

Light Simulations for Assessment in Social Science

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Abstract:

Simulations are an increasingly popular way of teaching social science, but are sometimes viewed as too complex and resource-intensive for assessment. This practice paper introduces the concept of a light simulation, one that is simple enough to be used for an individual written assessment. It provides examples from a variety of politics courses at under and post-graduate levels and in medium-sized and large classes. It also describes the super-light simulation, which does not require a live precursor to be an effective assessment. The article also reflects on how light simulations can prevent plagiarism, promote engagement, and contribute to an assessment portfolio that still includes the traditional essay.

Keywords: assessment, simulations, social science, teaching

The Essay is Dead: Long Live the Simulation?

Simulations, including, perhaps most obviously, elaborate and interactive role-playing, are increasingly popular in teaching (Ní Mhuirthile 2018; Torney 2018). Alas, an elaborate and interactive role play is hard to assess, especially at the level of individuals, who will receive credentials. By a simulation, I mean a task somehow reminiscent of a real situation, “designed to explore key elements of that situation” (Usherwoord 2015: 4). Simulations do not need to be elaborate and interactive. They can be very simple and can be assessed individually. I have designed over eight such “light” simulations and used them successfully in Dublin City University for the last ten years.

Essays are, in theory, a very demanding task. They challenge students to select, summarise, synthesise, and ultimately criticise academic literature. Simulations are, in theory, less demanding than essays. They do not ask students to criticise or synthesise the work of academics. They do probe their understanding of concepts and their intellectual flexibility by asking them to apply theory or concepts to a concrete situation. Therefore, simulations can be a useful precursor to an essay. Essays are higher order than simulations in theory. In practice, simulations can be higher order than essays. Most essays are mere summaries, and many are plagiarised. Summaries are irrelevant and plagiarism virtually impossible with simulations. This paper is chiefly a description and reflection of my experience with five different light simulations. It also engages in a broader reflection on the use of theory in

social science teaching and the relationship between essays and the type of assessment championed herein.

Fantasy Countries

The aim of the simulations I have designed is to challenge students to apply theory in complex situations. Thus, they perhaps have something in common with the problem questions and case studies used in law and business teaching. Since my subject is comparative politics, many take the form of descriptions of fantasy countries. The countries do not exist and, therefore, the students cannot just research and regurgitate “the facts”. The fantasy country characteristics have been mixed up in such a way that none of them resemble an actual place. Instead, the country characteristics represent instances of theoretical concepts and relationships that have been taught in class. Thus, students need to interpret the simulations through the academic language they have been taught. This is a powerful incentive to engage with course material. The assessments can appear very intimidating to those who have not attended class or done the readings. My simulations tend to be grounded in literatures that are relatively scientific in the sense of work that aspires to clear hypotheses and replicable research, but not in the sense of universality or predictability. Given that the aspiration is to give students a flavour of practical politics, the theory tends to serve as a way of telling a convincing story, rather than producing the right answer. Indeed, one of the tasks is designed to be more or less impossible. Most of the simulations invoke a specific political audience, hence the ultimate importance of narrative. While having this general philosophy in common, light simulations are a very flexible form of assessment and I describe the various contexts in which I have used them below.

A Flavour of my Flexible Fantasies

I have found that light simulations can be used for assessment in a wide range of pedagogical contexts. Table 1 summarises these. As the table shows, there are two groups: those preceded by a live simulation in a class of less than eighty (light simulations) and those without a live precursor that I have used in classes of up to one hundred and eighty (super-light simulations).



Table 1. Selected Light Simulations for Assessment

<i>Simulation</i>	<i>Level</i>	<i>Class Size</i>	<i>Live Precursor</i>
Sovereign Credit Rating	Under and Post-Graduate	>60	Yes
Budget	Under and Post-Graduate	>60	Yes
Fiscal Governance	Under and Post-Graduate	>60	Yes
Predicting Democratisation	Under and Post-Graduate	>80	Yes
Electoral System Choice	Under and Post-Graduate	>40	Yes
Corruption Prediction	Undergraduate	>40	Yes
Political Classification and Reform	Undergraduate	>180	No
Party Family Tweets	Undergraduate	>180	No

