Synthetic Excellence: Standards, Play, and Unintended Outcomes

Introduction

In today's increasingly networked society, more efforts are being devoted to promoting interoperability and an open network environment (Libicki, 2000). Thus, Sun Microsystems sponsored numerous conferences and publications designed to foster a discussion of the benefits associated with open, interoperable standards. Similarly, Oracle and IBM have worked with Harvard University's Berkman Center for Internet and Society to develop a set of best practices that together provide *a Roadmap for Open ICT Ecosystems* (Berkman Center for Internet and Society 2005). Also signaling the desire for interoperability is the gathering support for open source (Weber 2004).

This growing enthusiasm for interoperability is understandable. One need only consider the economics of networks. Given the interdependencies within a network, components must work together in order for the network to function effectively. As importantly, interdependencies give rise to positive network externalities, insofar as the value of a network increases along with the number of users and applications (Shapiro and Varian, 1998; Varian, Shapiro, and Farrell, 2005). Interoperable standards are also increasingly called for, given the growing complexity and interdependence of the

globally networked economy (Axelrod and Cohen, 1999). In the future economy, standards will not only serve their traditional functions of achieving efficiency, facilitating coordination, and executing control; as importantly, they will determine the structure of the 'playing field' on which networked transactions take place (Garcia, 2004).

Many of those advocating for interoperability have placed their hopes on the Internet, conceiving it as an open, end-to-end network that could seamlessly transmit information regardless of its source, the nature of the information, its means of transmission, and the user. To this end, the Internet's architects designed the network so that most of its intelligence and control functions extended outward to the users and peripherals at the edges of the network. To realize this vision, they implemented a technology neutral, non-proprietary platform, based on TCP/IP protocols, which linked the underlying network technology substrate to the middleware and applications layers riding on top of them (Communication Science and Telecommunications Board, 1994).

The Internet's end-to-end architecture did not solve the problem of interoperability for long, however. Given the commercialization of the Internet, and the growing diversity of its users, the consensus on behalf of the end-to-end architecture soon began to unravel. To make the most of interconnection, business users needed to enhance their services with a variety of additional functions (Blumenthal and Clark 2000). Thus, if the Internet is to serve effectively as a commercial platform, additional, higher-level standards in support of middleware and software applications will be required. Not surprisingly, therefore, recent decades have witnessed not only a sharp rise in the number and types of standards forums being established, but also greatly intensified business

efforts designed to capitalize on the growing strategic, and proprietary, value of standards. (Libicki, 2000: Werle 2001; Garcia 2004; Garcia, Leickly, and Willey, 2005)

It is in the light of such developments that the future of interoperability has been called into question, leading many interested parties to redouble their efforts to work towards interoperability at the upper layers of the Internet architecture. While supporting the overall goal of interoperability, this paper provides a cautionary note. It argues that the value of standards is contextually based. Thus, for example, while interoperability may be highly valuable in a purely economic/commercial context, it might, in fact, engender some unintended, negative consequences in the political and cultural realms. On this basis, the paper contends that, as standards efforts become increasingly focused on the upper layers of the Internet, care should be taken to assure that appropriate metrics be adopted to determine the costs and benefits of these standards with respect to other realms of life.

Employing an interdisciplinary approach, this paper takes a first step in exploring these issues. Focusing on the highest-level applications in particular, it examines current efforts to create standards across virtual worlds, using material from the MPEG-V working group as a case study. Advocates for these standards foresee clear economic benefits for producers and maintainers of virtual worlds, as well as for their inhabitants (Sivan 2008). We argue that such faith in the predictable outcomes of standards betrays a tendency both to think of virtual worlds as the intentional outcome of rational design, as well as to misapprehend the roles of diversity and play in discrete environments. We question this narrow economic perspective. Arguing that a *metaverse* — like all worlds — is highly complex, we contend that virtual world standards — ranging from EULAs to

the software code itself — can only beget unpredictable outcomes, which will not only affect relationships between worlds, but inevitably within communities. To identify the costs and benefits of standards in these complex environments, all of these relationships must be considered (Steinkuehler, 2004). As importantly, we argue that virtual diversity, like biological variety, is inherently beneficial to users of synthetic worlds. To realize the benefits of what Sutton-Smith (1997) calls "the potentiation of adaptive variability," we contend that what is needed is not standards across virtual worlds but rather a broad diversity of synthetic, discrete ecosystems.

