SYMPOSIUM

building resources for simulations: challenges and opportunities

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Abstract
One of the most notable challenges of getting colleagues to try out simulations in European studies teaching is the overcoming of start-up costs. In particular, the creation of a scenario from scratch or the adaptation of an existing game can be daunting. The article discusses these challenges and their origins in the fundamental assumptions that simulations make about both the world and pedagogy. In particular, the tension between the simple rules that are understood to capture real-world phenomena and the complexity that those rules produce creates not only an excellent learning opportunity but also a barrier to developing useful resources for simulation designers. The article offers a number of ways that such a barrier can be overcome, including the development of a simulation designer community, use of online guides and the creation of simulations that teach about simulation design. These ideas are illustrated with a number of practical examples.

Keywords simulation games; pedagogic resources; curriculum design; theory of simulation games

CHALLENGES AND OPPORTUNITIES

For a pedagogy with such a long history, recent years have been marked by a significant increase in interest in the use of simulations in many disciplines in Higher Education (e.g., Guetzkow and Jensen, 1966; Dorn, 1989; Lantis, 1998; Baroncelli *et al*, 2014). This can be attributed to a combination of factors, including improving levels of awareness by instructors, and student demand and institutional pressure to deliver more 'innovative' learning and teaching (L&T) strategies, in the context of market competition. Whatever the reasons, there is evidence of not only more and more instances of simulation use in the classroom, as discussed in the

introduction to this symposium (Guasti *et al*, 2015), but also an ever-extending literature thereon (see thematic issue of Asal *et al*, 2013, for an overview). However, it is also apparent that this increasing use is not without its hindrances and stumbling blocks. In particular, we can identify three key issues. First, the existing literature has not developed a theory of pedagogy in relation to simulations that goes much beyond recognising the utility to student learning of active application of knowledge and skills (Asal and Kratoville, 2013, is a good example of this). Although this is not problematic in itself, since there remains much ignorance of what simulations can do for student learning, the approaches to simulation design are heterogeneous, which does make it harder for newcomers to access the potential that simulations offer. Second, use of simulations is not predicated on a deep level of personal engagement by the instructor with what pedagogy they use, but rather it is treated as a sideshow to other L&T strategies and thus the potential benefit is further diminished. Third, there remains a severe lack of basic 'how-to' guides (whether grounded in higher pedagogic theory or not); instead, the typical process of spreading use of simulations is by word of mouth and the adaptation of existing models to new situations. Once again, this undermines the likelihood of getting the most from simulation use.

The core argument of the article is that if we are to overcome the barriers, we have to recognise the intrinsic ambiguities within simulations as a pedagogy, whatever group of students or participants one is working with, and work towards ways of using those ambiguities to help ourselves and others. Those ambiguities relate to a fundamental tension within simulations between the desire to simplify and the desire to create rich recreations of the phenomena under study. It is with this tension that the article begins, before moving on to consider how this hinders the production of resources for simulation instructors and/or designers, concluding with some preliminary thoughts about ways in which this tension might be addressed, or even turned to our advantage.

It is not the intention of this article to consider in any depth the value of using simulation games *per se*, but rather to explore some of the ways in which we might develop the capacities of those who would use them, so that they are able to do this effectively. This is not to say that the first point is not important, but instead is a recognition that while simulation games offer much – not only to European Studies, but to a wide range of disciplines – that is a potential that needs particular care in realising. As much as we need to keep in mind the practical dimension discussed below, so too must we never lose sight of *why* we are using simulations in the first place. In a sense, this requires a grounding of this pedagogy within an overarching framework of personal and professional reflection about one's practice, coupled with a willingness and capacity to try and meet one's learning objectives in different ways. It is this capacity to which this article most clearly speaks.

THE PEDAGOGICAL ASSUMPTIONS OF SIMULATIONS

Any pedagogy rests on a series of assumptions about the world, the way we understand it and the way that we can share this with students (e.g., Katz, 2000). Indeed, we could argue that all pedagogies are united by the fundamental assumption that such sharing is possible, through some form of transmission mechanism. The point is not one to be laboured, but the argument here is that to think of the barriers mentioned in the introduction in such terms might offer

some useful insights, not to mention some leverage in addressing them.