Light Simulations

The simulations in this group vary in the extent to which they approximate a real-world task. The most realistic is the credit-rating simulation. It is the only one in which I have used external and real-world content. A credit-rating agency (CRA) is a company that assigns ratings to a debtor's ability to pay back debt. It is from the CRAs that we get the phrase "Triple-A" to denote something that is utterly dependable and top quality. CRAs rate debt instruments issued by companies and by states. My simulations concentrate on states. The students are asked to rate a fantasy country, according to the Standard and Poor's criteria. The definitions of the letter ratings are show in Figure 1. The students are provided with extensive documentation from Standard and Poor's. Since my subject is politics, we concentrate on the political, rather than the economic and financial, element of the rating. We do this as group work in class with everybody rating the same fantasy country and providing a brief rationale for the rating. CRAs are highly controversial with a lot of debate about the extent to which their ratings are reliable and subjective. Therefore, the extent to which ratings by "trained" students differ provides a very concrete way for students to engage with a scholarly and public policy problem. In the week after the class simulation, students are assessed on an individual written simulation with an identical structure. There is an excerpt in Box 1. Many students have submitted superb work, which goes beyond the brief I have given them. One of the first students to take this simulation is now an analyst for a CRA in New York.

Figure 1. Standard and Poor's Letter Ratings 2015

 INVESTMENT GRADE	'AAA' Extremely strong capacity to meet financial commitments. Highest rating
	'AA' Very strong capacity to meet financial commitments
	'A' Strong capacity to meet financial commitments, but somewhat susceptible to adverse economic conditions and changes in circumstances
	'BBB' Adequate capacity to meet financial commitments, but more subject to adverse economic conditions
	'BBB-' Considered lowest investment grade by market participants
 SPECULATIVE GRADE	'BBB+' Considered highest speculative grade by market participants
	'BB' Less vulnerable in the near-term but faces major ongoing uncertainties to adverse business, financial and economic conditions
	'B' More vulnerable to adverse business, financial and economic conditions but currently has the capacity to meet financial commitments
	'CCC' Currently vulnerable and dependent on favorable business, financial and economic conditions to meet financial commitments
	'CC' Currently highly vulnerable
	'C' A bankruptcy petition has been filed or similar action taken, but payments of financial commitments are continued
	'D' Payments default on financial commitments
Ratings from 'AA' to 'CCC' may be modified by the addition of a plus (+) or minus (-) sign to show relative standing within the major rating categories.	

Box 1. Excerpt from Credit Rating Simulation

Please give the following country a letter credit rating according to the Standard and Poor's methodology.

Ruritania

The ruling Progress Party party, under longtime president Hodama, dominated the country's political life from independence in 1960. Hodama's collectivist economic philosophy promoted a sense of community and nationality, but also resulted in significant economic dislocation and decline. A fall in the price of agricultural products led to a default on the country's small foreign debt in 1965. After three years of negotiations, Ruritania repaid bondholders subject to a 25% haircut. Hodama's successor, Missani, was president from 1985 to 1995 and oversaw a carefully controlled political liberalization process in both politics and economics.

Ruritania is an electoral democracy. The October 2010 national elections were judged to be the most competitive and legitimate in Tanzania's history. Unlike past elections, the opposition accepted the 2010 results, due in large part to a July referendum providing for the creation of a national unity government after the poll. Executive power rests with the president, who is elected by direct popular vote for a maximum of two five-year terms. Legislative power is held by a unicameral National Assembly, which currently has 357 members serving five-year terms. Of these, 239 are directly elected in single-seat constituencies; 102 are women chosen by the political parties according to their representation in the Assembly; 10 are appointed by the president; 1 is awarded to the Attorney General.

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Corruption remains a serious problem. A 2007 anticorruption bill gave the government greater power to target abuses in procurement and money laundering, but critics claim it is insufficient. Several high-profile scandals, particularly the controversial purchase of radar equipment involving alleged kickbacks to Ruritanian government officials and businessmen, were the focus of considerable press attention through 2010 and into 2011.

The creation of the national unity government was partly a reaction to the economic crisis, which has seen economic growth fall and debt rise, as agricultural products lost competitiveness and the government borrowed, ostensibly to fund road-building and irrigation projects. The recent discovery of oil off the Ruritanian coast has increased optimism about the chances of economic recovery. The government has all but ceased infrastructural spending in order to contain debt. It has also introduced a new Fiscal Advisory Council, composed of independent academics, but with purely advisory powers.

The Credit Rating Simulation is highly structured with a set of criteria and guidelines. Credit Rating Agencies describe their opinions as journalism, just a statement of opinion. This has meant they are difficult to sue if their opinion leads investors to make decisions which turn out to be very costly. The CRA analysts are generally almost totally insulated from the consequences of their judgements. This Budget Simulation is a nice successor to the Credit Rating Simulation in that it looks at sovereign debt from the other side. More generally, it forces students to think about how politics must be about compromise. Much of politics teaching rightly invites students to question and criticise those in power. I think more politics teaching can provide an insight into the necessity and difficulty of political leadership.

