing games	3.20	2.91	2.89	2.32	2.25	2.61	2.52	2.03	2.04	1.81
	1.28	1.33	1.27	1.21	1.15	1.53	1.48	1.26	1.21	1.14

frequently than the female respondents. However, this tendency was dependent on how frequently digital games were played. While the main effect of the generation was significant, the main effect of gender was not significant ($F(4,1049) = 12.64$, $p < 0.01$, $F < 1$, respectively). While the younger generations played digital games more frequently than the older generation, no differences were found between the

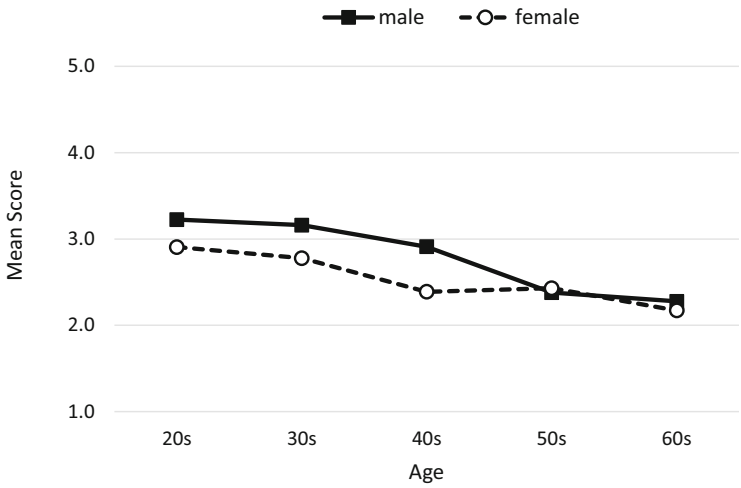

Fig. 5.2 Importance of online gaming friends

male and female respondents. The correlation between these two attitudinal items was high ($r = 0.387$, $p < 0.01$), thus indicating that the respondents who played tabletop games frequently also played digital games.

In relation to the importance of friends in online games, the main effects of generation and gender were significant ($F(4,1049) = 20.49$, $p < 0.01$, $F(1,1049) = 12.99$, $p < 0.01$, respectively). The younger respondents agreed that online friends are as important as real friends. Furthermore, the male respondents agreed with the latter statement more than their female counterparts. However, marginally significant interactions were identified between generation and gender ($F(4,1049) = 2.05$,$0.05 < p < 0.10$), thus indicating that as the respondents got older, there were fewer gender differences (Fig. 5.2).

The younger generations were more willing to collect information about games than the older generations ($F(4,1049) = 28.64$, $p < 0.01$). Furthermore, the male respondents exhibited a higher willingness to collect information than their female counterparts ($F(1,1049) = 25.59$, $p < 0.01$). In relation to willingness to play new games, the main effects of generation and gender were significant ($F(4,1049) = 25.81$, $p < 0.01$, $F(1,1049) = 24.73$, $p < 0.01$, respectively). The younger respondents were more willing to play new games than the older respondents. Furthermore, the male respondents were more willing than the female respondents to play new games.

The younger respondents agreed with the statement that playing games is a good use of time more than their older counterparts, and this tendency was more pronounced among the male than female respondents ($F(4,1049) = 24.07$, $p < 0.01$, $F(1,1049) = 17.20$, $p < 0.01$, respectively).

With regard to the relationship between games and the real world, two main significant effects were obtained for generation and gender ($F(4,1049) = 12.30$,

$p < 0.01$, $F(1,1049) = 15.05$, $p < 0.01$, respectively). In other words, the younger respondents as well as the male respondents believed that the contents of games reflect the real world more than the older and female respondents. The same tendency was observed for the notion that playing games is useful in the real world. Two main effects were significant for generation and gender ($F(4,1049) = 13.80$, $p < 0.01$, $F(1,1049) = 9.81$, $p < 0.01$, respectively). Although the younger respondents believed playing games is useful in the real world, they acknowledged that they were aware that they were not in the real world while playing games. The main effect was significant ($F(4,1049) = 8.09$, $p < 0.01$). Because the male respondents believed this more than the female respondents, the main effect of gender was also significant ($F(1,1049) = 6.13$, $p < 0.05$).

The female respondents felt more guilty than the male respondents when playing games. The main effect of gender was significant ($F(1,1049) = 6.13$, $p < 0.05$). No generational differences were observed ($F < 1$).

The experience of soliciting friends to play games with was more common among the younger respondents ($F(4,1049) = 32.00$, $p < 0.01$). Furthermore the male respondents had more experience soliciting friends than their female counterparts ($F(1,1049) = 26.61$, $p < 0.05$). The younger respondents exhibited more reluctance to refuse than the older respondents when asked to play games ($F(4,1049) = 18.39$, $p < 0.01$). The male respondents were also more reluctant to refuse to play than the female respondents ($F(1,1049) = 20.96$, $p < 0.01$). Furthermore, individuals were able to make friends by playing games. The main effects of generation and gender were significant ($F(4,1049) = 16.53$, $p < 0.01$, $F(1,1049) = 41.41$, $p < 0.01$, respectively). In other words, the younger respondents made friends by playing games and the male respondents had more experience of making friends by playing games.

In relation to the playing time, only the main effect of generation was marginally significant ($F(1,1049) = 2.29$, $0.05 < p < 0.10$). The respondents in their thirties and sixties tended to agree that they could control the time they spent playing games by themselves. No significant main effect was obtained for gender ($F < 1$).

With regard to the intention to increase playing time, the main effects of generation and gender were significant ($F(4,1049) = 30.47$, $p < 0.01$, $F(1,1049) = 28.42$, $p < 0.01$, respectively). In other words, the younger respondents wanted to spend more time playing tabletop and digital games. Furthermore, the male respondents were more willing to increase their playing times than the female respondents.

A one-way ANOVA was conducted by using the frequency of play as an independent variable. In relation to their frequency of gameplay, the respondents were classified into three groups: frequent, average, and infrequent game players who played tabletop games more than twice a month, between once a month and once every 6 months, and once a year or less, respectively. With the exception of the item that measured whether participants felt guilty when playing games, the main effects were significant at the 0.01 level. In essence, frequent players played games more, collected more information about games, and believed that the connection between playing games and the real world was useful.

Table 5.9 Items of the Game Experience Questionnaire

Component of GEQ	Items
Competence ($\alpha = 0.927$)	I was fast at reaching the game's targets
	I felt skillful
	I was good at it
	I felt successful
	I felt competent
Sensory and imaginative immersion ($\alpha = 0.944$)	I felt that I could explore things
	I was interested in the game's story
	I felt imaginative
	I found it impressive
	It felt like a rich experience
	It was aesthetically pleasing
Flow ($\alpha = 0.916$)	I lost connection with the outside world
	I forgot everything around me
	I lost track of time
	I was fully occupied with the game
	I concentrated deeply in the game
Tension/annoyance ($\alpha = 0.836$)	I felt annoyed
	I felt irritable
	I felt frustrated
Challenge	I felt pressured
Positive affect ($\alpha = 0.929$)	I felt happy
	I thought it was fun
	I enjoyed it
	I felt good
	I felt content

5.2.2.3 Relations with Game Experience Questionnaire

The Game Experience Questionnaire (GEQ) was employed to measure gaming experience. Although various challenges in relation to the consistency of research results have been noted (Law et al., 2018; Normanm, 2013), the GEQ has been widely used in gaming research. Based on the results of the attitudinal items in the 2018 survey, we selected 6 components of the 25 items from the 7 components of the 33 items in the GEQ (see Barbara, 2017) to evaluate gaming experience (Table 5.9). We calculated simple additive means and reliability coefficients (Cronbach's alpha coefficients) for each component item.

First, the six scales of the GEQ were scored according to the respondents' frequency of gameplay (Fig. 5.3). For all six scales, the higher the frequency of gameplay, the higher the score. Overall, three of the six scales, namely, competence, sensory and imaginative immersion, and positive affect, were scored higher than the other three scales. Furthermore, those who played at least once a month scored higher than the neutral point of 3. In relation to frequency among the six scales, there

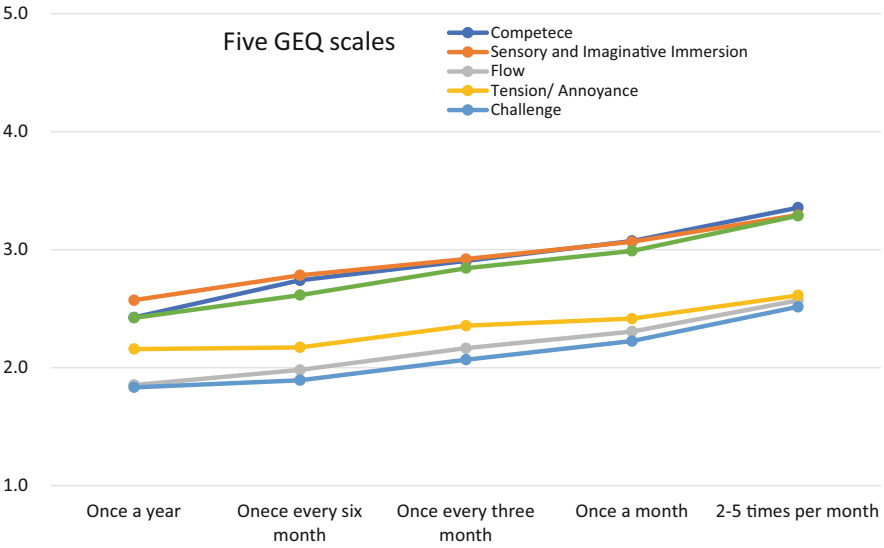

Fig. 5.3 GEQ scores by frequency of playing tabletop games

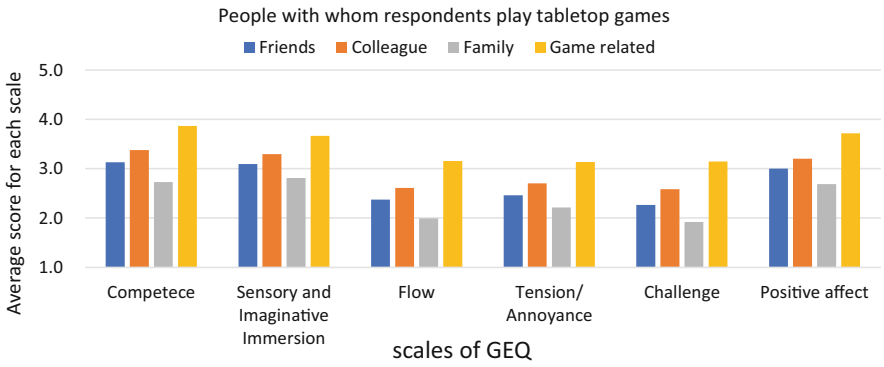

Fig. 5.4 Relationship between GEQ and people with whom respondents play tabletop games

was a minor difference in the scores of tension/annoyance. Overall, the more frequent the gaming experience, the greater the positive effect. In contrast, in-game stress was generally less related to game frequency.

Subsequently, the relationship between GEQ and game-playing partners was examined. People the respondents met at game meetings, game events, and game cafes were combined to form one category, namely, game relationships. The four categories of friends, coworkers, family, and game relationships (multiple responses) were compared on the six GEQ scales (Fig. 5.4).

The respondents who engaged in game-related and game-playing scored higher across all six scales. On the contrary, those who played games with their family members had the lowest scores on all six scales. This was related to the respondents' age and gender. The male respondents in their forties and older and the females in their thirties and older tended to play games with their families more than the other respondents (Table 5.3). One may assume that they played with their children because the survey did not assess with whom in the family they played. As opposed to game-related partners, the types of tabletop games played with children are likely to be simple and easy to play.

5.3 Discussion

The survey data confirmed that the recent boom in popularity of tabletop games in Japan is underpinned by younger generations, that is, people in their twenties and thirties. These generations played trading card games such as Yu-Gi-Oh! Card game, Pokémon card game, and Duel Masters Card game when they were children. These game experiences may have encouraged them to move on to other card games or board games as they grew up. They were active in the sense that they played tabletop games more often and spent more money on games and game-related activities. Furthermore, men tended to be more active than women. In essence, young men could be regarded as the main actors of the recent boom in popularity in Japan. They felt more positively about game-related activities. This could have contributed to the rise in the Game Market. The participation rate exceeded 16%, which is the threshold for the diffusion of the Rogers' (1962) innovation theory. These respondents were in their twenties and thirties, thus indicating that the majority of people can play tabletop games.

Frequent players, which mainly comprise young men, evaluated games positively. They also agreed that games have connections to the real world and that game experience can be useful in the real world.

In this chapter, based on surveys conducted in 2018 and 2019, the social impact of tabletop gaming was examined. We first examined the actual use of board games in Japan by expanding the scope of the survey to include Tokyo and other metropolitan areas where advanced use of tabletop games was expected. We subsequently included the whole of Japan, including three metropolitan areas and four regional cities. The differences between the two surveys can be viewed as the differences in the target areas as well as changes in the short period of 1 year.

Because of the COVID-19 pandemic, restraint in relation to face-to-face activities has had to be exercised in Japan. It is not within the scope of this chapter to discuss the restrictions placed on the implementation of games in social settings. However, for many people, spending more time at home with their families may have led to more time enjoying board games with their families. Although communication has become online in many situations, it is imperative to consider new uses of board games and evaluate such during the pandemic.

Acknowledgments This work was supported by the following funds.
FUSION of Science and Technology (FOST) 2018.
JSPS KAKENHI Grant Number 18 K03014.
JSPS KAKENHI Grant Number 18438.

References

Barbara, J. (2017). Measuring user experience in multiplayer board games. *Games and Culture, 12*, 623–649.

Game Market. (n.d.). Retrieved March 20, 2019, from https://en.wikipedia.org/wiki/Game_Market

Japan Statistics Bureau Monthly Report of the Population Estimates. (2018). Retrieved from https://www.stat.go.jp/english/data/jinsui/tsuki/index.html

Law, E. L.-C., Brühlmann, F., & Mekler, E. D. (2018). Systematic review and validation of the game experience questionnaire (GEQ)—Implications for citation and reporting practice. In *CHI PLAY'18: Proceedings of the 2018 Annual Symposium on Computer-Human Interaction in Play*, October (pp. 257–270).

Map of game cafes. (n.d.). Retrieved from https://bodoge.hoobby.net/spaces

Normanm, K. L. (2013). GEQ (game engagement/experience questionnaire): A review of two papers. *Interacting with Computers, 25*(4), 278–283.

NTTCom characteristics of the survey monitors. (n.d.). Retrieved March 20, 2019, from https://research.nttcoms.com/panel/profile.html (in Japanese)

Rogers, E. M. (1962). *Diffusion of innovation*. Free Press.

Part II
Education

Chapter 6
Case Example: KIKATOPIA Game—A Simulation Game on Diversity and Living Together with Children as Co-designers

Willy Christian Kriz and Thomas Eberle

Abstract In this chapter, we illustrate some of the basic concepts of gaming simulation (see Chap. 1 for terminology and fundamentals). We also use a case example to provide context for subsequent chapters on the use of games for education. Our case focuses on a game for players aged 10–14 years, which a team of children co-designed with us. The game was concerned with how to coexist peacefully in a modern society (Germany) that is becoming increasingly complex and diverse. We also discuss how the design process and content of the game are associated with ethical challenges. We believe that this case example can shed light on some of the risks, challenges, and opportunities associated with the use of games as cultural commodities. In addition, we show that co-designing games offers opportunities for improving education, knowledge, and skills of children, by developing their values and attitudes and improving their self-concept.

Keywords Game design · Co-design · Education · Self-concept · Diversity · Living together · Culture · Ethics

6.1 Background of the KIKATOPIA Game

In 2017, the German children's television channel, Kinder-Kanal (KiKA), proposed using a simulation game as the focus for one of its upcoming programs. KiKA is a free-to-air German television channel based in Erfurt. It is managed by the two main public-service broadcasters: ARD and ZDF. The channel is generally watched by children aged 3–14 years. KiKA ran programs with the theme "Living together, now

W. C. Kriz (✉)
Department of Management and Business Administration, FHV University of Vorarlberg, Dornbirn, Austria
e-mail: willy.kriz@fhv.at

T. Eberle
Department Pädagogik/Institut für Erziehungswissenschaft, University Erlangen-Nürnberg, Nürnberg, Germany
e-mail: office@thomaseberle.de

T. Kikkawa et al. (eds.), *Gaming as a Cultural Commons*, Translational Systems Sciences 28, https://doi.org/10.1007/978-981-19-0348-9_6

Fig. 6.1 Design team

and in the future", for 1 week. For children aged 10–14 years, one of the most popular shows was "Erde an Zukunft" ("Earth to Future"). The editorial office of KiKA proposed a 30-min special broadcast to address the following questions: "How can people of different origins, skin colours and religions live together harmoniously in Germany, given that their value systems may differ?" and "How do we want to live together in the future?" For this special broadcast, KiKA asked us to design a simulation game, the gameplay and debriefing of which would be recorded and shown on the television show. As one of our design principles (based on Duke, 1974) is to include the relevant stakeholders in the design process, we invited the editors at KiKA to accompany us and a group of children (selected as representatives of the target audience) to join the show's anchorman, Felix, on a new "adventure". We proposed that 12 children should act as co-designers of the game. We also proposed that the game design process, gameplay, and debriefing be recorded as content for the show (Fig. 6.1).

The following is a quote from the official press release, illustrating our approach and summarizing our remit:

> How do we want to live together in the future?—To answer this question, ERDE AN ZUKUNFT is launching a unique project. Twelve young "future-makers" are developing a simulation game with guidance from two experts, with the aim of promoting harmonious coexistence in the future. The anchor-man of ERDE AN ZUKUNFT, Felix, will accompany and support our future-makers from Hamburg in this exciting process.
>
> Six sixth-grade students from The Catholic School of Altona will meet with the game developers, Prof. Dr. Thomas Eberle and Prof. Dr. Willy Kriz, to discuss the project. Six students from class 6b of the Gymnasium Allee, Altona, will also participate. These students will visit special "places of diversity", such as the former "problem district" of Wilhelmsburg, Hamburg Airport, a "melting pot" pop music studio with underage refugees, and a junior football team (FC St. Pauli).
>
> Over a 5-month period, the children will help to develop the ERDE AN ZUKUNFT simulation game during three workshops in conjunction with the two professors, based on their personal experience. The game is aimed at promoting the coexistence of people from different origins and cultures and deriving solutions to conflicts. Felix will solicit the children's' perspectives and ideas during this exciting process. The EARTH TO FUTURE

simulation game (KIKATOPIA) will also be made available to other children and schools, inspiring them to develop their own ideas for harmonious future living.

This exciting project, the development and implementation of which will rely on the motivations and ideas of the future makers, reflects the thematic focus of KiKA.

6.2 Basic Pedagogical Principles

For many designers and companies, children and families are the target group for products, which are designed based on pre-existing studies to make them attractive. The "KIKATOPIA—City of the future" project is different; designing a simulation with children, as opposed to for children, was the key concept. We selected a diverse group of children as co-designers, because children in Germany are becoming increasingly ethnically diverse and because the game itself focused on dealing with the potential conflicts that might arise in a culturally diverse society. Therefore, the selected children had different cultural backgrounds, religions, genders, and identities. Some of the children had immigrated to Germany, others did not have German as their native language, and some came from families with below-average socioeconomic status. These children constituted the design team, and they were guided by the authors.

Many game design frameworks recommend including the target population as important stakeholders, not only in the prototype testing process but also in the whole design process (e.g. the well-known 21-step policy game design method of Duke & Geurts, 2004). However, children are not typically seen as co-designers. We have argued that the learning environment is enhanced when students are given the opportunity to design games (Kriz & Eberle, 2004; Kriz & Manahl, 2016). Including students (or more generally, representatives of the target group) offers them the opportunity to set their own learning goals, actively co-construct models of reality, and define game rules. During the design process, as a "self-organizing learning environment", the communication modes of the group can be observed, as well as the mental models and systems of representation of the individual co-designers. Common values, goals, rules, social representations of reality, and strategies for managing complex systems can be mutually derived (Kriz, 2003; De Caluwé et al., 2008). A gaming simulation design task provides an ideal environment for acquiring social skills, (re)constructing sustainable social systems, and dealing with the complexity and ambiguity of modern life. Another advantage of including representatives of the target group as co-designers is that they not only acquire new knowledge, competencies, and strategies in the context of existing norms (single-loop learning) but also obtain a deeper understanding of convictions, judgments, and rules, as in a double-loop learning system (Argyris & Schön, 1996).

From an ethical perspective, to deal with the increasing complexity of society, as well as with the issues of coexistence and conflict resolution from the perspective of diversity, it is important that children are given opportunities to explore alternative futures that go beyond the conditions set by adults. As Albert Einstein stated, we cannot solve our problems using the same thinking that gave rise to them. Problems

created by adults must be resolved via innovative ideas, especially from the unique and fresh perspective of children. Regarding whether children are able to deal with complexity, our basic pedagogical position is that they should be given as much responsibility as possible and they should be trusted and supported in such a way that they develop a sense of competence. This approach also seems to be fruitful for developing the self-concept of children.

6.3 Opportunities for Experiential Learning and Improving Self-Concept via Simulation Games

Experiential learning, as a form of competence-oriented, student-centred education, can influence participants' attitudes, self-concept, self-recognition, motivations, skills, and actions (see OECD Learning Compass 2030 and the OECD Future of Education and Skills 2030 project; www.oecd.org/education/2030-project/). In the experiential learning cycle, Kolb (1984) describes the connection between experience and future action. According to the theory of experiential learning, learning is a circular process involving concrete experience, observation, and reflection, the forming of abstract concepts and generalizations, and the testing of concepts in new situations. Gaming can be seen as an experiential learning environment (Garris et al., 2002; Kolb et al., 2014; see also Chap. 1 of this book).

William James (1890) distinguished between I (the inner perspective) and me (the perspective of the social self). The tension between self-recognition and information conveyed by others fosters change. Major personality theories, such as the "Big Five Traits", are helpful. However, scientific debate regarding a sixth trait is intensifying, namely, the stability and flexibility of the self. Haußer (1995) published a model including situational and generalized components of identity. A 2×6 spreadsheet was devised showing cognitive, affective, and action-related components of identity, in situational and general forms. Situational components may be modified by actual experiences that lead to general representations of the self. During the past few decades, psychological research has changed society's view on the concept of personality. The notion of a stable character has been supplanted by a more flexible and situation-specific view of personality traits. In addition, self-related cognitions are no longer viewed in general terms, but rather as being situation dependent.

Experiences accrued in our everyday private and professional lives promote changes in self-concept. However, changing negative self-conceptions has proven more difficult than expected. Researchers have investigated people (especially pupils) with low self-esteem and negative self-concepts; such individuals have also been the target of interventions. During reattribution training, success is experienced according to the individual's self-esteem: people with a poor self-concept may tend to say "it was easy" or "I was lucky", whereas those with a higher self-concept are more likely to say "I am competent", "I have abilities", or "I am gifted".

The self-concept pertains to one's thoughts about the self, while self-esteem can be defined as evaluations of the self that can be positive or negative (Smith & Mackie, 2007). Self-concept is one of the most frequently researched constructs within the field of adventure education (Hattie et al., 1997; Eberle, 2005). The self-efficacy scale of Schwarzer and Jerusalem (1995) is highly popular among studies on the effects of experiential learning on the self-concept. Sub-concepts include physical, emotional, and cognitive aspects of self-efficacy. Simulation and gaming often focus on the learning of concepts, understanding of interrelationships, and development of skills. However, simulations and games may have even greater potential for influencing self-concept (Eberle, 2003). Studies have shown immediate positive effects of experiential learning on the self-concept. Long-term effects have also been demonstrated (Neill, 2008), which can be explained in terms of reflections on experiences and proof of concept in daily life. Gaming simulation promotes reflection on gameplay through debriefing and application to the real world (Eberle & Kriz, 2017). Therefore, simulation games are well suited for effecting positive changes in the self-concept and self-efficacy beliefs (Eberle, 2019). Involving children in gameplay and design may promote the development of a more positive self-concept. As co-designers, children have the opportunity to experience themselves as competent and responsible. By participating in the entire process of gaming, children perceive their interests, ideas, and knowledge to be valuable. Through positive feedback, debriefing, and reinforcement by adult game facilitators, game designers, and peers in the design team, children are encouraged to attribute successful game development and gameplay outcomes to their own efforts.

6.4 Design Steps and Results of the Project

The main steps of the three design workshops are listed below. Each step was recorded and used in the production of the TV show.

1. Allowing the children to play simulation games and providing information about simulation and gaming.
2. Discussing in small groups the most important aspects of the children's future lives. What are their own core values? Are there any particular values that have a higher priority? What do they and their loved ones need to ensure humane, future-oriented lives?
3. Experiencing situations that are relevant in terms of diversity and its associated challenges, risks, conflicts, and opportunities (Figs. 6.2, 6.3, and 6.4).
4. Executing an as-is analysis of real-world data. After identifying some places of diversity, the children, in four small groups, visited and interviewed people to understand how they live and work together (a multicultural former "problem district" of Hamburg; Hamburg Airport, including a prayer room for several faiths; a "melting pot" pop music studio with underage refugees; and a diverse junior football team of FC St. Pauli).

Fig. 6.2 Children playing simulation games to get an understanding (left), defining own core values and aspects of a good life (right)

Fig. 6.3 Children defining places of diversity, challenges, risks, conflicts, and opportunities in a modern society

Fig. 6.4 Children doing as-is analysis with interviews at chosen places of diversity in the real world

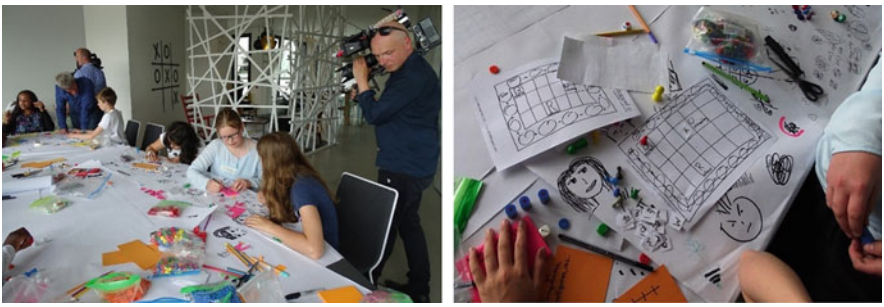

Fig. 6.5 Children developing the game

Fig. 6.6 Main elements designed by children: idea of game board representing space in a city; idea of infrastructure elements and their representation, kids discussing ideas

5. Generating ideas for designing a simulation game. The children discussed potential game ideas and mechanisms (roles, rules, events, decisions, etc.) based on their own perceptions.
6. Designing and developing the game through iterative cycles.
7. Development of ideas (during a workshop) for regulations and laws that the children believed would help the future population of a city (not only children) have a good life.
8. Testing and playing prototype games and continuing to develop them (Figs. 6.5 and 6.6).

KIKATOPIA was played several times by groups of children, and then further developed and modified. Six children who were unfamiliar with the final simulation game's rules and events played the game in the studio. The final version differs somewhat from that provided to schools and educational institutions, with the latter being simplified for reasons of cost and feasibility, but nevertheless having good educational possibilities with respect to diversity. For example, when played by several groups in parallel in a classroom setting, players can visit other KIKATOPIA cities and reflect on the aspects that make their own city attractive to tourists and potential immigrants. Players may be inspired by these other cities. The final steps in the studio were as follows:

1. Playing the final version of the game using materials designed to meet the requirements of a television studio.

Fig. 6.7 Test play in workshops (left) and final play in TV studio (right)

2. Obtaining feedback on decisions made as players.
3. Participating in the game debriefing.
4. Participating in interviews for the show (Fig. 6.7).

An evaluation of the design process was also conducted, involving all stakeholders. In interviews, the following feedback was provided by the design team, KiKA stakeholders (program managers, editors of the television show, etc.), and its viewers (children and parents):

- Being involved in the design process was important for developing the self-concept of the design team members.
- The design team members were proud of the game developed based on their own ideas, and the television studio context enhanced their feeling of self-efficacy.
- The project proved that children can be effective co-designers.
- As co-designers, the children could create a simulation reflecting their own values and ideas.
- The children felt actively involved and displayed critical thinking regarding harmonious coexistence in a heterogeneous, complex world; the game design process helped them identify issues that are particularly important.
- The children perceived our trust in them and confidence in their capacity to act independently, feeling that we were interested in their points of view and trusted them to make responsible decisions.
- The children viewed the opportunity to think seriously about the future as a positive experience and identified themes and concerns relevant to future development (e.g. nature, social cohesion, social welfare, migration, prosperity, and economic development).
- The children identified with their role as urban developers aiming to ensure the well-being of all citizens.
- Children learned through designing, playing, and watching the simulation game, which involved complex situations. The children observed the effects of their decisions and regulations on several relevant aspects of life and cohabitation.

- The simulation and game offered realistic opportunities for action, decision-making, and learning. The children viewed this as a challenging but highly motivating task.
- The stakeholders were pleasantly surprised by how the children made professional and thoughtful decisions when designing and playing the simulation game; they developed a city, responded to natural disasters and terrorist attacks (i.e. took measures to mitigate the negative effects thereof), and sought to develop a positive future.

6.5 Main Characteristics and Elements of the KIKATOPIA Game.

The basic idea of KIKATOPIA is to promote harmonious coexistence within a simulated city. The children developed game design elements that were implemented into the simulation as much as possible.

In KIKATOPIA, players assume several different roles, including planning and building a city gradually as urban planners, starting with an undeveloped plot of land. The cities built in KIKATOPIA are relatively small scale and based partly on the structures inherent to a modern state, particularly those that are important for the learning process. The children made decisions on types of investments, managed the city budget, and developed residential neighbourhoods, infrastructure, and service companies, as well as educational, commercial, and industrial institutions (Fig. 6.8).

Additionally, they played the role of city councillors, making investment decisions and enacting laws and regulations to facilitate the coexistence of the simulated population (in the game, they have slightly greater powers than actual city councillors).