What then are the assumptions that simulation-based pedagogies make? The starting point has to be the observation made in the introduction to this symposium (Guasti *et al*, 2015), namely, that simulations see active learning as more valuable than passive learning. A simulation offers the opportunity to 'live the world' of the phenomenon that we are studying, and it is in this 'living' that learning occurs in a profound way that engages students by requiring them to develop a personal model of that 'world' and how to engage with it: if I have to pretend to be the head of the Albanian unit responsible for property rights, and I have to then engage in a simulated interaction with officials from the European Commission, then I can get a much more nuanced understanding of the importance of that issue to Albania's efforts to join the European Union (EU) than I can from a lecture on the same subject.

This is relatively unproblematic, not just since it underpins all active learning pedagogies. The shift to student-led learning (cf. Brandes and Ginnis, 1996; Lea *et al*, 2003; Asal and Kratoville, 2013) suggests a broad consensus that such an approach has validity: it would be hard to find an educator who did not accept that answering a student's questions about any given material was not helpful for their learning needs. Even if the degree to which the assumption is then translated into practice varies massively, we would place it relatively close to the assumption about the possibility of student learning mentioned above.

However, simulations go beyond the active-learning assumption. In particular, they embody two core ideas. The first is the notion that the world (or at least the specific phenomenon in which we are interested) can be modelled, by which we understand that a set of relatively simple rules can encapsulate the fundamentals

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of a given situation (Brunazzo and Settembri, 2014, make this point as well). These rules might take the form of some kind of decision-making architecture (e.g., voting rights, structural relationships between actors, etc.), or of personal or institutional characteristics (e.g., peoples' intrinsic desire for power, or for optimisation of gains), or indeed of random events (e.g., using dice to generate chaotic situations). Whatever simulation might be used, we have to establish what we are doing and how we are doing it, which in turn prescribes the use of rules of the game (in both the literal and figurative sense): the very existence of a simulation creates the existence of such rules, whether implicit or explicit.

The second idea is that the world is complex, by which we understand that despite such simple rules, the results are intrinsically uncertain and non-linear, because of the chaotic nature of human interaction. Put differently, when we run a simulation we do so in the knowledge that both the process and the outcome will vary from iteration to iteration, and indeed it is precisely this uncertainty that we wish to convey to students. Even in a closed decision-making environment, the growth of pathways and of final conditions increases exponentially with each step, to

the point that even when the same students have played the same game more than once, they end up with very different experiences each time.

It is these two ideas that lie at the heart of the tension identified in the introduction (Guasti *et al*, 2015). The scenarios that we create within a simulation notionally capture the relevant elements (i.e., the rules of the game, the relevant knowledge and the individual skill-set), but we then undercut that by showing how each of these is not enough to fully explain what is happening when we play out the scenario. We might think of this as an exercise in contingency and as a corrective to a teleological view of politics and of history, but this would be to side-step the issue. Indeed, it is also possible to see this as simply choosing the wrong set of rules to model the world, and that once we try to use them to establish a simulation, some other rule will intervene. At one level, this is a reasonable position, but it actually gets us no further than a recognition that we do not have an agreed frame for understanding the world around us. This is surely a point that all social scientists can appreciate, given our assorted theoretical (even ideological) cleavages. It would suffice here to note that this author has yet to encounter a simulation that always run identically each time it has been used.

In order to move further on this tension, it is argued that we have to accept the existence of the tension, recognise the consequences and then begin to work with it, rather than against it.

THE DIFFICULTY OF DEVELOPING RESOURCES FOR SIMULATIONS

As noted above, the literature on simulations is growing, but remains incomplete. More specifically, we might consider that there exist three main camps of texts. The first of these is work on individual instances of simulations (e.g., Chasek, 2005; Baranowski, 2006; Kaunert, 2009; Usherwood, 2009; Crossley-Frolick, 2010; Brunazzo and Settembri, 2014). While this has moved on from the 'show and tell' of earlier years, it is still concerned with unique cases, surrounded by some observation on questions of efficacy and/or impact on student learning. The second group contains pieces that provide a meta-survey of individual cases, with the intention of developing more reliable measures of assorted aspects, from student engagement to knowledge acquisition to assessment (e.g., Heitzmann, 1973; Winham, 1991; Starkey and Blake, 2001; Lean *et al*, 2006; Chin *et al*, 2009; Raymond and Usherwood, 2013). The final group is more purely theoretical work, often not tied to actual cases, providing consideration of pedagogical questions at a high level of abstraction (e.g., Dorn, 1989; Gredler, 1992; Smith and Boyer, 1996; Feinstein and Cannon, 2003; Frederking, 2005, Asal and Kratoville, 2013). All three of these camps have strengths and make contributions to our understanding: the individual cases provide stimulation for simulation designers and evidence for our evaluation of them; the meta-surveys allow for a better understanding of generic design questions; while the theoretical literature permits a better grounding in the wider context of student learning.

