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Gaming our Way to a Better Future

David Rejeski

What could be more dangerous than a policymaker confronting a key decision for the first time?

If someone has never seen a situation or played it through in their minds, and practiced ten or twenty conceivable responses, what are the chances that they will make the right decision? The added pressure of time could make it even worse. This situation occurs more often than we think.

Today's decisionmakers are intervening in systems of such enormous complexity that no one can possibly understand the nature of every interconnection and feedback loop. "If I do x, will y happen, or *minus* y, or something I never even anticipated?" or the proverbial "What happens if I press this button?"

What our elected leaders, public officials, and administrators need, and need quickly, is what Yale computer scientist David Gelernter calls "*topside*" -- an understanding of the big picture. That understanding, coupled with the ability to rapidly test hypotheses, run multiple experiments, and fail softly -- without a loss of life or loss of face -- would go a long way in improving public policy and management.

Enter computer games, the bane of every adult with a post-pubescent male in the house. Aren't these digital playthings ruining the minds and morals of our kids? Wait a second. What exactly do well-designed games do? First of all, they place us in a dilemma and force us to use our ingenuity to succeed and balance important tradeoffs. They also let us fail without getting bruised, and experiment dozens of times until our skills improve -- all extremely valuable capabilities, if people are counting on you to make important decisions.

There is a tendency to underestimate the educational potential of games. Games are viewed in our society as entertainment and snobbishly we fear entertainment cannot be learning. In the 1930's, what began as an idea for an amusement park game became one of the most important training tools of the U.S. military. The Link Blue Box Flight Simulator was used to train thousands of pilots in World War II. Calculations done after the war indicated that the Link trainers had saved the Army Air Force the equivalent of billions in dollars today, and over 30 million man-hours in training time. Not bad for a "game." Today using simulation games to train cost-effectively is a way of life for the military. And it's not just high-end supercomputer flight trainers, recently the military released a free PC game (www.americasarmy.com) about G.I. level combat that uses at its core a top commercial game engine.

What if our goal was to "ubiquitize" educational gaming -- make it cheap, effective, and readily available to all those who need it, not just school age kids? One segment of our population that needs to "*game more to train more*" are individuals involved in governing.

Much of governance is built on a dangerous learning paradigm that we might term "learning too late." Things happen, and then policy makers react, with emergency response crews, legislation, or political excuses. That was acceptable behavior a hundred years ago but inexcusable today given the technological capabilities we possess. The challenge we face is to accelerate the capacity of decisionmakers to learn and, ultimately, to *learning before doing*. It is easier to connect the dots if you have seen them before, virtually or otherwise. If Boeing can design an entire airplane in the computer (the 777) surely we can do a better job of simulating the choices and dilemmas facing today's public sector managers.

Can we anticipate or simulate everything? No, but we can do much more than we are doing now and, as importantly, reach a much larger and wider audience. For example, the Games-to-Teach

Project (<http://cms.mit.edu/games/education/>) at MIT is developing a game called *Biohazard* to teach people in the medical profession to recognize and respond to victims of a bioterrorist attack. Public policy offers a wide range of conceptual and thematic opportunities for game-based learning and training. We could be using games and simulations to teach people to set up refugee camps in troubled areas, orchestrate disaster relief, negotiate environmental treaties more effectively, make better health policy choices, handle complex air traffic logistics, or grapple with options for taming urban sprawl. Why not develop a set of games to explore the unintended consequences of our technological choices, from gene splicing to nuclear power? The physicist Freeman Dyson has made the point that, like the Titanic, the most dangerous technology is one that is prevented from failing, and then does fail. So let technologies fail virtually and see what happens when it is safe to do so.

Bringing together the worlds of computer gaming and policy making will not be an easy task. When it comes to games, policymakers have spent far too much time focused on the effects of a small number of violent video games and lost sight of the pedagogical function and advantages of games in general. Policymakers will bring a set of unrealistic expectations to gaming, expecting games to act like other policy analytical models and provide them with crisp answers yielding easy policy choices, not confront them with obstacles or multiple paths to success. Yet despite these challenges, a number of factors could work to increase the application of game-based tools to public policy challenges.

First, gaming technology is improving rapidly. Significant advances in graphic processing capacity will allow evermore sophisticated and intuitive interfaces to be built. Better artificial intelligence underlying game programs and the ability to integrate large, empirical data sets from the outside world will increase the capacity of games to mirror reality. The advent of large, multiplayer, interactive games will open up new possibilities to view complex systems behavior where the players are people, not mathematical approximations of people. We might learn something new about what drives urban sprawl by observing 100,000 people playing SimCity on-line and interactively.

Second, we are witnessing the rise of a game savvy generation. The first generation of game players is now in their thirties and the next wave is following closely on their heels. Given the fact that the average age of Congressional staffers is below thirty, gaming could take root in the young underbelly of the public policy system and grow rapidly as octogenarian politicians leave for greener, computer-free pastures.

Finally, consolidation in the games industry may motivate game developers to look beyond the riskier, purely high-volume commercial entertainment sector. The public sector could become a viable market that offers some challenging projects combining safer profit potential with important laudable social impacts.

The goal of electronic-based gaming is not just to raise a generation of digitally ambidextrous kids but to create intellectually ambidextrous decisionmakers as well. Used properly, games could improve public sector policies and management by allowing decisionmakers to improve their understanding of complex systems, lower their risk of being surprised by unexpected events, and exercise corners of their minds seldom explored in their day-to-day lives until a crisis. Instead of just attacking the game industry for playing to our violent instincts, politicians should challenge the sector to use its creativity to develop sophisticated products to improve the vision, critical thinking and problem solving skills in government – something that would benefit us all.

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