Third, the players assumed the role of a self-determined character. To create an in-game avatar, the so-called player pass is used, based on the central theme of diversity among other elements of the game. Here, it is important to emphasize that the players have considerable freedom; they can use their "true self" as a template or

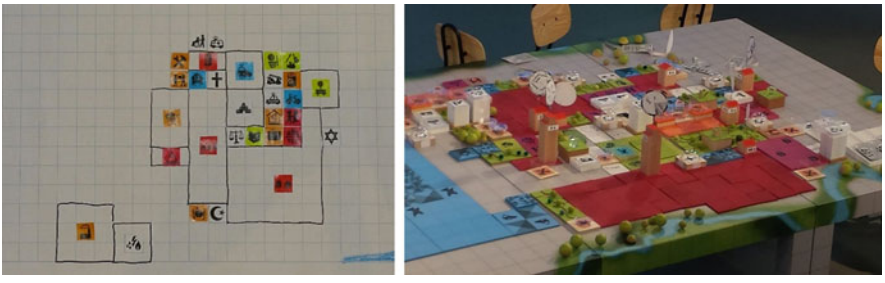

Fig. 6.8 City-of-the-Future KIKATOPIA develops in the school version (left) and in the TV show version (right)

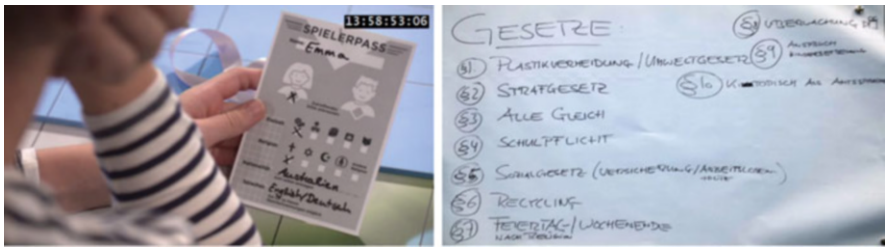

Fig. 6.9 Player passport (left) and example of rules and laws for a city (right)

design a completely different, fictional persona. In both cases, the goal is to make in-game decisions that serve the interests of one's own character/avatar. The players choose their name and gender and one of the four main leisure preferences: sports, nature, culture, or reading. They also decide on a religion (or atheism), nationality, and (one or more) languages to be spoken in their homes. The back of the player's passport provides information about the ethnic and demographic makeup of Germany and the languages most widely spoken therein. However, this is only intended to serve as a guide; the players can opt for a completely different nationality and language. This character aspect of the game and the player passport are important elements in the overall experience and for the embodiment (Fig. 6.9).

All decisions made during the game have an impact on the development of the city. The simulation provides feedback via scales for clearly defined key indicators. The main indicator is "quality of life", but other key areas of life for the inhabitants of the city (health, food, security, environment, prosperity, education, recreation/play/leisure, jobs, and community) should also be developed as much as possible. These nine areas of life represent the most important values and needs of the simulated citizens.

To make the simulation playable, an application that calculates complex relationships and clearly demonstrates their effects was programmed. The children codeveloped the variables and their interconnections, but the software was ultimately programmed by professionals. To ensure that the game realistically models the interactions between investments and decisions pertinent to urban development, experts were interviewed. Players also enact laws and regulations promoting harmonious coexistence and assess their impact on urban development and the lives of citizens (Fig. 6.10).

In the simulation, various dimensions are interconnected. For example, public parks and transportation have a positive effect on the environment, and building schools and universities increases education, etc.; in turn, this leads to growth of the population and tax revenues, which can be reinvested to further develop the city. Important aspects of diversity should be catered for by the infrastructure. For example, players with an interest in sports should be able to find facilities like soccer stadiums and public baths, and players that follow the faith of Islam should be able to find a mosque in the city, etc. When building residential areas and houses to provide living space for the population, players are also required to make decisions about the

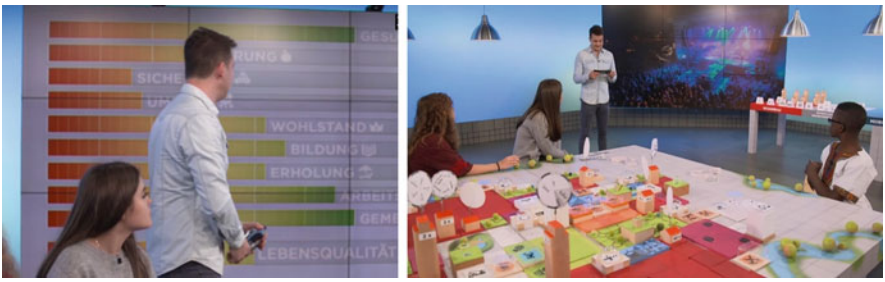

Fig. 6.10 Indicators of quality of life (left) and example of an event situation (right)

Fig. 6.11 Players making infrastructure decisions (left and middle) and decide on diversity characteristics of population within a district (right)

diversity of the simulated population in a given district, taking into account the infrastructure (Fig. 6.11).

The players of KIKATOPIA have considerable freedom to plan urban development. In fact, there is an almost unlimited number of possibilities as to how cities are developed, including building locations, infrastructure investments and the temporal order thereof, and the people moving into new districts. Players need to ensure that tourists feel comfortable and that native and immigrant populations are working together in the community. The needs of the heterogeneous population must be taken into account and balanced. Each group of players makes their own decisions, so there are an unlimited number of ways in which the cities develop from round to round. Furthermore, in each round of play, an unforeseen negative or positive event occurs. In their role as city councillors, players must discuss and decide how to react, implementing new laws and regulations or investing funds. The players must explain their decisions via press statements.

During debriefing, the players evaluate their experiences with the simulation game. Emotions evoked by the gameplay are discussed, experience is reflected upon, and the structures in the game are compared to the real world. In other words, the players are encouraged to transfer what has been learned into reality. Debriefing is done not only at the end of the game but also between rounds.

The simulation game, which is played for an entire day, has several rounds:

- Warm-up and briefing (30 min; teams of 3–4 players are formed).
- Preparation phase (30 min).

  - Landscape elements—generate map topography.
  - Complete the player pass—set avatar personality.
  - Choose a city name.
  - Place the town hall.
- Implementation phase (4–5 rounds of play, all following the same basic procedure and lasting 60–70 min).
  - Land partitioning and construction of buildings.
  - Definition of population.
  - Decisions regarding laws.
  - Decisions regarding events.
  - Decisions regarding tourism, if applicable.
  - Simulation of quality of life and tax revenues.
  - Feedback on the simulation results and a short debriefing session for each round.
- Final debriefing (60–90 min).

6.6 Lessons and Ethical Considerations

Feedback from the various stakeholders, viewers of the television show, and, most importantly, the co-design team of sixth grade (aged ~12 years) school peers indicated that allowing children to take responsibility during the design phase is valuable. The children showed competence and the ability to reflect on the topic at hand throughout the design process. They also felt competent and valued. In the game, the players received feedback on their decisions, including when their decisions had negative consequences. Through debriefing, the children developed a profound understanding of the underlying dynamics of the system and devised strategies to cope with the challenges presented by the game.

Involvement in the design of the KIKATOPIA simulation game promoted new perspectives, teamwork, decision-making skills, and awareness of the challenges to harmonious coexistence in a complex world. The self-concept of the children was also enhanced.

It was deemed important to give children as much freedom as possible to express their ideas when designing simulation game. They defined their values and priority life areas, identified places of diversity for field work, created events, defined game roles and rules, and designed materials representing resources. They also defined the main scenario and elements of urban planning, to simulate the challenges posed by an increasingly diverse society (including social conflicts), with the goal of a high quality of life for all citizens. The players were free to implement their own strategies and make their own decisions.

As a final point, we would like to reemphasize that the freedom to explore, design, and play the simulation game is essential from an ethical perspective. The

inclusion of variables such as gender, religion, language, and nationality, which are connected with basic values and needs, and of emotionally challenging events (like terror attacks, refugee influxes, etc.), was important for the realism of the game, but could also be stressful. Thus, we aimed to reduce stress levels by also including some positive and fun events, and we did not explicitly simulate race or skin colour. Although these attributes play an important role in the real world, we did not directly simulate them due to their sensitive nature, which may have caused distress for some participants. However, we explored all aspects of diversity during debriefing.

We also considered it important not to "manipulate" the possible future outcomes, according to the principle that decisions leading to a highly multicultural population are not automatically "better" (and were thus not more rewarded compared to decisions leading to a more monocultural population). In other words, we tried to avoid biasing the simulation towards a particular model of society. The game was designed to provide players with opportunities to develop creative and innovative solutions to the challenges of modern societies and to promote discussion of the advantages and disadvantages of the various possible futures with respect to cohabitation. In that regard, having several teams play, the game simultaneously was important to ensure different perspectives and visions for the future. During play and debriefing, the participants could visit the other simulated cities as tourists and provide feedback as to whether their needs and expectations were met.

References

Argyris, C., & Schön, D. (1996). *Organizational learning: Theory, method, and practice*. Addison-Wesley.

De Caluwé, L., Hofstede, G. J., & Peters, V. (2008). *Why do games work? In search of the active substance*. Kluwer.

Duke, R. D. (1974). *Gaming, the future's language*. Sage.

Duke, R. D., & Geurts, J. L. A. (2004). *Policy games for strategic management*. Dutch University Press.

Eberle, T. (2003). Personnel development through gaming simulation and outdoor training: Fundamental principles, similarities and differences, empirical studies. In K. Arai (Ed.), *Social contributions and responsibilities of simulation and gaming. Proceedings of the 34th Annual Conference of the International Simulation and Gaming Association (ISAGA)* (pp. 211–220). JASAG.

Eberle, T. (2005). Evaluation von outdoor-trainings. In M. Gust & R. Weiß (Eds.), *Handbuch Bildungscontrolling. Konzepte – Methoden – Instrumente – Praxisbeispiele* (pp. 147–159). USP-Publishing International.

Eberle, T. (2019). Grenzerfahrung in den Experiential Learning-Lernsettings Erlebnispädagogik, Planspiel und Outdoor-Training. In U. Stadler-Altmann & B. Gross (Eds.), *Beyond erziehungswissenschaftlicher Grenzen. Diskurse zur Entgrenzung der Disziplin* (pp. 249–271). Budrich.

Eberle, T., & Kriz, W. C. (2017). Planspiele in der Hochschullehre und Hochschuldidaktik. In A. Petrik & S. Rappenglück (Eds.), *Handbuch Planspiele in der politischen Bildung* (pp. 155–168). Wochenschau Verlag.

Garris, R., Ahlers, R., & Driskell, J. E. (2002). Games, motivation, and learning: A research and practice model. *Simulation & Gaming, 33*(4), 441–467.

Hattie, J. M., Marsh, H. W., Neill, J. T., & Richards, G. E. (1997). Adventure education and outward bound: Out-of-class experiences that make a lasting difference. *Review of Educational Research, 67*(1), 43–87.

Haußer, K. (1995). *Identitätspsychologie*. Springer.

James, W. (1890). *Principles of psychology*. Holt.

Kolb, D. A. (1984). *Experiential learning experience as the source of learning and development*. Prentice Hall.

Kolb, A. Y., Kolb, D. A., Passarelli, A., & Sharma, G. (2014). On becoming an experiential educator: The educator role profile. *Simulation & Gaming, 45*(2), 204–234.

Kriz, W. C. (2003). Creating effective interactive learning environments through gaming simulation design. *Simulation & Gaming, 34*(4), 495–511.

Kriz, W. C., & Eberle, T. (Eds.). (2004). *Bridging the gap: Transforming knowledge into action through gaming & simulation*. Sagsaga.

Kriz, W. C., & Manahl, W. (2016). Understanding and changing systems through hybrid simulation game design methods in educational contexts. In T. Kaneda, H. Kanegae, P. Rizzi, & Y. Toyoda (Eds.), *Simulation and gaming in the network society* (pp. 79–93). Springer.

Neill, J. T. (2008). Meta-analytic research on the outcomes of outdoor education. Paper presented to the *6th Biennal Coalition for Education in the Outdoors Research Symposium,* 11.01-13.01.2002 (updated February 2008).

Schwarzer, R., & Jerusalem, M. (1995). Generalized self-efficacy scale. In J. Weinman, S. Wright, & M. Johnston (Eds.), *Measures in health psychology: A user's portfolio. Causal and control beliefs* (pp. 35–37). NFER-NELSON.

Smith, E. R., & Mackie, D. M. (2007). *Social psychology* (3rd ed.). Psychology Press.

Chapter 7
Bringing Gaming into Education: Cultural Context and Ethical Issues in the Case of SN Games

Junkichi Sugiura

Abstract In this chapter, we present a case study of the Settoku Nattoku (persuasion and consent) game, which focuses on persuasion as a method of gaming to encourage discussion. The SN game simulates the interaction between persuasive communication and resistance to persuasion, in which players perform the roles of persuader and persuaded and change their thinking and behavior on a given topic. The game simulates the interaction between persuasive communication and the resistance to it. The theme of persuasion in the study is environmental issues, which are largely related to the social dilemma, the relationship between individuals and society, and economic disparity among people. While changing people's behavior may facilitate the solution to the problem, this paper discusses how gaming influences people's values in education, including the ethical issues of its introduction into education.

Keywords Gaming simulation · SN game · Persuasion · Culture · Education · Ethics

7.1 Introduction

There are many conflicts in our society due to the diversity of values and interests. To solve such problems, persuasive communication can be used to convey our ideas to others in order to make them understand our perspective. However, persuasion is not always effective in reality. Consequently, education is required to allow us to understand each other's values and to effectively compromise. Therefore, is such education being promoted and is it yielding results?

This chapter introduces persuasive communication, which aims to change the attitudes and behaviors of others, to education through gaming, and the ethical issues involved in its implementation through a case study. First, the background, rules, and availability of the Settoku Nattoku (SN) game (Sugiura, 2003a, b, 2005) as an educational game for persuasive communication will be explained. Next, examples

J. Sugiura (✉)
Keio University, Tokyo, Japan
e-mail: jsugiura@keio.jp

T. Kikkawa et al. (eds.), *Gaming as a Cultural Commons*, Translational Systems Sciences 28, https://doi.org/10.1007/978-981-19-0348-9_7

of variations of the game will be presented, including the ethical issues of its introduction into education. Finally, we discuss the setting of rules for the introduction of gaming into education in relation to cultural contexts and ethical issues.

The gaming of persuasion here does not mean propaganda or forcing one's ideas on others. It means that through the act of a person attempting to change another's thinking through language, they have the opportunity to discover the other person's reaction. According to the classic study of persuasive communication (Hovland et al., 1953), persuasion consists of the content and the characteristics of the persuader or the persuaded that affect the stimulating effect. Varying the type of message can also facilitate the understanding of the differences in persuasion effectiveness. Therefore, by taking advantage of the characteristics of gaming, players can experience variations in persuasion effects. The first characteristic is to assign roles to the players, creating contrasting disparities, such as expert and non-expert and rich and poor. The second is the exchange of roles. Players can experience the positions of both the persuader and the persuaded. The third is to change the persuasion partner. Depending on the combination of the persuader and the persuaded characteristics, the effect of persuasion will be different.

In Japanese universities, it is common for students to listen to lectures by faculty members in large classrooms, but to ask few questions. Even when university faculty members prompt a discussion among students, they may not be able to undertake it successfully. It is not that they are incapable of debate, but they may be able to carry the conversation forward if they have the opportunity to do so. In such cases, simulation and gaming are likely to be beneficial. Therefore, SN games take advantage of such gaming.

It is expected that the rules of the game will encourage participants to actively communicate with others, even those who are typically shy. Trying to perform persuasion on their own actions is influenced not only by cultural differences but also by the characteristics of the persuaders and persuaded. Therefore, by assigning the role of persuasion by the rules, even those who are highly likely to be shy or not in a position to persuade willingly in the player's real world can experience the other reality that results from persuasive communication in the game.

With regard to cultural context, Ando et al. (2019) compare communication across cultures using SN games, arguing that environmental communication is less frequent in Japan and that Japanese people underestimate the concern of others for environmental issues. Although there is a concern about the collective ignorance of negative evaluations by others when environmental issues are discussed (Geiger & Swim, 2016), SN games could potentially facilitate the awareness that "many people are interested in environmental issues" (Ando et al., 2019).

In the persuasion game, players are expected to convince others of the importance of, for example, the SDGs. Therefore, it is a practical matter. As a practical matter, this can facilitate an attitude change in players, and the goal of gaming is to actually change attitudes and behaviors for the purpose of the SDGs. We need to consider the ethical issues when introducing gaming into education, which involves attitude and behavioral changes. The other issue involves the introduction of roles of different economic statuses as rules for gaming. In that game, different roles have various

effects on the game. We will discuss the considerations when introducing such games in education.

7.2 The SN Game

The SN game, which stands for Settoku Nattoku game, is a game that was developed by the first author originally for players to learn persuasion skills using the knowledge of social psychology. The Japanese term Settoku means persuasion and Nattoku means consent. The game focuses on persuasion strategies and their results. In the game, players attempt to persuade others on a particular topic (Fig. 7.1). It is a version of a role-playing game, and players take turns between being persuaders and the persuaded. The winners of the game are those who can succeed in persuasion.

The SN game has a wide range of applications as you can choose topics of persuasion when playing the game. For example, if you choose the topic of environmentally friendly behavior, players can acquire knowledge about environmentally friendly behavior as well as persuasion techniques. You can also choose the topic of having a healthy diet in the game. In this case, players are exposed to various perspectives and discussions during the game; therefore, they can acquire knowledge about a healthy diet as well as improving their persuasion skills.

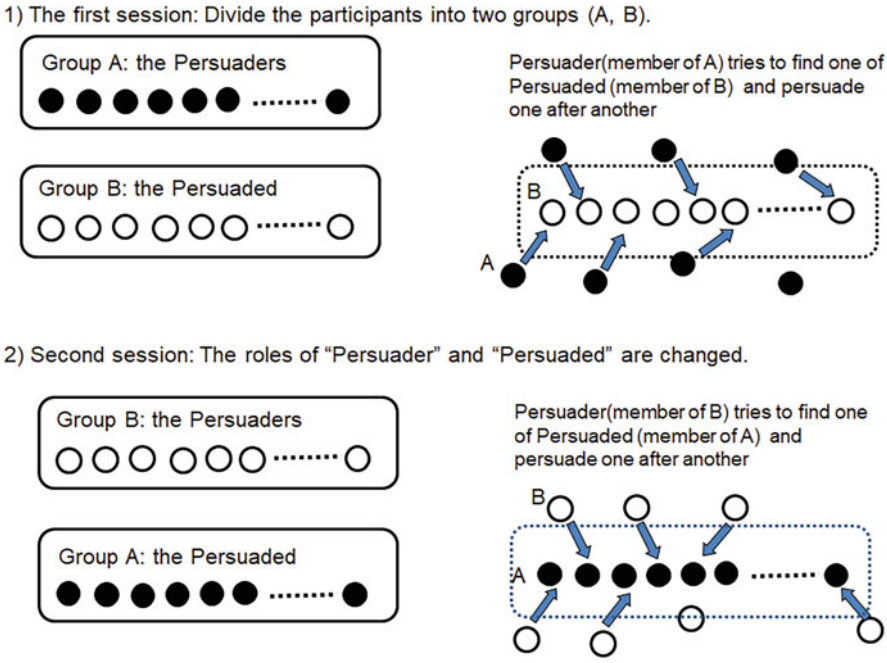

Fig. 7.1 The procedure of the Settoku Nattoku game

In addition, the game is unique in the sense that, by persuading others in the game, players would often change their own attitudes and behaviors in the game. This kind of persuading oneself (self-persuasion) would most likely occur because the players repeat persuasion in the game. The game process in which the players act as the persuader and the persuaded in turn (see detailed procedure in Appendix) could also reinforce this tendency (i.e., players themselves change or boost their attitudes).

Imai (2006) highlighted four advantages of the SN game from the perspective of attitude change research. First, the freedom of choosing statements of persuasion in the game could reduce the psychological reactance of persuaders, therefore boosting the conviction that the statements they are persuading are important. For example, in the case of energy-saving behavior, if the persuader chooses the action to decrease room temperature two degrees less as a statement of persuasion, players deepen their conviction while persuading others. Second, the persuaders can refine techniques of persuasion by repeatedly persuading different players, discovering the enjoyment of persuasion through successful experiences in the game. Third, as players changed the roles of the persuader and the person persuaded, players could realize the perspectives of the both roles. This also increased the commitment to the roles. Fourth, persuading others could lead persuaders to enforce the behaviors that they persuaded, by psychologically committing themselves to the action.

These attitude changes can be explained by Cialdini's (1984) pivotal book on social influence. His notion of commitment to a behavior is one of the six principles that are effective in changing the people's attitudes. Once a commitment is made, people want to maintain consistency of their attitudes. In an early experiment of forced compliance by Festinger and Carlsmith (1959), participants were asked to complete a dull task and then asked to explain it to other participants (confederates) as interesting. Later, the people who explained were found to be more favorable to the task, which is interpreted to maintain consistency of the attitude with the behavior, which they are asked to complete. Aronson (1966) reinterpreted the results from the perspective of degree of commitment. That is, the situation that participants would describe (that they believed was untrue; in this case, the task was interesting) could lead them to increase their commitment to the situation and, therefore, to change their attitudes. In addition, the playing experiences in the game also caused attitude and behavioral changes.

7.3 Reinforcing Environmental Behavior Using Games

One of the issues that divide the world due to differences in positions and values is environmental issues. Protecting the environment is in the interest of all its members, but behaving in an environmentally conscious manner can also be detrimental to individual interests. The SN game has been introduced into education on this issue since its development. This does not mean that the game is only helpful for environmental matters; if we remember the SDGs, we will understand that this

issue is connected to many social problems. Furthermore, it is also possible to set the other problems as themes. Here is an example of a composition: promoting energy-saving behavior.

The diffusion of innovation in energy efficiency through the reductions in conventional energy generation is a vital issue globally. The increase in renewable energy has been progressing; however, education in energy consumption on an individual basis is also essential from the perspective of environmental psychology (Wittenberg et al., 2018). In this sense, Japan is no exception. Especially after the Fukushima nuclear power plant disaster following the Tohoku tsunami disaster in 2011, people have become increasingly conscious about energy saving. Examples of concrete energy-saving behaviors are setting the temperature of air conditioners of offices and homes at 28 °C in summer and 22° in accordance to the recommendation and replacing electric appliances and cars with more energy-saving machines.

The Japanese government set a goal of reducing emissions of CO_2 to 26% below the 2013 levels target. This target can be achieved by reducing both industrial emissions and household emissions (in 2018 at Katowice, Poland, COP24, the 24th Conference of the Parties to the United Nations Framework Convention on Climate Change). However, further efforts are required to decrease the CO_2 emission at the individual level.

While the importance of energy-saving behaviors has been recognized and many concrete behaviors have been proposed, there are still many people who do not practice them. The reasons for this are simple: people are reluctant to change their lifestyles, or they may believe energy-saving behaviors force them into inconvenient lifestyles. However, if they do not adopt energy-saving behaviors, the target of CO_2 emission cannot be reached, and people will ultimately suffer.

This is a typical social dilemma situation as is the case with many environmental issues. Two types of strategies to solve these dilemmas were proposed by Messick and Brewer (1983). One is a structural approach; the other is an individual psychological approach. The former focuses on interventions to change the incentives of the situations, while the latter aims at influencing people's attitude and behaviors.

Traditionally, environmental games in the simulation and gaming field have attempted to influence players' attitudes and behavior by highlighting the structures of social dilemmas and increasing the awareness of the complex system and its actors. The examples of these games are FISH BANK (Meadows et al., 1989), Garbage (Thiagarajan, 1991), and The Commons (Powers, 1985–1986). In other words, these games traditionally attempted to improve the understanding of the mechanism of a social dilemma. FISH BANK and The Commons deal with the first-order dilemma (i.e., the provision of the public goods), while Garbage deals with the second-order dilemma, which arises from endeavoring to solve the first-order dilemma (i.e., monitoring cost of preventing free-riders). In this sense, Garbage also facilitates the players' realization that the possibility to solve the situation involves changing the incentives. This is an example of the structural approach.

Horsley (1977) used a different approach for changing environmental attitudes. He utilized a change agent's role play for players to diffuse environmentally conscious behaviors. In his study, he requested his geography students to become

change agents to persuade their friends and family to adopt environmentally conscious behaviors. In addition, he gave a lecture on environmental issues and attitude changes. Consequently, the players began practicing environmentally conscious behaviors outside the classroom, although their attitude changes did not significantly increase, probably due to the relatively high level of environmentally conscious attitudes among geography students. The results indicated that a mere role play of persuading others could provoke attitude changes in the persuaders themselves.

7.4 Simulation of Economic Disparity: Case Study

7.4.1 Purpose

In the SN game I introduced in this study, I included the differences in economic status to explore the notion that the polarization in economics and social divisions could affect attitudes and behaviors about energy saving. Recently, the polarization in economics and the social divide have been another focus when the society deals with environmental issues. For example, developing countries emphasize economic development, while they cannot afford environmental protection. These disputes are evident in the international negotiation process such as natural resource management (e.g., fossil energy). Although this is a macro-level example, the same situation (i.e., economic status could affect energy-saving behaviors) could also occur at the individual (micro-) level. For example, Xu et al. (2018) compared the influence of environmental appeal and monetary incentive on household separation and found that both interventions increased waste sorting behavior. However, as to the pro-environmental identity (i.e., people define themselves as environmentalists), they found that monetary incentive had a negative impact on identity. These results suggest that an emphasis on monetary incentive could prevent people from constructing an environmental identity, resulting in the ultimate failure to maintain environmentally friendly behaviors.

As presented by Sugiura (2018), I would examine the strategies and attitude changes by persuasion where economic status is introduced within the game. For example, if the persuaders take the perspective of the persuaded, they may believe that focusing on monetary benefit would be a more effective strategy when persuading low-income players.

7.4.2 Method

Participants: A total of 258 students from two universities in Tokyo and Kyoto, Japan, participated in the game.

Material: A set of 52 playing cards was used for SNG. Each of them has a description of an energy-saving behavior on the surface of the card (Sugiura &

Mikami, 2018). The card set was originally made to improve knowledge about energy-saving behaviors while using the cards. The estimated saving of money per year in Japanese Yen (100 JPY = approx. 0.9 USD; 0.8 EUR), and the CO_2 reduction per year in kilograms of each behavior, is also written on each card. For example, the "7 of Hearts" card shows that "cut standby power" will save 2800Yen and reduce 73 kg of CO_2.

Procedure: The game was performed in the psychology class. The procedures were the same irrespective of experimental conditions. The author served as a facilitator and a lecturer. Participants had a basic prior knowledge about persuasion techniques as he had given a lecture for them in his class.

The game consisted of two sessions. At the beginning of the game, participants were given one of the playing cards and eight stickers of one of three colors described in experimental design section. Each player was requested to place one of the eight stickers on their own card to identify their role. The rest of the seven stickers were used as points in the game. Next, the class was divided into two groups, one of which became persuaders in the first session and the other of which became the persuaded. Next, the participants changed roles in the second session. Subsequently, the persuaders were assigned to one of three economic statuses: high, middle, and low. At this point, participants recognized their economic statuses by colors.

Both groups were asked to design a plan to persuade another group of participants in 10 min. Subsequently, the first session started. The first group was asked to stand up and become persuaders. In the game, the persuaded were assumed to be consumers who were generally reluctant to behave in an environmentally friendly manner. The persuaders' objective was to persuade and gain as many indications of consent from the persuaded (consumers) in 10 min. Prior to the start of the game, the facilitator reminded the participants to apply the persuasive techniques as much as possible.

If a participant recognized the importance of the energy-saving behaviors and consented to enforce it in their daily life by persuasion, this persuaded participant would place one of their seven remaining stickers on the persuader's card.

The number of the stickers was used as points in the game, defining the success of persuasion. When the persuader failed to gain consent, the participant of the persuaded role gave them a half-sized sticker by cutting one sticker in two. This half-sized sticker was used to record the number of failures in the game.

After 10 min of the first group persuasion (i.e., the first session), a short reflection by players was introduced. This reflection was approximately 5 min long. In the reflection, players were requested to reflect on their behaviors in the session and formulate a plan for the second session.

In the second session, the group roles changed (i.e., the first persuaders became the persuaded and vice versa). The same procedure was repeated in 10 min. The economic statuses were maintained during the game (e.g., low-income persuaders became low-income consumers, while high-income consumers became high-income persuaders).

The game concluded after the second session. Subsequently, the participants completed a questionnaire about the game.

Variation of the Role
Players were assigned the economic status of persuaders (three levels: high, middle, and low), by randomly giving one of the three colors of stickers to the participants. The colors of stickers signified statuses as follows: blue (high-income), yellow (middle-income), and red (low-income). The statuses of the players were consistent regardless of the roles they played. The sticker was placed on the playing card they held in order to encourage an awareness of their status during the game.

Strategy of Persuader
The persuaders' focuses as a strategy of persuasion were chosen by the persuaders themselves prior to the start of the persuasion. During the briefing of the game, the participants were asked to consider the two aspects of energy-saving behaviors, individual monetary benefits, and environmental protection, which could contribute to CO_2 reduction. Following the briefing, they were required to choose one of the two aspects as a focus of their persuasions.

Worksheet as Record and Reflection of the Game
The worksheet consisted of three sections. The first section was the record of the game: the focus of the persuasion (i.e., individual monetary benefits vs. environmental protection [players were asked to choose one of them]) and total number of persuasion trials including failures).

The second section consisted of eight items to evaluate behaviors by the players themselves, four of these items involved the emphasis of persuasion, and the remaining four focused on the awareness of the economic status in the game. The evaluations were completed from the perspective of the two roles they performed. The items referring to the emphasis of persuasion were as follows: When I took the persuader's role, I focused on individual monetary benefits (monetary benefits-oriented persuasion: MOP); When I took the persuader's role, I focused on the environmental protection (environment-oriented persuasion: EOP); When I was persuaded, I focused on individual monetary benefits (MOP); and When I was persuaded, I focused on the environmental protection (EOP). The items focusing on the awareness of the economic status included the following: When I was a persuader, I was conscious of the color of the sticker of the persuaded; When I was a persuader, I was conscious of the color of the sticker of myself; When I was a persuaded, I was conscious of the color of the sticker of the persuader; and When I was a persuader, I was conscious of the color of the sticker of myself.

The third section measured the belief in the relationship between the game experience and the reality on the 5-point Likert-type scales. It consisted of four items: I believe energy-saving behaviors could lead to the individual monetary benefits (efficacy of energy-saving behavior on monetary benefits: EOM) in the long run; I believe energy-saving behaviors could improve the society (effectiveness of energy-saving behaviors on the society: EOS); I would like to practice energy-saving behaviors (behavioral intention of energy-saving behavior: BIE); and The world in the game was fair as a whole (fairness in the game setting: FGS).

7.4.3 Results and Discussion

7.4.3.1 Persuasion Strategy: Individual Monetary Benefit vs. Environmental Protection

The differences in the persuasion strategies adopted by the players are highlighted in Fig. 7.2. The results suggest that 35.6% ($N = 32$) of high-income players focused on environmental protection (e.g., the reduction of CO_2 emission per year), while 22.4% of lower-income players ($N = 17$) focused on individual monetary benefits (e.g., reducing energy costs per year ($\chi^2[2] = 4.96$, $p < 0.10$).

