

Gaming Research in Policy and Organization: An Assessment From the Netherlands

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Abstract

In this article, the authors assess the use of gaming/simulation for research purposes within the organization and policy sciences. They describe three categories of research: (a) gaming/simulation for pure research, (b) gaming/simulation for policy development, and (c) gaming/simulation for policy implementation and organizational change. For each category, an example project is described. Studying six projects and interviewing experts on these projects, they draw lessons for each category. At the end of the article, they conclude with eight methodological characteristics of gaming for empirical-analytical study of policy and organization projects.

Keywords

assessment, change management, methodological characteristics, organization science, organizational change, policy development, policy implementation, policy science, pure research, research with gaming

The aim of this article is to review how, in the Netherlands, academics use gaming/simulation for research purposes within the organization and policy sciences. Several universities have stable gaming/simulation groups, which work within the general area of management, policy, and organization sciences. For a retrospective assessment of

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several projects, we have selected, out of a larger number, three very different academic (action) research projects. This assessment involved extensive interviews with the researchers and other gaming experts.

In this article, we discuss, analyze, compare, and evaluate these projects in particular and the Dutch policy and organization research gaming scene in general. The last part of this article also summarizes the methodological insights from this assessment.

For almost 40 years now, the Netherlands has proven to be a productive and fertile testing ground for gaming/simulation in the fields of management, policy, and organization. The country is indeed a relevant one for an assessment of the research purposes in the field of gaming/simulation. To underline this remarkable development and as an introduction to this article, we will start with three observations concerning the discipline of gaming/simulation in the Netherlands.

Observation 1: The Lonely Small Planet

In the Netherlands, gaming/simulation is particularly visible at universities. However, unnoticed by mainstream policy and organization literature, gaming/simulation is also used by a growing number of major Dutch commercial and public organizations as a tailor-made intervention process for developing and implementing policy and organizational change. Dutch scholars and professionals using gaming/simulations have frequently reported on the use of gaming in extensive policy and change projects in a large variety of organizations. In the leading professional and academic journals on organization studies, however, one finds little about successful gaming applications. *The Academy of Management*, a leading professional and academic society, has indeed paid attention to gaming/simulation, but these initiatives resulted in most cases from work done by Dutch members of some of the divisions of this society.

Observation 2: A Dutch Niche?

Reviewing the past issues of the journal *Simulation & Gaming* as well as the proceedings of many conferences of the International Simulation and Gaming Association (ISAGA), one comes to the conclusion that the specific use of tailor-made gaming/simulations as integral and sometimes even central parts of interactive policy or change projects seems to be a "Dutch niche" in the gaming profession. Many ISAGA proceedings are available that are relevant for our topic (e.g., Crookall & Arai, 1992, 1995; Geurts, Joldersma, & Roelofs, 1998; Mayer & Mastik, 2007). However, there are also comparable applications in other countries (Duke & Geurts, 2004; Kriz, 2007; Liddell & McMahon, 2006; Orišek & Schwarz, 2008; Ruohomäki, 2003).

The use of gaming/simulation as tailor-made intervention for change must be distinguished from its successful role in management education and training (e.g., Geurts, Duke, & Vermeulen, 2007). The Dutch niche position proved to come as a surprise to those Dutch professionals and consultants who do not participate in the international gaming networks. An illustration of this is as follows: In 2006, the leading Dutch

journal on management and organization, *M&O*, together with *SIOO* [AQ: 1], an organization that educates change professionals, selected as the topic for their yearly, well-attended conference “new interactive methods for organizational change.” The focus was on discussing the plethora of emerging interactive and narrative group techniques, such as future search and large-scale intervention. The authors of this article were invited to be co-organizers and plenary speakers (Boonstra & de Caluwé, 2007; Geurts, Altena, & Geluk, 2007). However, when we asked whether gaming/simulation, clearly an interactive approach, should be a conference topic, the senior organizer and host of the conference looked surprised and voiced his opinion that gaming for organizational change was well established and did not need to be brought to the attention of the professional community anymore. Obviously, this senior colleague regarded gaming/simulation as a broadly accepted and valid intervention method for organizational change.

Observation 3: The Dutch Treat

The Netherlands has always provided *Simulation & Gaming: An Interdisciplinary Journal* with authors and readers, and the proportion of Dutch members within the ISAGA is substantial. In recent years, Simulation and Gaming Association–The Netherlands (SAGANET), the Dutch simulation/gaming association, is blossoming as never before.

Not only is gaming popular generally in the Netherlands, but gaming is also a growing field for scholars and the consulting profession: It is a serious career opportunity for young scholars and professionals. In addition, many lecturers, consultants, and trainers are offering gaming as an important part of their professional services, be it training, change, or policy. Management-oriented monographs on gaming/simulation sell well in the Netherlands, and leading Dutch publishing houses have contacted us to develop a new and extensive handbook for the Dutch professional and educational market. Several for-profit companies create a substantial turnover offering gaming as a specialized intervention technique for policy development and organizational change. Some large multispecialized consultancy firms, like Twynstra Gudde and Accenture, develop and use gaming for organizational change. Several small specialized firms have developed targeted and niche policy games.

However, these observations reveal three remarkable characteristics. First, in a number of respects, which we will elaborate later, the format and style of gaming in the Netherlands is different from the gaming practice in the many other countries that have successful gaming communities. In the Netherlands, gaming has established itself as a tailor-made organizational support and intervention process for policy development and change. Big projects with large budgets have been conducted in major companies and government agencies (see, for example, Geurts, de Caluwé, & Stoppelenburg, 2000).

Second, organizations in the Netherlands use gaming more often and more intensively than organizations in other countries. This is our impression when we compare

publications and when we talk with our international contacts about the gaming practice in different countries. In the Netherlands, gaming/simulation as a tailor-made intervention is often chosen as a realistic option.

Third, even though Dutch academics study and evaluate the gaming phenomenon extensively, this particular Dutch niche of gaming for policy and change is not well known internationally, and it is not sufficiently well discussed in international professional and academic societies and journals.