However, from the perspective of a new user of simulations (or indeed, someone with more experience, but who wants to move into new ways of developing their practice beyond a first instance), all three areas of the literature present limited utility. The high degree of flexibility that we can apply to designing a simulation – be that in terms of length, size, topic, complexity, assessment or connection to other learning elements, to name but a few dimensions – means that the individual case literature is almost inevitably not fully suited to the new users' needs. Similarly,

the online resources that exist are necessarily generic in nature (e.g., UCIS n/d). While the two other camps can give some guidance on aspects of potential advantage or concern, it is then hard to translate back down into specific practice.

In essence, the key issue here is that each simulation is effectively operating in a unique situation, speaking to a unique set of needs/objectives. The wide diversity of Higher Education institutions, study curriculum design, instructor teaching objectives and student bodies contributes to the mutability of simulations mentioned above. One illustration of this has been the anecdotal evidence that even when a simulation is taken from its originator and used elsewhere, it ends up doing different things. Thus, a European Council simulation designed to explore the emergence of policy decisions on a substantive issue can become one that instead explores the mechanics of political communication without any substantive amendment, at least at the level of gameplay.

The upshot of this is mainly that the literature typically proves to be little more than a prompt for reflection on the part of the simulation designer, who is then left having to find their own ways of resolving issues and operationalising their ideas. In practice, this gap is usually covered by one-to-one discussion with other simulation users and with colleagues, using dialogue to expose and resolve specific issues. Personal experience of participating in similar scenarios is coupled with repeated extended discussions with designers, colleagues and students, in addition to academic literature and conference presentations, to produce a first effort. After the initial delivery, internal feedback adds another path of information to this mix.

Certainly this blended method appears to work well in settling new users into their first steps to becoming more self-sustaining and capable of subsequent iterative development. However, this comes at a clear cost in terms of limiting the scope for mass dissemination of simulations as a pedagogy. If suitable individuals are not available, then the gap in the literature is much more difficult to cross and there is more potential for the user either to design a simulation that does not work appropriately for their needs or to decide that the effort is excessive, leading to not pursuing the matter.

ADDRESSING THE SITUATION

Considering these different elements in the round, we might begin to work towards some new ways of supporting new users. This requires a recognition that current methods are either limited or insufficient to meet the full scope of the demands placed upon them. In this section, we will set out four potential ways of addressing these points: 'standard-type' simulations; more discussion between users; decision trees, and; games to design simulations.

A first approach is one that sits most closely with existing practice, namely, the development of 'standard-type' simulations. This would entail the identification of a limited set of learning objectives and a structure for realising them, together with appropriate materials and/or instructions for users to make appropriate adaptations to their specific needs. As a partial demonstration of what this might look like in practice, the Wikiversity resource on 'Simulations and Games for the Enhancement of the Learning Experience' (http://en.wikiversity.org/wiki/Portal:Simulation_and_Gaming_Archive) provides specific documentation, together with more generic materials to help the user find a specific arrangement that meets their needs.

In essence, this approach attempts to find a *via media* between specificity and generality, by speaking to both sides.

In this, it shares some of the same ideas contained in the Pedagogical Pattern Collector (http://thor.dcs.bbk.ac.uk/projects/LDSE/Dejan/ODC/ODC.html), a project that asks instructors to separate out completely their pedagogy from their content, the better to allow such pedagogies to escape from their usual disciplinary silos. By explicitly giving the user this extended set of materials, we might expect their utility to increase, as that user can see more clearly both the potential and the scope for adaptation, scope to which they might in turn be able to add in the case of web 2.0 scenarios.