7.4.3.2 Success Rates of Persuasion

First, the number of trials of persuasion are highlighted in Fig. 7.3. The average trials of persuasion of high-income, middle-income, and low-income players are 4.7, 5.3, and 5.3 respectively. High-income players attempted to persuade high-income consumers (the persuaded) the most, middle-income players attempted to persuade middle-income consumers the most, and the low-income players attempted to

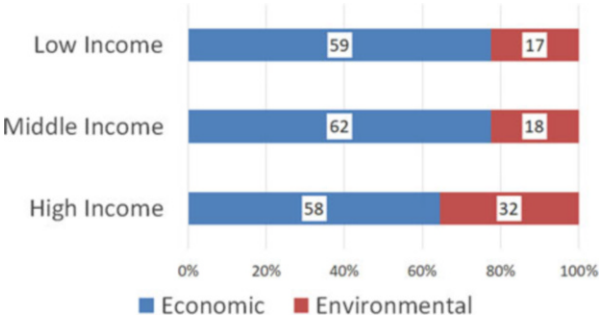

Fig. 7.2 Difference in focuses of persuasion (number of players)

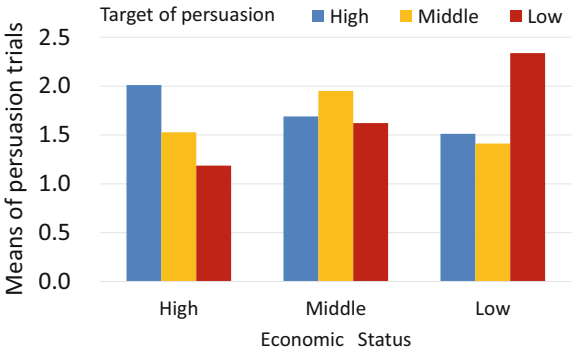

Fig. 7.3 The relationship between persuaders' economic statuses and those of the consumers (the persuaded). The numbers in parentheses indicate the average number of persuasion trials

Table 7.1 Success points of persuasion by economic status

Economic status of persuader	Strategy	Economic status of the persuaded		
		High	Middle	Low
Low	Monetary	90.4	91.0	93.4
	Environment	84.2	72.4	86.2
Middle	Monetary	94.0	94.0	97.2
	Environment	97.3	94.0	75.3
High	Monetary	93.7	87.9	93.0
	Environment	94.6	91.1	79.8

persuade low-income consumers the most. Therefore, persuaders chose the consumers who held the same economic statuses.

Second, the success points of persuasion by economic status are highlighted in Table 7.1. When the economic status of the persuaded (consumers) was low-income, persuaders individual monetary benefits achieved greater success in persuasion. When the persuaded were middle-income, low-income persuaders were more successful only in focusing on the individual benefits. In addition, middle-income persuaders were only successful in persuading low-income persuaded when they focused on the individual monetary benefits. However, when the persuaded held a high-income position, there was no significant difference between the persuader's economic position and persuasion strategy. These results revealed that low-income persuaders focused on the individual monetary benefits and were successful when persuading the persuaded participants irrespective of their economic status, while middle-income and high-income persuaders failed to persuade low-income persuaded (consumers) when they focused on the environmental protection. Furthermore, low-income players constantly focused on the individual monetary benefit when they were persuaders and the persuaded.

Next, we show the extent to which players were aware of the roles of persuader and persuaded (Table 7.2). Players were increasingly aware of the economic status of the persuaded when performing both roles. In other words, persuaders were aware of the economic status of the persuaded, while they were unaware of the economic status of themselves (when being persuaded, players were more aware of their economic statuses, while they were not conscious of the persuaders' economic statuses). In particular, when being persuaded, low-income players were most

Table 7.2 Mean of awareness of the role

	Object of the awareness of the role	Economic status				*F* value	d*f*	*P* value
		Total	Low income	Middle income	High income			
Persuader	Persuader	2.42	2.53	2.48	2.29	0.964	2, 242	0.383
	Persuaded	3.99	4.06	3.82	4.08	1.684	2, 243	0.188
Persuaded	Persuader	2.34	2.38	2.44	2.21	0.912	2, 242	0.403
	Persuaded	3.95	4.20	3.70	3.97	5.592	2, 242	0.004

conscious of their economic status ($F[2, 242] = 5.59$, $p < 0.01$). No significant difference was discovered for the high-income and the low-income players irrespective of the roles of the persuaders and the persuaded.

A correlation analyses revealed that the players who were conscious of their economic statuses when persuading were conscious of the economic status of the persuading players when being persuaded ($r = 0.404$, $p < 0.001$). In addition, players who were conscious of their economic statuses when being persuaded were conscious of the economic status of the persuaded players when persuading ($r = 0.234$, $p < 0.001$).

These results imply that the economic statuses of the persuaded were important when persuading and being persuaded. Furthermore, this tendency increased among low-income players. In addition, players who were more conscious of their own economic status when being persuaded were more conscious of the persuaded when being persuaded and vice versa.

Next, we analyzed the relationships among the items in the debriefing. We conducted a multiple regression analysis by player status. The independent variable was, how promoting energy-saving behavior contributes to efficacy of EOM and the effectiveness of EOS. The dependent variables were the BIE and FGS (Fig. 7.4). The results showed that in the low-income role, both EOM and EOS affected BIE; however, there was no association with FGS. On the other hand, in the high-income role, the EOM influenced the FGS. In the middle-income role, all paths between the two were significant. Interestingly, when comparing the data from the low-income and high-income participants, the results are in stark contrast. The role of middle income was significant for all paths in between. Therefore, it is evident that the perspective of the game was contrastingly different depending on the role assigned. Consequently, the players in this game must understand (after the game) that the world they experienced in the game and the implications of their energy-saving behavior differed depending on their position. In addition, facilitators must be aware that different roles promote varying lessons for learners in the implementation of the game and have everyone share this after the game.

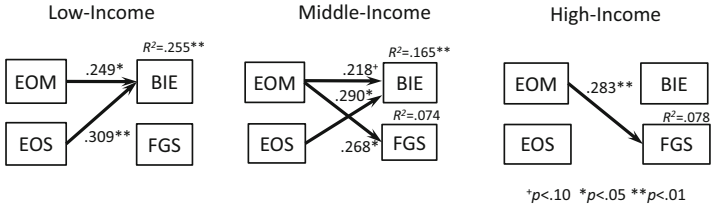

Fig. 7.4 Influence of behavioral efficacy (EOM/EOS) on behavioral intention (BIE) and fairness in the game setting (FGS) by economic status

7.4.3.3 Learning Effect of the Game

The learning effects of the game have been examined in terms of postgame attitudes (i.e., the extent to which people believe that energy-saving behavior helps to secure personal and social benefits). The emphasis on economic efficiency in the game is expected to facilitate the formation of attitudes toward securing personal benefits, and the emphasis on environmental conservation in the game is expected to facilitate the formation of attitudes toward securing social benefits. We compared the mean values of the degree to which player emphasized economic efficiency and environmental conservation during the game when they performed both roles and the mean values of their attitudes following the game (Fig. 7.5). First, with regard to economics, players placed a high degree of importance on personal economic benefits during the game, both when they were the persuader ($M = 4.33$) and when they were the persuaded ($M = 4.06$). However, their scores for the attitude that energy-saving behavior would benefit them ($M = 3.84$) were somewhat lower. Next, players scored lower on the degree to which they emphasized the environmental aspect than the economic aspect, even when they were the persuader ($M = 3.13$) or the persuaded ($M = 3.17$) during the game. However, the score for the attitude that energy-saving behavior serves the interests of society ($M = 3.99$) was higher. This result indicates that economic efficiency is relatively more important than environmental conservation during the game; however, following the game, attitudes toward energy conservation behavior relatively increased in favor of securing social benefits through environmental conservation. This means that playing the game increased the perspective that energy-saving behavior is not only economical but also facilitates environmental conservation, which means that the environmental learning was effective.

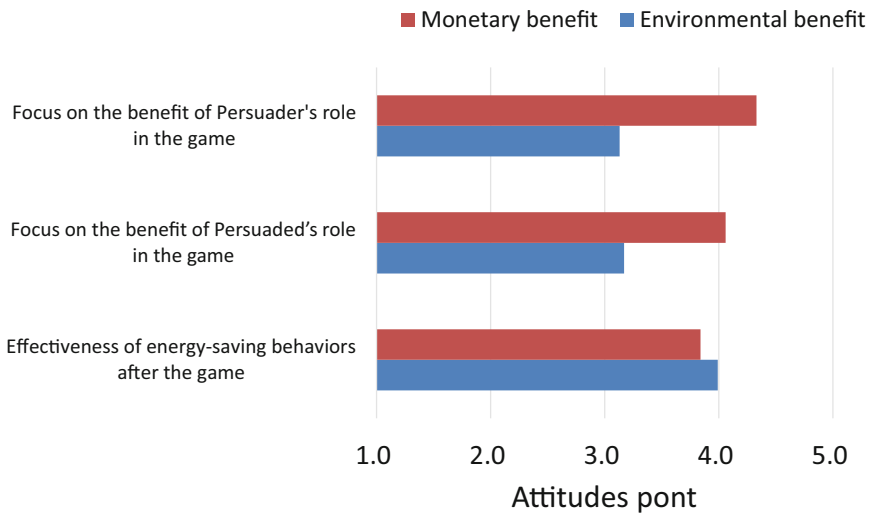

Fig. 7.5 The focus during the game (persuasion and conviction) and the attitude toward energy conservation after the game (personal and social benefits)

The results indicate that the fictitious economic statuses played in the SN game impacted the attitudes and behavioral intentions for energy-saving behaviors.

In the SN game, with the difference in economic statuses as players' attributes, I found that players chose the same economic status players as targets of their persuasion. That is, high-income players tended to persuade high-income players (consumers); middle-income players chose middle-income players; and low-income players chose low-income players. As Wetzel and Insko (1982) highlighted, the similarity between the persuaders and the persuaded could increase the success of persuasion (the players may realize it by instinct or somehow by experience).

In terms of the choice of the persuading focus, players preferred to emphasize the individual monetary benefits of energy-saving behaviors. This preference was stronger for low-income and middle-income players than for high-income players.

What is important here is that players understand, through postgame debriefing, that (1) players' perceptions of the persuasion of energy conservation will differ depending on the role set of economic disparity in the game and (2) this is a possible reality for each player. If this understanding is not achieved, the players may perceive the reality based on one economic position given in the game. Therefore, it is important for players to understand that they could have taken a different position.

7.5 Other Educational Effects of SN Game Rules

The SN game, using the topic of energy-saving behavior, aligns with the study conducted by Horsley (1977) as both games use role play. However, the SN game has two advantages from the perspective of gaming research compared to Horsley's research. First, the SN game emphasized the attitude changes of the players themselves as well as the changes of the persuaded. The rule that players must experience both roles (persuaders and the persuaded) facilitates the expansion of their perspectives.

Second, the SN game can be used as a quasi-experiment if the rules of the game are modified. The original game has few rules (like frame games); therefore, it has a greater flexibility to enable rule changes. Gaming researchers who have backgrounds in psychology have used games as quasi-experimental environments through which they could obtain more natural responses from participants than they could through pure experiments. Although experiments with strictly controlling variables are scientifically desirable, these experiments often lacked ecological validity, which is important in the realization of social issues.

7.5.1 Role-Playing in Games and Its Relationship to Reality

Role-playing persuasion in SN games is expected to facilitate real-world behavioral changes, as suggested by Horsley (1977). In addition, Sugiura and Motosu (2013) conducted SN games on the theme of global warming prevention in Japan and Germany and compared their effects as shown in Fig. 7.6. In Germany, players

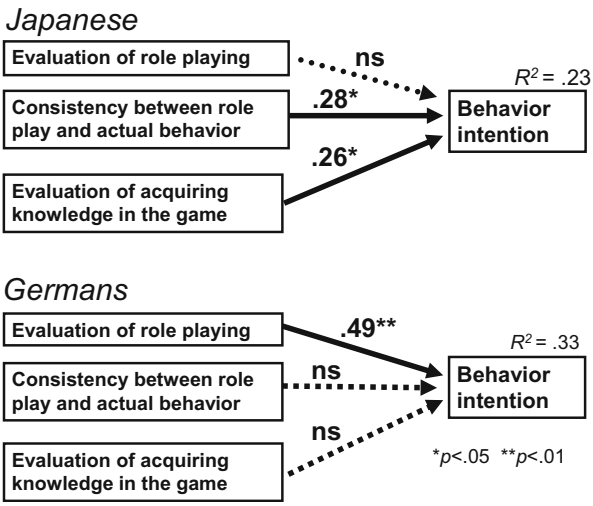

Fig. 7.6 Factors influencing the behavioral intention in Japan and Germany (Sugiura and Motosu, 2013)

who rated their persuasion role-playing as successful were more likely to have higher behavioral intentions regarding what they had persuaded in the game. In contrast, in Japan, players who considered it important to gain knowledge about the execution of actions as a consequence of playing the game and to perform the persuasion in the real world as a role-player of the persuader were more likely to have higher behavioral intentions. This means that the German participants played the game in a way that separated the game content from reality, whereas the Japanese participants did not. These results suggest that the persuader's own decision to perform the action is separate from the decision to do so. In contrast, Japanese participants perceived that if the persuader did not carry out what they were persuading, then they were not "persuasive." In addition, Japanese players wanted to expect that the persuaders themselves had already implemented the behavior. However, games are typically played in a space that is separate from reality; therefore, facilitators must help players distinguish between reality and the game and consequently focus on training in the discussion.

7.5.2 The Difference Between Persuading and Being Persuaded

In SN games, players perform the roles of both the persuader and the persuaded. Since there are countless games with different roles in general, it can be assumed that the rules of the game could be modified so that the player performs only one of the roles, either the persuader or the persuaded. However, such a game setup has its own set of challenges. This is because players can only experience persuasive communication from one side or the other in the game.

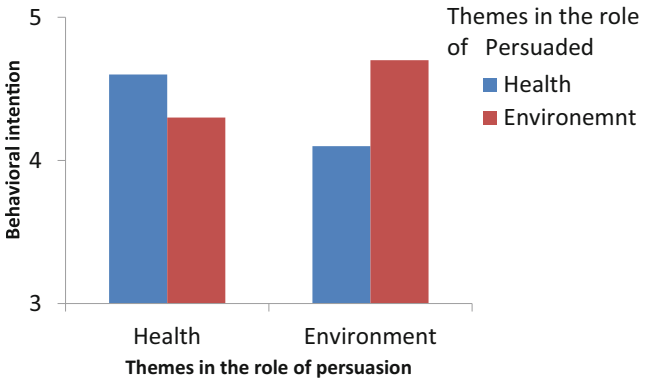

Fig. 7.7 Behavioral intention about issues to persuade

Therefore, in which role is the SN most effective, the role of persuader or the persuaded? In this section, we will examine the educational effects of SN games when the theme of persuasion and the theme of being persuaded are different.

Sugiura (2013) control for the task to be persuaded or to be persuaded (promotion of environmental or health-related behaviors). A total of 206 Japanese university students participated in one of four games. In the condition where the persuader is later persuaded about the same task, behavioral intentions for higher tasks are evaluated over different tasks (e.g., if you are repeatedly persuaded about your health task and are consequently persuaded about your environmental task by another player). In other words, indulging in role-playing as both the persuader and the persuaded about a particular behavior is an effective way to complement behavior.

Figure 7.7 highlights the relationship between the themes the players persuaded and behavioral intention, and Fig. 7.8 indicates the relationship between the themes

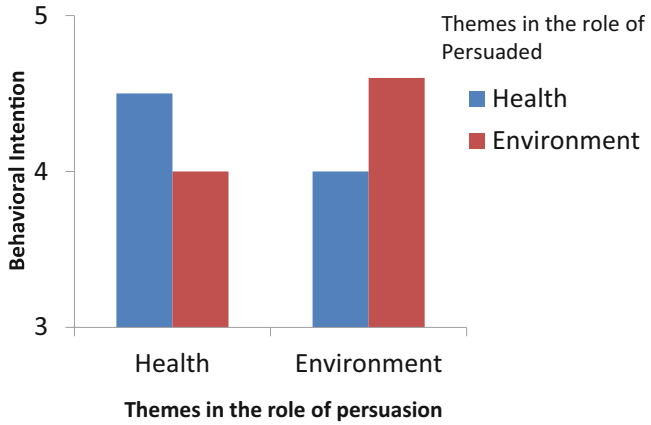

Fig. 7.8 Behavioral intention issues to be persuaded by

the players were persuaded and behavioral intention. In both cases, behavioral intentions are higher when the themes of the discussion between the role of persuasion and the persuaded were consistent. Consequently, establishing consistent themes throughout the game would result in a higher influence of the game experience on real-life behavior.

7.6 Discussion

7.6.1 Transferring to Other Issues

Although the game was originally developed to increase environmentally conscious behavior, the game can analyze other topics as the frame of the game is simple. For example, the game can be applied to increase the awareness of a healthy diet and protect people from scams.

In addition, the game can be used in two ways. One usage is for an educational purpose, while the other is to create a quasi-experimental situation by varying the issues and rules.

Yanagisawa et al. (2010) investigated the effects of self-esteem on smooth social interaction, which has differential approaches to interacting with others selected by people with high (HSE) and low self-esteem (LSE), using the SN game. They found that LSE people tended to more frequently select close others as interaction partners, spend more time in negotiations, and repeatedly select identical people as interaction partners.

In addition, the players could obtain knowledge about the focus issues of the game (e.g., energy-saving behaviors). Consequently, participants could enrich their knowledge during the game, and they could reorganize information by themselves before persuading and gain information from other players while persuading. Therefore, the interaction between the players in the game is a learning process about the issue. For example, a player insists on the advantage of switching off lights for energy-saving, while they may learn the disadvantages of the action from other players (e.g., frequent switching off and on potentially consumes more energy than the constant running of electronic devices).

7.6.2 SN Game for Online

COVID-19 required people to distance themselves, and therefore lectures were conducted online. I spent a sabbatical year from November 2020 to September 2021 in Germany in this situation and had the opportunity to conduct online gaming at the Medical School Hamburg, where I was a visiting researcher.

In the original game, all participants are initially divided into two groups: persuaders and persuaded. The persuader finds one opponent (persuaded) and persuades them in turn. In contrast, online, all participants are divided into groups

of three. Each group member assumes the roles of persuader, persuaded, and observer in turn every 3 min. By adding the observer role, they can learn about persuasion and counter-persuasion from the persuasive behavior of others and evaluate the process. Subsequently, participants are assigned to a breakout room consisting of three randomly selected people, and the three members of the breakout room swap roles. In the second and third rounds, set up a group of members with different combinations each time.

One of the differences between online gaming and face-to-face gaming is that facilitators cannot observe how players are persuaded by several breakout rooms. However, in this study, the players reported that they learned about persuasive communication in a similar manner to face-to-face gaming. In the in-person game, players had to find their own partners, whereas in the online game, players were placed in randomly generated groups of three. In addition, the players commented that "I had to engage with people you meet face to face," indicating that engaging with and persuading people they meet by chance is as important a task as it is in real life. The comment, "It was difficult to deal with opinions and arguments without background," suggests that online situations in particular require more information about the background of communication than face-to-face situations.

The online SN game was played by three players in multiple breakout rooms, because it was difficult to create a multiplayer game such as Duke's multilogue (Duke, 1974), in which players were free to choose their opponents from many players simultaneously, as opposed to a face-to-face situation. It is possible to concentrate on the discussion without being aware of other breakout rooms; however, this does not mean that players are not exposed to the fact that other players are conversing. Kikkawa et al. (2021) argue that online gaming is a unique situation, in which the visual and auditory information perceived in face-to-face situations is controlled. Therefore, by designing games online, we can also diversify the variations of games that can be assumed in face-to-face.

7.6.3 Perspective

Persuasion is an action that changes the attitude of an opponent; SN games experience rejection when persuasion is performed on many other players. This is a burden for the player and can be a negative experience. Kikkawa (2019) discusses the hesitancy of using games that encourage people to reject others, using the example of the cross-cultural understanding game "BaFá BaFá." She states that if the same content can be learned, it is preferable to use games with less conflict. In SN games, one of the techniques to mitigate these issues is to understand in advance that rejection is not based on the intentions of the opponent but on the rules of random chance. One way to devise rules for this purpose is to play the role of a designated player (e.g., the person with the birthday month, which is unknown by other players) who always refuses. However, even in the role of the person who is persuaded by others, refuting the persuasion is one of the hardest behaviors, even if the rules require it. This is especially true when it comes to socially desirable environmental

behavior. Therefore, we have also designed a game, in which players negotiate prices, replacing "persuasion and conviction" in SN games with "sales and purchasing" (Sugiura et al., 2006). By adjusting the amount of investment by negotiating the price, learners can agree on the degree of acceptance as a continuous quantity, rather than acceptance or rejection.

Because SN games have simple rules, it is easy for users to modify the rules. However, this can result in new ethical issues. Therefore, we must consider this when improving our games.

Acknowledgments This work was supported by JSPS KAKENHI Grant Number 19K03210.

Appendix: The Settoku Nattoku (SN) Game

Number of Players

Any number. An even number of participants are preferable.

Supplies

Idea card to persuade for each player. Players can also create their own cards based on a theme set before the game. In this case, 52-card packs of energy-saving behavior card game (Sugiura & Mikami, 2018), which showed specific ideas for energy-saving behavior, were used.

Preparation

Players are divided into two groups. The first group will assume the persuader role, while the second group will assume the role of the persuaded. The role interchanges in the second session.

Before the game begins, all of the players are asked to the idea or statements that they try to persuade when they take a role of persuaders. In addition, players are asked to create a plan of persuasion using their knowledge of persuasive techniques.

Session 1: First Persuasion

1. The first group players (persuaders) are asked to persuade the other players (the persuaded). The persuaded are required to sit down and wait for persuaders, while

the persuaders are required to stand up and go to the persuaded and choose the first person to persuade.
2. When persuading, persuaders attempt to explain the idea or a statement and to persuade the person to agree to it. If the persuaded agrees to it, they will write a signature on the card (or place sticker on it as a sign of signature). If she does not agree, "NO" will be written (or a [half] piece of the sticker is placed on the card).
3. Persuaders repeat the persuasion in order to receive as many agreements as possible within 10 min of the session.
4. Players reflect on their experiences in Session 1 in their respective roles.

Session 2: Changing the Role

1. In the second session, the two groups switch their roles from persuader to the persuaded and vice versa. Subsequently, the same 10 min persuasion session continues.
2. As in the first session, the players reflect on their experiences in Session 2 in their respective roles.

Debriefing

1. The scores are calculated. The number of signatures are divided by the number of total trials of persuasion. This success rate is converted to points ranging from 0 to 100.
2. Players use the reflection sheet to reflect on the entire game experience (see the text for the content of the reflection).
3. The facilitator interviews the players and provides commentary on the game at the conclusion.

References

Ando, K., Sugiura, J., Ohnuma, S., Kim-Pong, T., Hübner, G., & Adachi, N. (2019). Persuasion game: Cross cultural comparison. *Simulation & Gaming, 50*(5), 532–555.

Aronson, E. (1966). The psychology of insufficient justification: An analysis of some conflicting data. In S. Feldman (Ed.), *Cognitive consistency: Motivational antecedents and behavioral consequents* (Chap. 4, pp. 109–133). Academic Press.

Cialdini, R. B. (1984). *Influence: The psychology of persuasion*. Prentice Hall.

Duke, R. D. (1974). *Gaming: The future's language*. Sage.

Festinger, L., & Carlsmith, J. M. (1959). Cognitive consequences of forced compliance. *Journal of Abnormal and Social Psychology, 58*, 203–210.

Imai, Y. (2006). *Psychology of request and persuasion: How do people affect others*. Science SAIENSU-SHA.

Geiger, N., & Swim, J. K. (2016). Climate of silence: Pluralistic ignorance as a barrier to climate change discussion. *Journal of Environmental Psychology, 47*, 79–90. https://doi.org/10.1016/j.jenvp.2016.05.002

Horsley, A. D. (1977). The effects of a social learning experiment on attitudes and behavior toward environment conservation. *Environment and Behavior, 9*, 349–384.

Hovland, C. I., Janis, I. L., & Kelley, H. H. (1953). *Communication and persuasion; psychological studies of opinion change*. Yale University Press.

Kikkawa, T. (2019). Several issues regarding the quality and ethics of gaming and simulation research and practice. *Studies in Simulation & Gaming, 29*(1), 10–17. (In Japanese with English abstract).

Kikkawa, T., Nakamura, M., & Sugiura, J. (2021). Interactive learning online: Using face-to-face games and interactive reports. *Studies in Simulation & Gaming, 31*(1), 50–59. (In Japanese with English abstract).

Meadows, D., Fiddaman, T., & Shannon, D. (1989). *FishBanks Ltd [Computer-assisted game]*. University of New Hampshire Institute for Policy and Social Science Research.

Messick, D. M., & Brewer, M. B. (1983). Solving social dilemmas: A review. *Review of personality and social psychology, 4*, 11–44.

Powers, R. B. (1985–1986). The COMMONS GAME: Teaching students about social dilemmas. *Journal of Environmental Education, 17*(1), 4–10.

Sugiura, J. (2003a). Persuasion game as a tool for environmental education: Process of development, practice and improvement. *Studies in Simulation & Gaming, 13*(1), 3–13. (In Japanese).

Sugiura, J. (2003b). The development of the persuasion game. In *Proceedings of the 34th Annual Conference of the International Simulation and Gaming Association (ISAGA)* (pp. 713–722). Kazusa Akademia Park.

Sugiura, J. (2005). Environmental education using persuasion game and its transferability. *Japanese Psychological Review, 48*(1), 139–154. (In Japanese with English abstract).

Sugiura, J. (2013). Effects of role play to persuade and to be persuaded on environmental and health behavior using persuasion game. In *10th Biennial Conference on Environmental Psychology*, Magdeburg, Germany, September 24, 2013.

Sugiura, J. (2018). Effect of economic standing on the persuasion of energy-saving behavior using a gaming simulation. In *25th IA PS*. Roma Tre University, Italy, July 13, 2018.

Sugiura, J., Kikkawa, T., & Suzuki, A. (2006). Development of "SNG: SALES" as a negotiation game. *Studies in Simulation & Gaming, 16*(1), 37–49. (In Japanese with English abstract).

Sugiura, J., & Mikami, A. (2018). An instructional card game about energy-saving behavior. *Studies in Simulation & Gaming, 27*(2), 87–99. (In Japanese with English abstract).

Sugiura, J., & Motosu, M. (2013). Effect of role playing on persuasion: Comparison between German and Japan using Settoku-Nattoku game. *The Japanese Journal of Persuasion and Negotiation, 5*, 15–28. (In Japanese with English abstract).

Thiagarajan, S. (1991). Garbage: A card game that simulates the trade-off between competition and concern. *Simulation & Gaming, 22*, 112–115.

Wetzel, C. G., & Insko, C. A. (1982). The similarity-attraction relationship: Is there an ideal one? *Journal of Experimental Social Psychology, 18*, 253–276.

Wittenberg, I., Anke Blöbaum, A., & Matthies, E. (2018). Environmental motivations for energy use in PV households: Proposal of a modified norm activation model for the specific context of PV households. *Journal of Environmental Psychology, 55*, 110–120.

Yanagisawa, K., Nishimura, T., & Ura, M. (2010). Effect of trait-self-esteem on smooth social interactions during repeated Settoku Nattoku Games. *Studies in Simulation & Gaming, 20*(2), 37–46. (In Japanese with English abstract).

Xu, L., Zhang, X., & Ling, M. (2018). Pro-environmental spillover under environmental appeals and monetary incentives: Evidence from an intervention study on household waste separation. *Journal of Environmental Psychology, 60*, 27–33.

Chapter 8
Code of Conduct for Facilitators and the Ethics of Debriefing

Mieko Nakamura

Abstract This chapter seeks to explain the role of facilitators in gaming simulation. It is the responsibility of facilitators to ensure participants are provided with ample opportunities to learn through gaming simulation in safe environments. Focusing on their role, this chapter discusses the following questions: What is facilitation? What should facilitators do or not do? and What should facilitators consider for a fruitful gaming session? Facilitation begins well before the execution of a game and continues until the end of debriefing, when facilitators help participants process what was learned through the activities that were carried out. Facilitators should anticipate how participants will act and react during and after the game and react appropriately and flexibly. Facilitators are responsible for allowing participants to undertake activities and experience learning transfer in a safe environment throughout the entire process. I hope this chapter provides a supportive push to present/future facilitators who are going to find profound meaning in facilitation.

Keywords Debriefing · Ethics · Facilitation · Learning transfer · Preparation · Role of facilitator · Safe environment

8.1 Introduction

I first became acquainted with gaming simulation in 1991 at the 22nd annual conference of the International Simulation and Gaming Association (ISAGA) in Kyoto, Japan (Nakamura, 1992). At the conference, I happened to attend a panel session organized by David Crookall, who invited the audience to a game of cultural conflict. It was right there when I was surprised and became fascinated by gaming simulation. Since then, I have continued to conduct games with students on campus, sometimes with adults or children off campus, and remain captivated by the depth of facilitation and debriefing. I was fortunate that Kiyoshi Arai, one of my mentors in

M. Nakamura (✉)
Ryutsu Keizai University, Ryugasaki, Ibaraki, Japan
e-mail: mnakamura@rku.ac.jp

T. Kikkawa et al. (eds.), *Gaming as a Cultural Commons*, Translational Systems Sciences 28, https://doi.org/10.1007/978-981-19-0348-9_8

the gaming simulation society, invited me to contribute to his book on gaming simulation and write a chapter on facilitation (Arai et al., 1998). At the same time, I owe my writing to a special issue on debriefing of the journal *Simulation & Gaming*, edited by Lederman (1992). Thanks to Crookall, Arai, and Lederman, I became well informed on the topics of facilitation and debriefing early on when I jumped into the world of gaming simulation; however, I still needed to learn more through trial and error along with mistakes and failures. The more experiences I gain as a game facilitator, the more I understand the real meaning of facilitation and debriefing. Looking back at three decades of experience, I would like to share what I have learned thus far.

Before I begin, I would like to raise a few points concerning knowledge and games. First, I believe that knowledge and experiences generate a synergy effect. Knowledge can help us if we know what kind of knowledge we need. For example, when I attempted verbal forms of debriefing, I felt very uncomfortable and believed my attempts were not working for my students; they might have been too shy to speak out, scared of being criticized, or afraid of losing face. When I happened upon "journal writing" as a technique of debriefing (Petranek et al., 1992), I was unsure how it worked. After a while, I tried a "writing (paper-and-pencil)" style of debriefing using questionnaires and report writing. This method worked well and was an eye-opening experience to conduct for me. I learned I should be more open to new ideas and receptive to the unknown world.