The main thrust of this article is to help address this shortcoming in particular. The article summarizes the major insights of Dutch policy gaming, by offering a retrospective comparative analysis of research projects in which gaming/simulation was a major methodology. We have concentrated on a number of scholarly users of gaming/simulation who decided to devote their PhD work to this methodology. As will be shown in the rest of this article, all of the studies can be seen as combining two scientific paradigms. Most scholars merge the empirical-analytical approach with the ambitions and methods of applied “design” science, and this is a combination that seems to come naturally to gamers (Klabbers, 2006 [AQ: 2]; Kriz & Hense, 2006).

Lack of space here precludes us from using three evaluated projects as examples. However, even this small selection will support the general conclusion that research with gaming/simulations has distinctive, exclusive, valuable, and varied contributions to the body of knowledge of the policy and organization disciplines and its related professional practices, like change management, intervention science, facilitation, group dynamics, and the like.

To portray these varied contributions, we have selected studies from three broad categories of projects. The first category is gaming/simulation for **pure research**. Within this category, it is the initiator of the game (the researcher) who is focused on learning from the game. By using a game, he or she tries to create a research environment that allows experimental manipulation and observation of players. He or she tries to understand what is happening in the gamed environment, to find empirical data or to develop theory.

The second category is gaming/simulation for **policy development**. In this case, both the policy researcher and the participants are supposed to learn from the gaming/simulation. Indirectly, also the sponsor of the project, usually an organization or a person within the policy or management practice wants to learn in order to develop a better policy.

The third category is gaming/simulation for **organizational change**. In this application, gaming/simulation is used to introduce new behavior or new thoughts within an organization or within a network of organizations. It is the intention of the gaming project to facilitate the participants who are involved in the organizational change, to understand new thinking or to acquire new skills.

The Structure and Database of This Article

To prepare for this article, we analyzed and summarized six gaming projects reported in six PhD theses. We choose these six from a long list of gaming projects that have

been accomplished since 1980. All the short-listed projects led to a public academic publication (dissertation), and the projects were all combined with elaborate empirical work. In this article, we will describe only three of the six projects as an illustration for each category. However, the lessons learned and the findings are based on the six projects.

In the **pure research** category, we selected Ellie Roelofs' PhD study, in which she used a policy game to study the effects of a well-known problem-structuring method on policy quality (Roelofs, 2000). In the same category, we also looked at Frans Bouke van der Meer's path breaking and early PhD study (1983). He used a game to study how social patterns arise and change in organizations. van der Meer was among the very first in the Netherlands to receive a doctoral degree within the disciplines of organization and policy based on a thesis in which a gaming/simulation was the central element.

In the **policy development** category, we will summarize the PhD study by Martijn Kuit (2002). This study deals with the potential effects of a governmental deregulation plan in the energy sector. We also looked at the PhD study of Hanneke Mastik (2002), who used a game as a policy aid in the discussion on a new environmental law for manure management and its impact on pig farming (see also Termeer, Mastik, Scalzo, & In 't Veld, 1995)

The last category on **implementing change** contains the PhD studies of Leon de Caluwé (1997) and Joerie van Laere (2003). de Caluwé used and evaluated a game as the key element of a massive organizational change process in an insurance company. van Laere developed and evaluated a game to help introduce new forms of coordination in a large municipal police force.

Two additional PhD projects that were finished recently are also mentioned included in this article. Sebastiaan Meyer (2009) [AQ: 3] used gaming/simulation to study transactions in supply chains and networks. Geertje Bekebrede (2010) reported on the evaluation of a computer-based or serious game to support policy makers' understanding of the adaptive and emergent properties of complex infrastructural systems, such as the harbor extension of Rotterdam.

An important step in our assessment was a series of retrospective interviews with the six researchers of the six projects. We debated with them on their hindsight into the use of the gaming/simulation in their project. Finally, we did a round of expert consultations; we conducted focus interviews with several Dutch gaming experts, both consultants and academics.

The structure of this article follows the three categories introduced above; each category is illustrated with one example. Next, several observations and practical hints pertaining to that category are induced from the data. The functions of gaming/simulation for that category are included. The final part of this article presents a number of methodological characteristics of the gaming approach that seem to be relevant. They summarize our explanation of why gaming/simulation has a unique and important role to play in the sciences of policy and organization. They also summarize the special format and style of gaming/simulation developed in the Netherlands.

Additional information on research activities regarding gaming for policy, management, and change in the Netherlands can be found in many publications of the members of the Dutch gaming community. We mention here a number of summarizing books: Geurts et al. (2000); Geurts, Joldersma, and Roelofs (1998); Duke and Geurts (2004); Klabbers (2006); Mayer and Veeneman (2003); de Caluwé, Hofstede, and Peters (2008). Directly relevant articles in the past years in *Simulation & Gaming* are Hofstede and Pedersen (2000); Rouwette, Vennix, and Thijssen (2000); Kuit, Mayer, and de Jong (2005); Wenzler, Kleinlugtenbelt, and Mayer (2005); P. Bots and van Dalen (2007); Mayer (2009); Wenzler (2009); P. W. G. Bots, Wagenaar, and Willemse (2010).

Category I: Gaming/Simulation for Pure Research

Measuring the Effects of Policy Structuring Methods

The project that fits into this category is the PhD study of Ellie Roelofs. She looked for an experimental answer to a fundamental question in the policy and decision sciences: “Do decision aids matter?” Roelofs took advantage of a relatively rare opportunity to control, to manipulate, and to compare a number of game runs of a complex policy game. The participants in the game were experienced civil servants from six municipalities in the Netherlands. In half of the runs, the players were facilitated by a specific problem-structuring technique, while, in the other runs, problem structuring was not specifically stimulated, nor aided, but left to spontaneous processes in the game.

Problem structuring is an important part of policy development. Roelofs defines it as the “activities of representatives of various organizations which are directed at influencing the definition of an issue” (Roelofs, 2000, p. 173). Roelofs stresses that problem structuring does not only takes place at the beginning of a policy trajectory, but the (collective) definition of an issue can also be at stake at any moment in a policy process.