However, it is also evident that a number of rather major issues would need to be addressed. First, the identification of learning objectives is not a simple process, especially in the case of simulations, as they can speak to multiple agendas simultaneously – indeed, we might well argue that this is one of the main attractions of the pedagogy. Second, even if a set of learning objectives can be isolated, then it is still clear that there will be multiple ways that they can be addressed in simulation design terms; a move towards standardisation might then reduce some of the creativity currently evidenced in practice, as users converge on a single approach. Put differently, there is more to simulations than Youth European Parliament. Finally, there is the practical problem of ensuring that all the relevant material is included in the package. It is often only in the playing or the debrief of the simulation that all the aspects are considered, and a pertinent issue might not come to light until an advanced stage, when it might cause complications.

If we can see some issues surrounding the development of standardised simulations, then we might look to the other current element in supporting users, namely, the community of existing users. A second area for consideration is the building of a more structured and involved discussion within this community. By creating

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spaces for the discussion of all aspects of simulation use, the more material and more supporting discussion will be generated and shared. This will, in turn, mean that it is more likely that elements of use to a new user will be available and someone will be on hand to help with their operationalisation. While not primarily conceived of in this particular light, The Active Learning in Political Science blog (http://wordpress.activelearningps.com/) offers some idea of how a community might operate, sharing resources and reflection with a wider audience.

The key barrier to this is one of resource cost. To maintain a blog such as ALPS requires a considerable time commitment from bloggers, and this needs to be given over a long time frame. Moreover, ALPS does not offer much in the way of resources *per se*, but focuses mainly on the reflective element. Without clear individual or institutional incentives to do so, there is not much reason for someone to become a regular contributor, especially when that contribution is not likely to be matched by returns of ideas for some time. Thus, even with 3,000 page views per month, ALPS has not gained any new regular contributors since its inception in mid-2011. Thus, in the absence of a spontaneous sea-change in attitudes, this route does not offer any immediate solution to the problem.

A possible resolution to this barrier would be to use the expertise of individuals on a one-off basis, by using their knowledge to construct decision-making trees. Such models are not uncommon in

other spheres – notably medicine (e.g., Sonnenberg and Beck, 1993; Wu *et al*, 2005), where they are important aids to treatment choices – but they have not spread far into pedagogic circles. In essence, this requires the identification of logical questions, the answers to which would indicate an optimal solution. Randolph and Posner (1979) have provided an example of this in operation, albeit at a relatively high level of generality; this article is useful for highlighting the intrinsic need to connect simulations to other pedagogies in such a process.

The difficulty comes in seeing how best to move beyond Randolph and Posner's model. On the one hand, the logical starting point for such a tree is 'What do you wish to achieve?' or some other variation on the identification of the learning objectives. As noted in the introduction, this does not presuppose that simulations will be the appropriate way to achieve these, and therefore a tree that was to be of real use would need to extend across the full range of pedagogies, an undertaking of considerable complexity (Guasti *et al*, 2015). Even if the preconditions for choosing simulations were established – so that only this pedagogy is then explored in depth – it is hard to see how we could get very far into the detail of what a specific simulation should look like. Again, this reflects the large range of possibilities within the pedagogy and the multiple ways that learning objectives can be addressed, as noted above. Seen as such, the practicality of the exercise might be called into question.

Of more potential practicality than a decision-making tree is the final path to be considered in this article. This takes the pedagogic assumptions of simulations and turns them back on themselves: by helping users to experience the intrinsic uncertainties contained within modelling the world, they can better appreciate the ways through them. In more practical language, this might look like a simulation of designing simulations, where the participant is given the task of creating a simulation to a given specification, which is then changed (either randomly or to some pre-determined set of protocols). The need to actively respond to changing requirements allows the participant to recognise the connections between different elements and the opportunities to work with (or around) them: by having several different starting points, the tendency to always use the same basic model might be overcome too, thus enabling the participant to explore new areas of simulation use.

A simple version of such a simulation can be easily imagined, using random generation of options by use of a die (an online version is available at https://sites.google.com/site/howtodosimulationgames/examples-of-simulations/a-simulation-of-simulation). In the first stage, the player would select a random learning objective from a list (e.g., 'familiarise students with the key stages of the Ordinary Legislative Procedure'; 'explore tensions within the Troika supporting Greek economic restructuring'). In subsequent terms, the player would then be given a series of practical constraints, covering time available (30 min to a year-long course); number of students (one to 100+), mode of delivery (classroom, online or blended) and number of teaching staff available (one to 10+). With these constraints, the player would then have to produce a gameplay that meets the overall learning objective.