Second, I believe that knowledge makes us feel safe. When I first read about "initial inertia" and the "hubbub factor" (Duke, 1974, 2014), I was initially not sure what these meant. "Initial inertia" is the mode shown in the early stage of game play, in which participants look inactive and quiet. It is natural in such context to be quiet since participants have to digest given information and ponder on about what is going to happen. Some might feel embarrassed by the fact they are thrown into an unordinary learning environment. Participants need time to wonder what to do or how to behave before they commence with actions. The facilitator's role is to wait and see until the babble of voices comes back—This is the hubbub factor, which is the level of sound created by participants' conversations. "Initial inertia" and the "hubbub factor" must make a lot of sense for experienced facilitators, but not for novice facilitators. When participants are quiet, some facilitators may feel worried and start asking the participants "Was my instruction clear?" "Did you understand?" "Is everything all right?" However, this is unnecessary and undesirable. What facilitators should do is to wait and see. There is no need to worry. Now I can tolerate the silence during initial inertia in a confident attitude, since I know the voice of the participants will come back sometime later. I would be worried instead if there is no initial inertia. I have learned that knowledge of initial inertia and the hubbub factor needs to be combined with my own experiences for these to be fully understood. Simulation gaming is considered powerful because participants can combine their knowledge with their experiences. This is true for facilitators.

Third, I should refer to the area that I will deal with in this chapter. As a teacher of "industrial organizational psychology" and "project management and decision-making," the topics of games are limited to decision-making, information gathering,

leadership, team building, production management, etc. I conduct games as face-to-face activities with groups of students. Working with my students, I have been encouraged, sometimes discouraged and motivated, by various kinds of feedback. Here, I would like to share what I have learned from my experiences and would like to propose what others can apply for those who are interested in facilitation, including debriefing. In the following sections, I will discuss

- Facilitation of gaming simulation.
- Preparation.
- Briefing.
- Game execution.
- Debriefing.
- The ethics of debriefing.

8.2 Facilitation of Gaming Simulation

I am fortunate that the journal *Simulation & Gaming* recently published a special issue on facilitation in June 2021. The editors of this issue, Leigh et al. (2021), note that there is a large gap between the acknowledged level of facilitation and the research level of facilitation; they desire to provide "a framework for understanding and valuing the facilitator's role, and the skills required" (p. 247). Based on this concern, they selected several papers covering different theoretical and empirical aspects of facilitation. I owe my writing of this chapter to this special issue.

Kortmann and Peters (2021), based on their previous research (Kortmann & Peters, 2017), identify essential competencies of game facilitation encompassing three aspects: attitude, knowledge, and skills. They recommend that one should balance the three competencies to the full extent as one finds it possible and become the "unseen helmsman." Here, "unseen helmsman" refers to one "steering his/her ship of game players clear from rocks and storms without the players realizing" (Kortmann & Peters, 2017). I agree that the existence of a facilitator is expected to be forgotten as long as things shape well. This would also be a sign that the participants are fully immersed in the games. A facilitator's mission is to support participants in focusing on the given game play. When participants encounter unforeseen troubles, the facilitator will take care of them. Moreover, the facilitator is expected to prevent trouble from happening. The concept of the unseen helmsman is quite similar to the concepts of "active inactivity" (Kriz, 2010) and the "vigilant observer" (Leigh & Spindler, 1998, 2004). Kriz (2010) describes that "a facilitator must remain active in the background to ensure arrival at an appropriate end point" (p. 667). Leigh and Spindler (2004) explain that the "vigilant observer" is "standing back from the action, ever ready to support the learning but careful to avoid unnecessarily imposing their needs, goals, or even observations" (p. 310). Jones (1993) mentions that "the most important objective for a facilitator is invisibility" (p. 17). Jones (1995) even

compares the facilitator to an "usher, messenger boy, furniture remover, or friend of the editor or managing director" (p. 96), depending on the circumstance.

Kortmann and Peters (2021) refer to four phases of facilitation in complex systems games: preparation, briefing, game execution, and debriefing. This order seems natural and reasonable. However, Schwägele et al. (2021) have expressed objections to these four phases. They propose that more attention should be paid to the "changing needs of participants during a simulation gaming session to allow for a direct reflection on what is happening" (p. 364). Their suggestion is understandable, but it seems a matter of interpretation about debriefing or a matter of how much work a facilitator is in charge of. Peters et al. (1998, p. 401) distinguish "final debriefing session" from "debriefing sessions between rounds"; according to them, the former is to create a link between "the knowledge and skills used in the game/simulation" and "the knowledge and skills required in the corresponding real-life situations," while the latter is to "give guidelines to help improve the performance of the participants and to help them determine what to do in the next round to reduce the gap and meet the criteria" in the setting of training/education. Duke (1974, 2014) uses the word "critique" for debriefing sessions between rounds. In his wording, a game round is called a mini cycle and consists of iterations of mini cycles. Duke (1974, 2014) declares that "each iteration should be terminated with a critique which provides the opportunity to address directly things which have been presented obliquely" (p. 149 in 1974, p. 137 in 2014). Duke and Geurts (2004) describe such critique as "a facilitator-controlled discussion to review the previous cycle and launch the next cycle" (p. 346). Thus, an objection from Schwägele et al. (2021) does not conflict with the hitherto known understanding of debriefing. Their definition of "debriefing" as "the stimulation of learning, reflection and transfer processes of the participants of a simulation gaming session" accords with the established meaning of debriefing. Moreover, their suggestion provides important insights into when debriefing preparations should commence. "Effective debriefing (or at least its preparation) must therefore necessarily start much earlier" (p. 373). As Crookall (2010) states, "[the] game design should start with the place where the participants are going to learn, that is, with the debriefing. At the very least, the debriefing should be a design consideration right from the start" (p. 908). I will discuss this issue in more detail later.

Table 8.1 roughly shows what facilitators do in the four phases of facilitation: preparation, briefing, game execution, and debriefing (Kortmann & Peters, 2021). This type of table is best kept simple. Thus, I describe what I usually do as simple as possible, in accordance with a review of literature such as Kortmann and Peters (2021), Peters et al. (2012), and Duke and Greenblat (1975). First, in the "preparation" phase, the main tasks of facilitators are the selection of an appropriate game and the preparation of materials. To complete these tasks, facilitators collect related information and make efforts to be ready for the gaming session under the given conditions. I will provide helpful advice from some pioneers in the field (Greenblat, 1988; Jones, 1995, 1997; Thiagarajan & Parker, 1999) in the next section. Second, in the "briefing" phase, facilitators meet participants and introduce what is going to happen generally and precisely. Instructions should be simple and straightforward.

Table 8.1 The four phases of facilitation and what facilitators do

Phases	What facilitators do
1. Preparation	– Gathering information about participants, equipment, and environment – Determining the purpose of the session – Selecting, adjusting, or designing games to suit the purpose of the session under the given conditions – Preparing materials for briefing, game execution, and debriefing – Preparing oneself as much as possible
2. Briefing	– Clarifying the purpose of the session (why the game) and explaining what is going to happen (e.g., the timetable and what participants are expected to do as participants) – Explaining the rules, goals, procedures, roles, etc. – Organizing teams and distributing the materials
3. Game execution	– Declaring the beginning and ending of the game – Observing the flow of the game vigilantly – Handling troubles/happenings if needed – Supporting participants if needed – Providing supplementary explanations or materials if needed – Monitoring events for debriefing
4. Debriefing	– Explaining what to do during debriefing – Conducting debriefing: escaping from (getting out of) the game world, looking back what happened during the game, sharing opinions among participants, deepening or widening thoughts, and building up the connection to the real world

Jones (1997) recommends "keep the briefing brief" (p. 34). Thiagarajan (2021) in his keynote address advised to keep instructions within 4 min (he calls it the "4-min rule"). Peters et al. (2012) discuss the psychological security of participants. I agree that the most important task for the facilitator in the briefing phase is to produce a safe environment. I will discuss this more in detail later. Third, in the "game execution" phase, observing is the main task. Superficially regarded as doing nothing, the facilitator is busy carefully observing what is happening. Facilitators need to prevent the occurrence of troubles before they grow larger in scale, if possible. In emergency situations, when a trouble turns into a big issue, the facilitator should step in and protect participants from harm. We can see more what facilitators do during game execution from the recent studies by Jansen and Van Zelst (2021) and Van Laere et al. (2021). We discuss this in detail later. Fourth, in the "debriefing" phase, the facilitator guides the participants into a deep level of learning. Duke (1974, 2014) and Thiagarajan (1993) provide us with a structure for debriefing. It starts from getting out of the game world and calming down and then proceeding to review what occurred from various perspectives and to integrate diverse views into a piece of meaningful work. Tipton et al. (2015) state that the real learning begins when the game stops. From the next section onward, I discuss the details of the four phases.

8.3 Preparation

8.3.1 Gathering Information and Determining the Purpose of the Session

What is the kind of information we need to prepare for a gaming session? It depends; however, basic information such as information related to the participants, equipment, assistants, and environment (room size, mobility of desks and chairs, noise level, weather, temperature, etc.) would be most commonly required. It is the facilitator's role to prepare a better environment for the session, both physically and psychologically. In the field of instructor-led healthcare simulation, Rudolph et al. (2014) argued about how to establish a safe container for learning and suggested four practices: (1) clarifying expectations, (2) establishing a "fiction contract" with participants, (3) attending to logistic details, and (4) declaring and enacting a commitment to respecting learners and concern for their psychological safety. Let us examine the logistic details here. As an example, Rudolph et al. (2014) refer to whether participants will have enough time to get to their next class after the session. It is a matter of serious concern for participants but not for instructors, who are more concerned with the content or technical aspects of the simulation environment. Therefore, Rudolph et al. (2014) warn that instructors should carefully address logistic details. I agree that participants are distracted both physically and psychologically by environmental factors (Nakamura, 2019a, b). To reduce such distractions and help participants focus on the gaming session, facilitators should gather related information and prepare for the session.

The purpose of the session would be better determined at this point. In my case, based on a course curriculum or the objective of a workshop, I focus on a specific topic, such as social dilemma, leadership, and production management.

8.3.2 Selecting, Adjusting, or Designing Games

Important aspects in preparing a game include selecting, adjusting, and designing the game. Selecting a game refers to looking for a suitable game from a list of existing games. Adjusting a game refers to adjusting a game to suit the purpose of the session under the given conditions. Designing a game refers to designing an original game to satisfy the purpose of the session under the given conditions.

Greenblat (1988) recommends spending time and energy to find a suitable game before designing an original game (p. 20). I agree with her, since designing a game usually takes much longer than anticipated and requires not a few manpower. However, looking for a suitable game is not less difficult than designing a game. If I had a very reliable list of games categorized by topics, I could be able to find an appropriate game under the given conditions. Unfortunately, this does not occur for the most part. In reality, I will pick a game from the games I had played or found

somewhere. Or, I will look through the books and boxes on games on my shelves, pick one, and read the manual carefully. If possible, I will play the game with colleagues, friends, or someone who kindly offers their time for me. If necessary, I have to work on adjustments and test these. Adjusting a game is interesting, but this is often time-consuming and energy-consuming.

8.3.3 Preparing Materials and Preparing Oneself

I usually create a checklist of materials for a gaming session. In my case, a small class consists of approximately 20 students, a middle class approximately 60, and a big class 100–150. While making a checklist, I write up a detailed plan of the session (from briefing to debriefing) and make sure all materials are in the checklist. A detailed plan includes the timing and method of organizing teams and distributing materials. If the number of participants is large, I usually organize teams first and then distribute things by team. Jones (1995) recommends presenting the right materials at the right time as "any delay caused by facilitator inefficiently may well result in considerable exasperation from the participants" (p. 103). I completely agree with him. Anything that interrupts the flow of the game should be avoided.

Following the checklist, I prepare materials: game kits, a personal computer (to present an instruction on a screen), the timer, labels for locations, a deck of number cards (to allocate participants to teams at random), etc. I used to make copies of handouts for instructions and debriefing, but most of these have been transformed into a website. I check the contents of instructions and debriefing and revise these if necessary. Then, I run through what I am supposed to do during the session. Reading the instructions, I rehearse the session in my head and imagine what will happen as much as possible. Thiagarajan and Parker (1999) recommend to "conduct a dry run" and "walk through the steps of the activity" before conducting an activity (p. viii).

Jones (1997) describes several cases on the pitfalls for the facilitator and informs us "there is no need to fall into pits" and "the facilitator is one step further away from what is occurring" (p. 73). If we prepare well, we can avoid careless mistakes, if not all. Through the experience of several pitfalls, I reached my present style of creating a checklist and preparing myself as much as possible.

Gaming simulation is similar to cooking in some sense. The recipe tells us what ingredients we need and how to cook. We can imagine how it looks and how it tastes. However, this reality could be very different from what we imagined. The first reason is that we often do not or cannot follow the original recipe. The second reason is that the situation is never the same: the environment, the people, the context, etc. This is true for the gaming session. Suppose I found a wonderful game that looked perfectly fit to my class. Then, I imagine my students as participants and what materials and adjustments I need. I try my best, and yet I will not be able to recreate perfectly what is supposed to happen in the original game. The task of the facilitator is not to recreate everything as in the original game but to convey the essence of the original game under a given set of conditions.

8.4 Briefing

During briefing, the facilitator may meet the participants for the first time. For the participants, this may be their first encounter with gaming simulation. The expression "game" has a wide range of meanings, and participants will have very different expectations regarding the word game. Some might be highly motivated, while others might not. Therefore, it is important to start a session by explaining what gaming simulation is and the purpose of using it. In addition, as Kriz (2010) states, a trusting and open atmosphere among participants would be desirable. I completely agree with him on this point. However, I think this is not always the case. Many years ago, I saw a facilitator with an emotionless face organize a session excellently. I was very much impressed by the way he proceeded, and I was especially encouraged by his style. I mean, I learned to be myself and look for my style. This was probably because I was struggling to create an open atmosphere at the beginning of a session. Especially when all participants are new to me and few of them have experienced gaming simulation, it takes time to activate the entire atmosphere. I appreciate that ISAGA conferences and ISAGA summer schools gave me opportunities to attend gaming sessions as a player and to learn several different styles of facilitation. Gradually, I came to accept myself just as I am and focus on doing my best instead of trying to embody a different character.

8.4.1 Clarifying the Purpose of the Session and Explaining What Is Going to Happen

Concerning gaming simulation, Jones (1997) insists that steps should be taken to ensure that the methodology is clear to all participants and that misunderstandings or misapprehensions are avoided. Kriz (2010) states that "introducing the nature of the gaming simulation method, together with relevant learning objectives, is essential to a well-formed briefing" (p. 667). Peters et al. (2012) recommend finding the right tone and creating an appropriate atmosphere. That is, the facilitator is responsible for fostering a certain level of sense to the session among participants in common before explaining the content of the game. I believe it is important to pay attention to how participants interpret the term "game" and to provide information regarding what happens in gaming simulation in general. They may need time to digest it, but such information may help reduce anxiety or confusion. Jones (1998) points out that facilitators need to be sensitive to the attitude of participants and try to convey or communicate to the participant on what "game" means in their situation.

After the explanation of gaming simulation, the facilitator needs to clarify the purpose of the session: the reason why the gaming simulation method is used, which game is going to be played, and what the connection is between the present session and other sessions. Then, the facilitator roughly explains what is going to happen: the timetable, what participants are expected to do as participants, what the role of

the facilitator is, etc. A few pieces of information, as mentioned above, would reduce the anxiety some participants might feel.

8.4.2 Explaining the Rules, Goals, Procedures, Roles, etc.

A game requires instructions. Instructions for simple games could be presented using single media, for example, verbal instruction. However, complicated games require multimedia, for example, verbal explanations with pictures on a screen and handouts. At any time, visual explanations through examples would be very helpful. When participants have questions, facilitators answer them promptly. A long discussion would not be preferable at this stage. However, this needs to be performed nicely and warmly. The mood that any question is welcomed is important. Moreover, the questions and answers between a participant and a facilitator would help all others understand the situation and lessen their anxiety. However, some issues may be intentionally hidden at this stage. In that case, we could explain "it is confidential at the moment, but you will be informed later on."

8.4.3 Organizing Teams and Distributing the Materials

How to organize teams is one way to cheer up participants. Distributing different colors of poker chips and creating a team of the same color can be one way to cheer up participants. Using playing cards or colorful wooden blocks may also brighten the mood. I prefer to use cards with sequential numbers (e.g., from 1 to 60) to organize teams. I distribute a numbered card to each game participant, grasp the total number of participants, and use it to determine the number of teams. For example, if there are 60 participants and a group of 5 is desirable, I then show a 5-by-12 contingency table to the participants on a screen that indicates which number is assigned to which team. To save time, I prepare several contingency tables such as a 5-by-11 and a 5-by-13 beforehand and select one of these depending on the number of the participants. I also place labels for locations to serve as landmarks beforehand. Showing the table on the screen, I ask participants to go to their allocated team. I use this method to organize teams with speed and ease at random, as participants will see some new members each time.

Normally, I arrive at the site of a gaming session an hour before the game commences, check the room equipment, and move the desks and chairs as I like. Then, I set the handouts and materials by team in order. If I expect approximately 60 people coming and assigning them to groups of 5, I need 12 sets of handouts and materials ready for distribution. I will spend approximately half an hour to set these. The effort is rewarded for the smooth flow of the session, minimizing the distraction caused by a long waiting time. At some point during the game briefing, I announce

that a set of handouts and materials are ready to be distributed and ask teams to send a few members to receive them.

Now, let us look at the factor of a safe environment. Hijmans et al. (2009), who analyze a "safe environment" from the perspectives of participants, suggest distinguishing security from safety. The feeling of safety comes from the awareness that the game system is not connected to the real-life system. Participants can explore new behaviors and solutions because they know what they do in the simulation game does not affect reality. The feeling of security or insecurity is related to a social psychological component. Participants feel insecure about four factors: confrontations and evaluations, the real-life impact, issues dealt with, and game elements and people. As facilitators, we need to be sensitive to the level of insecurity or anxiety participants would feel. We cannot remove their anxiety 100%, but we can show our concern and encourage them to go forward.

Peters et al. (2012) expanded upon the work of Hijmans et al. (2009), focusing on the second dimension of psychological security, and propose helpful hints for facilitators. Their advice covers from briefing to debriefing. Among their many suggestions, I would like to mention role allocation. Peters et al. (2012) recommend assigning plural member to one role, "not one, but two participants (or three) as responsible for the actions and decisions of that role" (p. 63). Jones (1995) mentions that in some simulations, it is almost certainly a good idea to allocate two participants to the role since they will back each other up (p. 102). The idea behind this is to protect participants when they are blamed by their bad decisions.

8.5 Game Execution

Facilitators need to establish a clear distinction among phases: declaring the beginning and ending of the game when the game play starts and ends. Some participants concentrate too much on understanding the situation or talking with other participants and often do not notice that the game play has started or ended. Therefore, facilitators should ensure that all participants understand which phase of the game they are in.

Immediately after the beginning of the game play, participants may need some help to understand what to do. Facilitators see how the participants react and provide supplementary explanations if many participants seem lost. Once participants understand what to do and start working by themselves, facilitators keep a certain distance from them and observe the flow of the game carefully. When a problem occurs, facilitators handle the situation. If they can spot a potential problem early on, they nip the problem in the bud before it becomes serious. If a participant does not understand what to do and does not ask help from others or have any communication with others, then a facilitator should approach the participant and whisper "may I explain your role a little more?" or speak to the surrounding members "are you sharing information among members?" In such a case, the wording employed would be a sensitive issue. Sometimes, it should be general, and sometimes, it should be

straightforward. Facilitators need to choose the appropriate words to use from their experiences, based on the observation of the game play, the atmosphere, the relationship among members, and the participant's personality. In case of an emergency—such as a certain participant becoming mad at someone's behavior and seeming to lose control—the facilitator should intervene before that participant starts cursing the other participant. However, if conflicts are under control and within the scope of prior assumptions regarding how the game is expected to play out, facilitators should observe vigilantly. During the expected conflicts, the facilitator should not take any visible action.

Two recent studies, Jansen and Van Zelst (2021) and Van Laere et al. (2021), can help us understand how facilitators intervene during game executions.

Analyzing 30 runs of a free-form "MicroTech" game in which participants play the role of a top management team or division managers in a multiunit organization, Jansen and Van Zelst (2021) suggest that facilitators should switch roles intentionally during game execution. "There is a simultaneous need to shift within phases in order to keep participants moving and stimulating them to work towards the learning goals" (p. 273). This is because some participants are not able to apply their knowledge and competence they already have from their past experiences in the real world without support or guidance from a facilitator. This is in line with Schwägele (2014), who places gaming simulation as a space in which learning transfer occurs not only from the game world just experienced to the real world in the future but also from the real world experienced beforehand to the game world in the present. Schwägele et al. (2021) characterize gaming simulation as a learning environment to activate and apply participants' existing experiences to the gaming situation. Learning transfer should be considered in a cyclic or spiral manner throughout the entire gaming session. The facilitator's role is to give a helping hand to those who need it and to promote learning transfer as much as possible.

Van Laere et al. (2021) organized action research on the facilitation of 47 role-play simulation games of crisis management training: performing facilitation and reflecting on its effectiveness in parallel. Participants comprised municipal employees in Sweden who were unexperienced with crisis management. Van Laere et al. (2021) developed an active coaching approach: initially coaching actively on facilitators' initiative and later coaching passively on participants' requests. Six episodes show how facilitators intervened during the game execution. Three episodes were analyzed from the point of view of how facilitators tackled the issues that led participants to "the valley of despair" (Wenzler & Deenen, 2018), which brings pain or discomfort to the participants. Wenzler and Deenen (2018) state that "the role of facilitators is to ensure that players first experience a sufficient level of discomfort in their effort to perform." The level of pain or discomfort should be neither too high nor too low. Since each participant's capacities are different, facilitators need to take care of all participants to ensure that they continue participating without running away halfway through. However, facilitators cannot control everything, and sometimes they cannot tell whether their interventions rescue the game or not, regardless of how well-experienced and prepared for the session they are. "The quality of the intervention depends partly on the facilitator's preparation

and skill set, but is, in its current performance, also heavily dependent on the circumstances of the day and the interaction between the facilitator and the players involved" (van Laere et al., 2021, p. 359). Facilitators simply do their best to make the game experience fruitful and meaningful for the participants.

Now, I would like to discuss about the boundary between game designers and game facilitators in terms of the responsibility to the users/participants. According to Duke (1974, 2014) and Duke and Geurts (2004), how to involve participants in the game is one of the important tasks for game designers. Good games are deliberately shaped and tested during the design process using several techniques such as creating inspiring roles and scenarios and adjusting the level of abstraction and information loading. Designers are responsible for providing a fine manual for facilitators, as they can run the game as intended. At the same time, facilitators must become thoroughly familiar with the game: reading the manual repeatedly, practicing each step by themselves, preparing for answers to possible questions from participants, etc. Moreover, the facilitator is the one who selects the game for the session. If anything should be adjusted or modified, the facilitator should have carried this out before the session. This means that if anything supposable is not well mentioned or prepared, both the designer and facilitator should be blamed. In this sense, the interventions reported by Jansen and Van Zelst (2021) and Van Laere et al. (2021) would be regarded as an issue of design, as well as an issue of facilitation.

Suppose a designer designed a game for experienced businesspeople and the expected participants are only experienced businesspeople. If a facilitator chooses the game for university students, then the facilitator must adjust or modify the game accordingly to fit the university students. Yet, the facilitator might find the game not appropriate for university students during game execution. In this case, the facilitator needs to fill the gap on site by providing complementary information, giving hints or clues, and so forth. There are four periods during which a facilitator can avoid or adjust a mismatch between a game and participants: selecting the game, preparing the game, running the game, and debriefing. Facilitators are required to be sensitive to a feeling of slight strangeness and be ready to do everything to deal with it. Duke and Greenblat (1975) state that the facilitator's major activity during game execution is careful observation and assistance to those who require it. Those who need assistance may not notice that they need assistance. Facilitators must catch a sign of need and give a helping hand to them according to the need.

8.6 Debriefing

Tipton et al. (2015) state, "simulation and games are experiences that need to be processed to draw out the learning" (p. 132). "For real learning to happen, we must debrief and we need to do it well" (p. 134). We obtain the message, but it is not easy to perform this well.

Usually, "debriefing" is performed immediately after a simulation game. Thiagarajan (1993) raises other alternatives regarding the timing of debriefing:

- Before the experiential activity.
- During a lengthy experiential activity at logical intervals.
- In emergency settings when the simulation game goes awry.
- A long time after the experiential activity.

Before a session, facilitators can ask participants to reflect on their previous experiences related to the forthcoming activity to provide a useful baseline (Thiagarajan, 1993). Debriefing before the session would activate participants' existing knowledge and speed up the learning transfer from the real world to the game world. Recently, I started with a method of awareness-raising questions; I asked informative questions between briefing and game execution to increase the level of participants' recognition of the core problem. This seemed to motivate participants to have serious discussions among team members (Nakamura, 2021).

According to Duke (1974, 2014), debriefing between rounds is called (mini-) critique, and it "provides the opportunity to address directly things which have been presented obliquely" (p. 149, p. 137). To facilitate learning through games, participants are required to engage directly in activities of play, assume roles, and commit themselves to decisions. These decisions should receive prompt feedback from the facilitator. Duke (1974, 2014) declares that it is the facilitator's responsibility to correct players' careless mistakes. Addressing unwitting errors early would help to smooth the flow of the game play.

In emergency situations, facilitators should stop the game, release tension, and review the causes (Thiagarajan, 1993). For example, when some misunderstandings develop hostile behavior and appear to go too far, facilitators have to break in before the situation escalates. This is why it is important for the facilitator to observe vigilantly and work hard behind the scenes as an unseen helmsman. Jones (1997) suggests not to wait until trouble develops but to nip it in the bud. He also states the need to watch words and avoid trouble.

Debriefing can be held a long time after the experiential activity. This will be a session to examine the long-term effects of participants' experiences. Evidently, debriefing can be done at any time, but this does not mean that we can skip the main debriefing. Debriefing immediately after a simulation game is the most important part of the gaming session.

Duke and Greenblat (1975) show roughly how much time should be allocated to the final debriefing: between one-fourth and one-third of the whole session. Steinwachs (1992) recommends allocating half of the entire session to the final debriefing. Jones (1995) points out that frequently debriefing is too brief, too dictatorial, too close upon the event, and too routine and unimaginative. To avoid these pitfalls, "the most helpful advice is for the facilitator to consider the options, the timing and the format of the debriefing before running the simulation" (Jones, 1995, p. 124). If we perform gaming simulation in the setting of education or training, we should start from planning the phase of debriefing, that is, taking time for the plan of debriefing in the phase of preparation. Honestly speaking, I have

tended to spend most of preparation time to select and adjust a game and to prepare materials and myself for the session. However, nowadays, I spend a certain period of time for preparing debriefing. Through trials and errors with feedback from participants and colleagues, I would say my debriefing style is evolving.

Duke (1974, 2014) and Thiagarajan (1993) recommend to start debriefing from emotional ventilation. It can be short but very important for calming down and changing the mode of learning. According to Kriz (2010), the purpose of this step is to release tension, calm down, drop a role, and create a distance. It is important to emphasize the mode of learning (Peters et al., 2012). At the beginning of debriefing, the facilitator should help participants move from the position of the player to the position of the co-learner. Crookall (2014) describes that participants disengage from the game and engage with the processing of the experience. Steinwachs (1992) recommends asking participants to bring their game materials to a side table, as it helps them begin to get out of the player's role. I think we can call this part preparation for debriefing. After emotional ventilation, the debriefing phase is separated into a few sections: endogenous review and exogeneous review (Duke, 1974, 2014); description, analysis, and application (Steinwachs, 1992); systematic reflection and analysis, intensification and personalization, and generalization and application (Lederman, 1992); insight sharing, hypothesis generating, reality check, real-world transfer, second thoughts, and what-ifs (Thiagarajan, 1993); and what has happened, examination of the relationship between experiences and reality, what did you learn, what would have happened if. . ., and how do we go on now (Kriz, 2010). Then, we should ask ourselves, "how do I structure the debriefing phase in the session?" "Is there any existing method which I can use in my session?" "Should I design my original debriefing style? How?" Designing an original style of debriefing is probably the best course of action but may not be practical. If I can find preconceived questions in the game manual, the first step is to use them in my session. However, my session would not proceed exactly according to the manual. Hence, I have to reconsider using these questions and decide whether to skip or add them.

Lederman (1992) describes that "learning is accomplished by responding to questions posed by the debriefer and using their experiences and analyses of those experiences as the basis for their answers" (p. 149). She also states that the debriefer "selects the experience on which the debriefing will focus, and provides the mechanisms for reporting out and analyzing and assessing the experience" (p. 150). This means that the facilitator needs to carefully observe what happens during the game play. However, not everything can be observed. The facilitator decides what to monitor with great attention, based on the purpose of the session. Then, the facilitator selects things to be focused on during the game play and debriefing. Jones (1993, p. 20) states that the content of debriefing should be considered in advance because the content is likely to influence what the facilitator will look for during the event itself. At the same time, he recommends being imaginative to ask additional questions since preconceived questions are no substitute for the facilitator's own experiences of running the same event. The facilitator and participants only experience the event together; there must be a special one-time-only event for both.

Preconceived questions focus on what happens commonly or generally, but they cannot cover uncommon or one-time-only events. If such an event would provide an opportunity for learning, the facilitator should pose questions to analyze the event.

If a facilitator's manual shows a list of questions for debriefing, we can utilize it like ready-made clothes, since it would be convenient, helpful, and reliable. We can begin by copying and adjusting it as appropriate. If we think the list does not fit our own situation, then we can create our own list of questions, like tailor-made clothes. We can also utilize a common flow in the literature, starting from concrete experiences during the game, generalizing them, and applying them to real-world behaviors. Keeping in mind the common flow, we can create a list of basic questions before the session and arrange it during the session.

A recent study by Tosterud et al. (2020) compared two different structures for debriefing. One structure was from Steinwachs (1992), and the other was from the critical response process (CRP; Lerman, 2020). The former is composed of three steps: description, analysis, and application. The latter is composed of four steps: statements of meaning from observers, questions to observers from performers, neutral questions to performers from observers, and permissioned opinions from observers. The CRP was originally a technique to shape constructive dialogues between an artist and a responder. Tosterud et al. (2020) applied the CRP to debriefing in a medical simulation. In their simulation, two students carried out the simulation, while the others acted as responders/observers in a setting of simulation-based training with a scenario such as anaphylactic shock. The results showed no significant difference between the two structures in terms of the level of participants' debriefing experience scale, such as learning and making connections. The main difference was whether the facilitator takes leadership or the facilitator gives leadership to the participants. As a result, Tosterud et al. (2020) recommends the employment of the CRP in the debriefing of medical simulations as it reduces the facilitator's dominance and promotes collaborative, active, and learner-centered learning. Although a medical simulation-based training differs from the so-called gaming simulation, we can learn how to apply a new technique to debriefing. The most important thing is the balance between two perspectives: what the participants want to learn and what the teachers want them to learn.