Roelofs concentrates on several dimensions of the **complexity** of policy issues. For **cognitive** complexity, she defines the following criteria:

- *aspect differentiation*: “the richness of ideas the policy makers hold about the issue”
- *aspect integration*: “the extent to which the various issue aspects are ordered and linked to each other to form clusters of ideas which add meaning and transparency to the policy actors’ understanding of the issue”

For **sociopolitical** complexity and for **normative** complexity, she develops comparable indices. Altogether she uses six criteria.

A gaming-simulation called BANS, served as the empirical environment to apply these six criteria to problem-structuring activities. BANS simulates public policy making within a local community. The game has several periods, during which participants meet to discuss local policy issues and/or to create collective policy products

(plans, memoranda, etc.). The steps of play lead the players into the drafting of these products such as a timetable and agenda for involving the public at large in the simulated debate. The order and chairing of these meetings are left to the participants. Roelofs used her standard version of BANS in three control runs. For the three experimental runs, she added more structure to the game, that is, she introduced the oval-mapping technique of Eden, Jones, and Sims (1983) and Eden and Ackermann (1998) to help the problem structuring. However, given time constraints, she had to develop a shortened version of the oval-mapping technique.

The study used questionnaires as well as observation methods to follow the policy structuring activities and their results and to assess the six quality criteria for problem structuring. Each of the six runs of the game resulted in a long text (45 pages) with observation notes. Roelofs used techniques from the area of content analysis to reduce the observation data into an analyzable format.

In her analysis, Roelofs was able to relate the criteria scores to the content of the policy products that the players created during the game, as a way of comparing differences in problem structuring with differences in the content of policy outputs.

In summary, she found less pronounced effects of the problem-structuring method than those that she had expected. The intervention with oval mapping seems to have resulted in a positive but rather limited effect on aspect integration and differentiation.

Roelofs' experiment illustrates not only the advantages, but also a number of obstacles in using gaming/simulation for policy and organization research. Because this is the focus of this article, we will describe some of the conclusions on this topic that emerged during our study. We will describe five lessons learned from the study of these projects, the interviews with the researchers and the experienced gamers:

- games are quasi experiments with clear advantages and some disadvantages;
- games open closed doors and create possibilities;
- specific dilemmas are part of the research design;
- member check [AQ: 4] as a validity test is important; and
- control groups also want to learn; it is unethical to deprive some people of a learning opportunity.

Games are Quasi Experiments

The strongest advantage of gaming/simulation as a social science research tool is the possibility of systematically manipulating variables in the most realistically possible organizational environment and of measuring the effects in a systematic way. Statistical methods can also be used. This came out of our assessment of the totality of the Dutch experiences.

Gaming/simulation offers the possibility of applying statistical methods in a study that is, in essence, a qualitative project (see Dörner, 1996, Miles & Huberman, 1994). In a real-life context, it is almost impossible to find situations in which comparable

systematic research can be done and both qualitative and quantitative comparisons can be made. Of course, the traditional laboratory research is also well suited for doing systematic comparative research. However, in laboratory experiments, the situation is often so controlled and so artificial that its results have limited real-life resemblance and applicability, and are thus difficult to generalize.

Another clear advantage is the possibility of offering identical policy environments to the experimental and the control group, while, at the same time, structuring the stimulus for the experimental and control groups in the desired fashion. For example, in the BANS experiments, the steps of play and the policy products that the players were asked to produce made it possible to plan and test data collection in advance and to make sure that the data sets for all runs were comparable.

The day-to-day practice of policy making is often a murky and interrupted process, with many rounds, steps, or phases, and it is hard to observe and interview the authors of policy documents while the policy makers are writing them. It is not without reason that the majority of informative personalized histories of policy making can be found in biographies and in the reconstructive and descriptive case studies of historians and investigative journalists. Minute longitudinal reconstructions of decision processes are rare and can often only be created after the fact (e.g., Allison, 1971; Hickson, Butler, Cray, Mallory, & Wilson, 1986; Nutt, 2002). The ability to produce a cockpit or situation room recording of an ongoing policy process based on extensive observations and detailed protocols of conversations seems to be the (near) exclusive benefit of policy gaming. Normally, observing the interactions in comparable policy processes will suffer from seriously biased viewpoint effects because the researchers can never be present at all events at all times. This can be done in a game, but at the same time, this nearness and presence of the observer can become “too close for comfort” and can create unknown and hard-to-avoid control effects. Players may not show their natural behavior and may be reluctant to say what they really think because of this nearness and presence—we may never know! We will elaborate this point again in the next section.

Games Open Closed Doors

Another general advantage that came through clearly from our assessment is the potential of gaming/simulation to reveal and study policy-relevant, but at the same time elitist and hidden, situations that are impossible or difficult to study in real organizations. Simulation makes it possible to study decisions and actions that are rare, dangerous, risky, and obscure. Often, it is difficult for researchers to gain access to, and to be at the right time to observe, the strategic behavior that is the object of their study. Managerial elites are notoriously hard to study. In policy processes, confidential information as well as socially unacceptable or clearly deviant behavior is not easily raised in standard interviews. However, the assessed projects show that within

the spontaneous situation of a game, people will not hesitate to show deviance and play "dirty strategic tricks" (see also Dörner, 1996).

Looking back at her study, Roelofs underwrites the advantages of games as environments for policy research. Roelofs's (2000) study confirmed to her that in a game it is possible

to follow policy makers around and write down their actions and conversations both in formal and informal settings. It has thus been possible to follow, to a certain extent, the dynamics in the way various participants approached an issue, took position and tried to convince others of their perception. (p. 186)

Similar advantages of gaming-simulation for policy research have been reported and positively used by other researchers, such as Dörner (1996) and Vissers (1996).

Managing Dilemmas in Research Design

Ideally, researchers want perfectly controllable experimental conditions as well as the surfacing of behavior that can be characterized "as in real life." These two criteria will often be contradictory. It is necessary in the project design to make a careful trade-off between these two desirable, but dilemmatic, conditions.