The Budget Simulation lacks a neat set of bureaucratic guidelines and puts the students in a situation of extreme political pressure where every word can have drastic consequences for the career of the decision-makers and the history of their countries. Students play the role of the advisor to a finance minister in the midst of a debt crisis. They must craft a budget that is politically and fiscally sustainable. A good budget must be consistent with two interlinked stories, a narrative of determined fiscal reform for investors in the state's debt and a narrative of social fairness and economic hope for citizens. While finance ministers will definitely not want to tell the same story to the two audiences, the story being told to the investors will not be credible unless the citizens buy into the narrative they are being told and vice versa. The political weakness of the governing party and the economic crisis of the state push the students to formulate a plan that can be told as a story that will replace a spiral of loss of confidence with a spiral of competence, hope, and solidarity. No such story is based on glaring omissions or mistakes in primary school mathematics. Almost all students grasp the central point that a budget is both politics and economics. Box 2 provides excerpts from the budget simulation. The students are also provided with graphs showing past and projected spending and income. There is an Excel sheet which allows them to play with budget scenarios, without having to do tedious calculations. Ultimately, the students must provide numbers for the next three budgets, along with a political and economic rationale for how these numbers will restore political and investor confidence. The variety of strategies chosen by students provides a lot of fun and controversy in class. Some cut ruthlessly, while others are reluctant to cut anything. Some target farmers and civil servants, while others get tough on business. Many Irish students tend to be somewhat mesmerised by that country's unusual dependence on an unusually low corporate tax rate. Other than that students tend to engage very well with the simulation on its own terms, often showing a lot of imagination and rigour in drawing from the lessons of the academic literature and the sequencing of political and economic moves. The simulation definitely provides an insight into how hard politics is to do and how easy it is to criticise.

Box 2. Excerpt from Budget Simulation*Seldonia*

You are the political advisor of the new finance minister of Seldonia. The parliamentary representation of the political parties is as follows.

Table 1: Seldonian Parliament

Party	Orientation	National Assembly	Senate
Freedom	Centre-right	100	120
Socialists	Centre-left	90	70
Our Seldonia	Agrarian	10	20
New Left	Ex-communist	20	10

The Freedom Party has formed a minority government as a coalition proved impossible. The Socialists and New Left are both ideologically hostile to the Freedom Party but will not co-operate because of the New Left party's record under the communist regime. The budget must be passed by a majority of those voting in the National Assembly. The Senate cannot veto the budget but can delay it for three months. Seldonia is a rich country with no history of default, but has been badly hit by a sudden financial crisis. Figures Two, Three, and Four provide official recent statistics and projections. Please advise the minister on a fiscal strategy for the next three years by filling in the budgetary figures in Table Two and justifying the plan with particular reference to the country's credibility in the bond markets and the political interests of the Freedom party.

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Table 2: Budgeting in Seldonia (proportion of GDP)

	2018	2019	2020	2021
<i>Expenditure:</i>				
Pay	.225			
Pensions	.04			
Social Protection	.24			
Agriculture	.075			
Interest Payable on Government Debt	.059			
<i>Revenue:</i>				
Personal Tax	.32			
Corporate Tax	.135			
<i>Interest Rate on Government Debt:</i>	6%			

Note: The row "Interest" is the amount of interest due as a proportion of GDP. The interest rate is in the last row.

There are four other light simulations. They vary a lot in terms of academic content and the courses on which they have been taught. However, they share a relatively tight connection to a relatively definite body of social science theory. I will illustrate the type of teaching and assessment by presenting the Democratisation Prediction Simulation in some detail and more briefly describing the other simulations.

In the Democratisation Prediction Simulation, students are placed in the role of advisors to a foreign minister. Democracy is an important consideration in the foreign policy of the fantasy country in question and the foreign minister has asked for an assessment of which of two countries is most likely to democratise. The students are provided with vignettes of the two countries. The country descriptions provide information relevant to various political, economic, and cultural theories of democratisation they have studied in class, as well as some red herrings they should ignore. (Please see Box 3.) The simulation invites a well-informed and sophisticated application of theory. Most students quickly realise that no existing country exhibits the mix of characteristics in the simulation, even though occasionally some persist in looking for a shortcut by identifying which real country is disguised in the simulation. The causes of democratisation have been well studied and students will have access to a selection of readings that will provide useful pointers about relatively strong relationships and also plausible theories that are not borne out by any consistent evidence. The best students are able to realise that the simulation involves difficult judgements about the relationship between causation and correlation and the interaction of variables.