8.7 The Ethics of Debriefing

At the beginning of my facilitation career, my main concern had been to find a good game, learn how to run it, and prepare for the required materials. It is likely that some years of experience is needed to fully understand the real importance of debriefing. I feel empathy for those who have difficulty conducting debriefing. Nowadays, I put more weight on debriefing but still struggle with how to carry it out. I set aside an adequate time slot for debriefing. My basic style of debriefing is to ask questions in the form of a questionnaire, making small groups share opinions within the group, and assigning report writing as homework. For the content of questions for

debriefing, I seek help from many existing examples of questions such as those of Steinwachs (1992), among others. If I can get hold of a facilitator's manual, it can serve a good start to contemplate about questions. As Jones (1993, p. 20) states, using a preconceived list has the advantage that participants can see the links between the results and the objectives clearly.

8.7.1 Thoughts on the Ethics of Debriefing

Stewart (1992) offers guidelines to help debriefers (facilitators) analyze ethical issues in debriefing sessions. One such guideline is that it is unethical to conduct an experience-based activity without providing adequate debriefing. This receives total support from Crookall (2014): Running simulation/games without debriefing participants fully is unethical. However, how can we conduct debriefing fully and appropriately? As De Wijse-Van Heeswijk (2021) describes, a facilitator must prepare what he or she thinks is necessary and achievable given the situation, and there are no direct answers to how a facilitator can behave as ethically as possible. A facilitator can only take it seriously and carefully.

Another example of Stewart's guidelines is that debriefers are responsible for creating a supportive atmosphere for knowledge seeking and a shared sense of community characterized by concern, responsibility, and respect. This issue is confirmed by Kriz (2012): The facilitator has to take care of the well-being and safety of participants and create a trusting and open atmosphere among participants. Kriz (2012) suggests placing a so-called contract (a verbal or written agreement) with participants that they will interact with each other to optimally support learning.

Stewart (1992) also proposes that debriefers should match their debriefing style to the goals of the experience. One example is that the debriefer would be an expert who knows the correct answer when a particular set of procedures or practices are taught. Another example is that the debriefer would be a co-learner who encourages participants to step into a new realm collaboratively when they explore an unknown realm. We better keep in mind that the debriefing style employed will change depending on the goals of the gaming session. For example, in the field of simulation-based healthcare education, participants learn a particular set of procedures, such as emergency first aid treatment. The goal of the session is to learn the right procedure and learn how to avoid making mistakes. Debriefing needs to ensure that all participants understand what is right and what is wrong and be able to perform the right action at the right time.

One more advice from Stewart (1992) is related to readiness or tolerance of facilitators: debriefers should guide the pace and the depth of the debriefing to minimize discomfort whenever possible, because debriefing sometimes may be an uncomfortable activity for participants. As in game play, it is a facilitator's role to observe the level of abstractness, the level of difficulty, the level of discomfort, etc. and do whatever necessary as flexibly as possible. Suppose a participant comments a very specific incident during the play and some members have no clue what he or she

is referring to. Then, a facilitator would act to draw out a supplemental explanation by asking the person or someone else to provide more information.

8.7.2 How Can Facilitators Be Trained?

How can we develop ourselves as facilitators? Kato (2010) mentions, "facilitation is always and only in action" (p. 703). According to him, facilitators cannot evaluate and learn their practice as facilitators unless they have the capacity to recollect and reexamine the process of their own facilitation. I understand his suggestion, as facilitation itself needs experiential learning—that is, reflection (debriefing) activates learning. In other words, facilitators particularly need to be aware of the learning cycle: They need to accumulate experiences of facilitation, reflect and analyze experiences from various perspectives, generalize and personalize the style of facilitation, and apply it in the next session. Fortunately, we can obtain helpful advice and suggestions on how to develop ourselves as facilitators from books and colleagues. Unfortunately, these advice and suggestions often seem contradictory and confusing because the situation at play differs, case by case. Therefore, facilitators need to sort out the information and compare them to their own experiences so that they can feel confident about what they do. Feedback from the participants during and after the gaming session can be very useful in modifying the style of facilitation employed. Experiential learning makes facilitators more flexible and well prepared.

To train ourselves, it would be helpful to learn from the different methods proposed in the field of healthcare. For example, Rudolph et al. (2013) show how to improve the questions asked during debriefing. They conducted a retrospective analysis of a case of difficult debriefing. This involved a 15-min simulation on managing hemorrhagic shock. In the study, the instructor recalled the conversation she had with the learners during debriefing and wrote them down in two columns: "What I thought and felt but did not say" in the left column and "What I and the learners actually said" in the right column. Then, a peer group of faculty members analyzed the descriptions and provided step-by-step feedback: desired results, actual results, actual frames, desired frames, and desired actions. This step-by-step feedback helped the instructor solve her difficulties in debriefing. The method of retrospective analysis is good in that the session itself is finished some time before the analysis and the analysis does not affect the session; furthermore, the facilitator can choose the best case for analysis. The drawback is the difficulty of finding a peer group of faculty members. When a faculty member is not available, we should perform such analysis ourselves. In the area of healthcare simulation programs, there is a basic medical procedure to be learned that learners experience in a simulated setting, and they are expected to conduct it successfully in the real-world setting. Retrospective analysis is one way to develop facilitators' skills, although we cannot apply this method directly to game facilitators in general.

Another example has been given by Der Sahakian et al. (2015), who propose six recommendations for productive debriefing in simulation-based healthcare education. In the field of healthcare, they have a checklist called the DASH or the "Debriefing Assessment for Simulation in Healthcare" (Center for Medical Simulation, n.d.). It is a self-assessment tool that is used to gauge how well an instructor performs during the simulation-based exercise. Again, we cannot directly apply their method, but we can think about a way to support facilitators in the field of gaming simulation in general.

Hammel (1986) provides a debriefing guide for a leader of outdoor experience as (a) setting aside enough time to reflect on their experiences, (b) asking the right questions, (c) planning appropriate activities that will help participants reflect on their experiences, (d) listening to the participants carefully, and (e) supporting each participant's unique learning. We can simply ask these five items to ourselves whether (a) time was enough, (b) questions were right, (c) style was appropriate, (d) the participants were carefully listened to, and (e) each participant's unique learning was supported.

8.7.3 Recommendations for Facilitators

Van Laere et al. (2021) point out that it is very hard to find "how to apply each facilitation skill," "how to apply several of them in combination," and "detailed empirical accounts of how facilitation actually is performed" (p. 348). Why is this so? This is because they are never the same. Debriefing should be conducted differently for different types of participants (Lederman, 1992). Facilitators must be open to their own learning (Stewart, 1992). Fortunately, we can accelerate our learning cycle: reflect our own styles (retrospective analysis), be flexible and careful, enjoy new experiences, and continue experiential learning.

- Let us use existing methods effectively.
- Let us look for an appropriate method for our own facilitation.
- Let us consider how to apply general advice to our own facilitation.
- Let us reread basic books to rediscover the deep meaning of the advice.
- Let us join ISAGA or local associations and attend gaming sessions.
- Let us share what we got with each other to accelerate our learning cycle.

Acknowledgments This work was supported by JSPS KAKENHI Grant Number 18K03014.

References

Arai, K., Deguchi, H., Kaneda, T., Kato, F., & Nakamura, M. (1998). *Gaming simulation (In Japanese)*. Nikkagiren.

Center for Medical Simulation (n.d.). *Debriefing assessment for simulation in healthcare (DASH)*. Retrieved September 12, 2021, from https://harvardmedsim.org/debriefing-assessment-for-simulation-in-healthcare-dash/

Crookall, D. (2010). Serious games, debriefing, and simulation/gaming as a discipline. *Simulation & Gaming, 41*(6), 898–920. https://doi.org/10.1177/1046878110390784

Crookall, D. (2014). Engaging (in) gameplay and (in) debriefing. *Simulation & Gaming, 45*(4–5), 416–427. https://doi.org/10.1177/1046878114559879

de Wijse-van Heeswijk, M. (2021). Ethics and the simulation facilitator: Taking your professional role seriously. *Simulation & Gaming, 52*(3), 312–332. https://doi.org/10.1177/10468781211015707

Der Sahakian, G., Alinier, G., Savoldelli, G., Oriot, E., Jaffrelot, M., & Lecomte, F. (2015). Setting conditions for productive debriefing. *Simulation & Gaming, 46*(2), 197–208. https://doi.org/10.1177/1046878115576105

Duke, R. D. (1974). *Gaming: The future's language*. Sage.

Duke, R. D. (2014). *Gaming: The future's language (reprint)*. W. Bertelsmann Verlag.

Duke, R. D., & Geurts, J. L. A. (2004). *Policy games for strategic management*. Dutch University Press.

Duke, R. D., & Greenblat, C. S. (1975). Running games: A guide for game operators. In C. S. Greenblat & R. D. Duke (Eds.), *Gaming–simulation: Rationale, design, and applications* (pp. 196–208). Sage.

Greenblat, C. S. (1988). *Designing games and simulations*. Sage.

Hammel, H. (1986). How to design a debriefing session. *Journal of Experimental Education, 9*(3), 20–25. Retrieved from http://www.highrocks.com/staff/zone/design_debrief_session.pdf

Hijmans, E., Peters, V., van de Westelaken, M., Heldens, J., & van Gils, A. (2009). Encounters of a safe environment in simulation games. In E. Bagdonas & I. Patasiene (Eds.), *Games: Virtual worlds and reality. Selected papers of ISAGA 2008*. Kaunas University of Technology. Retrieved from https://www.researchgate.net/publication/254877926

Jansen, R. J. G., & van Zelst, M. (2021). The multiple facilitator: Scientists, sages and rascals. *Simulation & Gaming, 52*(3), 273–289. https://doi.org/10.1177/1046878121989376

Jones, K. (1993). *Imaginative events for training: A trainer's sourcebook of games, simulations, and role-playing exercises*. McGraw-Hill, Inc.

Jones, K. (1995). *Simulations: A handbook for teachers and trainers* (3rd ed.). Kogan Page.

Jones, K. (1997). *Games and simulations made easy: Practical tips to improve learning through gaming*. Kogan Page.

Jones, K. (1998). What are we talking about? *Simulation & Gaming, 29*(3), 314–320. https://doi.org/10.1177/1046878198293006

Kato, F. (2010). How we think and talk about facilitation. *Simulation & Gaming, 41*(5), 694–704. https://doi.org/10.1177/1046878109334010

Kortmann, R., & Peters, V. (2017). Demystifying the unseen helmsman: Towards a competency model for game facilitators. Internal report TU Delft/Samenspraak Advies. https://doi.org/10.4233/uuid:d6f58b7e-ac7d-4d72-b32d-67600dce1217

Kortmann, R., & Peters, V. (2021). Becoming the unseen helmsman: Game facilitator competencies for novice, experienced, and non-game facilitators. *Simulation & Gaming, 52*(3), 255–272. https://doi.org/10.1177/10468781211020792

Kriz, W. C. (2010). A systemic-constructivist approach to the facilitation and debriefing of simulations and games. *Simulation & Gaming, 41*(5), 663–680. https://doi.org/10.1177/1046878108319867

Kriz, W. C. (2012). Gaming simulation and ethics: Reflection on interconnections and implications. *Studies in Simulation and Gaming, 22*(Special), 65–68. https://doi.org/10.32165/jasag.22.SPECIAL_65

Lederman, L. C. (1992). Debriefing: Toward a systematic assessment of theory and practice. *Simulation & Gaming, 23*(2), 145–160. https://doi.org/10.1177/1046878192232003

Leigh, E., Likhacheva, E., Tipton, E., de Wijse-van Heeswijk, M., & Zürn, V. (2021). Why facilitation? *Simulation & Gaming, 52*(3), 247–254. https://doi.org/10.1177/10468781211016914

Leigh, E., & Spindler, L. (1998). Vigilant observer: A role for facilitators of games/simulations. In J. L. A. Geurts, C. Joldersma, & E. Roelofs (Eds.), *Gaming/simulation for policy development and organizational change* (pp. 389–398). Tilburg University Press.

Leigh, E., & Spindler, L. (2004). Researching congruency in facilitation styles. In W. C. Kriz & T. Eberle (Eds.), *Bridging the gap: Transforming knowledge into action through gaming & simulation* (pp. 309–317). SAGSAGA.

Lerman, L. (2020) *Liz Lerman's critical response process: The basics*. Retrieved September 12, 2021, from https://lizlerman.com/wp-content/uploads/2020/04/Critical-Response-Process-in-Brief_CRP-one-pager_updated-2020_03_24.pdf

Nakamura, M. (1992). ISAGA'91: An unforgettable experience. *Simulation & Gaming, 23*(2), 215–218. https://doi.org/10.1177/1046878192232009

Nakamura, M. (2019a). Influence of room condition on participants in simulation and gaming activities: Analyses of debriefing forms. *Simulation & Gaming, 50*(5), 645–661. https://doi.org/10.1177/1046878119873029

Nakamura, M. (2019b). Physical and mental environments for simulation and gaming: The facilitator's role as a designer of environments. In R. Hamada, S. Soranastaporn, H. Kanegae, P. Dumrongrojwatthana, S. Chaisanit, P. Rizzi, & V. Dumblekar (Eds.), *Neo-simulation and gaming toward active learning* (pp. 443–452). Springer.

Nakamura, M. (2021, September 6–10). *Unpacking and disclosing the reasoning behind "a structured instruction improves team performance"* [Technical session]. ISAGA 2021: 52th conference, Indore, India.

Peters, V., van de Westelaken, M., & Bruining, J. (2012). Simulation games as a safe environment: What can game designers and facilitators do to guard the psychological security of participants? *Studies in Simulation and Gaming, 22*(Special), 59–64. https://doi.org/10.32165/jasag.22.SPECIAL_59

Peters, V., Vissers, G., & van der Meer, F. (1998). Debriefing depends on purpose. In J. L. A. Geurts, C. Joldersma, & E. Roelofs (Eds.), *Gaming/simulation for policy development and organizational change* (pp. 399–404). Tilburg University Press.

Petranek, C. F., Corey, S., & Black, R. (1992). Three levels of learning in simulations: Participating, debriefing, and journal writing. *Simulation & Gaming, 23*(3), 215–218. https://doi.org/10.1177/1046878192232005

Rudolph, J. W., Foldy, E. G., Robinson, T., Kendall, S., Taylor, S. S., & Simon, R. (2013). Helping without harming: The instructor's feedback dilemma in debriefing—A case study. *Simulation in Healthcare, 8*(5), 304–316. https://doi.org/10.1097/SIH.0b013e318294854e

Rudolph, J. W., Raemer, D. B., & Simon, R. (2014). Establishing a safe container for learning in simulation: The role of the presimulation briefing. *Simulation in Healthcare, 9*(6), 339–349. https://doi.org/10.1097/SIH.0000000000000047

Schwägele, S. (2014). Gaming—An environment for learning and transfer: A new perspective on the transfer of learning by using simulation games. In R. D. Duke & W. C. Kriz (Eds.), *Back to the future of gaming* (pp. 242–255). W. Bertelsmann Verlag.

Schwägele, S., Zürn, B., Lukosch, H. K., & Freese, M. (2021). Design of an impulse-debriefing-spiral for simulation game facilitation. *Simulation & Gaming, 52*(3), 364–385. https://doi.org/10.1177/10468781211006752

Steinwachs, B. (1992). How to facilitate a debriefing. *Simulation & Gaming, 23*(2), 186–195. https://doi.org/10.1177/1046878192232006

Stewart, L. P. (1992). Ethical issues in postexperimental and postexperiential debriefing. *Simulation & Gaming, 23*(2), 196–211. https://doi.org/10.1177/1046878192232007

Thiagarajan, S. (1993). How to maximize transfer from simulation games through systematic debriefing. In F. Percival, S. Lodge, & D. Saunders (Eds.), *The simulation and gaming yearbook 1993* (pp. 47–52). Kogan Page.

Thiagarajan, S. (2021, September 6–10) *Secrets of effective and engaging games and simulations* [Keynote address]. ISAGA 2021: 52th conference, Indore, India.

Thiagarajan, S., & Parker, G. (1999). *Teamwork and teamplay: Games and activities for building and training teams*. Jossey-Bass/Pfeiffer.

Tipton, E., Leigh, E., Kriz, W. C., & Crookall, D. (2015, July 17–21). *Debriefing: The real learning begins when the game stops* [Special session]. ISAGA/JASAG 2015, Kyoto, Japan.

Tosterud, R., Kjølberg, K., Kongshaug, A. V., & Haugom, J. V. (2020). Exploration of two different structures for debriefing in simulation: The influence of the structure on the facilitator role. *Simulation & Gaming, 51*(2), 243–257. https://doi.org/10.1177/1046878120903467

van Laere, J., Lindblom, J., & de Wijse-van Heeswijk, M. (2021). Complexifying facilitation by immersing in lived experiences of on-the-fly facilitation. *Simulation & Gaming, 52*(3), 346–363. https://doi.org/10.1177/10468781211006751

Wenzler, I., & Deenen, R. (2018, July 9–13). *The 10 commandments of effective game facilitation: A practitioner's view* [Keynote session]. ISAGA 2018: 49th conference, Nakorn Pathom, Thailand.

Chapter 9
Ethics and Simulation Games in a Cultural Context: Why Should We Bother? And What Can We Learn?

Marieke de Wijse-van Heeswijk and Elyssebeth Leigh

Abstract Ethics is a challenging subject, especially when applied to the already social complex reality of simulation games (SGs). In this chapter we explain the factors involved and provide suggestions on how to deal with the challenges that arise. Our aim is to create learning opportunities for both participants and facilitators. Ethical challenges in SGs stem from two main sources; the first is the context of the SG and its participants as they start interacting in the gameplay, and the second is within the SG itself. In this chapter we take you on a journey to provide insights into the kinds of challenges you may encounter and how they can enable you as designer and facilitator to optimize learning both within and beyond the SG. Because SGs as tools are adding much of their value by connecting to specific (ethical) issues relevant for learners, it is important for facilitators to understand how these may become problematic as a SG proceeds.

Keywords Simulation game · Game design · Facilitation · Debriefing · Types of simulation games · Gamification · Serious games · Culture · Game-based learning · Ethics

9.1 Introduction: Why Should We Bother?

Elyssebeth Leigh, as second author of this book chapter, states that "any kind of educational activity is inherently manipulative"; it is clear that learners in simulation games (further abbreviated with SG) depend on both the ethical and cultural awareness and skills of facilitators who select the activity and can manipulate events. Designers can create a simulation game to inform or teach participants about almost

M. de Wijse-van Heeswijk (✉)
Business Administration, Section Intervention Methodology, Radboud University, Nijmegen, The Netherlands
e-mail: Marieke.dewijse-vanheeswijk@ru.nl

E. Leigh
Faculty of Engineering and IT, University of Technology Sydney, Sydney, NSW, Australia

T. Kikkawa et al. (eds.), *Gaming as a Cultural Commons*, Translational Systems Sciences 28, https://doi.org/10.1007/978-981-19-0348-9_9

anything. Games can be abused for propaganda reasons (keynote Dr. Kriz, ISAGA Indore conference 2021) to display hidden messages based on the values of the designers and facilitators. And with such power comes a responsibility to design and facilitate with the right intentions for the right reasons and at the right time. Questions concerned with ethical design and facilitation in cultural contexts include.

- How do we know that, when we are facilitating and designing, we are addressing the right issues in specific cultural contexts?
- What might lead us to go astray from this good intention?
- Since all simulation is—in some way—a 'manipulation' of conditions why would we do such a thing anyway?

Cultural ethical issues in SGs have two main sources, first the SG itself and secondly the participants and their specific context at a moment in time. We begin with the SG itself as a source of ethical issues because as facilitators and designers we can influence learning simply by our choice of activity as well as in the ways we choose to use it. The second source of ethical issues is the participants who may challenge or feel challenged by the activity. As designers and facilitators, we need to be alert to deal with and adapt to these challenges. These context- and participant-specific characteristics can provide amazing learning opportunities for participants and facilitators and also create ongoing challenges. The learning opportunities thus created require identifying and raising relevant learning issues to fit the learning challenges for specific groups of participants. Connecting experiences in a simulated activity to their beliefs and personal schema while paying attention to (cultural) differences is essential in facilitation SGs.

9.1.1 Added Value of SGs in Ethical Education

Before we explore in depth the two main sources of ethical challenges in SGs, we need to establish why educators would use SGs at all. The added value of SGs is a long recognized and proven issue (Bogost, 2010; Hays, 2005; Hofstede et al., 2010; Klabbers, 2009; Kriz & Auchter, 2016; Ravyse et al., 2017; Schaefer et al., 2011; Stoppelenburg et al., 2012). SGs move educators and learners beyond passive ingestion of information. By coupling thinking and doing, SGs move challenges from simply theorizing how certain things might work (De Caluwé, 2001). Learning in action and reflecting on actions is an important component of learning in SGs (Alklind Taylor, 2014; Kolb & Kolb, 2009). Opportunities include finding your own learning path through a SG, making use of scaffolding, experiencing agency, and receiving personalized feedback and motivation for learning. All these are important components adding to the learning process (Bandura, 1989; Bedwell et al., 2012; Deen, 2015; Plass et al., 2011; Squire, 2008; Streicher & Smeddinck, 2016; Tieben, 2015; Watt & Smith, 2021) also in an ethical sense because they are intended to connect to the learnings instead of imposing norms and others think are valuable and point toward creating a learning environment within a SG that connects the

experience and to what is meaningful and relevant to the participant (Harteveld, 2011; Leigh & Spindler, 2005; Spindler & Leigh, 2003). With this in mind, we proceed this chapter with a basic categorization of SGs and comment on how these different types of SGs influence the learning taking place within them.

9.2 Specific Types of SGs and Their Related Challenges

Rule-based and open SGs can be placed on a continuum. In rule-based SGs, actions of participants are based on rules; often these formats have preset roles, organization structures, and procedural workflows and sometimes contain black box feedback and scoring calculation mechanics. If the structure of the SG also contains task divisions both in a functional and in a hierarchical sense, the interdependencies can create a lack of overview and generate extensive experienced complexity (Achterbergh & Vriens, 2010; De Wijse-van Heeswijk, 2021; Sitter, 1981), which may or may not resemble participants' reality. Depending on the learning goals for the participants, a rule-based SG may mirror the dynamics of the real organization. However, a rule-based structure that contains many rules and interdependencies might also impede the learning because experimentation is restricted by the rules, participants receive less personalized feedback, and they may also lack overview of the larger process and therefore be unaware of how their personal actions contribute to, or impede, the organization's survival (De Wijse-van Heeswijk, 2021). Since similar contributions and blind spots may be occurring in real bureaucratic (rule based) organizations, this raises opportunities for the facilitator to discuss the implications of rules and restrictions in SGs both in the debriefing and during subsequent reflections (M. De Wijse-van Heeswijk, 2022).

Open SGs have as few overt rules as possible. Sometimes there may only be a start and a stop rule available (Christopher & Smith, 1990; De Wijse-van Heeswijk, 2021; Klabbers, 2009; Leigh & Spindler, 2004). Players usually begin to play based on a starting scenario introduced by the facilitator. Any player can stop the game at any time (this is the stop rule) when he or she feels unsafe in the learning process or feels any need to stop the process. Due to the fact the players are most unrestricted in their actions and they can receive adaptive feedback from other players as well as the facilitator, the chances are that they will learn more (Hattie & Timperley, 2007; Jankowicz, 1973; Kickmeier-Rust & Albert, 2010). The downside of this type of SG is that the learning outcomes are strongly dependent on the quality and skill of both players and facilitator. The facilitator can perform an array of interventions to increase learning safety (De Wijse-van Heeswijk, 2021). This type of open SG can also evoke specific ethical challenges because the openness means that anything can happen in the SG and unexpected events can occur because of the high amount of autonomy and hence unpredictability. Personal schemata may be triggered by the gameplay (Bekebrede et al., 2015; Klabbers, 2000; Lukosch et al., 2018; Van Laere, 2005), and personal projections and trauma might possibly be surfaced in the gameplay.

Rule-based and open SGs can be placed on a continuum that will include any type of SG whether it is a digital or analogue SG. Naturally specific characteristics of a design may trigger ethical challenges. In a recent publication (special issue facilitation, *Simulation & Gaming* journal), de Wijse-van Heeswijk (2021) explains how it is possible for certain types of rule-based games to trigger even more ethical challenge because they trigger participants into (or out of) certain behaviour. It is important as facilitators to make a distinction between behaviour that is caused by the rules in the SG and behaviour that is natural to the players and therefore stems from their own personal and cultural assumptions. Sometimes it is hard to make this distinction because the two are interwoven. So it remains constantly important to explore with participants what dynamics may have been caused by the SG and what caused by interactions with the game design concepts, as well as identifying with participants how this relates to their reality. The following paragraphs add insight in how (social) systems and organizational theory contribute to how to discern influence from the type of SG and its (facilitation) design and the values and (cultural) norms of the participants.

9.3 The Role of (Social) Systems and Organizational Theory in Understanding Learning in SG

(Social) systems theory and organizational theory can aid facilitators and participants in their understanding of what is happening in SGs. In an interpretation of Luhmann's thoughts, Achterbergh and Vriens (2019) explained how structures are based on expectancies of their social actors, and how those expectancies are in turn 'fed' by their schemata filled with cultural assumptions. Tsoukas and Chia (2002) and Orlikowski (1996) further developed this notion and conducted research on how learning in organizations really takes place and concluded it is an ever-changing system and not a steady state. Although the authors also recognize the stability pressures from the expectancies of the organizations, they note that inhabitants also create a certain force for maintaining the status quo which can help to explain why it is so challenging to engage in organizational change.

Von Foersters' theory on 'eigen behaviour' (Achterbergh & Vriens, 2010; Von Foerster, 1984) can aid participants and facilitators in understanding the complexity and often unique outcomes and behaviour of the SGs they engage in. The unique characteristics of participants in assuming their roles together with the actions of the facilitator, as they make decisions and perform actions, recreate unique behaviours that Von Foerster names 'eigen behaviour'. Understanding this observation is important for anyone engaging in SGs because we need to be able to discern the difference between 'normal/routine' behaviour and what is behaviour caused by the structure of the particular SG. For example, if a rule-based game contains restrictive rules (or structural elements) inhibiting participants' ability to oversee the larger scenario, it is hard for them to develop insight into how they can add value to the

organization as a whole. The Beer Game developed by Jay Forrester (Goodarzi et al., 2017; Turner et al., 2020) is a good example of a simulation that generates the 'bull whip effect' among participants regardless of who they are. This effect is a systems phenomenon that shows how delayed responses occur in a system and shows that it takes a long time before even a simple chain of actors will begin behaving in a stable pattern. A facilitator needs to know how this behaviour occurs and how this may relate to players' actions in real time, when they engage in similar systems. Eigen behaviour in the Beer Game can consist—for example—in participants requesting the facilitator to provide extra information or deliberation round. This is not standard to the game and can be unique to the (cultural) assumptions of the players.

Next we turn to consideration of how concepts such as distance and scope (De Wijse-van Heeswijk, 2021) can further explain the kinds of ethical challenges that may arise and how facilitators and designers can deal with these.

9.3.1 Distance

In our work 'distance' in a SG refers to the space participants experience as existing between their perception of what is normal or recognizable work and what they are doing in a simulation. For example, consider a person who is an administrator by profession and is required by a game to make puzzles which are claimed to represent administrative processes. They may feel 'distant' because they dislike puzzles, preferring tidy logical working processes, and avoid taking risks, which are required by puzzling which involves applying a trial-and-error approach. For this administrator the tasks in the SG have a high distance because they are unable to recognize the puzzles as relevant to their work. In addition, they may hate puzzles because they personally can find no meaning in them. In addition, they may dislike apply trial-and-error learning strategies. This makes the distance for such a person high on three points: (1) game tasks are unrelated to real work processes (although the puzzles are meant as metaphor by the designer), (2) the learning process is not compatible with the participant's learning, and (3) the entire process seems unrelated to the work processes the participant perceives to be meaningful. We have encountered numerous such examples, where the point is that the 'distance' experienced by the players is a key determinant for their motivation to engage in and be motivated to learn from a SG. This distance as experienced may also impede learning from the SG, when the game processes are not perceived to be relevant and meaningful, this impedes immersion and active engagement in the SG as a learning strategy. For another person, playing exactly the same SG, the 'distance' experienced could be low, as this person perceives the puzzles in their intended role as metaphorical representations of the delaying processes inhibiting cooperation. Facilitators have a role in influencing this experience of 'distance' by preparing participants for the learning process of specific SGs. For instance, they can explain the meaning behind the abstraction of certain processes and affirm that trail-and-error strategies can provide for

personalized feedback, enabling deeper learning to happen in contrast to passive ingestion strategies.

9.3.2 Scope

The scope of a SG relates to the autonomy of participants, including how much space they have in terms of (no) restricting factors in the form of rules/functions/limited resources in the SG. Making a choice as designer or selector of SGs on how much autonomy is allowed to players directly influences the amount of learning opportunities a player may encounter in gameplay. For example, in a rule-based SG where scope is narrow, a facilitator might have to work harder to provide sufficient personalized feedback so participants know what actions produced which results and how to learn from the SGs. If the learning goal is to experience how limited autonomy affects motivation, agency, and immersion/flow (Csikszentmihalyi, 1997; Deen, 2015), then a facilitator/designer can specifically choose for limited scope. When reviewing conditions that aid learning in SGs, scope should be seen to be sufficient for participants to experiment and scaffold (Bedwell et al., 2012; K. De Wijse-van Heeswijk, 2022; Watt & Smith, 2021). However, if scope is very wide, a participant may feel lost in the SG because of the array of options, and the experience may also lose meaning because participants feel unattached to the situation recreated in the SGs when it is unrelated to their working conditions. This also may trigger ethical challenges, because feeling lost and impeded from learning can evoke strong and frustrating emotions. The following section provides further explanation on the phenomenon of the 'valley of despair' as a phase that can trigger learning in SGs.

9.4 The Valley of Despair in Relation to Ethical Challenges

The valley of despair is a well-known phenomenon in SG literature (De Wijse-van Heeswijk, 2021; Wenzler & Chartier, 1999) and refers to the period that often occurs in SGs in which participants temporarily feel lost and frustrated. Such discomfort can both inhibit or generate grounds for learning. Going through the valley of despair by experimenting with new behaviour can aid participants to develop new, more adequate adaptive repertoires of response to challenges from their environment. However, it remains true that a facilitator should not 'aid' the participants too much; as Bion states "the answer is the death of the question" (1984), and participants are better served when they find their own ways to perform effectively in the SG. Then the probability increases that they will take feedback they receive more seriously and learn more. The connection between strong emotions and learning is proven to be an effective method for (transformative) learning (Sessa et al., 2011; Tosey, 2006). However, since emotions cause frustration, this can evoke ethical challenges too (Jones, 1998a, b; Kato, 2010; Plass & Kalyuga, 2019). The question

is how participants perceive the valley of despair. If they are prepared by a facilitator, this may happen during the gameplay, and this is often a sign of deep learning; they may deal with the phenomenon with more resilience than when they do not recognize what is happening to them. There are different ways a facilitator can aid the learning processes in the valley of despair; providing reflection from within the role a participant fulfils in the SG aids in reducing the 'distance' from the gameplay and assists in finding new perspectives on how to achieve learning goals.