The playful element in games might seduce participants to display more risky behavior than in real life. However, some experienced, but careful, participants sometimes find it difficult to get fully into their role as they would in real life. Mechanisms like this can reduce the psychological validity of a research project and thus damage the predictive validity of the empirical results. The researcher might end up with the critique "it was only a game." A game will, to a certain extent, be organized chaos. The design team, the observing researchers, and the facilitators will have to live with uncertainty about what will actually happen during a game run.

In essence, the game-researcher hopes that the participants can act as freely as possible. However, for the researcher, complete freedom would create a situation of little control and strong unpredictability, which, in empirical science, are seen as serious threats to the internal validity and reliability of the research design. Game-researchers search for an optimal position on a continuum, which has, as extreme values, the traditional laboratory experiment and open field research, with gaming/simulation somewhere in the middle.

When selecting potential participants for a research-oriented gaming project, it seems wise to make sure that participants with relevant real-life field experience are included in the sample. These participants bring realism and daily knowledge and behavior into the game runs. It also seems worthwhile to combine gaming/simulation and field research. This allows for triangulation of data sources, so the one type of data will provide criterion validation for the other.

Member Check as Validity Test

Control effects are Roelofs's main methodological concern. Roelofs was cautious as to carry out "member checks," by asking her (expert) participants what they thought of the degree of realism of BANS. The participants filled in questionnaires, and Roelofs interpreted their answers against the typology for validity of gaming/simulations that Raser developed in 1969 and that Vissers and Peters have annotated (Raser, 1969; Vissers, Heyne, & Peters, 1995).

Roelofs (2000) has the following to say about the results of this assessment:

These outcomes suggest that BANS does differ from real-life experiences. However, it captures a number of characteristics of real-life policy-making processes that are realistic in the eyes of the players. The interactions between the various policy actors evoked by their position on the issues they are involved in, resemble those of the world the game-simulation tries to simulate. BANS provides a context for policy-making which is familiar in terms of the issues and interacting interests. The psychological and process validity BANS provides seems quite acceptable, as does its structure validity, albeit to a lesser extent. Its predictive validity appears to be limited. (p. 80)

Still, the artificiality of the gamed situation may be a problem, even though, as Roelofs explains, the game BANS had many features to support external validity. Of course, she does not know how much the behavior in the game differed from real life. Indeed, the important question is whether the game and the experiment were *valid enough* to measure specific and selected forms of behavior that one wants to understand in real life and to generalize to real life. Roelofs is right when she says that only the combining of experimental research with longitudinal field research will shed more light on this issue of validity.

Comparing the experimental and the control condition, Roelofs could not find much effect from the problem-structuring decision aid. However, it did prove difficult to give the technique enough "space and time" in the existing BANS game structure. Interestingly enough, it is exactly this basic BANS game structure that might have caused that the differences between the control and experimental groups are relatively small. BANS was certainly not a free-form game. On the contrary, BANS was designed as an educational tool and, accordingly, it contained many structuring elements to guide the learning process. The game also stimulated interactive policy making. Consequently, as Roelofs (2000) said,

Participants were probably inclined to pay positive attention to various interests, involving various actors, and to try to be sensitive to the needs and norms of fellow policy makers. Hence, participants were already inclined to show some of the behaviors problem-structuring methods aim to evoke of their own accord. (p. 187)

The answer cannot be found within Roelofs's data. In the future, repetitions of her interesting research design with different games, in combination with field evaluations, may bring more clarity to this matter.

The Control Group Wants to Learn

From an application or professional point of view, one could perhaps reframe Roelofs's study as the systematic comparison of two variations of the same game. Participants were invited to play a game and they did; obviously with much enthusiasm and positive learning experiences. Half of the groups (the experimental condition) stepped into a game process with somewhat more structure than the other half (the control groups). Roelofs saw her study as a decision-aid study, which used a game as the research environment. However, it can be reframed as a comparative evaluation of two versions of the same game. In such a study, one could have asked whether both of the gamed formats positively affected the policy structuring behavior in real life, neither of the two, or only one of them.

Our study of examples and our interviews of experts confirm our original idea that in research with gaming/simulation, it is indeed the initiator of the gaming/simulation who learns. However, that statement has to be annotated. No such thing as a purely unmotivated participant is present. Participants come to a game to learn something. Using the behavior of a participant within a game for research purposes involves a moral contract between the participant and the researcher. This contract defines how far the researcher can introduce artificialities in their game that stem solely from their purpose of using the game as a research tool. Gaming/simulations for social research purposes are usually played by students. Students are often paid to be obedient subjects in experiments. However, the researcher sometimes really needs expert players or mature personalities to bring in real-life experience. Certainly, then the game, even though it is a research situation, has to be an inviting and worthwhile experience for the participants. It is here that we see a clear trade-off between (a) controllability and artificiality and (b) playability and real-life experience. All participants want to learn and they will learn, and of course, the control group wants to learn as well. We cannot prevent people from learning or wishing to learn.

We drew these five important lessons from the study of projects and from interviews with the project leaders and with other experts who used gaming/simulation as a research tool. In the next section, we will focus on the lessons learned about gaming/simulation for policy development.

Category 2: Gaming/Simulation for Policy Development

Deregulating the Energy Market

A good example of use of policy games for policy development is the PhD study by Martijn Kuit, on the relation between the regulatory style of a central government and

the strategic behavior of energy providers in the sector (Kuit, 2002; see also Kuit, Mayer, & De Jong, 2005).

The main function of the gaming/simulation in this PhD project was to create a situation for *ex-ante* evaluation of different deregulation policies. The Dutch government wanted to liberalize and deregulate the energy market and was interested in the possible short- and long-term effects on the strategic behavior of the various stakeholders in this energy market. The government also wants to understand what the effects might be of its own regulatory style on the strategic behaviors of the various parties in the field.

Kuit used a specially designed game called INFRASTRATEGO for this policy exploration. Several styles of regulation were simulated in different runs of the game. The dependent variables were the strategic behavior of gamed companies and the institutional relationships among the various entities that emerged during the game. The research design were that of a quasi experiment, so it resembled Roelofs's projects described above, but context of use and motives for use of the game differed. Kuit's project was an *ex-ante* policy evaluation. The motive for the study was to contribute to the public policy debate. It aimed to be an early warning mechanism for the parties involved. The project's objective was to produce an informed basis for the Dutch government to select and to implement the most adequate forms of regulation.