To make our case, we proceed as follows. First, we characterize standards and describe their role in society from the perspective of complex adaptive systems. Second, we look at how — from an historical perspective — formal standards and standard setting has evolved, emphasizing their link to the ascent of technological artifacts with the consequence that standards development concerns have generally been skewed towards relatively narrow economic criteria such as cost, competitiveness, and efficiency. Next, focusing on the case of MPEG-V, we show how this trend is being replicated today with respect to the development of standards for virtual worlds. This, we conclude, is an alarming trend, which could give rise to a number of unfortunate and unforeseen consequences. To make this point, we look at the unique (some might say sacred) role of games in the realm of culture, which allow mankind to both generate and adapt to a changing environment. We conclude that designing play environments, based solely on economic criteria, might seriously undermine the innovative and adaptive role of play as well as the evolution of diverse cultures..

Standards and Their Role in Complex Adaptive Systems

To fully appreciate the long-terms development of standards for virtual worlds, it is necessary first to define standards, and second to characterize their general role in society. In this paper, we focus on the role that standards play as *interfaces* between actors at all layers of a complex adaptive system, facilitating interconnection and interaction, and thereby fostering the generation of emergent properties and the evolutionary adaptation of the system itself.

What Do We Mean by Standards

Standards are specifications that define the relationships between the parts of any given whole. As such, standards are *the rules of the game*, bounding the system as well as providing both affordances and constraints to the actors/components/nodes within it.

Although in the modern era we have come to think about standards in technical terms, they are first and foremost the building blocks of the social order — itself a network of networks (Kontopoulos, 1993; Sawyer, 2005; Beinhocker, 2008). For, in any given context, standards constitute an agreed upon set of meanings, scripts, and rules that guide behavior and govern relationships. Embodying critical information in highly compressed and abbreviated formats, they greatly simplify the environment. Signally opportunities and constraining choices, standards allow for cooperation and coordinated behavior to take place (Garcia, et al, 2005).

Consider, for example, the role of language and simple gestures. Based on a common understanding, they provide the shared frame of reference and sense of reality needed for intimate relationships and the establishment of common goals. Similarly, cooperation among individuals who are engaged in interdependent activities is greatly

facilitated when people do not act randomly, or on a trial and error basis, but rather when they conform to a shared set of expectations embodied in socially constructed roles (Katz and Kahn, 1978). Likewise, organizations gain greater access to resources as well as reduce their transaction costs, when they adhere to standardized rules and procedures institutionalized in their environments. In so doing, organizations themselves become standardized over time, as today the prevalence of bureaucratic forms and structures clearly attest (DiMaggio and Powell, 1991). In the realm of technology, as well, standards specifications and protocols add value to system components by allowing them to interconnect and interoperate in a transparent and seamless fashion (Garcia, Kale, and Danish, 2007).

By providing an overarching and common point of reference, standards help to integrate social systems. Even more important, by serving as an *interface* across boundaries and between and among different actors in complex systems, standards afford a mechanism for interconnection and feedback to take place, so that innovative and adaptive behaviors can emerge. To better appreciate this role, we need to look more closely at the nature and importance of complex adaptive systems.

Standards and Complex Systems

The term complex adaptive system is derived from complexity theory, the origins of which can be traced back to ideas and propositions associated with a broad array of disciplines, including mathematics, biology, psychology, physics, philosophy, and sociology. Although complexity analysis has yet to take the form of an all encompassing, agreed upon body of theory, the notion of a complex adaptive system — a term coined by John Holland (1995) and Murray Gell-Mann (1994) — has itself been

very fruitfully employed by a number of diverse scholars in far-ranging fields (Stuart Kauffman, 1995; R. Keith Sawyer, 2005; Joshua Epstein, 2006; Eric Beinhocker, 2006; Michael Batty, 2007; and Linda Dennard et al, 2008).

Surveying this diverse literature, we can best characterize complex adaptive systems by virtue of a set of common attributes that have typically been ascribed to them. Accordingly, a complex adaptive system can be said to comprise a number of interdependent, heterogeneous actors whose actions affect the behavior of all others. As importantly, because actors operate according to their own unique scripts and roles, the outcomes of their interactions are nonlinear and therefore unpredictable (Kauffman, 1995). Nonetheless, the system as a whole is emergent; changes and interactions, which are generated from the bottom up, give rise to 'self-organization', whereby outcomes at the macro level transcend individual actions, so they cannot (as in linear systems) be traced back to them (Kontopoulos, 1993; Monge and Contractor, 2003; Beinhocker, 2005; Sawyer, 2005).