Also, different people may respond differently to the challenges within the valley of despair. Some research delivered the insight that people with a multicultural background have a higher adaptivity toward changing challenges which is also present in SGs and they are better equipped for dealing with learning from experience (De Wijse-van Heeswijk, PhD research). However, in various cultures different conceptualizations on how learning occurs exist and may influence how participants perceive learning in the SG. For example in some cultures learning is perceived as a passive activity; in another cultures learning does not allow for experimentation and making mistakes. Facilitators should pay attention to how learning in SGs should be perceived, that it involves active participation, experimentation and that making mistakes is an essential part of the learning. We provide more perspective and handholds for that in the paragraph on ethical challenges from culture on a personal, group, organization, and country level.

9.5 Ethical Challenges from Culture on a Personal, Group, Organization and Country Level

Specific group and personal characteristics may have extensive influence on learning in a SG. Some of these are listed in Table 9.1 (below) along with suggested opportunities for enabling learning (safely). The word 'safely' is placed inside the brackets because we mean to address both learning and safety, since they are interrelated. When learners feel safe, they learn more and better than when they feel unsafe because then they are more open to feedback, experimentation and sharing of experiences. Experienced safety is always relative to the specific participant involved. Potentially learners can feel a bit anxious or unsure at times in the simulation game. Simulation games are never totally safe (Carrera et al., 2016). The safe transfer of the learnings is the most crucial bit, so participants can leave the SG with a safe feeling and valuable learnings. In addition to educational SGs, also policy games are used for instance to test changes in the organization's structure. It may be possible by playing a game of this type the consequences are certain jobs have become obsolete. If participants have not been informed beforehand on what the implications could be, this could lead to a highly unethical situation. Participants then should be informed of the potential consequences and unpredictable outcomes of the policy game and should be asked if they agree to voluntarily participate under these conditions. Although we mainly focus on the educational perspective of SGs in this chapter, it is certainly worth thinking through the consequences of possible

Table 9.1 Ethical challenges and learning opportunities

Ethical challenges from cultural aspects	Related literature	Opportunities for enabling learning (safety)
The amount of experience with learning in SGs: game literacy and systems competence If participants are familiar with learning in game simulations, they may have developed 'game literacy', meaning they have skills to respond adaptively and adequately to learning challenges in an ever-changing game (Abt, 1987; Buckingham & Burn, 2007; McGonigal, 2011; Squire, 2008)	Kriz published an article in German on systems competence (Kriz, 2011) about how individuals can develop system insights and adaptive skills to respond to quickly changing circumstances. Prof Geurts also talked about this systems competence skills in his farewell speech (Geurts, 2015) and stressed the importance of these skills to human survival. In this age of complexity and rapidly changing circumstances, information is renewed frequently, and information quickly becomes outdated	1. Ask participants if they are familiar with learning from SGs; if not prepare them for learning in SGs (e.g. show how learning from mistakes is an effective way of learning especially in low-cost environments such as a SG) 2. Explain how making mistakes is vital to acquiring new knowledge and games in education are learning opportunities not assessments 3. Make agreements on what safe learning is, how feedback should be provided, and what is needed from everyone to have a safe as possible learning environment
The amount of experience with interactive learning in general In many cultures it is not common practice to interact with teachers and/or with each other during learning. Learning is these contexts is often operationalized as sitting still, listening, and looking at the teacher without dialogue, interaction, or input from students. If these students are asked to engage in a SG, they must be prepared for what is expected of them and be told about how interactive learning takes place and what value it has	Anderson et al. (2014), Frank and Scharf (2013), Goodman and Beenen (2008), Hofstede (2009), Laycock and Stephenson (2013), Nakamura (2021)	1. Prepare participants with a smaller exercise to demonstrate and have them experience how learning from experience works 2. Have a trial round, and discuss what behaviour contributed to learning and what behaviour impeded learning 3. Discuss how participants experience the learning, and think together what is needed to get more out of the simulation experience 4. Prepare participants with structured open-ended guided questions on a process level that is reflected upon in a timeout in between game rounds or after a certain time spent in the SG

(continued)

Table 9.1 (continued)

Ethical challenges from cultural aspects	Related literature	Opportunities for enabling learning (safety)
The amount of relevant working experience Novice learners without (much) relevant working experience might have difficulty linking theory to practice. For instance, if a game simulation is implemented in an educational setting where participants don't have (sufficient) working knowledge, it may be difficult for them to attach meaning to challenges they encounter in the SG. This might be even more challenging for some cultures or when working in a multicultural team. For instance, cultures perceive concepts like planning and time quite differently. If it is uncommon in a culture to say 'no' and other players and facilitators don't realize, this conclusion about behaviour may be wrong	Kirschner et al. (2006), Plass et al. (2011), Sweller et al. (2007), Tavella (2018), Van Merrienboer and Sweller (2005)	1. Before the SG discuss the values and behaviours typical for certain cultures and how this might be relevant for learning together in the SG. Use an example from a culture absent from the current situation. Avoid stereotyping; stimulate openness on reflection and interpretation of behaviour 2. Conduct a short teambuilding exercise or 'jolt' before the action to help participants think about cooperation with different personal values and how cultural values might interplay 3. Stimulate learners to reflect on their experiences, and slow down if necessary, for instance, with a timeout reflection using questions directed at the process of cooperation/decision-making and learning so learners make more effective use of the feedback to avoid learnings not being recognized in the rush of the game
Individuality vs. collectivity affirmation of persons In more masculine cultures, a focus on winning might impede learning if there are no game mechanics giving relevant feedback in the learning process. Conversely, omitting winning mechanics in a masculine culture might reduce motivation. More collectivist cultures dealing with winning mechanics on an individual level might impede the learning process since	Hofstede (2009), Teach (1993, 1990)	1. Reflect on the role of the winning mechanic. What does it mean? And what other indicators contribute to learning instead of a winning mechanic. 2. Add expert knowledge, for this—see publications on the role of the winning mechanic and learning outcomes that show teams that perform less well often learn more (see

(continued)

Table 9.1 (continued)

Ethical challenges from cultural aspects	Related literature	Opportunities for enabling learning (safety)
participants may feel uncomfortable being in the spotlight when announced as solo winners while they felt they were part of a group that contributed to the process. In addition, hierarchical layers in some cultures have a strong influence. It is advisable to keep this in mind when inviting participants and making choices about mixing hierarchical layers among roles, because this may influence participants' interactions and feedback		Teach left column), since they experiment more and have to make more decisions and respond to feedback to remain their position. Often a winning team has beginner's luck
The subcultures present within groups and organization Apart from national cultures, there are often different subcultures within generations and within organizations that might help or hinder learning. Subcultures are quickly created via role division in game simulations; be aware that norms and values arise in groups due to the forming, norming, and storming phases that naturally evolve in groups. Physical surroundings and settings can influence learning, for instance, locating one team in a separate room may need to be explained. It is useful to note these influences and ask how realistic they are in the settings where participants work	De Wijse-van Heeswijk (2021), M. De Wijse-van Heeswijk (2022), De Wijse-van Heeswijk et al. (2022), Geurts (2015), Jones (1998a, b), Kato (2010), Roungas et al. (2016)	1. Share knowledge on how values and hidden norms can influence learning on personal level and group levels 2. Provide reflective questions aimed at uncovering hidden values and assumptions, and discuss their role in how it may affect learning 3. Stimulate participants to ask open questions instead of closed questions since closed questions often have hidden assumptions 4. Stimulate participants to ask about ideas and assumptions of participants in the SGs. Provide structured creative reflections for interactions among participants who did not regularly interact in the SG to enable perspective exchanges—see, for example, the *market place method* by Thiagi. For more methods see the chapter on facilitation design by De Wijse in

(continued)

Table 9.1 (continued)

Ethical challenges from cultural aspects	Related literature	Opportunities for enabling learning (safety)
		Angelini et al. in press (November 2021)

outcomes for the people involved and especially the way they were invited to the SGs and what expectancies they had (Peters et al., 2014). The table indicates some of the ethical challenges that can arise from using simulations in a multicultural context and provides a contextualizing perspective on how these can be addressed.

9.6 Case Study Examples from Practice

We the authors of this chapter (Elyssebeth Leigh and Marieke de Wijse) together have over 60 years of worldwide experience in simulation gaming. Since we made an argumentation for developing a feel for ethical challenges in context, we have summarized some interesting examples we have encountered in our practice as both game designers and facilitators.

9.6.1 Inactive Players Due to Cultural Backgrounds

Marieke engaged in a multicultural asynchronous game played with groups from 12 different countries. The game is characterized as largely open because at the beginning it provides only a starting scenario, some role descriptions, and a general assignment. Marieke was one of the facilitators. The groups met one evening a week for four consecutive weeks. The purpose of the game was to develop sensitivity for cultural aspects and to obtain more knowledge on didactics used in school curricula. The participant teams were created with maximum focus on mixing the cultural backgrounds. Part of the assignment was to discuss the implications for different didactic methods used in different countries. Fruitful discussions took place on how teaching was perceived and how differently teachers and learners would interact in different countries.

Another part of the discussion concerned how play is viewed differently in different cultures. In some Arabic cultures, play is seen as unwise, foolish, and even offensive, while in other cultures, play and experiment are very common. In the Dutch culture, for instance, a large part of the population regularly engages in games during their education, and rules are usually perceived as suggestions instead of constraints. During the SG signs emerged that we had three groups of students behaving in very specific ways. One group consisted of highly communicative experimental, critical students who also questioned the SG and the role it had in

their curriculum in a positive critical way. One group gradually became more active and picked up on facilitation interventions aimed at activating their engagement and motivation to contribute. Later they reflected they had felt unsure for a relatively long time on how to behave and contribute to the learning. When they became active, they received more feedback, and they were able to work toward their learning goals. The smallest third group remained inactive, observing that they were unused to active experimentation and engaging in simulation-based interactions. They appeared passive and asserted; they were waiting for clearer instructions and felt 'lost in the fog' during the first 3 weeks. In the final week, their participation in reflective discussions was limited. Research uncovered that these students were from countries without active learning or interaction with teachers which they confirmed. The educational situation in their country does not yet allow active participation; however they were positive about the final result for group as a whole. Evidence indicates that experiencing a successful simulation and observing other students' active behaviour may enable them, in some future time, to engage in active learning; having a successful experience and having observed successful behavior contributes to lowering the threshold in becoming an active learner. Providing more direct and personalized feedback may enable less active learners to become more active.

9.6.2 A Company's Culture Impeding the Learning

In a Dutch consulting group, colleagues usually worked in solitude occasionally cooperating in pairs on projects. Management wanted consultants to employ more SGs in their work. A trial session with Slogan (a well-known management game developed by Richard Duke) was provided to experience the effects of a SG. This game is positioned in the middle of the continuum rule-based open SGs, since the players are given more autonomy gradually during the gameplay. The consultants quickly became very frustrated and even angry with the game and the facilitator and only later realized they were being confronted by their inability to work together. This non-cooperative attitude was found its basis in the company's culture who rewarded independent consultants working on their own. The cooperative skills required in the game were not a quality the company demanded from their employees. The facilitator did not realize the company's culture would become so evident in the SG. Knowing more about the company's culture might have helped identify the frustration earlier and enabled timeout to consider it in relation to the stated SG goals. Participants experienced the gameplay as very confronting because of the extensive feedback from the game and from colleagues. Maybe if they had been better prepared about what was expected of them, they might have recognized the link between the game's cooperative goals and their own.

9.6.3 Case Study: A Group of Dutch Mayors

The group of mayors wanted to experience the work of commercial company directors to see what they could apply to their work as mayors. The activity chosen was a management game based on Stafford Beer's viable systems model (Beer, 1984). The game had a low complexity and limited rules and can be characterized as an open SG. From round one the mayors were confronted by their assumptions because the game quickly and painfully made clear they were not steering on priorities. They wanted to stop playing after just one round announcing that they could not play this game, turning it into a crisis game in the first round because they refused to make decisions. It became apparent that in their daily practice they took decisions based on political processes and personal agendas rather than community priorities. The experience was confronting but helpful for their learning goals. The openness of the SG provided an opportunity to experience the effects of their habit of delaying decisions in a commercial context. The SG setup was highly effective in drawing out cultural assumptions that were both sector related and shared by the mayors—as was confirmed in the debriefing session.

9.6.4 Case Study Rules Clash in a German SG

Hofstede (2009) plotted the Dutch culture as individualistic, participative, tolerant, entrepreneurial, and risk-taking (but not in a financial way). The Netherlands usually has little hierarchy and in SGs rules are there to break. The designer of the activity in this next case did not realize she was (still is) part of this culture. While the German culture can be described as being more collective, with a higher risk uncertainty avoidance.

The activity was a Hex (developed by Richard Duke) session, which is positioned in the middle of the continuum of rule based to open SGs in Germany. Everything was going well, and participants were following the rules; however when it was suggested that they should experiment, they did not wish to do that. They assumed that playing by the rules as provided at the start should be all that was required. It was difficult to persuade them to try different options or accept that this is part of the game. Although they could negotiate rules and have rules evolve as circumstances changed, they did not want to try this. Subsequent reflection with facilitators from a German/Swiss background uncovered the fact that the facilitator could have framed the rules differently by naming them as the starting position rather than rules and could have made the starting position discussable at the beginning to motivate the German players into experimenting and learning from the gameplay. Without experimenting with the rules, the learning outcomes were less than optimal because everything had been done 'as usual' so the outcomes would be 'the usual' without change. The facilitator was unaware of the cultural difference, and the introductions did not provide a guide for participants to move out of their

assumptions and comfort zones which was perhaps too ambitious to achieve in a short SG with a playing time of 3 hours.

Nb. Although the setting of this case was in Germany, we are not generalizing the findings of this specific case study to the whole German culture. Other experienced designers and facilitators have been asked for comment and confirmed that some other case studies in German contexts found similar results regarding strict application of rules. We want to also consider that the theory of Hofstede was established before globalization set in and also new generations may have developed other norms. The results in this case study may potentially be explained due to risk avoidance and hence sticking to the rules. Furthermore, the matter of hierarchical power distance may explain partly why obedience to the game's rules and the facilitator's instructions was taking place.

9.6.5 Social Workers Claiming to Be 'Not Competitive'

A facilitator was invited to lead a simulation game for a group of social workers as part of their professional development. The brief for the session required an activity where participants could generate either cooperation or conflict. 'Unequal resources' was chosen as a team-based activity where each team received the same instructions but different resources and would need to negotiate with others to get essential resources. The action was fast, furious, and highly competitive. When the debriefing began, they claimed the 'game made us do it. We are not competitive'. The facilitator had not been advised about this cultural group identity and felt blindsided by the client who was fully aware of the self-image, but had not shared it, hoping the activity would reveal this aspect of their behaviour to the participants. In the time since then, the ethical issues around the client's withholding of information have been explored repeatedly. Deliberate concealment of an intention to show them how they really are left the facilitator feeling manipulated and uncomfortable about the entire debriefing process which had been conducted in ignorance of the client's hidden agenda. Simulation games should not be used to lay traps for participants, in this case and in this chapter. We explained the type of simulation game that can have influence on the behaviour of the participants. It is up to the participants and the facilitator how they perceive the value and transferability of the action in the simulation game into their reality. This should be an open and free process with an eye on ethical conduct from different perspectives (De Wijse-van Heeswijk, 2021). Biases and heuristics such as backward rationality are part of the process of discussion. Even if a participant might turn the truth a little bit in his or her advantage, the learning to her or him was clear otherwise no positive bias would have been applied. People do not learn more by pushing and pulling; people need freedom to reflect and should be respected in how far they themselves want to go in this process.

These case studies are provided as examples of how cultural issues can raise ethical problems for facilitators and are offered as learning opportunities toward continuing professional skill development.

9.7 Conclusion and Future Research

Being ethical is a verb and action word—and something to be put in action and aim for. Only in retrospect can we determine—using multiple perspectives—whether certain behaviours were ethical or not. In the Nicomachean Ethics (Hughes, 2013), Aristotle explains that a person wanting to be ethical needs to learn in context and reflect on events from different perspectives including working with the stakeholders involved. Being 'absolutely' ethical does not exist. Ethical behaviour is contextually based, and we can only try to do the best we can, given our understanding of specific contexts and conditions. Only afterwards can facilitators evaluate and learn to improve our feel for future situations. Therefore, we provided a variety of contextualized examples in this chapter to share a view into practice and the contingencies of selecting SG designs and using them in the context of participants.

Future research is needed to investigate the impact of the suggested interventions in different contexts, so we can learn together on what works best when. For SG designers and facilitators so far, no ethical guidelines have been established. Authors such as Jones, Kato, Leigh, van Laere and De Wijse-van Heeswijk referenced in this chapter and from the medical sector Rudolph and Dieckmann (Dieckmann, 2020; Dieckmann et al., 2009, 2010; Rudolph et al., 2013, 2014, 2006, 2007) have attempted to shed light on different aspects of ethical conduct in different types of SGs and game settings, and this all contributes to our understanding. However, we owe it to ourselves as SG community to establish formal ethical guidelines like they have in other professions as well but then for SGs specifically because these unique intervention instruments require a customized approach because of their:

- Complexity
- Unpredictability
- Potential high impact on the learning and possibly the wellbeing of its participants and facilitator

The authors can be contacted via the following contact details if you wish to contribute to or enquire about which future steps are or have been taken to further professionalize the ethical approach of designers and facilitators in the field. The authors thank all the learners, facilitators, and organizations they were able to work with in the past and that contributed to the development of the knowledge in this article. We would have been lost without you!

Marieke.dewijse-vanheeswijk@ru.nl
elyssebeth.leigh@icloud.com

References

Abt, C. C. (1987). *Serious games*. University Press of America.

Achterbergh, J., & Vriens, D. J. (2010). *Organizations: Social systems conducting experiments* (2nd rev. ed.). Springer.

Achterbergh, J., & Vriens, D. J. (2019). *Organizational development*. Routledge. https://www.taylorfrancis.com/books/9781315695228

Alklind Taylor, A.-S. (2014). *Facilitation matters: A framework for instructor-led serious gaming*. University of Skövde.

Anderson, G., Boud, D., & Sampson, J. (2014). *Learning contracts: A practical guide*. Routledge.

Bandura, A. (1989). Human agency in social cognitive theory. *American Psychologist, 44*(9), 1175–1184. https://doi.org/10.1037/0003-066x.44.9.1175

Bedwell, W. L., Pavlas, D., Heyne, K., Lazzara, E. H., & Salas, E. (2012). Toward a taxonomy linking game attributes to learning: An empirical study. *Simulation & Gaming, 43*(6), 729–760. https://doi.org/10.1177/1046878112439444

Beer, S. (1984). The viable system model: Its provenance, development, methodology and pathology. *The Journal of the Operational Research Society, 35*(1), 7–25.

Bekebrede, G., Lo, J., & Lukosch, H. (2015). Understanding complexity: The use of simulation games for engineering systems. *Simulation and Gaming, 46*(5), 447–454. https://doi.org/10.1177/1046878115618140

Bion, W. R. (1984). *Learning from experience*. Karnac Books.

Bogost, I. (2010). *Persuasive games: The expressive power of videogames*. MIT Press.

Buckingham, D., & Burn, A. (2007). Game literacy in theory and practice. *Journal of Educational Multimedia and Hypermedia, 16*(3), 323–349.

Carrera, A. M., Naweed, A., Leigh, E., Crea, T., Krynski, B., Heveldt, K., Lyons, M., Knott, C., & Khetia, S. (2016). Constructing safe containers for effective learning: Vignettes of breakdown in psychological safety during simulated scenarios. In *Intersections in simulation and gaming* (pp. 15–29). Springer.

Christopher, E., & Smith, L. (1990). Shaping the content of simulation/games. In *Simulation, gaming, and language learning* (pp. 47–54). Harper & Row.

Csikszentmihalyi, M. (1997). Flow and education. *NAMTA Journal, 22*(2), 2–35.

De Caluwé, L. I. A. (2001). Denken over veranderen in vijf kleuren. In *Facility management handboek*.

De Wijse-van Heeswijk, K. (2022). A design science perspective on formative evaluation in simulation games (release spring).

De Wijse-van Heeswijk, M. (2021). Ethics and the simulation facilitator: Taking your professional role seriously. *Simulation & Gaming, 52*(3), 312–332. https://doi.org/10.1177/10468781211015707

De Wijse-van Heeswijk, M. (2022). Facilitation interventions to increase learning effectiveness in game simulations. *A generic approach of facilitation applicable to a broad variety of simulation games* (release spring).

De Wijse-van Heeswijk, M., Rouwette, E., & van Laere, J. (2022). Comparative case study analysis on effects of facilitation interventions in different types of simulation games an effect study (release spring).

Deen, M. (2015). *GAME games autonomy motivation & education*. Retrieved from Lulu.com

Dieckmann, P. (2020). The unexpected and the non-fitting—Considering the edges of simulation as social practice. *Advances in Simulation (London, England), 5*, 2. https://doi.org/10.1186/s41077-020-0120-y

Dieckmann, P., Lippert, A., Glavin, R., & Rall, M. (2010). When things do not go as expected: Scenario life savers. *Simulation in Healthcare, 5*(4), 219–225. https://doi.org/10.1097/SIH.0b013e3181e77f74

Dieckmann, P., Molin Friis, S., Lippert, A., & Ostergaard, D. (2009). The art and science of debriefing in simulation: Ideal and practice. *Medical Teacher, 31*(7), 287–294.

Frank, T., & Scharf, L. F. (2013). Learning contracts in undergraduate courses: Impacts on student behaviors and academic performance. *Journal of the Scholarship of Teaching and Learning, 13*(4), 36–53.

Geurts, J. (2015). *Over Systemen, Organisaties en Grenzen*. afscheidsrede Universiteit van Tilburg.

Goodarzi, M., Makvandi, P., Saen, R. F., & Sagheb, M. D. (2017). What are causes of cash flow bullwhip effect in centralized and decentralized supply chains? *Applied Mathematical Modelling, 44*, 640–654. https://doi.org/10.1016/j.apm.2017.02.012

Goodman, P. S., & Beenen, G. (2008). Organizational learning contracts and management education. *Academy of Management Learning & Education, 7*(4), 521–534.

Harteveld, C. (2011). *Triadic game design: Balancing reality, meaning and play*. Springer Science & Business Media.

Hattie, J., & Timperley, H. (2007). The power of feedback. *Review of Educational Research, 77*(1), 81–112. https://doi.org/10.3102/003465430298487

Hays, R. T. (2005). The effectiveness of instructional games: A literature review and discussion. *Technical report 2005-004 naval air warfare center Orlando*.

Hofstede, G. J. (2009). Research on cultures: How to use it in training? *European Journal of Cross-Cultural Competence and Management, 1*(1), 14–21.

Hofstede, G. J., De Caluwé, L., & Peters, V. (2010). Why simulation games work-in search of the active substance: A synthesis. *Simulation & Gaming, 41*(6), 824–843.

Hughes, G. J. (2013). *The Routledge guidebook to Aristotle's Nicomachean ethics*. Routledge.

Jankowicz, A. Z. (1973). Feedback for learning in business games. *Simulations and Games, 4*(2), 175–203. https://doi.org/10.1177/104687817300400206

Jones, K. (1998a). Three categories of ethics. *Simulation & Gaming, 29*(3), 363–365. https://doi.org/10.1177/1046878198293016

Jones, K. (1998b). What are we talking about? *Simulation & Gaming, 29*(3), 314–320. https://doi.org/10.1177/1046878198293006

Kato, F. (2010). How we think and talk about facilitation. *Simulation & Gaming, 41*(5), 694–704.

Kickmeier-Rust, M. D., & Albert, D. (2010). Micro-adaptivity: Protecting immersion in didactically adaptive digital educational games. *Journal of Computer Assisted Learning, 26*(2), 95–105. https://doi.org/10.1111/j.1365-2729.2009.00332.x

Kirschner, P., Sweller, J., & Clark, R. E. (2006). Why unguided learning does not work: An analysis of the failure of discovery learning, problem-based learning, experiential learning and inquiry-based learning. *Educational Psychologist, 41*(2), 75–86.

Klabbers, J. H. G. (2000). Learning as acquisition and learning as interaction. *Simulation & Gaming, 31*(3), 380–406. https://doi.org/10.1177/104687810003100304

Klabbers, J. H. G. (2009). The magic circle: Principles of gaming & simulation (3rd and rev. ed.). Sense Publishers.

Kolb, A. Y., & Kolb, D. A. (2009). The learning way: Meta-cognitive aspects of experiential learning. *Simulation & Gaming, 40*(3), 297–327. https://doi.org/10.1177/1046878108325713

Kriz, W. C. (2011). Qualitätskriterien von Planspielanwendungen. *Planspiel–Qualität und Innovation. Neue Ansätze aus Theorie und Praxis*, 11–37.

Kriz, W. C., & Auchter, E. (2016). 10 years of evaluation research into gaming simulation for German entrepreneurship and a new study on its long-term effects. *Simulation & Gaming, 47*(2), 179–205. https://doi.org/10.1177/1046878116633972

Laycock, M., & Stephenson, J. (2013). *Using learning contracts in higher education*. Routledge.

Leigh, E., & Spindler, L. (2004). Simulations and games as chaordic learning contexts. *Simulation & Gaming, 35*(1), 53–69. https://doi.org/10.1177/1046878103252886

Leigh, E., & Spindler, L. (2005). Congruent facilitation of simulations and games. In *Gaming, simulations, and society* (pp. 189–198). Springer.

Lukosch, H. K., Bekebrede, G., Kurapati, S., & Lukosch, S. G. (2018). A scientific foundation of simulation games for the analysis and design of complex systems. *Simulation & Gaming, 49*(3), 279–314. https://doi.org/10.1177/1046878118768858

McGonigal, J. (2011). *Reality is broken: Why games make us better and how they can change the world*. Penguin.

Nakamura, M. (2021). Unpacking and disclosing the reasoning behind: A structured instruction improves team performance, In *Conference Proceedings ISAGA Indore* 21.

Orlikowski, W. J. (1996). Improvising organizational transformation over time: A situated change perspective. *Information Systems Research, 7*(1), 63–92. https://doi.org/10.1287/isre.7.1.63

Peters, V., Westelaken, M., & Bruining, J. (2014). Simulation games as a safe environment—Considerations for game designers and facilitators.

Plass, J. L., Homer, B. D., Kinzer, C., Frye, J., & Perlin, K. (2011). Learning mechanics and assessment mechanics for games for learning. G4LI *White Paper*, *1*, 2011.

Plass, J. L., & Kalyuga, S. (2019). Four ways of considering emotion in cognitive load theory. *Educational Psychology Review, 31*(2), 339–359. https://doi.org/10.1007/s10648-019-09473-5

Ravyse, W. S., Blignaut, A. S., Leendertz, V., & Woolner, A. (2017). Success factors for serious games to enhance learning: A systematic review. *Virtual Reality, 21*(1), 31–58. https://doi.org/10.1007/s10055-016-0298-4

Roungas, B., de Wijse, M., Meijer, S., & Verbraeck, A. (2016). *Pitfalls for debriefing games and simulations: Theory and practice. Intersections in simulation and gaming* (pp. 101–115). Springer.

Rudolph, J. W., Foldy, E. G., Robinson, T., Kendall, S., Taylor, S. S., & Simon, R. (2013). Helping without harming: The instructor's feedback dilemma in debriefing—A case study. *Simulation in Healthcare, 8*(5), 304–316. https://doi.org/10.1097/SIH.0b013e318294854e

Rudolph, J. W., Raemer, D. B., & Simon, R. (2014). Establishing a safe container for learning in simulation: The role of the presimulation briefing. *Simulation in Healthcare, 9*(6), 339–349. https://doi.org/10.1097/SIH.0000000000000047

Rudolph, J. W., Simon, R., Dufresne, R. L., & Raemer, D. B. (2006). There's no such thing as "nonjudgmental" debriefing: A theory and method for debriefing with good judgment. *Simulation in Healthcare, 1*(1), 49–55.

Rudolph, J. W., Simon, R., & Raemer, D. B. (2007). Which reality matters? Questions on the path to high engagement in healthcare simulation. *Simulation in Healthcare, 2*(3), 161–163. https://doi.org/10.1097/SIH.0b013e31813d1035

Schaefer, J. J. I., Vanderbilt, A. A., Cason, C. L., Bauman, E. B., Glavin, R. J., Lee, F. W., & Navedo, D. D. (2011). Literature review: Instructional design and pedagogy science in healthcare *simulation*. *Simulation in Healthcare, 6*(7), S30–S41. https://doi.org/10.1097/SIH.0b013e31822237b4

Sessa, V. I., London, M., Pingor, C., Gullu, B., & Patel, J. (2011). Adaptive, generative, and transformative learning in project teams. *Team Performance Management, 17*(3/4), 146–167.

Sitter, L. U. d. (1981). *Op weg naar nieuwe fabrieken en kantoren: produktie-organisatie en arbeidsorganisatie op de tweesprong: een rapport inzake de kwaliteit van de arbeid, organisatie en arbeidsverhoudingen*. Kluwer.

Spindler, L., & Leigh, E. (2003). Reconciling design issues and values in simulations. *Simulation & Gaming, 34*(3), 447–456. https://doi.org/10.1177/1046878103255794

Squire, K. D. (2008). Video games and education: Designing learning systems for an interactive age. *Educational Technology, 48*(2), 17–26. Retrieved from www.jstor.org/stable/44429558.

Stoppelenburg, A., de Caluwé, L. I. A., & Geurts, J. L. A. (2012). Gaming: organisatieverandering met spelsimulaties.

Streicher, A., & Smeddinck, J. D. (2016). Personalized and adaptive serious games. In R. Dorner, S. Gobel, M. KickmeierRust, M. Masuch, & K. Zweig (Eds.), *Entertainment computing and serious games* (Vol. 9970, pp. 332–377). Springer. https://doi.org/10.1007/978-3-319-46152-6_14

Sweller, J., Kirschner, P. A., & Clark, R. E. (2007). Why minimally guided teaching techniques do not work: A reply to commentaries. *Educational Psychologist, 42*(2), 115–121. https://doi.org/10.1080/00461520701263426

Tavella, E. (2018). On novice facilitators doing research in problem structuring methods as autoethnography. *Systems Research and Behavioral Science, 35*(1), 58–75. https://doi.org/10.1002/sres.2438

Teach, R. (1993). Forecasting and management ability: A response to Wolfe. *Simulation & Gaming, 24*(1), 63–72. https://doi.org/10.1177/1046878193241007

Teach, R. D. (1990). Profits: The false prophet in business gaming. *Simulation & Gaming, 21*(1), 12–26. https://doi.org/10.1177/1046878190211002

Tieben, R. (2015). Activating play: A design research study on how to elicit playful interaction from teenagers.