Kuit developed several methodological arguments for using gaming/simulations in this kind of exploratory policy evaluation. First of all, it is impossible to field-study strategic behavior in an unknown situation in the future. The only thing that one can do with regular field studies is to perform speculative interviews and ask how executives think that they will behave in the future (i.e., if the respondents do have an opinion and if they are willing to share that opinion with the interviewer). In small, tightly knit networks, stakeholders might think twice before they discuss with the interviewer their confidential policy plans or (potentially) unacceptable behavior (Kaats & Opheij, 2008). Kuit expected that in gaming/simulation, it would be easier for participants to show, openly and honestly, the kinds of behavior that they have in mind or that they might create on the spot. Gaming/simulation is a seductive tool. If done well, the safe environment of the game removes restrictions on the honesty and diversity of behaviors that people are willing to show.

Another argument for Kuit to select gaming/simulation was that he could systematically create different future situations. INFRASTRATEGO was loaded with different scenarios of how energy markets might look like in the future. Within different combinations of scenarios and regulatory rules of the government, the participants (the providers) are invited to trade, to create deals, and to develop institutional rules.

Last but not least, Kuit stressed that there was no solid behavioral theory that would exactly predict what kind of deals and actions the participants would do and display. Thus, the next best alternative was an empirical study that used the best "simulators" that one could find for the future, and they were the current policy actors. These would, in the end, become themselves the players of the future. As in modern research in behavioral decision theory and economy, the expert players helped Kuit to develop the

theory that was lacking. One can say that during playing they made explicit their theories-in-use (Argyris, 2004).

What can we learn from this study and the experiences of the gamers that use gaming/simulation for policy development? Three important lessons come to the surface:

- you can create a future and then look back in it;
- some complicating factors arise in gaming in policy development, most of them concerning time and money; and
- we can distinguish four functions for policy development.

Gaming/Simulation for Policy Development: Creating the Future

The central benefit of gaming/simulations for policy development that emerges from our review is the ability to study the effect of future policy on the behaviors of persons, and visa versa. This makes gaming/simulation a productive source of relevant policy analytical information. It significantly adds to the often used method of (merely) collecting expert opinions. An expert can bring their own past expertise and their current views on policy into an interview. During a game, however, new and very pertinent experiences and insights will be created that widen and deepen the experts' perceptions. One additional added value of the use of gaming/simulation in policy development is that, by involving real people, games bring into the game discourse all kinds of irrationalities and theories-in-use. Most of this knowledge is unconscious, tacit knowledge: games can bring this to the surface and make it visible. Games create new challenges that provoke action. While enacting on these challenges, participants create and make sense of the potential future and thus select and retain meaningful knowledge and behavioral repertoire (see Weick, 1996).

To elaborate on this point, it is useful to compare gaming with mathematical models that are often used in analytical predictive policy studies. Mathematical models have to be fed with currently available insights and data. Unlike players in a policy game, mathematical models cannot discover new knowledge *during* the process of simulation. A formal model is a great tool for discovering the dynamic consequences of the knowledge that we already have. It might even reveal counterintuitive dynamics that can completely change the perception one has of a planned policy (see Forrester, 1968; Meadows, 1989, 2001; Vennix, 1989).

However, when policy analysts are interested in the unknown effects or the uncertain impacts of a particular policy on persons or groups, they reveal, create, and enter into dynamics and issues that one cannot model on the computer. For this, gaming/simulation with real players is more suitable.

Complicating Factors in the Use of Gaming in Policy Development

The Dutch experience reveals several factors that complicate the use of gaming/simulation for policy development. One is the long period and the many hours that it

often takes to develop a tailor-made policy game. This makes it difficult to be up-to-date with the game. A policy exercise can never be allowed to represent only yesterday's facts. The players have to be facilitated to confront the current debate and agenda of the policy issue at stake. That puts enormous demands on the flexibility and alertness of game developers.

Delivering an up-to-date game also adds to project costs because the data file of the game has to be continuously refreshed. It may be that the costs of policy gaming are higher than those of a series of expert interviews, even if we use an expensive form of interviewing, for example, a Delphi technique, in which experts are interviewed in several rounds and are confronted with aggregated data from previous rounds.

An additional cost factor is that policy exercises, because of their function and specifications, are often used only a few times. That is why some clients try to recover part of their costs by having the exercise redesigned for new audiences and different purposes. Some organizations have been successful in reusing the policy game as part of their internal training program. Bringing down the project costs by reusing the game in the future, for other purposes, is certainly possible, but usually this cannot not happen without additional energy and expenses (Duke & Geurts, 2004).

Our respondents also discussed their impression that, sometimes, players in gaming/simulations show more risky behavior than they would in the policy realities. This kind of behavior is known as risky shift: As a member of a group, one does things he or she would not do as an individual (Kampermann & Gerrichhauzen, 1992). Such behavior might have, of course, a negative impact on the validity of the outcomes of the game. However, this can also happen in nonsimulation situations. A question then arises, "Does a risky-shifty behavior in a simulation represent one that would have occurred in reality?"

Four Functions of Gaming/Simulations for Policy Development

To conclude this section, the following four functions for policy development are clearly confirmed by the Dutch experiences:

Function 1: Exchanging perspectives. Each position within a policy arena comes with certain interests and perspectives. Within a gaming/simulation, it is possible for participants to exchange these perspectives and even to obtain an in-depth experience of the perspectives of somebody else by using role switch. It is possible to know and feel the position of others and to understand and appreciate it better.

Function 2: Understanding uncertainties and dynamics. In the game, persons, in their roles interacting with each other, create, step by step, a road into the future. In fact, they can create as many different futures as they, or the facilitator, think is necessary. That supports the prudent and positive belief in the policy community, or at least within the participants, that the outcome of a certain policy is hard to predict. A wise policy process is one that takes all kinds of flexibilities and uncertainties into account. The game can help to develop well-grounded judgment of what the range of possible outcomes might be.