In DCU, I have run the Democratisation Prediction Simulation as part of a course that is very much focused on democratisation theory. I have also done this simulation in a class in a colleague's class in Waseda University, Japan, which was not focused on democratisation theory, but rather on politics in the Middle East and North Africa. With some minor adjustments to the class simulation content, the students were able to engage extremely well. While these were clearly relatively strong students, this positive experience suggests that not only the light simulation approach, but even the content of my simulations, may be relatively easy to adapt to other contexts.

I have run other simulations that are similar to the Democratisation Prediction Simulation in that they are linked to quite definite academic literatures. All three are additionally attractive to students because they are challenged to provide a solution to a specific political problem. In the Corruption Simulation, students are asked to suggest reform to a notional public administration system that will reduce the incentives for bureaucrats to take bribes. In the Fiscal Governance Simulation, students play the role of a consultant who has been asked to recommend changes to budgetary procedure in a particular political context. Finally, in the Electoral System Simulation, the students are assessed on suggested electoral systems that will reduce the potential for ethnic conflict.

Box 3. Excerpt from Democratisation Prediction Simulation

Instructions:

You are an expert civil servant in the Foreign Ministry. Your country prefers to sign trade deals and donate aid to democratic countries. It is especially keen on developing good relations with newly democratic countries in the Middle East and North Africa. The Foreign Ministry has been asked to draw up a list of countries that are likely to democratise soon so that they can be prioritised in diplomacy. Below are descriptions of two candidate countries. You have been asked to say which of these countries is most likely to democratise and why.

CASE 1

The Holy Kingdom of Vurpitanian



Vurpitanian has a GDP per capita of 2000 US dollars (2018 purchasing power parity). The economy of this isolated country mostly depends on subsistence agriculture. 90% of its population are members of the Vurpitanian ethnic group, which is Sunni Muslim. 10% of the population are members of the Anjanski ethnic group, which is Orthodox Christian. The head of state is a prince, who claims direct descent from the prophet. Nevertheless, a government holds real power and is accountable to a parliament. There is substantial fraud at elections, but it seems that 25% of seats are decided according to a fair count of votes. While the members of parliament represent the rural majority, as well as capital, the business elite comes almost exclusively from the traditional merchant families of the capital Rovamaki.

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Super-Light Simulations

Super-light simulations can be used for assessment without a live precursor. This means they can be used to assess very large classes. There are several reasons why this option is especially welcome in large classes. They tend to present a greater risk of mediocre essays and plagiarism, so it is especially useful to have another assessment option. The higher student-staff ratio also makes it harder to move directly to an essay and an earlier and more structured assessment can provide useful feedback to both students and teacher. I have only begun to work with super-light simulations recently, having previously been mesmerised by the assumption that simulations required interaction. I have now moved to the much more flexible assumption that simulations merely require imagination.

The two super-light simulations I have used are both assessments on a large second-year class comprised of groups of students from different programmes and faculties, as well as students on individual exchange programmes. The class has a history of highly variable engagement and performance. The first assessment concentrates on the classification of a political system and evaluation of proposals for political reform. It tests the students' ability to apply the most basic concepts of the course to a concrete situation, which combines some relatively simple analytical challenges with some very difficult ones. In a traditional essay format, students would have been asked to critique and evaluate these concepts without ever having been asked to apply them. So, the assessment avoids the skipping of a logical step that was typical of traditional university teaching and assessment in this sort of subject. Box 4 is an excerpt from this exercise and once again a fantasy country is described. Most students were able to do quite well in this assessment by offering a largely correct classification of the political system. A smaller number managed to engage with the subtle technicalities of the proposed reforms. Those who did the assessment without engaging with the relevant course material scored badly and were asked to present for some remedial tutoring before moving on to an essay.

The second light simulation dealt with another widely used, but less technical, set of concepts in comparative politics. In previous simulations, pictures had been used to add a little fun and reality to the exercises, but the analytical content of the simulations was to be found only in text and numbers. In this exercise, images are key part of the simulation. The students are presented with four tweets from a pretend political party, which they have to classify into one of the party families from the political science literature. The classification depends on the students' interpretation of the combined meaning of images and text across the four tweets, one of which is reproduced in Figure 2. Some students got into the spirit of this assessment and tweeted me their incredulity that no such party existed! The students enjoyed this light simulation and it served to encourage weaker students who had struggled with the previous exercise. The class also contained a significant cohort of very able students, who probably found it too easy to score very highly on this exercise. In future courses, I would like to change this to a more active exercise by asking students to compose their own tweets from a part of a particular family (O'Boyle 2018), although this may invite plagiarism of tweets produced by real political parties.