Tosey, P. (2006). *Bateson's levels of learning: A framework for transformative learning?*

Tsoukas, H., & Chia, R. (2002). On organizational becoming: Rethinking organizational change. *Organization Science, 13*(5), 567–582.

Turner, B. L., Goodman, M., Machen, R., Mathis, C., Rhoades, R., & Dunn, B. (2020). Results of Beer game trials played by natural resource managers versus students: Does age influence ordering decisions? *Systems, 8*(4), 37. https://doi.org/10.3390/systems8040037

Van Laere, J. (2005). ICT inbedden in de politieorganisatie: Spelsimulatie als ontwikkelomgeving voor nieuwe kennisdelingsprocessen. *Journal of Social Intervention: Theory and Practice, 14*(1), 31–42.

Van Merrienboer, J. J., & Sweller, J. (2005). Cognitive load theory and complex learning: Recent developments and future directions. *Educational Psychology Review, 17*(2), 147–177.

Von Foerster, H. (1984). Principles of self-organization—In a socio-managerial context. In *Self-organization and management of social systems* (pp. 2–24). Springer.

Watt, K., & Smith, T. (2021). Research-based game design for serious games. *Simulation & Gaming, 52*(5), 601–613. https://doi.org/10.1177/10468781211006758

Wenzler, I., & Chartier, D. (1999). Why do we bother with games and simulations: An organizational learning perspective. *Simulation & Gaming, 30*(3), 375–384.

Part III
Manipulation in Games

Chapter 10
Subtle Manipulation in Games

Toshiko Kikkawa

Abstract In this chapter, I discuss the issue of manipulation, intentional and unintentional, in games. First, I introduce a number of cases involving ethical issues, which, despite the presence of these issues, are common in gaming due to their importance and/or playability. Second, I discuss the relationship between ethics and fidelity and the reasons why we, as game designers, researchers, facilitators, and teachers, i.e., people in the simulation and gaming community, cannot easily give up ethically problematic games in the face of achieving high fidelity given that, with high fidelity, participants can easily connect their game experience to reality, and this connection can lead to better educational effects. Third, the issue of intentional manipulation is explored, as we must recognize the darker side of game use for propaganda purposes. Fourth, two subtle types of manipulation are discussed: one with ill intent and the other unintentional. Finally, I note changing attitudes on the part of the game industry and an increased awareness of ethical issues in game design and how to solve them.

Keywords Ethical issues · Fidelity · Propaganda · Simulation and gaming · Subtle manipulation

10.1 Introduction

In this chapter, I discuss the issue of manipulation, intentional and unintentional, in games. I have deliberately chosen the term "manipulation" to refer to the issue that game designers or facilitators face in leading game participants/users along a predetermined learning path. This is especially problematic when games are used for unethical purposes, as games can be and have been used for propaganda purposes.

First, I introduce concrete cases that throw up ethical issues, yet the methods demonstrated in these cases are commonly used to promote the playability of games.

T. Kikkawa (✉)
Keio University, Tokyo, Japan

T. Kikkawa et al. (eds.), *Gaming as a Cultural Commons*, Translational Systems Sciences 28, https://doi.org/10.1007/978-981-19-0348-9_10

Second, I discuss the relationship between ethics and fidelity and the reasons why we as game designers, researchers, facilitators, and teachers of the simulation and gaming community cannot easily give up ethically problematic games, due to their high fidelity. Generally speaking, when the fidelity is high, participants can easily connect their game experience to reality, and this connection can produce better educational effects. Third, I explore the issue of intentional manipulation and how games have been used for propaganda purposes, especially political ones, to manipulate people's perception. Fourth, I describe two types of subtle manipulation: one with ill intent and the other for useful purposes. Finally, I note changing attitudes in the game industry and an increased awareness of ethical issues and the means to address them.

10.2 Case Studies

In this section, I introduce three concrete cases exemplifying ethical issues encountered when using games in education. After introducing the case studies, I propose possible ways to resolve these issues. For example, there may be a better substitute for the problematic game or a way to change the rules of a game to allow for play to continue. In some cases, it will be necessary to develop new games for solving social issues.

10.2.1 Blue Eyes-Brown Eyes

Blue Eyes-Brown Eyes is one of the pioneering prejudice-reduction simulations. It was developed in the United States (U.S.) by Jane Elliot in 1968 (Peters, 1971) when she was a school teacher. The simulation has since gained in popularity outside of the U.S. For example, "La Leçon de Discrimination" (Turbide & Payeur, 2006) is a documentary film of a similar simulation exercise conducted in Canada, with some modifications.

Basically, Blue Eyes-Brown Eyes is a role-playing simulation in which students are treated differently depending on their eye color—blue or brown. It is 2-day simulation, in which the treatment is reversed on the second day, such that the students experience both roles of being privileged or discriminated against.

While the effectiveness of the simulation for reducing prejudice has been proven both experimentally (Byrnes & Kiger, 1990) and by many anecdotes, Byrnes and Kiger (1992) pointed out the ethical issues related to this exercise and the potential for increased risk of coercion, informed consent, and stress among participants. They also highlighted the benefits of the exercise under certain conditions, e.g., for a homogeneous population such as that used originally by Elliot in which all participants were Euro-Americans and the children's cognitive skills and affective development were enhanced.

Here, I focus on the stress issue, given that the simulation is very close to real life experiences, as the students could potentially experience high levels of stress. Of course, careful preparation and a thoroughly planned debriefing may solve these issues. However, questions remain with respect to the value of this simulation type in which the stress level is high, despite the learning outcomes.

Elliot used a difference in eye color, whereas in the Canadian study, the teacher, Annie Leblanc, used the differences in students' heights. Notably, eye color and height are physical characteristics beyond the students' control. As such, some have looked at ways to conduct a similar experiment that is more sensitive to these issues. For example, Byrnes and Kiger (1992) suggested the use of colored hats or arm bands that could be easily discarded after the simulation; the question then is would this substitution (hats/arm bands vs. eye color or height) have the same results or learning effects?

From the perspective of stress on the participants, temporary markers such as colored caps are not substitutes for eye color or height but could still have the effect of stigmatizing the study participants. Likewise, more broadly speaking, cultural difference-related simulations, such as BaFáBaFá (Shirts, 1977), raise similar ethical issues, as participants experience embarrassment or stress through being subjected to new rules when they visit different game cultures.

Role-playing games also incur various ethical concerns. Despite the value of the game and its importance in a world in which discrimination and hatred are all too common, I believe that there must be a better way. To follow the ethics considerations proposed by Jones (1997), we cannot be confident in the power of the debriefing and facilitation. Thus, even if the game developers know and follow Jones' recommendations, there is the risk of amateur or inexpert facilitators and teachers who do not care about the negative impact on their study participants.

Instead of using games to experience exclusion or embarrassing experiences, we could consider the use of substitute games that minimize the conflict experienced by any one individual. One example of this is Barnga (Thiagarajan & Thiagarajan, 2006). In this game, players in several groups play a card game with the same name; however, the rules differ among the groups. During the game, the players can change groups. However, the player that changes his/her group (the "immigrant") may become embarrassed on realizing that the rules are different from that of the previous group. The characteristics of this game are such that newcomers/immigrants can obey the rules of the new table; additionally, the players can initiate a change to the rules. A key difference of Barnga from other culture clash games is that the "immigrants" can change the rules of "society" (the new group), thus allowing the participants to take a more proactive stance if they wish.

I used the metaphor of immigrants and society in the previous paragraph, because cultural unawareness or prejudice caused by ignorance in real life is partially due to the results of the rules or customs that we have, which we take for granted. It also highlights the possibility of changing the rules or customs of our societies as the players of Barnga do by experiencing the game. Therefore, the stress for participants is less than that of the aforementioned games. Additionally, the difference in rules is

a common key learning point as participants learn about and experience cultural differences, discrimination, and prejudice.

10.2.2 Werewolf (Mafia)

Werewolf is a party game originally developed by Dimitry Davidoff as Mafia in 1987 (Robertson, 2018). Since Mafia gained popularity on a global scale, many variations have been created. Werewolf is the most well-known among them. In the game, players compete between a minority group (the werewolves) and the majority group (the villagers) with a moderator, who manages the process of the game but does not participate in the game as a player. Although there are variations regarding the rules, and there are roles with special abilities, the basis of the game is as follows. At the beginning of the game, players are secretly assigned their roles. Only the werewolves know their identities among their group, whereas the villagers do not know their identities. The objective of the werewolves is to eliminate villagers to reach numerical parity with the villagers. The objective of the villagers is to eliminate the werewolves.

The game proceeds with two alternating phases, i.e., day and night. During the day, players discuss and deduce the identities of players based on what they say and how they behave during the game play. At the end of the day, players vote to eliminate one player suspected of being a werewolf. The moderator sometimes leads the discussion, in addition to managing the phases. At night, the werewolves kill one villager. The game repeats these phases until one group wins.

To deduce the identities of other players, communication is key to winning the game. The rule solicits active participation in a discussion among the players. The importance of communication in the game is twofold. Obtaining information from other players is necessary for logically deducing their identities. Players who keep silent are suspected of being werewolves, especially in the early stages of the game. In a normal progression of the game, players would actively participate in the communication, including persuading and deceiving other players in the game. Therefore, the game can be used for improving communication skills in an educational setting (e.g., Tanno & Kodama, 2015). It can also be used for language learning activities, e.g., for improving English speaking skills (Adhiyati & Fatimah, 2019).

However, there are at least three potential downsides to the game from the perspective of ethics. First, the terms frequently used in the game, such as “killing (or executing) villagers” and “eliminating (or hanging) werewolves,” would have negative connotations, i.e., exclusion from the groups. These negative terms not only refer to getting get rid of some player but also imply an attack on the participant in real life.

Second, as there are no clues regarding the identities of players except for the werewolves themselves in the early stage of the game, players who have salient characteristics could be targets of the suspected werewolves. Therefore, they could

be excluded from the game in the very early stages. For example, a female in a group of mostly male players or a player with a unique physical appearance could well be a victim. However, unconsciously, there would be the risk of replicating the discrimination of people with unique characteristics in real life. In addition, victims could perceive the attack as a reflection of reality and could experience negative emotions.

Third, players who are relatively quiet during the discussion are inclined to be victims as well. Silence can be interpreted as cryptic behavior; thus, silent players are likely to be excluded from the game. Contrary to the purpose of improving communication skills in an educational setting, the game does not offer opportunities for communication for those who have difficulty with this skill. From this perspective, the game would not be appropriate for improving communication. Thus, the surface value of the game, that it requires communication skills such as persuasion or deception, would not be appreciated, given the risk of exclusion.

In conclusion, Werewolf requires proper attention from the teacher or facilitator when used in educational settings, as it may reinforce exclusion and may not contribute to improving players' communication skills.

Merely changing the premise of the game could offer a solution for the aforementioned ethical concerns. One such game is Fox and Chicken (by Huch & Friends, 2013), which is sold in toy shops. In this game, the rules are the same as those for Werewolf. However, in the game, the story is different. Foxes eat the chickens. They are not human. In addition, changes in the illustrations for children participating in the game could reduce negative connotations. For example, the game master could say "a chicken disappeared overnight," instead of saying "a chicken was killed."

A minor change, such as that proposed in the previous example, indicates that we should examine more closely the relationship between fidelity and ethics. When the game structure is close to real-world experiences, i.e., when the fidelity is relatively high, participants could be forced to play as themselves. In other words, they may have to disclose themselves to a certain extent, which could lead to experiences of exclusion, prejudice, and so on, similar to that experienced during role-playing type exercises. On the other hand, the game could, instead, employ an appropriate metaphor to create a fictitious environment and a safer situation. Even if the fidelity is low, the game could still be used for accomplishing the pedagogical purpose, in this case, improving communication skills. Of course, when the fidelity is low, the debriefing process that connects the implications of the game with reality becomes even more important.

10.2.3 Fall-out Shelter

Fall-out Shelter (Kroehnert, 1992) is a group problem-solving exercise. Six out of 12 people are chosen to occupy a fallout shelter, as the occupancy of the shelter is limited. The 12 people have different characteristics with respect to age, gender, and occupation. There are similar games having this structure, e.g., games in which the

number of survivors varies or a game in which the participants are awaiting rescue from an island.

The participants first select the six people individually and then discuss the selection as a group. The ethical problem of this exercise occurs mainly in the discussion session. For example, an older person or an artist whose works may be deemed impractical for the group's survival would be likely to be eliminated, whereas a young woman with the possibility of reproduction may have a better chance of being selected. Other unconscious values are revealed during the discussion, which may hurt the feelings of participants having characteristics similar to those presented in the game.

The game's original intention was for the participants to become more aware of their unconscious biases, although facilitators and teachers must use caution with this game. In my opinion, the use of the game for its original purpose would require that the content and/or composition of characters in the game be scrutinized and updated.

Deguchi and Shuang (2019) proposed a change in the setting of the game. The important change was that participants are not assigned roles, nor asked to disclose their own opinions. Instead, they are asked to play the role of a consultant and, as a consultant, give advice to the people in the shelters. In other words, they are explicitly asked to role-play, instead of playing the role of themselves. The composition of the members in the shelter would also have to be carefully considered.

Even if ethical issues exist, the theme of the game may be more important than one realizes. Remember, we have played and continue to play similar games in the real world with social decisions made with respect to the coronavirus of 2019 (COVID-19) that persists to this day. When there are scant resources, e.g., vaccines, a limited number of ventilators, beds, and intensive care units and staff, many countries are forced to decide the priority of resource allocation, with or without national debate. Some societies ultimately agree with their country's policies, whereas other do not. Regarding the allocation of vaccines, there has been an inequity in the vaccine distribution between developed and developing countries. Without ex ante discussion and consensus among people, the policy would hardly be acceptable for most. In this sense, games like Fallout Shelter increase in importance with respect to their potential to impart valuable lessons for society. The question is as follows: How can the game be redesigned so as to eliminate or minimize ethical concerns?

We already have games for learning "triage" in disasters. Spoons (Rolfe, 1998) is one example; however, it is a simulation for learning the procedure at a disaster site. What we have experienced during COVID-19 is not a triage in the real sense of the word. The point being that sometimes we assign priorities without sound science or discussion. Ethical consideration and science are necessary for optimal outcomes. To my knowledge, however, the games available to date have yet to meet these criteria.

10.3 Fidelity and Ethics

From the abovementioned case studies, I would like to highlight the fidelity issue and the learning experience.

In the case of Blue Eyes-Brown Eyes, experiencing simulation that is very close to reality is necessary for learning success. However, the relevance of ethical issues increases with the fidelity of the participant's experience. In general, high-fidelity gaming and simulations are more effective, as the participants are more actively involved in the situation and connect their experiences to their real life. However, we cannot focus only on the pedagogical effectiveness. If there is a doubt as to the ethical treatment of the participants, we should give up the exercise and look for a substitute, even if the effectiveness is expected to be lower than that originally planned. In my opinion, we should not rely solely on the individual ethics of teachers or facilitators. We, as members of the simulation and gaming community should, instead, collaborate on a code of ethics for our field.

In the case of Werewolf, the game scenario itself instigates negative connotations. While it is a commercially available game, the ethical issues associated with its use cannot be ignored, as teachers try to find substitute games for education. Given that many communication-related games are available, the necessity of using games like this is very low. Additionally, changing the game design/scenario may also minimize any ethics concerns, as discussed earlier, and changing the metaphor would also serve to lower the fidelity of the game. In this case, once again, I would emphasize that connecting the game to reality in the debriefing session would be especially important.

Fallout Shelter is a game in which the unconscious bias of the participants could appear during the discussion portion of the game. The discussion is not controlled by the facilitator or teacher and thus may present ethical issues. I introduced a substitute game (Deguchi & Shuang, 2019) by redesigning the game's structure. As I pointed out in relation to what has happened during the COVID-19 pandemic, the theme of the game could be expanded. The development of new games may also be necessary.

In my personal opinion, as the fidelity is lowered, the ethical issues tend to become less serious. In principle, participants can make mistakes in a safer environment, given that their experiences in the game are not so obviously connected to the real world for them. On the other hand, as the games with low fidelity become more metaphorical, some participants may find it difficult to participate fully in the game experience. In other words, not all participants can reach the formal operational stage as described by Piaget (Furth, 1980). For this reason, debriefing would become more important.

10.4 Intentional Manipulation of Games

Games and gamification have been gaining in popularity, especially board games or existing card games that are sometimes used in classroom settings. These settings include not only kindergarten or elementary school but also higher education settings. The reason could be related to the sophistication of the rules and their implementation in practice compared to the ones developed by researchers. Thus, immersion in the game can enhance the educational effects.

However, the ethical issues must be examined. In this section, I do not refer to digital games, as this is frequently addressed in the literature. Instead, here I focus on the superficial nature of games and their intended purpose, be it for good or bad.

For example, the ethical issues of Werewolf are a typical case. Teachers only focus on its surface playability and students' surface enthusiasm. It is important to scrutinize the rules and objects of the game before using the game in repeated testing processes.

Based on the history of games, the perceived friendly nature of the game may hide the intended purpose of the developer. For example, games can be used for advertisements (Kriz, 1995) or propaganda.

In the World War II, games were used for propaganda by governments. Below, I discuss three such cases, two of which were Japanese games and the other a German game.

Figures 10.1 and 10.2 show the two Japanese games, with a wartime theme. These games were sold in toy shops; additionally, many children's magazines were sold with the games as supplementary material.

Figure 10.1 was developed by government-related organizations in 1944 to foster the spirit of war. The game was framed in terms of "Karuta," based on traditional rules and values familiar to the Japanese culture. It is a card game played with a deck of cards. The deck consists of two types of cards: reading cards and grab cards. Reading cards are read by a reader, and players find, as quickly as possible, corresponding grab cards among the cards spread on the floor. Players must grasp the one-to-one correspondence between the reading card and the grab card. Given that memory is the key to winning, the game provided a viable medium for disseminating war propaganda. For example, the combination of "To say yes" (the reading card) with "contribution to the country" (the grab card) had the effect of imprinting patriotism. By playing this game, children established an association between the two words or phrases and learned to respect and obey authority without question. The government created two versions of the game: one for early elementary school children and the other for late elementary school children. Given the rule of "Karuta" as its premise, the game was readily accepted on the basis of its cultural ties, although its intent was to "brainwash."

Figure 10.2 shows a supplement to a magazine for 7-year-old elementary school pupils in 1941. The game was based on "Sugoroku," a traditional game familiar to the Japanese populace. The board game is similar to Snakes and Ladders or Game of the Goose as it uses a linear race track along which players race by throwing dice. It

Fig. 10.1 Patriotism *Karuta*

has frequently been used for educational purposes, as well as played for fun, as information can be added to the squares (spaces) of the board (see also Strouhal, 2015). Similar to Monopoly®, when a player stops on a square, she/he follows the instructions written on that square. The frame is especially suitable for teaching chronological information, since the game is a race to reach a goal. In the case of Fig. 10.2, it explains how the Japanese military struggled in the war, and at last they won. The game could thus deliver multiple implicit messages to the children. For boys, the game could encourage them to join the military in the future. Additionally, they received misinformation that the Japanese military was winning, which was not true. Similar to "Karuta," the premise of "Sugoroku" was familiar to its people, even young children. Thus, many "Sugorokus" were developed with the intent of manipulation.

Figure 10.3 shows a German game to teach children to avoid shopping at Jewish shops. The objective of the game was for children to learn that Jewish people earn a lot of money and that they should therefore be discriminated against. Because it is a dice game, it is easily played by children. Similar to the Japanese games discussed above, it is important to remember the dark history of the game, as its friendliness and playability were used to mediate propaganda targeting children.

Fig. 10.2 Military *Sugoroku*

10.5 Subtle Manipulation of Games

The three cases in the previous section are obvious manipulation cases. However, we must be careful to guard against similar forms of manipulation that are hidden in today's social structures. These games can be grouped into two categories: one involves manipulation that operates in a more refined or subtle way, and the other involves manipulation that is unintentionally put into practice by facilitators or teachers.

Since winning is an objective of learning, one can implicitly manipulate participants by setting a specific winning condition. For example, if you want to have disciplined children/students, you can design a game in which a player who shows obedience to teachers wins. In a more subtle way, you can design a game for "moral" education. The implication of the term "moral" would be "good"; thus, teachers would be likely to welcome such a game, at face value, as an educational tool. However, before using the game for instructional purposes, we must scrutinize the "morals" being taught by the game and keep in mind that the learning point may completely change with the rules or winning condition. The Landlord's Game,

Fig. 10.3 German game in the WWII

which later became Monopoly®, is a good example. The original game was developed to teach that an economy that rewards wealth creation is better than one in which monopolists work under few constraints (Pilon, 2015). This differs completely from the objective of today's Monopoly®.

In addition, a serious social issue has recently emerged in Japan. As board and card games have become ever more popular, the number of game parties or game cafes has steadily increased. These gaming venues are sometimes used as opportunities to solicit illegal investments or new members for religious groups. In this case, the surface accessibility of games is exploited by people with ill intent.

Even if teachers or facilitators do not have the intention of manipulation, we must be careful of participants behaving in such a way as to satisfy expectations. This is known as "demand characteristics" in psychology. Here, participants attempt to perceive the conclusion or teaching objective of teachers or facilitators and unconsciously follow their conclusions in the debriefing session. When an instructor/facilitator chooses the games used for the classes or workshops, it is important for them to self-reflect on the ability of the participants to reach the conclusions independently of instruction, as opposed to being led to the answer, especially in the debriefing session.

10.6 Awareness of Ethical Issues Is Increasing in the World of Entertainment Games

In the entertainment games field, there is greater awareness of ethical issues as they relate to game development and how the game is perceived by its users. In this section, I will introduce some specific incidents in the field of board games.

In 2021, board game companies "Board&Dice" (2021) and "Hans im Glück" (2021a) announced that they would stop selling the games of a particular designer and collaborating with his/her work unless the designer acknowledged wrongdoing and corrected instances of discriminatory wording.

"Hans im Glück" (2021b) later apologized for the use of black dice in their popular game "Marco Polo," as there was the possibility that the dice could be interpreted as black slaves and the trafficking of slaves. Although the game is no longer available, it may be that the game could be sold again if the dice color were to be changed.

These kinds of issues are especially difficult when the theme of a game deals with historical facts. Ethical issues related to board games have been pointed out in numerous studies (e.g., Draper, 2019), as well as inclusion and diversity issues (e.g., Hargrave, 2020). The game industry should pay more attention to this matter, as the ever-increasing gaming population assumes a more global character.

Related changes have already been occurring in practice. For example, when you carefully look at the illustrations of game packages, you notice that more attention has been paid to addressing ethnicity and that there is greater diversity with regard to the game characters and the color of their skin, with the aim of being more inclusive, rather than being stereotypical.

In concluding this chapter, I would like to emphasize the following two points:

- We should ask ourselves the following: Is there an alternative game that can be used to teach the same pedagogical goal if there is any doubt regarding the ethical issues of the existing game?
- We must scrutinize the rules of the game, especially the conditions of winning, from the perspective that they could be used, unintentionally, to manipulate the participant.

Although we have a rich heritage of excellent games, only a few of which I have introduced here, we cannot rely on this heritage to protect game users from the ill intent and manipulation of some in the gaming industry. A code of ethics is necessary for the gaming community to ensure the enjoyment, well-being, and trust of game participants in using the designed product. More importantly, games should be redesigned or newly designed so as to minimize any ethical concerns.

Acknowledgments This work was supported by JSPS KAKENHI Grant Number 18K03014.

References

Adhiyati, A. Z., & Fatimah, S. (2019). Using werewolf game to teach speaking to seminar high school students. *Journal of English Language Teaching, 8*(1), 61–70.

Board & Dice. (2021). *Board & Dice official statement regarding Daniele Tascini*. Retrieved September 24, 2021, from https://boardanddice.com/news/statement-on-daniele-tascini/

Byrnes, D. A., & Kiger, G. (1990). The effect of a prejudice-reduction simulation on attitude change. *Journal of Applied Social Psychology, 20*(4), 341–356.

Byrnes, D. A., & Kiger, G. (1992). Prejudice-reduction simulations: Ethics, evaluations, and theory into practice. *Simulation & Gaming, 23*(4), 457–471.

Deguchi, H., & Shuang, C. (2019) The effectiveness of gaming and simulation in decision making education. (In Japanese). In *Proceedings of Spring Annual Meeting of Japanese Association of Simulation and Gaming,*14–19.

Draper, K. (2019, August, 1) *Should board gamers pay the roles of racists, slavers and Nazis?: After the cancellation of scramble for Africa, where do board gamers go from here?* Retrieved 24, September, 2021, from https://www.nytimes.com/2019/08/01/style/board-games-cancel-culture.html

Furth, H. G. (1980). *The world of grown-ups Children's conception of society*. Elsevier.

Hans im Glück. (2021a). *Statement zu Rassistischen Äusserugen*. Retrieved September 24, 2021a, from https://www.hans-im-glueck.de/news/statement-zu-rassistischen-aeusserungen.html

Hans im Glück. (2021b). *Marco Polo—The black dice*. Retrieved September 24, 2021b from https://www.hans-im-glueck.de/en/news/marco-polo-die-schwarzen-wuerfel.html

Hargrave, E. (2020). *Inclusion, diversity, and representation in board gamers and beyond*. Retrieved September 24, 2021, from https://stonemaiergames.com/inclusion-diversity-and-representation-in-board-games-and-beyond-guest-post-by-elizabeth-hargrave/

Huch & Friends (2013) *Fox & Chicken*. Retrieved August 8, 2021, from https://boardgamegeek.com/boardgame/140693/fox-chicken

Jones, K. (1997). *Games & simulations made easy: Practical tips to improve learning through gaming*. Kogan Page.

Kriz, W. C. (1995). Contributions of JASAG and Japanese gaming—A westerner's perspective. *Studies in Simulation and Gaming, 25*(2), 45–48.

Kroehnert, G. (1992). *100 training games*. McGraw-Hill.

Peters, W. (1971). *A class divided*. Doubleday.

Pilon, M. (2015). *The monopolists: Obsession, fury, and the scandal behind the world's favorite board game*. Bloomsbury.

Robertson, M. (2018, April 2). *Werewolf: How a parlour game became a tech phenomenon*. Retrieved August 8, 2021, from https://www.wired.co.uk/article/werewolf

Rolfe, J. (1998). Spoons: A flexible low-cost simulation of casualty handling after a disaster. In J. Rolfe, D. Saunders, & T. Powell (Eds.), *The international simulation and gaming research yearbook. Vol.6, Simulation and games for emergency and crisis management* (pp. 38–45). Routledge.

Shirts, R. G. (1977). *BafáBafá: A cross culture simulation*. Simulation Training Systems.

Strouhal, E. (2015). *Die Welt im Spiel: Atlas der Spielbaren Landkarten*. Christian Brandstätter Verlag.

Tanno, H., & Kodama, K. (2015). *Jinro game de manabu communication no shinrigaku* (in Japanese) (*Learning communication skills through playing Werewolf*). Shinyo-sha.

Thiagarajan, S., & Thiagarajan, R. (2006). Barnga: A simulation game on cultural clashes: *25th anniversary edition.* Intercultural Press.

Turbide, P. & Payeur, L. (2006). *La leçon de discrimination (film by Société Radio-Canada)*. Retrieved August 8, 2021, from https://www.youtube.com/watch?v=iDyZf5xOLVY

Chapter 11
Manipulation Through Gamification and Gaming

Willy Christian Kriz, Toshiko Kikkawa, and Junkichi Sugiura

Abstract In this chapter, we examine the manipulation that may occur through gamification, facilitation, and debriefing processes. We focus in particular on "unintended" manipulation that even professional facilitators or game designers may practice. First, we examine gamification, followed by gaming and simulation. Although gamification, which is a relatively new field, is associated with issues of manipulation, the gaming and simulation field, which has over five decades of history, is seldom affected by manipulation issues. Of course, facilitators' ethics have long been the subject of much discussion; here, we focus on the more subtle and unintentional aspects of manipulation, which have been relatively overlooked, additionally in relation to the embodied experience. In the chapter's final section, we provide a list of recommendations aimed at supporting game professionals in minimizing manipulation. These questions may be used as guidelines for future game practices and research, leading to the development of a code of ethics for game studies.

Keywords Manipulation · Gamification · Facilitation · Debriefing · Codes of ethics · Embodied experience

11.1 Introduction

Attempts to use simulation and games, particularly for educational purposes, are always associated with the possibility of "unintended manipulation." Here, we adopt the term "unintended manipulation" to highlight the fact that educators and facilitators are not always aware of their unconscious adoption of preconceived

W. C. Kriz (✉)
Department of Management and Business Administration, FHV University of Vorarlberg, Dornbirn, Austria
e-mail: willy.kriz@fhv.at

T. Kikkawa · J. Sugiura
Keio University, Tokyo, Japan
e-mail: jsugiura@keio.jp

T. Kikkawa et al. (eds.), *Gaming as a Cultural Commons*, Translational Systems Sciences 28, https://doi.org/10.1007/978-981-19-0348-9_11

conclusions, regardless of courses of learning. For example, when gaming is practiced with the objective of realizing the importance of diversity and inclusion in societies, facilitators may compel participants to adopt these conclusions. Regardless of whether the participants fully appreciate the importance of diversity and inclusion, they may agree superficially with the facilitator-guided conclusion.

In this sense, facilitators and teachers "manipulate" learning unintentionally. However, the situation is inherently inevitable, since every pedagogical endeavor's objective is the learners' achievement. Experiential learning methods, including simulation and gaming, are no exception.

11.2 Why Is Unintended Manipulation a Serious Issue?

Manipulation may be defined as the use of means to exploit, control, or otherwise influence others to one's advantage (APA, 2021). Manipulation is forced influence that is used to gain control, benefits, and/or privileges at the expense of others. Although conscious and malicious manipulation may be rare in gaming simulation, unconscious manipulation through game design and facilitation poses a potential danger. From a design science perspective (Klabbers, 2009), gaming generally means changing current dysfunctional situations and systems dynamics into new and preferred situations and processes. Games are used for learning and educational matters and/or to support the transformation of organizations and larger social systems. Therefore, we must be aware that all games are implemented with the purpose of reaching a desired learning outcome or system transformation. To achieve this aim, hidden agendas and designed game mechanics that involve manipulation may be in play. At the very least, games are used to influence and persuade all kinds of players, such as participants in game-based education and training and users of gamified products and services. Gaming has an underlying instrumentality in urging persons to desired actions, typically within the context of a specific goal. Influence and persuasion per se are neither positive nor negative (Duncan, 2018). Influence can be understood as mainly harmless, as it respects the influenced party's right to accept or reject it and is not unduly coercive (Noggle, 2020). Manipulation is a stronger form of forced influence that may detrimentally take advantage of others' gullibility and (emotional) weakness with the aim of gaining control and benefit at their expense.