Function 3: Ex-ante evaluation. Gaming/simulation in policy development is at its best when the aim is to make future processes more transparent or clear. As Kuit (2002) and Mastik (2002) have shown, it is possible to explore and actually simulate different policies or strategies within a game. Again, that does not mean that gaming/simulation will predict exactly what will happen. Unexpected outcomes of a policy may be identified, and several policies can be assessed and compared to find win-win or win-lose situations, dangerous outcomes, desired outcomes, ranges of outcomes, costs of outcomes, unwished side effects, or many other interesting policy insights. Games as ex-ante evaluation help to reach the desirable state of optimally transforming, currently available knowledge into relevant policy insights.

Function 4: The double learning experience. Double learning refers to the fact that the outcome of the game is not only an enhanced learning experience about the issue that is modeled in the game. Participants can also look back on the experience in a game as a totally new way of interacting with colleagues and stakeholders. A game is an open, nondefensive, and safe forum. New forms of communication are explored. In that sense, the effect (in interaction and communication) of the gaming experience goes beyond the current issue.

The uses of tailor-made gaming/simulations for policy development have become linked with the concept of a policy exercise (Duke, 2010; Duke & Geurts, 2004; Toth, 1988). When developed and applied as a policy exercise, a gaming/simulation contributes to what Nutt (1982) has called the “hybridification” of planning methods. Policy exercises allow the integration of all kinds of intervention tools, such as computer simulation, Delphi techniques, strategic conferences, scenario workshops, and consensus conferences (Mayer, 1997). A policy game or a policy exercise displays features that distinguish it from structured workshop techniques, even though the policy exercises are often presented as a seminar or workshop to the participants. In a policy exercise, persons in roles actually create a future in a step-by-step experiential learning process. For many experienced policy makers, this collective effort is a completely new and intriguing approach in exploring the future. This crucial difference with a structured workshop in which one mainly discusses and speculates about the future is clearly recognized and positively evaluated.

After examining these three main lessons for gaming/simulation for policy development, we will now describe studies and experiences regarding gaming for implementation and organizational change.

Category 3: Gaming/Simulation for Policy Implementation and Organizational Change

Example: Working in Teams

Tailor-made games are used increasingly as an element of carefully structured intervention processes to help organizations implement changes. Sometimes, these

interventions are called training, sometimes organizational development, and sometimes a strategic culture change.

Consider, for example, the PhD study of de Caluwé, which combines evaluation of a change process with output and outcome evaluation. He studied a change program in which a game was the central element (reported in de Caluwé, 1997; see also de Caluwé & Geurts, 1999; Geurts et al., 2000).

Delta Lloyd is a well-respected Dutch insurance company, with more than 2,800 employees. Its competitive performance had become disappointing, and management saw serious threats for the future. After an interactive phase of strategy development (not using a game!), a set of turnaround decisions was made. One was to lay off some 600 people and another was to implement a fundamental restructuring of the organization. As a consequence, the company would become extremely flat (many management positions disappeared), and, at the same time, all the company's processes were to become embedded in output-steered teams. The new Delta Lloyd was basically a network of 140 teams with a relatively small management structure at the top.

Creating the structure was one thing; making it work was something else. For the members of the organization, working in teams meant a serious cultural change: Everybody had to behave differently in the future. What was sanctioned as good behavior in the past might now turn out to be dysfunctional. New reference behavior had to be developed, and new reward systems and internal heroes would emerge. That new reference behavior was, for example, output steering of teams, nonhierarchical positions within teams, and group autonomy in working methods.

It was decided that everybody (from the CEO to the supporting staff) would participate in the change program. de Caluwé showed how this change program could be characterized as a set of interrelated decisions on 22 design parameters. Choices were made on the content, structure, actors, mechanisms, and certain preconditions of the intervention. A 2.5-day training program, several forms of follow-up, and a very visible and active management (role models!) were the main characteristics of the intervention. A tailor-made game (reflecting the desired future of working in teams) was the most visible and central element of the intervention and, over a period of 4 months, about 140 teams played the game. Imagine the logistics of such a program.

In full cooperation with the client organization, de Caluwé was able to collect a massive set of data. He used document analysis, questionnaires, in-depth interviews with managers and trainers, and written observation protocols. He was able to administer the same questionnaires measuring attitude toward teamwork at five points in time: before and immediately after the game, and then again 3, 12, and 18 months later. These measurements produced a remarkable wave-like curve. After the game, very positive attitudinal effects resulted. The effects subsided during the 1st year, but, after that, they tended to become positive again. de Caluwé saw this as a learning curve. The new behavior adopted in the safe environment of the game proved difficult to continue in real life; it could only be mastered (internalized) after a period of some frustration. This change had to be learned! In general, de Caluwé concludes that the impact of the program has been positive and lasting.

[AQ: 5]

From a methodological point of view, it is interesting that de Caluwé was able to show that such a game-based change program is a stimulus consisting of many inter-related design elements. Even his extensive data set did not allow the isolation of the positive results of a single element, such as the game. His expert interviews and other qualitative sources made it possible for him to identify (post hoc) a number of probable effective elements of the intervention. The use of the tailor-made gaming/simulation came out as one of those very effective elements. de Caluwé also uncovered which of the characteristics of the game most probably caused its effectiveness. He mentioned 10 features of the game, such as the strong similarity to reality (created by the tailor-made design), and the fact that the steps of play forced the players to go several times through the learning cycle.

What can we learn from this study and from the experiences of the experts using games for the purpose of implementation and organizational change? We take seven lessons here:

- games make (produce) sense;
- games combine ideals and reality;
- the rewards can be very high, but so may be the costs;
- when complexity is involved, games are particularly powerful;
- games are useful in changing and influencing behavior;
- games have to fit like a glove; and
- we can identify four key characteristics of games for implementing change.

We discuss each of these below.

A Game Makes Sense

One valuable contribution here is “sense giving”; through the real-life experience in the game, a new abstract concept, a new idea, a new word that has been introduced into a company gains meaning. New policies or new concepts are often introduced into an organization or a policy network without (yet) having a real operational meaning or without reference to the behavior that is expected. A tailor-made game will make that what has to be learned observable and visible. Players can then “look back” on the new future.

