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Gods of the City? Reflecting on City Building Games as an Early Introduction to Urban Systems

Bradley Bereitschaft

ABSTRACT
For millions of gamers and students alike, city building games (CBGs) like SimCity and the more recent Cities: Skylines present a compelling initial introduction to the world of urban planning and development. As such, these games have great potential to shape players' understanding and expectations of real urban patterns and processes. In this article I argue that, despite the fundamental role of agency in CBGs and other *sandbox* type games, players are constrained by the developers' assumptions and biases regarding how cities ought to look and function. Of particular consideration is the tendency among CBGs to emphasize personal transportation over transit, autocentric over mixed-use development, and simplified social dynamics over a more realistic model.

Key Words: *city building game, SimCity, planning pedagogy, city simulation, urban planning*

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> We don't want to make a very realistic game; we would rather make a fun game that has some realism in it
>
> —Karoliina Korppoo, lead designer *Cities: Skylines* (interviewed by Jeff Wood, StreetsBlog USA, April 16, 2015)

> Although you can build hundreds of different looking cities in *SimCity*, the ideological bias that underlies these cities and determines their success is unchangeable.
>
> —Lauwaert (2007, 209)

INTRODUCTION

Since the release of *SimCity* a quarter century ago, city building games (CBGs) have introduced millions to complex urban systems, inspiring new generations of city planners, traffic engineers, and urban theorists. Within formal classroom settings at both the grade school (i.e., fourth–tenth grade) and university levels, various iterations of *SimCity* have proven to be valuable, though limited, pedagogical tools. Gaber (2007) argued that simulations like *SimCity* help students to think holistically; to understand cities as a complex system with many interconnected and interdependent parts. They may also help to reinforce adaptive critical reasoning as students confront the many challenges of running a city (e.g., traffic, pollution, crime, natural disasters, negative cash flow, waste accumulation, citizen unrest). Other studies have demonstrated the efficacy of CBGs in reinforcing critical-thinking skills and introducing students to geographical patterns and processes (Adams 1998; Nilsson and Jakobsson 2011; Ting and Yang 2012; Kim and Shin forthcoming). At the university level, and particularly when used in planning education, however, the limitations and inaccuracies of these games limit their utility in understanding complex urban processes. The inability of players to tweak the source code, and thus the underlying assumptions of the game (i.e., the game's *black box*), further limits their value in planning education and research (Devisch 2008; Minnery and Searle 2014).

Rather than critiquing CBGs as a formal pedagogical tool, this article explores what Lobo (2004, 14) has described as the social or "cultural use of *SimCity*.". CBGs like *SimCity*, and the more recent *Cities: Skylines* ($C:S$), are highly successful cultural products that for millions of gamers have constituted their initial formative experience with urban planning and development. As an introductory gateway to these topics, players may come to view urban systems through the lens of their gameplay experience, which provides a necessarily constrained and biased view of reality. While professional urban planners and theorists have their education and professional experience to draw upon, most players have no formal training with which to identify and contextualize biases woven into the game mechanics. Players operating outside the professional planning arena may still influence the future trajectories of urban spaces through political action and taxation. There is thus a need to explore how certain elements, assumptions, and limitations of these games may help shape players' understanding and expectations of real urban systems. I set about this task by first examining CBGs, and video games more broadly, as both an individualized and communal medium for learning. Then, through a survey of gameplay features and online discussions, I argue that CBGs present a biased urban imaginary whose underlying rules and assumptions often run contrary to contemporary best practices in urban planning and policy.

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Working within these constraints however, players wield considerable power to sculpt their own unique urban visions, which come to embody the ideologies of both player and developer.

Video Games as a Medium for Learning

Despite their limitations as a formal pedagogical tool, CBGs and other video games may still represent an effective and uniquely advantageous medium for learning and cognitive development (de Freitas and Oliver 2006; Feng, Spence, and Pratt 2007; Hsiao 2007). Squire (2003) suggested that simulation-style games like *SimCity* and strategy games like *Civilization* may constitute particularly effective learning mediums because they "place learners in a unique position to understand a system's dynamics." (53). These scenario-oriented games allow the player to manipulate variables that would otherwise be difficult or impossible to adjust in the real world. Time, for example, can often be sped up or slowed down to better observe system changes. Simulations also tend to have a "relationship [with] reality, and real life situations, allowing for exploratory learning to take place" (de Freitas and Oliver 2006, 348), though this element may be limited in all but a few "serious games"—those designed with teaching and training in mind (Annetta 2008).