In order to allow the player to evaluate whether their plans work, the final stage would be a checklist of questions to stimulate reflection and self-criticality. These would require the player to consider whether the central purpose of the simulation is still clearly in focus; whether the simulation can be explained to players in simple terms; whether the volume of work placed on players is reasonable and proportionate; and what might be the worst that could go wrong with the gameplay, and what failsafes are in operation.

Finally, the question of whether the objective could be achieved more simply and/or effectively without using a simulation would have to be posed. This final question is perhaps the most important, for it proves the most basic of sense-checks on the process: just because we can do it with a simulation does not mean we should always do it with one.

The idea of this approach would be to provide a guided way through the key elements of the design process and to share ideas: completed gameplay plans could be collected in a central location, to be viewed later. From this base, it would also be possible for the player to use the process for producing new gameplays for learning objectives that they specifically need to address.

This, too, is not without problems. The specification of the starting point would need careful consideration to ensure that it was driven by factors that fitted to wider needs, while the possibility of failing to find solutions (and thus scaring off a new user) would also need some reflection. As the simulation shows, it can only be one way in which to tackle such a potentially complex pedagogy, to the point that its value might lie as much in one's reaction to it as in one's engagement. However, in terms of scoping the variety and complexity of simulations, such a method has the scope to offer a much more manageable approach than the other options discussed above.

CONCLUSIONS

This article has discussed the enormous potential of simulations and the barriers to realising that potential. As compared with most other pedagogies, simulations offer a great deal of flexibility, in almost all the basic dimensions of pedagogic practice: a lecture looks like a lecture, no matter how long it takes or how people listen to it. The opportunity that simulations offer up for student engagement and active learning – with a combination of substantive knowledge, technical and interpersonal skills, and community-building – is one that has found increasing favour with educators.

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However, this flexibility is a double-edged sword, for it also risks intimidating new users, or distracting them from their underlying objectives. As Iyengar and Lepper (2000) noted, increasing choice can be a demotivating factor for individuals; we might therefore seek to help those individuals to ground themselves more fully in the pedagogy, rather than just presenting them with a long list of what they might do and leaving them to it. In so doing, all users of simulations might benefit, as the limits become more clearly defined and the benefits more clearly evaluated (the *JPSE* special issue is particularly useful in this latter point). Even with their paradoxical assumptions, simulations offer much, and it is in the interests of both instructors and students that we make the most of them.

The (linked) processes of designing resources and then translating them into practice are a key part of the exploration of what simulations can do. As such, their value lies not only in the immediate gain to the individual user but also in the stress that they place on that user to reflect on their teaching practice more generally. This, in turn, can feed into the further development of simulations (and other pedagogies) and a full understanding – grounded in evidence – of their benefits.

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References

Asal, V., Kollars, N., Raymond, C. and Rosen, A. (eds) (2013) 'Thematic issue: simulations in political science', *Journal of Political Science Education* 9(2): 129–248.

Asal, V. and Kratoville, J. (2013) 'Constructing international relations simulations: examining the pedagogy of IR simulations through a constructivist learning theory lens', *Journal of Political Science Education* 9(2): 132–143.

Baranowski, M. (2006) 'Single session simulations: the effectiveness of short congressional simulations in introductory American government simulations', *Journal of Political Science Education* 2(1): 89–112.

Baroncelli, S., Fonti, F. and Stevancevic, G. (2014) 'Mapping Innovative Teaching Methods and Tools in European Studies: Results from a Comprehensive Study', in S. Baroncelli, R. Farneti, I. Horga and S. Vanhoonacker (eds.) *Teaching and Learning the European Union*, The Netherlands: Springer, pp. 89–109.

Brandes, D. and Ginnis, P. (1996) *A Guide to Student-Centred Learning*. Nelson Thornes.

Brunazzo, M. and Settembri, P. (2014) 'Experiencing the European Union: a simulation game on the European citizens' initiative', available at: http://www.sisp.it/files/papers/2013/marco-brunazzo-and-pierpaolo-settembri-1500.pdf, accessed 14 November 2014.

Chasek, P. (2005) 'Power politics, diplomacy and role playing: simulating the UN security council's response to terrorism', *International Studies Perspectives* 6(1): 1–19.