Box 4. Political System Classification and Reform Simulation

1. The Republic of Novaya Zembla

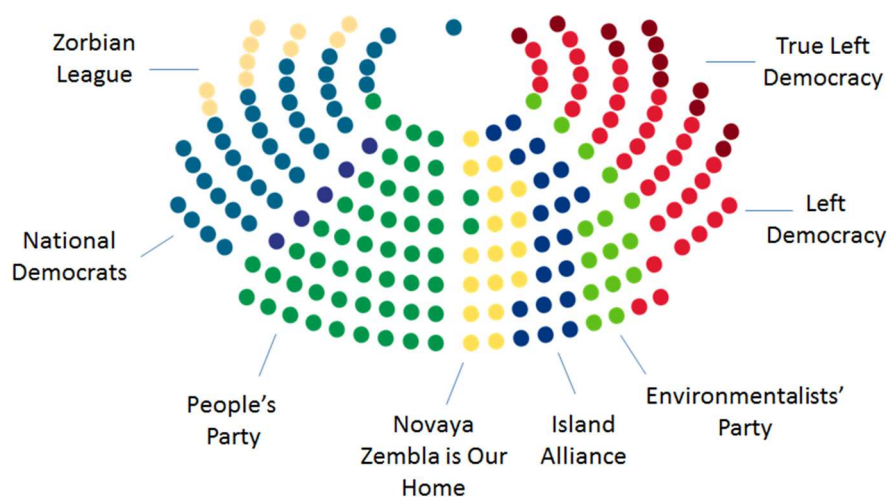
Which features of this country are consensual? Which are majoritarian?

Overall, would you describe it as a majoritarian or consensual political system? Why?

What effect would the reforms proposed by the NZIPS have? Would they make Novaya Zembla more or less consensual?

The President is elected by a joint sitting of the House of the People and the House of the Regions. The candidate with the lowest votes is eliminated in each round of voting. The President does not head the executive, but she decides who should be given the first opportunity to form a government after legislative elections; she can refer bills to the Constitutional Council for a test of their constitutionality; and must approve any payments to international organisations. Deputies to the powerful House of the People are elected according to a party list system in large regional districts. The composition of the House of the People is shown in Figure 1. Representatives to the House of the Regions are elected by a two-round system, according to which all candidates with less than ten per cent of the vote are eliminated after the first round. The regions are responsible for their own educational and cultural policies, but depend on funding from the central government. The Constitutional Court often has to adjudicate disputes between regional governments and the central government over control of education.

Figure 1. Current Composition of the House of the People



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Figure 2. Party Family Tweet



Concluding Reflections

Many teaching and learning papers offer real pedagogical benefits but often at the cost of substantial resources, especially the time of the teacher. This time cost squeezes attention from other teaching tasks on the course where innovation takes place, other courses for which the teacher is responsible, and, of course, the research career, and interminable list of other jobs, of the teacher. Light simulations are not time consuming. Unlike traditional simulations they do not necessarily require interactive role-play. They do require a little more preparation than a traditional essay, but not much more. Light simulations provide a very effective form of assessment that can dovetail nicely with other teaching and assessment methods such as elaborate class role-playing, essays, and lectures. They are also plagiarism proof. The low-cost and flexibility of light simulations has been an important part of my motivation in writing this practice paper.

The aim of this piece has been to share a successful experience. While my experiments have been overwhelmingly successful, there have also been failures. In particular, one year I asked students to play the role of actual politicians in only slightly amended political

contexts. This produced some very low-standard work. My light simulations have worked best when some relatively clear theoretical ideas have been combined with an obviously fake context. I am very confident that light simulations can and should be used more often in political science. I wonder to what extent light simulations are prevalent and practicable in other social science disciplines. I am one of many who suspects that the intellectual differences between social sciences are exaggerated. I also have the impression that our pedagogical problems and opportunities are relatively similar and that light simulations like the ones described here could be effective in cognate subjects.

References:

Ní Mhuirthile, Tanya. 2018. Assessment to Embed 'Graduate-ness' in Final Year Law Students. Presentation to the Dublin City University Teaching and Learning Day, 13 September.

O'Boyle, Neil. 2018. Assessing Assessments: What Student Feedback Tells Us. Presentation to the Dublin City University Teaching and Learning Day, 13 September.

Torney, Diarmuid. 2018. Running Simulations: The "World Climate" Exercise. Presentation at Seikei University, 15 May.

Usherwood, Simon. 2015. Simulations in Politics: a guide to best practice. York: The Higher Education Academy.