The indeterminateness and flexibility associated with complexity makes it possible for complex adaptive systems to evolve and adapt over time. In fact, as Beinhocker (2005) claims, complex adaptive systems are, by their very nature, evolutionary systems. As such, they are ideally suited to *learn* over time. Learning takes place when actors at the micro level strive to enhance their *fitness level* with respect to the context in which they operate. As Monge and Contractor describe, actors 'follow rules that explicitly and sometimes consciously seek to improve their fitness in terms of performance, adaptability, and/or survival" (Monge and Contractor, 2003). In so doing, they change the *fitness levels* of other actors as well as the *fitness landscape* of the system

itself — that is to say the macro *criteria* by which actors in that system are evaluated (Kauffman, 1995; Beinhocker 2005). It is in this way that actors and the system co-evolve.

Viewed within the context of complex adaptive systems, standards can be considered as *rules of the game* in so far as they help define the fitness level, explicating the criteria for success in any given context. Moreover, standards are — like all norms and institutions — socially constructed, emerging and evolving through the interplay of social interactions, social institutions, and social norms, be they cultural, political or economic. Embedded in language, artifacts, scripts, and repertoires, standards help actors to carry out their activities and pursue their goals. As well, employing standards for their own, unique purposes, actors redefine them over time.

Not surprisingly, standards have proliferated and gained importance as societal activities have become more complex (Beniger, 1986). As Emile Durkheim noted three quarters of a century ago, increased specialization and a deeper division of labor generated the need for greater integration and control (Durkheim, 1984), and standards provided one answer. As described below, the growing demand for standards, accompanied by unprecedented technological advances, led to the specialization of the standards setting process itself, and with it a much more 'generalized,' economic criteria for standards evaluation. It is the technologically-based criteria that we question in the case of virtual worlds.

Formalizing Standards Through Standardization Processes

That the momentum behind formal standardization processes and the shift to a focus on economic criteria should occur together with the rise of industrial technologies

should come as no surprise. The idea of Progress through industrial production was at the heart of the American dream (2007). And technical standards were essential for achieving it. Most importantly, standardization allowed for interoperable parts, which made large scale, rapid, precision manufacturing possible.

Consider, for example, the case of mass production, and the specialization associated with it. With specialization and a deepening of the division of labor, tasks became more interdependent, requiring greater cooperation and information exchange. As noted by Harold Williamson:

> Chief among the other elements in the pattern of mass production is the principle of standardization. Stemming from the rudimentary division of labor, standardization involved the continuous pursuit, and progressive realization, of the uniformity of the materials, operations and products of industry, which made possible the future division and mechanization of labor (Williamson 1951).

The relationship between standards and mass production was self-reinforcing. Further advances in precision manufacturing required the development of machine tools and precision gauges, which in turn further drove the need for standards and standard measures (OTA 1992).

With the growing demand and increased stakes in standards, formal organizations were established to develop them. Generating their own procedures, communication genres, and social identities during their on-going, day-to-day interactions, standard setting organizations took on a recognizable life of their own. Over time, these organizations developed a set of structural practices unique to their institutional space as well as a set of fitness criteria by which to evaluate and select standards (OTA 1992)

By far, one of the most powerful forces driving standardization in the United States was the First World War and the campaign to eliminate waste. In 1917, product

diversity was so great it threatened to hinder the war effort. To deal with the problem, the government set up a Commercial Economy Board of the Council of National Defense, whose task was to simplify the use of labor, capital, and equipment for all industries (McCullough, 1928). In 1918 the Board was incorporated within the War Industries Board, which eventually supervised the manufacture of over 30,000 articles of commerce. The intensity of this campaign made every American conscious of standards — its impact "reached into every home, every office, factory, institution, and government agency in the United States" (Cochrane, 1966: 167)

Concern about the post war economy led Government to take a continued — if not more intense — interest in standards in the period following the war. The moving force behind this *crusade for standardization* was Herbert Hoover, Secretary of Commerce under President Harding (Congressional Research Service, 1974). In contrast to the wartime simplification program that had focused on military products, Hoover's program was directed at the economy as a whole. By all accounts, the standards campaign was a great success. It reached a peak in the late twenties when, according to the American Standards Association (Congressional Research Service, 1974):

> Standardization had become 'the outstanding note of the century," its influence pervading 'the remotest details of our industrial regime," topping "all sources of scientific knowledge and [affecting] every phase of design, production, and utilization.

