Participatory simulation of institutions could help address global limits

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Introduction

Current social, economic, and political institutions are heavily implicated in the challenges that the LIMITS community typically engages [5]. The design of these institutions has often been predicated on assumptions that particular policies, processes, or power structures will lead to desirable outcomes. These assumptions have traditionally been difficult to evaluate. However, interactive computing systems are now beginning to enable experimental evaluations of fundamental issues in law, government, and society. One such class of computing system is the participatory simulation: "role-playing activities aimed at exploring how complex dynamic systems evolve over time." [15]

Previous Work

This work builds on extensive previous research in agent-based modeling, in particular in economics and policy analysis (e.g. [1,2,4,7–10]). Interactive and participatory simulations have been brought to bear on a range of domains such as environmental policy [1], learning [15], and empirical legal studies [11–13].

Future Projects

We propose that participatory simulations of other actual and proposed policies could be similarly useful in other domains. We currently have one project under way simulating the Accountable Capitalism Act (ACA) [14], a bill proposed in the United States in 2018 by Sen. Elizabeth Warren. This act seeks to restructure US corporate law in several significant ways, shifting power and accountability away from shareholders and toward a wider array of stakeholders. We will use this participatory simulation for two main purposes – first, to provide empirical results that may guide the implementation of this law, and second, to create an interactive educational platform that helps people learn about corporate law and the proposed effects of the ACA.

In addition, we are exploring simulations of several other US legislative efforts: the pair of resolutions H. Res. 109/ S. Res. 59, "the Green New Deal" [6] proposed by Rep. Alexandria Ocasio-Cortez and Sen. Ed Markey; H.R. 763, "the Energy Innovation and Carbon Dividend Act" [3] proposed by Rep. Ted Deutch; and Sen. Warren's "Ultra-Millionaire Tax" [16].

We intend to situate these various projects in the same simulated environment, in order to be able to explore the interdependencies among them. Interactions may have complex and unpredictable results. These legislative proposals could generate unexpectedly-synergistic benefits, making them even more positive than their proponents suggest, or they could unexpectedly interfere with one another, revealing latent tradeoffs between them. Exploring both is important in assessing these proposals' possible effects For example, the Accountable Capitalism Act requires that all firms over $1B annual gross revenue produce a "general public benefit"; this stipulation would cause firms that do not currently do so to change their direction, potentially pivoting to work toward the goals laid out in the Green New Deal. Similarly, the Carbon Dividend Act could dovetail with the Green New Deal, and the Ultra-Millionaire Tax could impact major shareholders also affected by the Accountable Capitalism Act. The intersections and interdependencies among these legislative initiatives are important, and may be underexplored as efforts focus primarily on each individual bill or resolution.

These policies have the potential to contribute to important nation-scale efforts address the "slow crises" currently facing humanity; using interactive simulation to contribute to discussions around the direction

of these policies, and to enable people to understand the various impacts that they would be likely to have, could be a useful contribution from computing toward this set of critical issues.

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