For geography, video games may represent a crucial bridge between the realms of play and practice. The ability to manipulate space and time, and to overlap and engage with multiple data layers at once within simulation games for instance, mirrors many of the capabilities of a geographic information system (GIS). As Lobo (2004, 11) suggested, "*SimCity* is an extremely powerful and useful GIS-like tool, which engages the students and provides spatial visualizations." Video games may also assist in the development of geographic knowledge, creativity, and spatial awareness. While games like *Where in the World Is Carmen Sandiego?* and *GeoNet* reinforce basic geographic literacy (Brysch, Huynh, and Scholz 2012), others like *SimCity* and *Minecraft* challenge the player to think critically and creatively, and to solve problems with definite spatial dimensions. Action games have been found to enhance spatial cognition (Feng, Spence, and Pratt 2007), while CBGs and other simulation/strategy games encourage the player to exercise adaptive critical reasoning while continually critiquing different theories and strategies (Gaber 2007; Nilsson and Jakobsson 2011). The rules of the simulation, and the ways in which the game responds to user input therefore necessarily help shape players' perceptions of real-world systems and their geographies.

City Building Games: A Brief Overview

Situated within the broader simulation genre, CBGs are open-ended "sandbox" games with no explicit goal nor single way of "winning" (Squire 2008). Players are free to explore an open-ended world in which they may create, destroy, and reimagine a wide variety of urban typologies. Players come to understand the rules and conditions of the game primarily through trial and error: "a process of demystification" (Friedman 1999). As in a real city, they must balance the supply and demand of various land uses (i.e., residential, commercial, and industrial), provide services and infrastructure (e.g., roads, water, sewer, electricity, police and fire protection), set and collect taxes, and see to the health, happiness, and education of their citizens. Although players are presented with a virtual "borderless playground" (Lauwaert 2007, 195), they are constrained by the limits and assumptions of the game's mechanics, and are guided by the built-in ideologies and biases of the game developers. For example, most CBGs actively encourage population and economic growth, often incentivizing this singular progression with special buildings, landmarks, and other rewards that are "unlocked" when particular milestones are reached.

Will Wright and his game development studio Maxis introduced the world to CBGs with the release of the original *SimCity* (known today as *SimCity Classic*) in 1989. The game featured relatively simple graphics with a singular top-down perspective. Increasingly complex iterations of the game have been released over last twenty-five years, including *SimCity 2000* in 1994, *SimCity 3000* in 1998, *SimCity 4* in 2003, *SimCity Societies* (produced by Tilted Mill) in 2007, and *SimCity* in 2013 (to avoid confusion with the original, players often refer to this latest version as *SimCity 2013*). Only in the past decade have other games developed and produced outside Maxis proven competitive in the CBG genre, including *City Life* and the closely related *Cities XL* franchise developed by Monte Cristo, and the most recent entry into the market: *C : S* developed by Colossal Order and published by Paradox Interactive. In 2006, *City Life* was the first CBG to feature a fully three-dimensional graphics engine, allowing the player to view their city from any angle. Most recently, *SimCity 2013* and *C : S* (released in March 2015) currently stand apart as the only two CBGs to model each individual citizen (or agent). Players can now track individual simulated citizens as they go about their daily activities, and in *C : S*, even watch their citizens age over time.

The CBG Community

Lauwaert (2007) identified two levels on which players may interact with the game: internal and external. Internal involves playing the game, while external constitutes all related activities outside the gaming environment, including socialization on forums and chat rooms and the exchange of user-generated content (UGC) and game strategies. These external activities may greatly expand and enrich the gaming experience. Online forums and other gaming communities also offer a portal into the culture of particular games and game genres, and are thus employed herein to provide insight into the practices and expectations of those who play contemporary CBGs, particularly *SimCity 4*, *SimCity 2013*, and *C : S*. I chose to focus primarily on these three games because they each (1) attempt to simulate contemporary urban systems modeled

on the real world, (2) are supported by large and active online communities, and (3) are commercially successful, having sold over one million copies each (Electronic Arts 2013; 2015; Paradox Interactive 2015a). Among the most active online CBG communities are *Simtropolis.com*, a forum and UGC exchange originally dedicated to *SimCity 4* that has since expanded to cater to players of several different CBGs, and the CBG subreddits of *Reddit.com* (i.e., r/SimCity4, r/SimCity, and r/CitiesSkylines), a popular online community in which users submit and vote on content. Reflecting the popularity and support for *C : S*, whose developers have maintained an active dialogue with the CBG online community as well as provided a variety of game modification (i.e., *modding*) tools, the *C : S* subreddit currently has 88k subscribers compared with *SimCity 2013*'s 26k, a game released two years earlier.