Numerous different forms of manipulation exist, with various motivations for manipulation in gaming. For example, on the personal level, players and facilitators as the main actors in a game may seek personal gain, to attain feelings of power and superiority in their relationships with other participants, to be in control, to boost their own self-esteem, and—in competitive simulation games—to win the game. On a more systemic and organizational level, games may be designed as communication media to support certain behaviors and/or create certain mindsets and attitudes that reflect the values or interests of the game designers or their sponsors. The aims may

range from political and ideological indoctrination to criminal economic and financial interests.

11.3 Gamification and Manipulation

As already discussed in Chap. 1 (in this book), gamification can be defined as the use of game design elements in "non-game" contexts (Deterding, 2015). Gamification employs game-based mechanics and dynamics and game design principles and aesthetics. Gamification's main purpose is to engage and motivate, to influence behavior and decision-making, and to build knowledge and attitudes. Gamification is often aimed, for example, at influencing employee performance, the organizational climate, employer branding, or customer retention.

Gamification applies some of the leading theories and results from social and motivational psychology and behavioral economics. For example, Landers (2015) developed a psychological theory of gamified learning that linked gaming and gamification. According to this approach, gamification is defined as the use of game attributes, as defined by Bedwell et al.'s (2012) taxonomy, outside the context of a game with the purpose of affecting learning-related behaviors or attitudes. Numerous studies have examined the effects of "manipulating" game attributes to foster intended outcomes. In this chapter, we do not wish to discuss specific studies further, regardless of whether they report intended outcomes and "positive" effects on people's behavior and motivation (e.g., Gallus, 2017) or show partly positive effects and partly unintended and "negative" results (e.g., Mollick & Rothbard, 2014).

We argue that, whatever framework or taxonomy we might use to describe game attitudes, principles, and mechanics (e.g., Schell, 2008; Salen & Zimmerman, 2004; Marczewski, 2018; Kim, 2018), those elements can be used to manipulate. The same principles described by gamification and "serious games" researchers and designers are also applied in the development of simulation games. Simulation games often involve more complex dynamics and are applied to a wide range of additional purposes. The founding father of ISAGA (International Simulation and Gaming Association) identified 21 steps of game design and more than 100 game design elements and attributes in his famous "game design wheel" model (cf. Duke, 1974; Duke & Geurts, 2004). All attributes can be consciously used for manipulation purposes (with the best intentions, of fostering education, etc.), but more often these are unconsciously used by designers and facilitators who use games only as tools or instruments and have little or no knowledge about the underlying principles and mechanisms.

Concepts such as Octalysis (Chou, 2015) can be useful in elucidating players' motivational and learning processes and can be applied in designing game artifacts. The Octalysis framework uses eight core drive factors. We briefly discuss them here as an example to illustrate the potential dangers of manipulation or harmful effects if

we do not care or know about design connections with the psychological processes of the participants in games.

- Epic meaning and calling: This core drive is in play when a person believes that they are doing something greater than him/herself or contributing to a "higher purpose." Players do not receive an extrinsic reward, but they feel that their contribution will help create something important.
- Development and accomplishment: Here, people are driven by a sense of growth toward a goal and its accomplishment. They may strive to win a game or to overcome a challenge. On reaching the goal, players feel self-efficient and high-performing and that they have made progress and developed their skills.
- Empowerment of creativity and feedback: This drive is expressed when users are engaged in a creative process in which they repeatedly try to be innovative. People need not only ways to express their creativity but also to see the results of their creativity, receive feedback, and adjust, in turn.
- Ownership and possession: This drive concerns players' feeling that they own or control something. When people feel ownership, they want to increase and improve what they own. Besides being the major drive for wanting to accumulate wealth, this deals with many virtual goods.
- Social influence and relatedness: This drive incorporates all the social elements that motivate people, including group dynamics from cooperation, social acceptance in a group, and friendship to competition, mobbing, and envy.
- Scarcity and impatience: This drive causes people to want something simply because it is extremely rare, exclusive, or immediately unattainable (e.g., the fact that people cannot get something right now—often because of artificial scarcity—motivates them to return to check the product's availability and to think about it constantly).
- Unpredictability and curiosity: Unpredictability is the core drive for being constantly engaged because the player does not know what is going to happen next.
- Loss and avoidance: This core drive impels people to avoid negative occurrences. People feel as though if they fail to act immediately, they will lose the opportunity forever.

Chou (2015) connected the eight core drives to well-known concepts, such as intrinsic and extrinsic motivation, and distinguished between "white hat" (positive) and "black hat" (negative) emotions that correlate with the drives. In particular, the more extrinsic and black hat drives (e.g., scarcity and impatience, unpredictability and curiosity, loss and avoidance, and ownership), if combined and used as game techniques, may lead to potentially harmful effects. For example, they might support gaming addiction and gaming disorders (2019, ICD, WHO) through the use of random variable rewards and artificial scarcity for items players want to win and/or do not want to lose. These techniques can engage users, but they are often used with a manipulative hidden agenda to drive business through the users' influenced behavior.

Simulation games do not typically intend to induce people to gamble, and the danger of addiction to simulation games is low. However, the same potentially

harmful gamification principles are used in many competitive simulation games (e.g., many traditional business games with simulated market competition and a winning company). They may lead to high competition, engagement, and even fun and excitement but may reduce the learning effect for all participants and cause the losing participants' motivation to decline (Kriz & Auchter, 2016). If there is no proper debriefing (and too often this is still missing), players may enjoy playing against the simulation model that remains a "black box" like a slot machine. In the worst case, participants not only learn nothing but may even develop false assumptions about the underlying system processes and relationships in the "real" world (see the discussion of misuse of business games in the section that follows).

11.4 Gaming Simulation and Manipulation and the Role of Debriefing

To illustrate some main aspects of manipulation and unethical use related to the process of gaming simulation, an example of a typical business simulation game should be described here. Somewhat provocatively, one could argue that the typical business computer simulation games used nowadays bear responsibility for the worldwide financial crisis. Generations of young students have run through MBA programs and have played typical business games, and, unfortunately, now as managers of companies and banking institutes, they implement in practice what they have learned in games. They transfer knowledge gained from gameplay but in a way that makes reality increasingly gamelike, gambling with the earth's limited resources.

The following example and its arguments are based on the work of Richard Teach, from personal communication and several of his published articles (e.g., Teach, 1990; Teach et al., 2005).

Most business games played worldwide are based on the rigid, highly reductive, and outdated models of the traditional free-market economy (mainly dealing with the competition on markets for customers and preference of cost leadership strategies to win, leaving out the supplier side, etc.). These models do not take ethical aspects into account. Players do not deal, for example, with compliance or business ethics. They cannot put into practice sustainability, "green production," "zero waste," ethical consumerism, etc. simply because the game's reductive model game does not allow such decisions. Therefore, most rigid-rule business games are biased models of reality that follow narrow economic narratives.

The didactic approach of such games fails to wholly consider ethical issues. Sustainability and more ethical strategies would require longer periods of gameplay for the impact to become apparent. However, time is always limited in the use of a game, and many business games are played in too few rounds to facilitate sustainable (long-term) strategies that are successful enough for winning. Ethical decisions make no sense from the perspective of players with a mindset of winning the game with

short-term profit-oriented strategies. Therefore, many of these games' designs are aimed at short-term and simple exploitation strategies and are focused on ownership, loss, and avoidance and scarcity (see above Octalysis drives, which are mainly black hat and extrinsic). Participants should not think about long-term sustainability, higher purposes, or creativity. Through these games, participants receive an education in business and economics but only to the extent that it aligns smoothly with specific consumption-oriented mainstream and neoliberal policies. Here, the manipulation is subtle, unconscious, and hidden, as many sponsors, designers, and facilitators themselves believe in the correctness of this economic paradigm and way of life.

Moreover, many facilitators lack any strategy for dealing with playing teams that must declare bankruptcy in traditional business games. Consequently, facilitators of business games tend to provide conscious or unconscious support, particularly to teams that fail to thrive. Adopting the role of the bank, facilitators give unlimited loans to keep teams and participants in the game. Participants' engagement in high-risk and unethical behavior is supported, and the learning effect may be that managers can evade real responsibility and consequences for their risky decisions because someone will bail them out. This is precisely what is happening worldwide in the current economic crisis: the games used and the way in which they were facilitated conveyed the wrong message, leading to real-world business being approached as gameplay or gambling with resources.

Often, the business ethics and manipulation dimension is wholly omitted from the debriefing stage. Even more problematically, the described weaknesses of traditional business games' simulation and didactic models are not covered in the game's evaluation, because the ethics and manipulation dimension is excluded from the evaluation process. Designers, facilitators, and participants still believe in neoliberalism and a pure free-market economy. They concoct a reductive and normative model and reality and then think that the game is ontologically true and fully representative of reality. They erroneously believe that winning a game demonstrates competencies and learning. Many business schools grade and assess students based purely on their game results. Students with better financial results, simulated stock prices, market values, and KPIs (key performance indicator) in simulation games are awarded better grades despite having participated in no debriefing or reflection on the game's underlying assumptions and models. The schools do not reveal or challenge the simulated variables and interconnections, and the game model thus remains a black box. In this way, even traditional simulation games are intentionally or unintentionally used as one-dimensional and biased media of propaganda and self-fulfilling prophecy.

In an interview, Allen Feldt (co-founder of ISAGA) expressed similar concerns. As an example, he took another type of business game with a purely socialist planning economy background:

> Games are powerful because they teach by experience. But the danger is: it teaches by experience. People are not capable of disbelieving things that happened to them. They believe implicitly 'it must be true, because it happened to me'. Games can be designed to lie, and they give false experience. We must be vigilant in protecting this from happening ...

> Debriefing is important, by an honest debriefer. I know some well-intentioned professors who believe so strongly in what they are teaching that they lie even when they are not thinking that they are lying. They say things that are not true. For example, Marxists do this. They teach Marxism as sociology, but not all of Marx's ideas are true. But they do it with the best of intentions ... You have to limit complexity for effective teaching through gaming ... but you can misrepresent. (Personal communication with Kriz, see Kriz et al., 2019).

The examples from Richard Teach and the above quote from Allan Feldt demonstrate that every game can intentionally or unintentionally become a medium for propaganda purposes, manipulation, and ideological indoctrination. Debriefing plays an important role in preventing the misuse of games. As stated above, the exertion of influence is part of any attempt to change a system and/or to support learning processes through the use of gaming. This is acceptable and remains harmless if the game-based learning environment respects players' rights to accept or reject it. Gaming participants are often obliged to attend games as a required part of their educational program or workplace activities and must accept their role as a player in the game; it is often not a voluntary activity. From an ethical perspective, we should take care to limit the degree of manipulation, and this means that players must have the right to refrain from playing. From a pragmatic ethical perspective, facilitators of simulation games must consider the participants' well-being and safety (Stewart, 1992; Leigh & Spindler, 2005). Generally, a trusting and open atmosphere among participants should be fostered, and participants must be informed about the game's objectives and purpose. In practice, sometimes a so-called full value contract may be implemented—a contract (i.e., a verbal or written agreement) that determines the ways in which participants will interact with one another to optimally support learning. Such a catalogue of values corresponds to desired behavior patterns (e.g., to give and receive feedback, etc.) and to behavior patterns that will not be tolerated (e.g., physical violence, bullying, etc.).

Participants must have the right to step out of the gameplay at any time should they wish to do so (the "challenge by choice" principle) and to continue with the game activity in an observer role. Furthermore, a proper debriefing is ethically necessary because it offers opportunities to step out of the role one played in the game and deal with stress, strained group dynamics, and the emotional processes of the gaming experience itself. The debriefing is also key to limiting manipulation because the simulation model and the didactic model of the game should also be reflected on and discussed. The commonalities and differences between the game and reality should be discussed in depth, and alternative ways of behaving both in game and in reality should be investigated. The debriefing should lead to a rigorous analysis of the underlying variables and their interconnections to create a better understanding of the limits of the simulation model. Debriefing should enable participants to draw useful lessons learned not only to align with pre-defined patterns and existing paradigms but also to create opportunities and ideas to change existing situations, decisions, and underlying mindsets.

Unfortunately, debriefing can also be misused and—in the worst-case scenario—may reinforce unethical messages and influences mediated by the game. Therefore, additional reflection loops are required. To ensure that gaming leads to better

learning and not to stronger manipulation, it is necessary that a multiple-perspective approach is adopted. In principle, increased diversity can reduce the danger of manipulation. This principle can be implemented by using a diverse group of participants (i.e., with a mix of cultures, disciplinary backgrounds, genders, ages, etc.) and multiple facilitators. Furthermore, a diversity of debriefing methods and a diversity of games within a program can minimize the potential for manipulation. Debriefing and evaluation should consider whether anyone perceives instances of manipulation during gameplay. In addition, feedback loops and meta-debriefing among communities of practitioners (facilitators, designers, educational program managers, etc.) should be implemented along with constant and transparent formative evaluation processes and research studies. In particular, a multidisciplinary dialogue (or, in the tradition of Richard Duke, a "multilogue") with all stakeholders using a simulation game (including participants) should be established with respect to the entire design, learning process, and transfer or intervention (Kriz, 2003, 2010).

11.5 Embodied Experiences in Games

According to Allan Feldt, the danger of manipulation is enhanced by the fact that people tend to believe more in things they have directly experienced themselves. Gaming as a form of learning by experience can lead to "false" assumptions based on the manipulation of experience and false information. In general, every game also has the positive potential to create embodied knowledge (Klabbers, 2009), which increases the meaning, embeddedness, and practicability of knowledge. Embodiment means that human cognition and the creation of mental models depend on the kinds of experience that come from having a body with various sensorimotor capacities and that these individual sensorimotor capacities are themselves embedded in a more encompassing biological, psychological, and cultural context (Varela et al., 1991). Simulation games can offer different levels of embodiment.

For example, three famous games created by the founders of the gaming discipline simulate developing nations in which players must make decisions for the well-being of the simulated country and its people. We isolate only the representation of the variable "population" as one aspect. In Stratagem (designed by Dennis Meadows), players are in the role of government, and the affected population and variables are represented merely by numbers on a computer screen and coins on a game board. The population is thus represented on a more abstract level and experienced as less embodied. In HEX (designed by Richard Duke), the population, food, and other variables are tangible game pieces. Game figures (representing the population) who do not have sufficient food (represented by beans) at the end of a simulated round die and are removed from the game board amid an enacted funeral ceremony. This funeral event, in particular, elicits stronger concrete feelings (often shame, sadness, or anger) and embodiment. In SIMSOC (designed by William Gamson), an entire simulated society is created in a complex role-play. Here, the population is simulated in the most concrete and embodied format, because the

players themselves represent the population. Players with wealth can earn simulated money and purchase real food, such as chocolate and soft drinks, while players with less income in the game might merely survive and be able to afford only water and dry bread (and the game lasts 1 or 2 days!); poor players struggle for survival and may experience simulated death after several rounds (these players then cease the gameplay and assume an observer's role).

Embodiment is an excellent means of gaining certain insights, but it may also provoke strong emotions and stress. Strong embodiment combined with strong emotions also warrants intense debriefing, and the facilitation and debriefing must be sensitive to the psychological safety of the participants (see below). At the same time, a strong embodiment may reduce the perceived need for, or interest in, a long and intense debriefing. First, players may be exhausted after their full engagement in the gameplay and may no longer be able to concentrate on an extensive debriefing that seems boring, passive, and wearisome. Second, the embodiment creates the experience and belief that the game is so similar to reality that debriefing is no longer needed. Participants believe that debriefing can be skipped because the game is experienced as a "perfect" model of reality and the gameplay speaks for itself. This creates an increased danger of manipulation and the illusion of acquiring "true" knowledge and skills.

The examples of HEX and SIMSOC also reveal another potential risk: participants may feel emotionally overstrained, and aspects of the gameplay may be perceived as culturally inadequate (e.g., dealing with death and funerals in certain ways, unequal treatment for long periods during gameplay, allowing certain players to drink only water for an entire day while others simultaneously receive good food, etc.). This is another reason why it is so important to implement the rule that participants must have the right to withdraw from gameplay at any time should they wish to do so (the "challenge by choice" principle, see above). Players must be informed of this right during the game briefing.

Simulation games are often described as learning methods that offer a safe and error-friendly environment for participants to experiment with new behaviors and routines. It is a key advantage of simulation games that players can make and learn from mistakes and failures. Peters et al. (2012) investigated the phenomenon of a safe environment and made a distinction between two aspects of this concept. In the first place, there is "systems model safety": erroneous choices during gameplay will not directly affect real-life situations. In this way, participants can learn from poor decisions or failures without concern for real-world consequences. The second aspect is "psychological safety": participants must perform during gameplay, and their performance is observed and measured by others. Players might experience in-game scenarios that they are unfamiliar with, and this may cause them to feel uncomfortable. Certain situational aspects may be perceived as disturbing (e.g., time pressure and competition in the game, the behavior and communication of other participants, confrontation with their own lack of competence and fear of loss of face, expected behavior that is in conflict with their own values, etc.). Although a certain level of imbalance or discomfort is often required for an effective learning

process and is intended by the game, it becomes a problem if the level of discomfort or insecurity becomes so great as to render the player dysfunctional.

In this book, our colleagues Mieko Nakamura (Chap. 8) and Marieke de Wijse and Elyssebeth Leigh (Chap. 9) discuss further valuable guiding principles of facilitation, debriefing, and ethics. These concepts help elucidate the role of the facilitator and add information about important aspects that can help enhance learning and prevent dysfunctional discomfort and unethical or manipulative processes in simulation games. From their insights and further publications (de Wijse-van Heeswijk, 2021; Schwägele et al., 2021), we wish to emphasize one more finding from current research. Designers and facilitators should take greater care to engage in constant formative evaluation and in-between debriefing throughout gameplay. Evaluation and debriefing should not only be implemented at the end or after gameplay but must be interlaced into the entire gaming activity. Facilitators must engage with impulses from gameplay situations and results, participants' behavior, and the learning environment during the entire game-based activity. This can result, for example, in discussions of experiences and observations, feelings and needs, and the emergence of new learning goals and expectations for the participants after every game round or in an extra timeout session. Moreover, connections to theoretical concepts, reflections on the game's simulation and didactic models, and practical transfer issues can be debriefed during the game. This allows participants to assume a more active role in shaping their own learning processes and to make them more self-organized, open, and free-form gaming experiences. Here, participants co-design their own learning processes and assume co-responsibility for the flow of the learning experience. Another advantage is that such an approach limits harmful and unethical processes and gives fewer opportunities for manipulation to operate. The designers and facilitators relinquish a measure of control and influence, and the participants enjoy greater empowerment.

11.6 Recommendations for Reflecting on Ethics and Minimizing Manipulation

11.6.1 Analytical Science Perspective

Ethical questions and concerns about manipulation in general can be described from the perspective of analytical science (Klabbers, 2009). Here, games are used to test hypotheses and to develop theories. This perspective is concerned with the honesty and integrity of science and the ethics of research and science in general. For example:

- Authorship and research standards: the dishonest theft of other authors' ideas, inadequate citation of colleagues, violations of copyright, manipulation of data, etc.

- Review process: The peer review process should contribute to the quality control of the research. However, journals' review processes may be corrupt or biased owing to leading paradigms of academic understanding.
- Ethical standards: How should facilitators behave with participants (from this perspective, test subjects) in gaming simulations that are used as quasi-experimental environments?
- Integrity: (Consciously) biased interpretation of findings to please certain sponsors of a research study.

11.6.2 Design Science Perspective

Several interconnections exist between gaming simulations and ethics from the design science perspective (Klabbers, 2009). Here, games are used to foster learning at the individual, collective, and organizational levels and to support decision-making, policy development, and the transformation processes of large socio-technical systems. Designing and using simulation games can facilitate better understanding, in an applied and pragmatic way, of the (un)ethical aspects of real-world decisions. Issues of ethics and manipulation must be studied by experiencing complex and ambiguous situations and dealing with complex problems. In managing complex systems, the answers are almost never simply "yes or no" or "right or wrong" statements.

11.7 Ethics and Manipulation as Game Content

Various topics relating to ethics may form the content of games or the motivation for using a game to train participants to base real-world decisions on gaming simulation methods. The idea is to make a positive social contribution by applying a game and to change existing dysfunctional situations into preferable scenarios by using gaming simulation (Kaneda et al., 2016).

Some examples are as follows:

- Using business games focused on compliance and business ethics to prevent corruption and unethical business practices.
- Using games focused on climate change and energy consumption to foster environmentally sustainable behavior.
- Using games for disaster management and crisis simulations to train participants for crisis situations and/or to develop better strategies for decision-makers, etc.
- Using games to understand and mitigate harmful group dynamics, to build trust and empathy, to reduce prejudice and social conflicts, etc.
- Using games to demonstrate and reflect on techniques and processes of manipulation and indoctrination, fake news, and filter bubbles.

11.8 Ethics Within the Process of Gaming Simulation

Ethics can further be related to the gaming simulation process. Various ethical concerns and dimensions are involved in the process of game design; in the process of game application, including briefing, playing, and debriefing; and in the process of evaluating a game. Within the process dimensions, several critical factors for designers, facilitators, and evaluators determine whether an ethical learning environment can be created for specific participants and users of the game. From the perspective of the design science paradigm, several key questions surround the practical ethical and manipulation concerns (Kriz & Hense, 2006; Kriz, 2012). The following list of questions may be seen as prompts for further research but also as a practical list for reflection during meta-debriefing of game designers and facilitators. We believe the list may form a starting point for discussion among the simulation and gaming community and lead to the establishment of a code of ethics emerging from this study.

11.8.1 Design Process

- How can game designers be prevented from violating other designers' intellectual property rights (theft of game concepts in the worst-case scenario) during the design process?
- How can a simulation model be designed to include the ethical aspects of decisions and the simulated reality?
- How can we sensibly and appropriately address and increase awareness about issues of gender, diversity, and culture (not only in design but also in facilitation and debriefing)?
- How can game design that is aimed at manipulating and disseminating false information be prevented?
- How should we deal with the unethical misuse of power and the micropolitics of stakeholders who participate in the development of the simulation game model?
- How can real multi-perspectives and dialogue be ensured in the design process?
- How can we minimize all (unnecessary) complexity, uncertainty, and ambiguity in the scenario and the gaming materials (that are superfluous to the learning goals)?
- How can the game be designed in such a way that game elements such as rules and steps of play are less rigid and normative and more open to ensure sufficient freedom for facilitators and participants to contribute to and tailor their own learning process?
- How can we design a simulation game that presents an appropriate level of uncertainty, one that stimulates participants to develop strategies for action and decision-making, but that is not overburdening as a result of excessive complexity and ambiguity?

11.8.2 Facilitation and Gameplay

- How can we avoid negative consequences relating to the use of gaming (e.g., addiction, emotional hurt, and manipulation with games)?
- How can we agree in advance on a "full value contract"—rules and procedures for dealing with one another in a way that ensures psychological safety and learning (including setting up challenges by means of the choice principle)?
- How can we manage participants' expectations prior to and during gameplay, including, for example, a shared understanding of purpose and learning objectives?
- How can a "safe" learning environment be created for all game participants? Particularly in games that are designed to deal with conflict and intercultural communication and in which frustration and demotivation are elements of the game's scenario?
- How can we determine (and perhaps adapt) the presence of game elements and embodied experiences that may provoke feelings of discomfort in the particular target group?
- How can a didactic process that considers ethical aspects and manipulation in the game be established?
- How can insidiously unethical uses of games (e.g., the client in a company officially uses a game for training purpose, but, in reality, he wants to use it as a hidden assessment, to test his employees, and a dependent facilitator is forced to keep the real purpose of the game secret) be managed?
- How can facilitators deal with the manipulation and disturbing behavior of participants on the spot? How can they manage team conflicts and mobbing among participant groups and protect players from dysfunctional behavior during gameplay?
- How can the over- or under-challenging of participants for extended periods during gameplay be prevented? How can gameplay leading to too much stress or frustrating boredom be salvaged?
- How might participants be empowered to adopt more active roles during gameplay for their own learning transfer and reflection on actions?
- How can a certain "fun factor" be incorporated into simulation games with the aim of ensuring at least some moments of relaxation and positivity during the flow of activities?
- How can we enhance empathy and sensibility for timely recognition of participants' discomfort (so as to take them aside for discussion, giving them the option of assuming an observer role, or, if multiple participants experience discomfort, to implement a timeout and debrief the situation)?
- How can we ensure that participants do not leave the game experience damaged or frustrated, and, if they do, how can we ensure that they receive the necessary care?

11.8.3 Debriefing/Evaluation

- How can we ensure that sufficient time is allowed and appropriate methods are used to help participants cool down and step out of their simulated roles?
- How can we address ethics and manipulation as topics for reflection during game debriefings?
- How can we create awareness of (un)ethical and manipulative methods and questions used in game debriefings or evaluations (this is often also culture-specific)?
- How can a learning environment founded on dialogue and creative "conflict" of exchanging arguments and ideas and giving feedback be established in a constructive way?
- How can overgeneralization be minimized and support be provided to allow participants to discuss the differences between games and reality?
- How can debriefing be held in such a way that encourages all participants to reflect on the game as a hypothesis or model of a socially constructed reality and remain open to reframing and sharing interpretations collectively from a variety of multi-perspectives?
- How can we open the "black box" and rigorously reflect on the underlying assumptions and interests of the designers and sponsors of simulation game models?
- How can we stimulate participants to reflect on the interconnections between simulated system elements and gaming elements?
- How can we mine impulses from gameplay, participants, and learning environments for fruitful in-between debriefing and formative evaluation during gameplay to enable participants to co-design and customize their own learning processes?
- How can we ensure that feedback offered between gameplay rounds and debriefings pertains to the role and the performance of that role and not the person themselves?

Acknowledgments This work was supported by JSPS KAKENHI Grant Number 18K03014.

References

APA American Psychological Association. (2021). Manipulation. In *APA dictionary of psychology*. Retrieved December 10, 2021, from https://dictionary.apa.org/manipulation

Bedwell, W. L., Pavlas, D., Heyne, K., Lazzara, E. H., & Salas, E. (2012). Toward a taxonomy linking game attributes to learning: An empirical study. *Simulation & Gaming, 43*(6), 729–760.

Chou, Y. (2015). *Actionable gamification: Beyond points*. Badges and Leaderboards.

de Wijse-van Heeswijk, M. (2021). Ethics and the simulation facilitator: Taking your professional role seriously. *Simulation & Gaming, 52*(3), 312–332.

Deterding, S. (2015). The lens of intrinsic skill atoms: A method for gameful design. *Human-Computer Interaction, 30*, 294–335.
Duke, R. D. (1974). *Gaming, the future's language*. Sage.
Duke, R. D., & Geurts, J. L. A. (2004). *Policy games for strategic management*. Dutch University Press.
Duncan, R. D. (2018). *Influence versus manipulation: Understand the difference.* Retrieved December 10, 2021, from https://www.forbes.com/sites/rodgerdeanduncan/2018/12/21/influence-vs-manipulation-understand-the-difference/?sh=695a8d7c470c
Gallus, J. (2017). Fostering public good contributions with symbolic awards: A large-scale natural field experiment at Wikipedia. *Management Science, 63*(12), 3999–4015.
Kaneda, T., Kanegae, H., Rizzi, P., & Toyoda, Y (2016). Simulation and gaming in the network society. Springer.
Kim, A. J. (2018). *Game thinking: Innovate smarter & drive deep engagement with design techniques from hit games*. Gamethinking.io.
Klabbers, J. (2009). *The magic circle: Principles of gaming & simulation* (Third and Revised Edition). Sense Publishers.
Kriz, W. C. (2003). Creating effective interactive learning environments through gaming simulation design. *Simulation & Gaming, 34*, 495–511.
Kriz, W. C. (2010). A systemic-constructivist approach to the facilitation and debriefing of simulations and games. *Simulation & Gaming, 41*(5), 663–680.
Kriz, W. C. (2012). Gaming simulation and ethics: Reflection on interconnections and implications. *Studies in Simulation and Gaming, 22*, 65–68.
Kriz, W. C., & Auchter, E. (2016). 10 years of evaluation research into gaming simulation for German entrepreneurship and a new study on its long-term effects. *Simulation & Gaming, 47*(2), 179–205.
Kriz, W. C., & Hense, J. (2006). Theory-oriented evaluation for the design of and research in gaming and simulation. *Simulation & Gaming, 37*(2), 268–283.
Kriz, W. C., Clapper, T. C., & Harviainen, J. T. (2019). Obituary for Allan G. Feldt: Pioneer in urban gaming and co-founder of the International Simulation and Gaming Association (ISAGA). *Simulation & Gaming, 50*(3), 408–410.
Landers, R. N. (2015). Developing a theory of gamified learning: Linking serious games and gamification of learning. *Simulation & Gaming, 45*, 752–768.
Leigh, E., & Spindler, L. (2005). Congruent facilitation of simulations and games. In R. Shiratori, K. Arai, & F. Kato (Eds.), *Gaming, simulations, and society* (pp. 189–198). Springer.
Marczewski, A. (2018). *Even Ninja monkeys like to play: Unicorn edition*. Gamified UK.
Mollick, E., & Rothbard, N. (2014). Mandatory fun: Consent, gamification and the impact of games at work. The Wharton School Research Paper Series.
Noggle, R. (2020). *The ethics of manipulation. The Stanford Encyclopedia of Philosophy*. Stanford University Press.
Peters, V., van de Westelaken, M., & Bruining, J. (2012). Simulation games as a safe environment. *Studies in Simulation and Gaming, 22*, 59–64.
Salen, K., & Zimmerman, E. (2004). *Rules of play. Game design fundamentals*. MIT Press.
Schell, J. (2008). *The art of game design: A book of lenses*. Elsevier.
Schwägele, S., Zürn, B., Lukosch, H. K., & Freese, M. (2021). Design of an impulse-debriefing-spiral for simulation game facilitation. *Simulation & Gaming, 52*(3), 364–385.
Stewart, L. P. (1992). Ethical issues in postexperimental and postexperiential debriefing? *Simulation & Gaming, 23*(2), 196–211.
Teach, R. D. (1990). Profits: The false prophet in business gaming. *Simulation & Gaming, 21*(1), 12–26.
Teach, R. D., Christensen, S. L., & Schwartz, R. G. (2005). Teaching business ethics: Integrity. *Simulation & Gaming, 36*(3), 383–387.
Varela, F. J., Thompson, E., & Rosch, E. (1991). *The embodied mind: Cognitive science and human experience*. MIT Press.