Over the years, standards continued to grow in importance, providing a means of exerting power, controlling resources, and promoting economic growth. In particular, the emergence of the industrial economy not only heightened interest in standards; it also brought new players to the fore. By 1925, there were approximately 365 national

organizations in the US accredited to develop standards, and by 1990 the number topped 400. At the same time, a new, much more specialized *ad hoc* organization emerged to generate standards — consortia, ranging in number from between 200 to 400 (Cargill, 2002). Characterizing the growth of, and complexity within, today's standard setting environment, Werle notes:

> In the last two decades standardization organizations (SOs) in telecommunication and information technology. . .have proliferated. Both the globalization of markets and the blurring of technological boundaries have induced an overlap of the domains of international and regional SOs. At the same time, SOs at the national level are losing significance. Traditional organizations have been restructured and — assisted by governments — new official SOs have been created at the regional level. Most dramatic, however, has been the growth of private consortiums and forums. Thus, official standard setting is confronted with an 'informal sector,' the evolution of which indicates some discontent with the traditional organizations and entails an inherent potential of jurisdictional conflict (Werle 2001: 392)

Despite the diversity of organizations within the standards setting environment, standards became associated with the economy, and the criteria for determining the *fitness* of standards converged around economic variables. Included among these fitness criteria, for example, are prospects for scale and scope economies, reduced transaction costs, lower prices, enhanced competition, competitive business strategies, innovation, and positive externalities. This techno-economic emphasis is understandable, given the industrial context in which formal standardization emerged, together with the Government's emphatic belief that standards should be developed in the marketplace by the private sector. Thus, most of the participants in standards processes have been industrial players. Moreover, much of the thinking about standards development has taken place within the relatively narrow discipline of economics (Landis 1987; Farrell and Saloner; Besen and Farrell, 1994)

Serving not only to regulate behavior but also to constitute its very meaning, standards and standards setting bodies are a major source of power in society. For this reason, how and by whom standards are defined, and the fitness criteria used to evaluate them, is of great import, be it with respect to day-to-day social interactions or the architectural framework that defines a technology. Thus, standards setting processes must not only be efficacious, they must also be legitimate. Moreover, they must be suitable to the context at hand. While economic fitness criteria for standards have served well in governing economic interactions in the marketplace, we should not presume that market criteria are appropriate for the realm of culture and games.

As described below, just as the advancement of technology provided the momentum for standardization in the industrial world, so too it is now fostering standards development in the realm of virtual worlds and video games. Caution is warranted at this point. As Duguid and Brown (2002) have pointed out with respect to the design of shopping "knowbots," technologies, exclusively economic criteria often constitute aberrant simplifications and distortions of life. These designs can have far reaching implications because — as Winner points out — technologies typically become 'forms of life,' taking on a life of their own. (Winner, 1986) Hence, as Winner admonishes, we must not be technological somnambulists in the face of new technology. MPEG-V is a case in point.

MPEG-V

In a brief "think-piece" entitled "Real Virtual Worlds SOS (State of Standards) Q3-2008," in the second issue of the *Journal of Virtual Worlds*, Yesha Sivan briefly makes a

case for extending standards across virtual worlds. These synthetic environments, he enthuses, "are destined to become big, in the sense of meaningful, influential, and making money [sic] for various current and new players" (1).

But as a market, this imagined "metaverse" of worlds is inefficient: Decrying individual and proprietary attempts to build and populate virtual worlds, Sivan argues that "the common public good calls for a connected system like the Internet where different forces can innovate in particular spots of the value chain" (2). Standards, he insists, are desperately needed.

Sivan's concern for the common public good is laudable, but necessarily prompts the question: What is the common public good *vis a vis* online synthetic worlds? And are standards perforce the best way to safeguard that imagined good? In this section, we want to look briefly at documents surrounding the draft schema to which Sivan refers: The proposed standards for information exchange within virtual worlds now being developed by the Moving Picture Experts Group Virtual Worlds Standard (MPEG-V) working group. With attention paid solely in the technology itself, and with little apparent regard for the sociotechnological context of their project, the MPEG-V imagines the public good in a narrow, reductive, and determinist fashion. Looking briefly at their proposal for a metaverse-wide avatar standard, we ask whether imagined gains in efficiency will come at a dear cost.