Chin, J., Dukes, R. and Gamson, w. (2009) 'Assessment in simulation and gaming: a review of the last 40 years', *Simulation & Gaming* 40(4): 553–568.

Crossley-Frolick, K. (2010) 'Beyond model UN: simulating multi-level, multi-actor diplomacy using the millennium development goals', *International Studies Perspectives* 11(2): 184–201.

Dorn, D.S. (1989) 'Simulation games: one more tool on the pedagogical shelf', *Teaching Sociology* 17(1): 1–18.

Feinstein, A. and Cannon, H. (2003) 'A hermeneutical approach to external validation of simulation models', *Simulation & Gaming* 34(2): 186–197.

Frederking, B. (2005) 'Simulations and student learning', *Journal of Political Science Education* 1(3): 385–393.

Gredler, M. (1992) *Designing and Evaluating Games and Simulations: A Process Approach*, London: Kogan Page.

Guasti, P., Muno, W. and Niemann, A. (2015) 'Introduction – EU simulations as a multi-dimensional resource: from teaching and learning tool to research instrument', *European Political Science,* in press.

Guetzkow, H. and Jensen, L. (1966) 'Research activities on simulated international processes', *Background* 9(4): 261–274.

Heitzmann, W. (1973) 'The validity of social science simulations: a review of research findings', *Education* 94(2): 170–174.

Iyengar, S.S. and Lepper, M.R. (2000) 'When choice is demotivating: can one desire too much of a good thing?' *Journal of Personality and Social Psychology* 79(6): 995.

Katz, S. (2000) 'Competency, epistemology and pedagogy: curriculum's holy trinity', *Curriculum Journal* 11(2): 133–144.

Kaunert, C. (2009) 'The European Union simulation: from problem-based learning (PBL) to student interest', *European Political Science* 8(2): 254–265.

Lantis, J. (1998) 'Simulations and experiential learning in the international relations classroom', *International Negotiation* 3(1): 39–57.

Lea, S.J., Stephenson, D. and Troy, J. (2003) 'Higher education students' attitudes to student-centred learning: beyond 'educational bulimia'?' *Studies in Higher Education* 28(3): 321–334.

Lean, J., Moizer, J., Towler, M. and Abbey, C. (2006) 'Simulation and games: use and barriers in higher education', *Active Learning in Higher Education* 7(3): 227–242.

Randolph, W.A. and Posner, B.Z. (1979) 'Designing meaningful learning situations in management: a contingency, decision-tree approach', *The Academy of Management Review* 4(3): 459–467.
Raymond, C. and Usherwood, S. (2013) 'Assessment in simulations', *Journal of Political Science Education* 9(2): 157–167.
Smith, E. and Boyer, M. (1996) 'Designing in-class simulations', *PS: Political Science and Politics* 29(4): 690–694.
Sonnenberg, F.A. and Beck, J.R. (1993) 'Markov models in medical decision making a practical guide', *Medical Decision Making* 13(4): 322–338.
Starkey, B. and Blake, e. (2001) 'Simulation in international relations education', *Simulation & Gaming* 32(4): 537–551.
Usherwood, S. (2009) 'Enhancing student immersion in negotiation-based learning environments', *International Journal of Learning* 16(7): 607–614.
Winham, G. (1991) 'Simulations for Teaching and Analysis', in V.A. Kremenyuk (ed.) *International Negotiation: Analysis, Approaches, Issues*, San Francisco: Jossey-Bass Publishers, pp. 409–423.
Wu, S.M., Chao Yu, Y.M., Yang, C.F. and Che, H.L. (2005) 'Decision-making tree for women considering hysterectomy', *Journal of Advanced Nursing* 51(4): 361–368.

Websites

'Pedagogical pattern collector', available at: http://thor.dcs.bbk.ac.uk/projects/LDSE/Dejan/ODC/ODC.html.
'Archive for simulations and games for the enhancement of the learning experience', available at: http://en.wikiversity.org/wiki/Portal:Simulation_and_Gaming_Archive.
'UCIS: Resource guides for teaching the EU', available at: http://www.ucis.pitt.edu/euce/node/52.
'A simulation of simulations', available at: https://sites.google.com/site/howtodosimulationgames/examples-of-simulations/a-simulation-of-simulation.

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