Often, a management consultant or trainer will lecture about teamwork, but without some practical experience, not many individuals will easily understand how deeply teamwork can affect their day-to-day work. In de Caluwé’s project, the gaming/simulation was successfully constructed for this specific purpose—to have the participants create and experience the complexity and dynamics of teamwork within their multifunctional groups.

Many changes in organizations run the risk of getting stalled in mere word play, or they become mere lip service. Thus, no real change will happen in the depth of the

actual work processes and in the orientations and motivations of the members of the organization. Concepts like “client-oriented process management,” “multidisciplinary teamwork,” “delaying the organization,” and “chain optimization” are just a few of hundreds of examples of recent organizational new speak and modern jargon. The experience shows that a game can help the people in the organization experience such concepts on a practical level and thus create individual and collective meaning.

Games Put Ideals and Ideas to Work

More often than not, the new words, which bring new ideas and ideals, will only find their true added value through an intensive process of internal discussion, testing, and adaptation. At the start of an implementation process, it is almost impossible to use standard training practices to explain exactly to the members of the organization what changes in their behavior are expected from them when working under the regime of the new concepts. By acting and experimenting in the gaming/simulation, the participants are forced to give meaning or sense to the things that are happening to them. This learning by doing or learning through experience is what makes games in organizational change valuable.

However, we see a second side to this. While exploring the content of a new policy and its consequences, players create innovations. Innovation is the new and unique combination of past experience with unexplored behavior aimed at new goals and ideals. Sometimes, this involves the creative destruction of certain old working processes, recipes, and tools (Schumpeter, 1932). This can be a painful experience; it will always be time-consuming, involving risks for the company and for the individual. When done well, a game is a safe testing ground to experiment with new behavior. It is difficult to realize this form of testing-while-learning with other more traditional intervention techniques. This is because, in other methods, the participants or the future users or “victims” of the policy will only complete Kolb’s learning cycle after the “for real” and often irrevocable introduction of the intended change at the workplace (A. Y. Kolb & Kolb, 2009; D. A. Kolb, 1984; D. A. Kolb, Rubin, & Osland, 1991).

Costs Are High, So Are Rewards

A disadvantage of a tailor-made gaming/simulation for organizational change may be (again) that this form of gaming is a cost-intensive and time-consuming tool. Indeed, game design is certainly not cheap, but it proves to have high cost-effectiveness. Gaming has strong sense giving and motivational effects, and games offer a playful and safe environment for experimenting with new behavior. This combination of characteristics explains why tailor-made games help to overcome organizational defenses and resistance, and it explains why games are a powerful learning tool.

Still, much work is needed to prepare and implement a change game, and to test it carefully before it is released for use in an organizational change environment. These costs seem to contrast sharply with the relatively low costs (and preparatory efforts)

that seem to be put into the preparation of workshops, discussion meetings, or seminars, which are the tools of many traditional training or retraining programs. Once a game is developed and ready for use, the cost for applying and using the game is more or less the same as costs for a classic training program. The big difference is in the (high) cost of the development of a tailor-made game.

When Complexity and Dynamics Are Involved

A clear suggestion from the Dutch testing ground is to use gaming/simulation especially in those situations where complexity and dynamics are important characteristics of the change that is proposed. That was certainly the case in de Caluwé's project: one tries to influence a social system (the team) in its ways of working. Games have their strongest advantage when complexity and dynamics are combined. When the dynamic consequences of an intended change are hard to predict or to verbalize, then gaming shows its strongest advantage. It is the "magic of gaming" that it creates analyzable and observable dynamics out of a seemingly chaotic initial conditions, and that it can help people to look back at the future they have created themselves. This interactive and experiential look into the crystal ball is really important in the use of games.

Behavioral Change

Games are particularly powerful when change must result in new behavior of (almost everybody in) an organization. In such situations, gaming/simulation proves to be strong because it is one of the very few techniques that directly translate policy into operational behavior. It reveals the concrete behavior or consequences that a new intended change provokes. It indicates which real behavioral consequences and which behavioral standards are needed in order to make strategic change a success. In short, games can affect the organizational culture.

Fit like a Glove

For a game to be a valid and effective tool for change, participants need to recognize their own situation clearly in the gamed conditions. An off-the-shelf game that simulates a generalized situation does not usually help here. Participants easily become skeptical when they do not recognize in the game their real-life work environment. Reactions like "Oh, this is only a game" and "This is not what I experience every day at work" are common negative reactions. This can only be mitigated by preparing a game that is an accurate simulation of the work conditions in which people do their work in real life.

Gaming/simulations present to the change agent a number of advantages in comparison with classical training tools, such as reading materials, lecturing, training, or an excursion. The optimal gaming/simulation for change offers participants a situation that they recognize as familiar and important. It is not exactly the same as a situation

in their day-to-day work, but it looks very much like it, and it invites them to test behaviors that they consider as relevant. In addition, a game offers them safe experimentation with the features of the new policy. Mistakes are less important because they do not have a direct impact on their real work and life and on their careers. One can learn from mistakes; one can always start a game again.

Key Characteristics of Games for Implementing Change

Four principles of gaming/simulation serve as the conclusions of this section on policy implementation and organizational change. This is sometimes called strategic culture change (Cummings & Worley, 2009) because it touches on the change of thinking and doing of people within collectivities.

- **Practicing the future.** Gaming/simulation is experiential. Because organizational culture is the result of learning from practice, games can influence a cultural change by shaping the learning that occurs—as if in the real organization. As a consequence, an intervention has to be based in practice and offer the opportunity and the appropriate amount of time to experiment with and learn new organizational practices. A game can be an important and advanced learning tool.
- **Tailor-made design.** Gaming/simulation should and can be tailored to an organization. Games should create practical situations that are close to reality. People will learn the most when the situation and problems are highly recognizable.
- **Gaming/simulation is interactive.** Cultural change is a collective (re) institutionalization. Consequently, interventions have to be organized as whole-systems processes: All members at all organizational levels have to participate (Weisbord & Janoff, 1995/2000), although not at the same time. Everybody has to be committed. They will all learn a new language, new habits, and new ways of working.
- **Communication via multimedia.** Gaming/simulation is multilogue (Duke, 1974). Organizational culture is broad and deep, and interventions have to reflect this. They have to facilitate the reflection on and institutionalization of the new practices via a multilogue (as opposed to monologue) communication format, that is, it should allow many persons with different perspectives to be in communication with each other using different modes of communication in parallel. The game elicits that communication.