MPEG, an ISO/IEC working group, has been the source of many familiar standards, and argues that it is important to standardize intermediate formats and protocols for "Information exchange with Virtual Worlds" in the areas of "Interfaces between virtual worlds" and "Interfaces between virtual worlds and the physical world."

Their working framework consists of three areas:

> The first part will describe an overall architecture that can be instantiated for all the foreseeable combinations of virtual worlds and real world deployment. The second part will allow for the interchange of characteristics between virtual worlds taking native formats and scalability into account. The third part will allow for the interfacing of sensors and actuators to the virtual world taking native formats into account.

According to the "Summary of MPEG V,"

> the 'Information exchange with Virtual Worlds' [1] project intends to provide a standardized global framework and associated interfaces, intermediate formats definitions and the like, to enable the interoperability between virtual worlds (as for example *Active Worlds*, *Second Life*, *IMVU*, *Google Earth*, *Virtual Earth* and many others) and between virtual worlds and the real world (sensors, actuators, vision and rendering, robotics (e.g. for revalidation), (support for) independent living, social and welfare systems, banking, insurance, travel, real estate, rights management and many others).

But consideration of the brief document's rhetoric reveals a process in which technological concerns trump social ones. While the document begins by characterizing virtual world technologies as components of complex social and cultural practices like "entertainment, education, training..., work, reliving the past," and so on, any due consideration of the social nature of these systems is quickly abandoned in favor of an economic vocabulary. Citing the growing ubiquity of online gaming and virtual worlds in our lives, for example, the document assumes a singularly economic posture: "Games will be everywhere and their societal need is very big," the authors explain, concluding "it will lead to many new products and it requires many companies." Driven by this market logic, the document's argument echoes early 20th Century calls for standards, as it emphasizes "efficiency," "fast adoption," and the need for "better tools."

While there is nothing surprising about justifying the move toward standards in

exclusively economic terms, we contend that the argument for technological efficiency conveniently ignores the messy social contexts within which we adopt, make use of, and are shaped by these tools. Once economics becomes the dominant logic, imagined demand is met by imagined supply and the question of the social is abandoned: "It is envisaged that the most important developments will occur in the areas of display technology, graphics, animation, (physical) simulation, behavior and artificial intelligence, loosely distributed systems and network technology." Technology is "envisaged" as though in a vacuum. When human beings finally resurface in the MPEG-V's considerations, they are reduced to mere consumers, as the user is given tools to preserve "value invested" in his avatar.

As we have suggested, this rhetoric is historically part of the logic of standards. We do not doubt that everyone who has contributed to the MPEG requirements discussion is enthusiastic about the social and cultural opportunities these technologies offer. But whatever their intentions, as the Avatar Characteristics XSD repeatedly demonstrates below, the industrial-era emphasis on efficiency, coordination and control mean that social and cultural criteria are effectively divorced from technical considerations.

The Avatar Characteristics XSD

The Avatar Characteristics XSD (XML Schema Document) is the core technology by which the MPEG-V proposes to standardize virtual worlds: Not by standardizing the worlds, *per se*, but by creating a comprehensive document that standardizes aspects of the player's in-world representative, her avatar, in minute detail, across the categories of Appearance, Animation, Communication Skills, Personality, and Control. It seems likely

that the MPEG working group approached the matter in a fashion they believed would allow each world to preserve its unique identity: These standards do not address the worlds themselves, only the movement between them.

But what are worlds other than the people who comprise them? And what are the societies that comprise these worlds, other than bodies of rules and norms? Of course, there are infinite combinations of characteristics available within the schema as defined. But no generalizable and finite descriptive schema could possibly account for the infinitely malleable schemas of specific worlds' discreet descriptions of their avatars. The schema is a vector for rigidity and the end of adaptability in virtual worlds and online games. We believe that the avatar schema imposes unwelcome finitude on every world in the metaverse.