Tailor-made gaming/simulations have the ability to translate abstract concepts of intended change into meaningful concepts and terms, to facilitate the development and internalization of a model of a future work environment, and to enable the players to experiment and learn new behavior in a safe environment. To summarize, gaming/simulation provides a multiple-perspective, small-group, action-based experiential learning approach for strategic change.

Games in Policy and Organizational Research: Some Methodological Lessons

As in every research design, gaming-based empirical studies have limitations. However, our review shows that when done properly, gaming deserves the serious attention of the methodologists and practitioners of the organization and policy sciences. When we compare all the observations and lessons learned in the three research categories described above, it is clear to us that eight characteristics of the gaming methodology support its role in empirical-analytical policy and organization projects. We will describe these eight characteristics in this section.

Replication

Within a game, it is possible to play the same scenario or the same conditions several times. If it was a disaster, you can practice alternatives again and again. It is also possible to do repeated measurements within almost the same conditions. That allows for statistical analyses of results. Systematic and incidental differences between identical conditions can be statistically discriminated from each other. Stable patterns can be discovered. Different groups can be compared as they play the same scenario.

Systematic Variations of Conditions

By varying theoretically or practically relevant conditions, the effect of experimental conditions on selected dependent variables can be studied. It is also possible to manipulate conditions which, in the real-life system, are very hard to observe or only happen very rarely or are even harmful to the organization under study. So, certain conditions and its effects can be studied. The “here and now” makes common observations between participants and facilitators possible. They share the same observations and can discuss improvements and intentions and actions for the next round.

Eliminating Sources of Variance

One way of varying the conditions between the replications of a game is to use a theoretical model or a factorial design such that, one by one, competing explanations can be eliminated. This helps to find out the core and the essence why things happen or not. Groups can explore different conditions too and vary the game runs systematically.

Simplified Situation

A simulation is an approximation of the relevant characteristics of a referent system, which makes this referent system analyzable in a pure or simple format. It allows for players to understand the most essential variables in the game and to improve their individual and collective behavior.

Time Compression, Feedback, and Evolution

The simulation offers the possibility of time compression. Usually, simulation games contain feedback mechanisms. After a certain period, participants can be confronted with the consequences of their own behavior. These cycles make the participants face a situation that is, at least partially, the result of their own doing. This is a very important issue in management studies and training. However, in real organizations, longitudinal and evolutionary research designs take a very long time and thus result in very costly research projects.

Interaction Density

The relatively low complexity of the game and the fast feedback cycles in the simulation makes it possible to follow the steps in an interaction process. At the same time, it is also possible to slow down, to stop the game for some time, to reflect, and to learn. We can then step back into the game with new intentions and lessons learned. Reflection time, feedback, and debriefing create valuable contributions to the learning processes of individuals and groups. Through this large interaction density, events and incidents happen at a fast pace. Also, this feature of gaming/simulations makes interesting interactions between structure and dynamics of organizations traceable.

Openness

Even though it has prestructured elements, in essence, a game is a temporary open system. This open social situation allows for the emergence of various forms of interesting problem solving or “coping” behavior; for example, inconsistency, procrastination, deviant behavior, conflicts, bargains; that is, any kind of behavior that will be very hard to study in real life.

Social and Psychological Realism

A game has the power to suspend disbelief. People buy into games. Mostly, they take the reality presented to them in the game materials as important, real, and worthwhile. They will start to act in their gamed roles as they would in a new job: They do their best to perform well. This social and psychological realism of games facilitates the study of a wide range of individual and group phenomena, such as learning style effects, leadership styles, group pressure and groupthink, double- and single-loop learning, collaboration, and trust.

In their application, these eight lessons for the methodology of gaming/simulation follow the different three categories that we described. It raises the important question, “Who is the one that learns?” If the researcher wants to learn, he or she will vary conditions and the experiment in order to find the desired data for empirical research or

theory development. If the participant in the game wants to learn, then he or she wants to have a say in the conditions of the game and how it will be explored and applied. The subject and the object of the research can be different.

Wrapping Up

In this article, we have focused on the link between gaming and academic goals. Dutch researchers using games in field or laboratory studies, whether their goals are applied or fundamental, want to preserve the complexity and wholeness of real social interactions and, at the same time, create a research situation that is under control, is measurable, and allows for rigorous analysis.

The eight research characteristics described in the previous section connect gaming/simulation to experimental research as well as to model building. Applied and fundamental researchers recognize the eight qualities as important and attractive for empirical research in organization and policy projects.

Several important dimensions to the gaming method encourage policy analysts, trainers, and consultants to use games in their interventions. Games allow the *homo ludens* to come out of closet. Games motivate and are fun; games create multilogue, trust, and sense. These socioemotional and relational features add to the success of gaming in the policy and organization practice.

Our examples, our interviews, and our analyses in this article show that the Dutch academic world is a successful user of gaming/simulation for policy and organization. We also found confirmation of very close links between the consulting industry and the academic community in the Netherlands. As we said before, it is difficult to mention here the many scholarly and professional users of gaming/simulation in Dutch universities and consultancies. We have concentrated on scholars in gaming/simulation who have devoted their PhD work to this methodology. It is good to see that groups in universities create for themselves situations in which they can study the use of gaming/simulation, while this tool is being applied in real-world settings. Young policy and organizational researchers see it as their task to study gaming/simulation for 3 or 4 years and to produce intelligent and relevant contributions to the field. Their empirically oriented PhD's usually do not get a broad reading audience. That is why we decided to devote this article to the work of these empirical researchers in the Netherlands and bring them, via this journal, to the attention of our colleagues abroad.

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