The proposed XSD stipulates that an avatar's Gender, for example, is to be either Male, Female, or Undefined; there are no other options. Without some requisite biological real-world referent (both men and women frequently play avatars opposite their own genders), the stipulation of a static, binary gender seems poorly conceived, and illustrates the limits these rules immediately impose. Suddenly, worlds like those depicted in novels like Ursula K. LeGuin's *Left Hand of Darkness* or Jeffrey Eugenides *Middlesex* become entirely unthinkable. Whatever insight these worlds offered readers of fiction becomes lost to online worlds. The in-world re-creation of divinities like Ardhanarisvara and Hermaphroditos becomes impossible. And intersex identity is consigned to the non-category of an "Undefined."

In terms of their overt racial characteristics, avatars are described by a single element in the XSD called SkinPigment, which comprises six named elements: Very

Light, Light, Average, Olive, Brown, and Black. Again, given the absence of real-world referents, these seem strangely arbitrary, and smack of bias: The element "Average" recalls an era when the pink Crayola crayon was labelled "Flesh." In contrast to the nominal elements of SkinPigment, though, consider the complexity of the avatar's hair specifications. Where skin color is one of merely six named elements, hair is defined by no fewer that 32, including amount of white hair (WhiteHair), amount of blonde hair (BlondeHair), amount of red hair (RedHair), as well as a variable hair color (HairColor) that can be set to any of 65,000 different values.

Defined Animation elements dictate the actions that the avatar will be able to port from world to world. As they are defined by the XSD, there are several dozen predefined actions, including one for yoga, one for surfing, and one for throwing up. At the same time, there are separate, predefined elements reserved for animating the avatar as she aims a bow and arrow, as she aims a handgun, as she aims a rifle, and as she aims a bazooka. For greeting another avatar, there are eight animations defined by the XSD; for dancing, there are 11 animations; for fighting with another avatar, there are at least fifty-eight animations.

In sum, we see these definitions for avatars as arbitrary and determinist. Invented to satisfy commercial needs, even a cursory review reveals them to be inflexible in terms of gender and race, two enormously complex and variable categories of human identity. Further, resources within the XSD seem predisposed to violence, while resources devoted to personal expression receive considerably less attention. We are under no illusions about the frequently violent nature of activity in virtual worlds. This standard, however, privileges acts of violence over any other.

The Mangle of Practice, The Mangle of Play

In addition to addressing the explicit intent of the MPEG-V, it is instructive to consider the issue of unintended outcomes. Within and around game worlds and virtual realities, there has always been intense conversation about the digital rulesets that shape them. Independent wikis, blogs, and chat boards like wow.com and massively.com are dedicated to unpacking, cataloguing, and debating the hard-coded rules that give form to some of the more populous worlds, like Blizzard's *World of Warcraft*, Makena's *There.com*, and Linden Lab's *Second Life*. Even mainstream sites like CNET.com and engadget.com regularly cover virtual world software client updates and the debates among players that even miniscule rule-changes can engender.

Players' focus on the rules themselves is understandable, but wrongheaded: No matter how informed and finely-grained these conversations, the exclusive focus upon rulesets ignores the emergent complexity of game environments (Steinkuehler 2004). With a careful examination of the unanticipated effect of Chinese goldfarmers in the massively multiplayer online role-playing game (MMORPG) *Lineage II*, Steinkuehler observes that in the virtual environment, hard-coded rules represent merely one system in a complex ecosphere. "In-game communal norms," she writes, "amplify, enhance, negate, accommodate, complement, and at times even ignore hard-coded game rules" (200). Borrowing from Pickering (1995), Steinkuehler argues that synthetic worlds represent a "mangle of production and consumption — of human intentions..., material constraints and affordances, evolving sociocultural practices, and brute chance" (Steinkuehler 200).

Thus, the injection of standards into environments like these is likely to meet with

unintended consequences. Steinkuehler observes that "the ways in which a game gets played out [or a virtual world is used] on the ground level are not easily determined *a priori* by the game design, rules, EULAs, or whatnot. They shift and evolve, often in unpredictable directions" (211). Steinkuehler refers to this phenomenon as "the mangle of play."

> This is why we need to understand the emergent game cultures within virtual worlds and not simply the designed objects that hit the shelves. This is also why we might consider the legal regulation of games as not merely a matter of intellectual property rights... but also perhaps as the philosophical and ethical issue of self-governance of societies that inhabit virtual kingdoms that are corporate owned but player constituted (211).

Beyond the matter of narrow determinism and the dilemma of unanticipated outcomes, however, there is a third issue that demands consideration. We have suggested that the proposed avatar schema is unnecessarily rigid, and that this inflexibility precipitates not only the diminution of player choices, but threatens the end of adaptability within virtual worlds. It is important to address the matter of adaptability, and suggest why it is such a significant aspect of online games and synthetic environments.

Adaptability, Play, and the Sacred

The current discourse on virtual worlds and videogames is blunted by our misapprehension of these technologies as banal sites of worldly re-production and mimesis. Corporate interest in so-called "serious games;" advertisements touting hyper-realistic graphic and lighting algorithms; debates over the psychic effects of on-screen violence: All of these discourses ignore the intrinsic ludic, or playful, nature of these environments. We *play* in these worlds.

As sites of "play," these synthetic worlds temporarily separate the user from quotidian experience, exchanging the vast array of social rules and norms under which we all live daily for a streamlined, arbitrary, temporary ruleset. Play is the only suitable way to engage with games and virtual worlds: Because they are voluntary and delimited, they are sustained solely by the free will, or the "lusory attitude," of the participants (Suits, 2005).

In the West, any serious consideration of play is a challenge. Plato spurned it; Rome condemned it; Calvin taught that work, not play, was the will of God; Industrialization disciplined its workers, relegating play to the weary after-hours. As inheritors of a Puritan work ethic, we are suspicious of play because, for all its volume and bombast, it remains ephemeral and, by appearances, inconsequential: Play is the activity of children and the idle. Beyond a little exercise or improved eye-hand coordination, games are non-productive: Play is its own reward, "an occasion of pure waste" (Caillois, 2001).

And yet, play is imbricated with the sacred, the linkage buried in our language and in our games themselves. The role of dice in divination, for example, lies latent in the word "die," plural "dice," from the Low Latin *dadus*, meaning "given," or "that which is given by the gods." Before the modern invention of "random outcomes," humankind regarded the roll of the dice as an opportunity for the gods to make their wills known: Tools like dice, yarrow stalks, astragali (knucklebones) and dominoes were the sacred, subtle instruments of faith. In the Norse tradition, it is Odin, the All-Father, who invents dice for his children, that he may better communicate with them. In Greece, it is Hermes who invents them: Hermes, who is not only the messenger of the gods, but later the

patron saint of gambling.

The unifying sacrality of play is always a localized, situated phenomenon. In his book *Homo Ludens*, Dutch historian Johan Huizinga tells us that "Human play belongs to... the sacred sphere." A sacred site, he writes,

> cannot be formally distinguished from the play-ground. The arena, the card-table, the magic circle, the temple, the stage... are all in form and function play-grounds, i.e., forbidden spots... within which special rules obtain. All are temporary worlds within the ordinary world dedicated to the performance of an act apart. (10)

Sociologist Roger Caillois agrees: In religious ceremony, he writes,

> an enclosed space is delimited, separated from the world and from life. In this enclosure, for a given time, regulated and symbolic movements are executed, which represent or reincarnate mysterious realities in the course of the ceremonies... [This is] just as in play, [where] the opposing qualities of exuberance and regimentation, of ecstasy and prudence, and of enthusiastic delirium and minute precision, are present at the same time. (207-8)

It is in this rarefied atmosphere, freed from the onerous burden of mere being, that men and women can pose the question, "What if?" Huizinga and Caillois argue for the play of an archaic past as fundamental to the instantiation of civilization itself. Huizinga tells us that "culture arises in the form of play... it is played from the very beginning..." (46). Our denigration of play is recent, he says, and dangerous.

Recent scholarship has taken Huizinga's tacitly evolutionary framework to its logical conclusion. Looking carefully at the way we play, and the way we talk about play, Brian Sutton-Smith sees in play an imitation of the evolutionary process itself, in which mankind models his own biological character (229). Drawing heavily on the work of Stephen Jay Gould, Sutton-Smith argues that play's nature — quirky, redundant, flexible — is the key to evolutionary success. "I define play as a virtual simulation

characterized by staged contingencies of variation, with opportunities for control engendered by either mastery or further chaos" (231).

It is at this powerful intersection — of "mastery and chaos," of "ecstasy and prudence," of abandon and control — that societies change, adapt, and thrive. This sacred ludic tension is where innovation begins. To impose the arbitrary limitation of standards across all virtual worlds is perforce to reduce the variability of these virtual ecosystems, and impoverish thereby the *excellence* (Gould, 1991) of play's adaptive potentiation.

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