CBG communities play a key role in disseminating knowledge not only of the game and game mechanics, but also of urban patterns and processes more generally. Players with both formal and informal training in urban planning, geography, engineering, and other related fields readily share their knowledge of transportation systems, land-use economics, and hydrology among others, and how they may be best addressed within the simulation. Often strategies employed in the real world to mitigate such issues as traffic, crime, or pollution may also be applied successfully within the game. Players also commonly share pictures and stories of their cities, eliciting feedback regarding city design, mechanics, and aesthetics. Players frequently choose to re-create existing cities that, when shared with the online CBG community, occasionally prompt comparisons between the real and simulated city. Through these juxtapositions, players can identify both the strengths and limitations of the CBG as a model of real urban systems. A player attempting to recreate San Francisco in *C : S*, for example, noted the advantages of the game's district feature:

> I divided the districts according to SF Planning Department Neighborhood Group Map. In large districts I would brake [sic] it down to smaller subdistricts. I also issue[d] policies according to the real world. No reference here, just from my memory and [G]oogle street view. For example, I banned high rise buildings in almost all districts except Financial District and SOMA. I also allowed "recreational use" in Civic Center district (ixohoxi, *Reddit.com*, April 2, 2015).

Planners, Mayors, or Gods?

In most CBGs it is stated or implied that the player is taking on the role of mayor, making the critical decisions that shape the growth and character of their simulated cities. Frequently, however, the player is required to perform additional tasks that typically fall to city planners, transportation engineers, and planning and zoning boards. In each of these roles, the player has essentially unlimited reign; the only hard limits are finite space and financial resources (which may be overcome with a variety of cheat codes). If the player is indeed the mayor, then they govern with more power than any mayor in history; not only can they destroy an entire city and start over on a whim, they make their decisions in a virtual political vacuum with no elections, rival political parties, or other democratic processes to contend with. Players do however often receive feedback either from advisors or, in the case of the agent-based *C : S* and *SimCity 2013*, individual simulated citizens. In *C : S*, a Twitter-like feed known as Chirper relays a near-constant barrage of comments and complaints from city residents, only a limited number of which actually assist the player in decision making.

Ultimately, the player's full capacity within the game, which often includes the ability to drastically alter the landscape and unleash natural disasters, is more akin to a deity than a mayor. This top-down, unilateral, and practically omnipotent form of urban development, though understandably designed to maximize the entertainment value of the game, is far removed from the constraints and complexities of reality. As Lobo (2004, 16) observed of *SimCity 4*, "The game does not dwell successfully in the complex but intrinsic elements of an open society. . . [including] citizen participation, voting, councils, legislation, homelessness, corruption or accountability."

Though players wield immense power within the game, they are also guided and constrained by a model of the world conceived by the game developers. Indeed, the very notion of what constitutes the ideal city is woven deeply into the gameplay mechanics and aesthetics of each CBG, providing the scaffolding upon which players suffuse their own utopian visions. What proceeds is a discussion of some of these elements, and how they may shape, as well as be shaped by, the player's expectations of real urban patterns and processes.

Where's the Mixed Use?

Mixing land uses, particularly certain types of residential and commercial, is one the primary tenants of sustainable urban development (Jabareen 2006). It is seen as a way to reduce automotive dependency by minimizing the distance between destinations and improving the viability of alternative modes of transportation such as walking and cycling (Cervero 1996). Potential benefits include improved health due to an increase in physical activity, better air quality and lower CO_2 emissions, a reduction in urban sprawl and associated losses in agricultural and natural areas, and a more equitable and vibrant urban environment (Parker 1994; American Planning Association [APA] 1998).

Despite the advantages and growing popularity of mixed-use urban developments, CBGs have rarely featured mixed-use zoning. To the author's knowledge, the *Cities of Tomorrow* expansion for *SimCity 2013* is the only CBG that accommodates vertical mixed-use development, and only

as part of the game's futuristic 100+ story megatowers. CBGs have otherwise adopted the classic modernist triad of fully separated residential, commercial, and industrial zones. Admittedly this more simplistic framework reduces the overall complexity of the simulation. The forced segregation of land uses however often exacerbates traffic and other maladies within simulated cities, particularly for the two agent-based games. In *C : S*, players are also strongly discouraged from implementing horizontal mixed use. Commercial buildings, along with industry, roads, and power plants, produce noise pollution that can reduce land values and lower health and happiness in adjacent residential areas (*C : S* Wiki 2015a). Players are therefore encouraged to separate potentially compatible commercial and residential zones into separate districts, worsening automotive congestion.

While strict zoning regulations and the resultant segregation of land uses is a ubiquitous feature of the modern city, particularly in North America, contemporary planning is often much more flexible. Mixed-use "neo-traditional" and "new urbanist" style developments are a common component of urban revitalization efforts and "smart growth" policies (Jabareen 2006; Jepson and Edwards 2010). Though many may be willing, players are simply unable to replicate the vibrant mixed-use "urban villages" famously described by Jacobs (1961), and are instead steered toward monotonous, segregated, and often autocentric development patterns. A player on Reddit (*r/CitiesSkylines* subreddit) expressed his frustration:

> I would love to see an old Main-Street style urban area with mixed use zoning: commercial/retail storefronts and apartments on the levels above. I feel like this is a level of realism that is lost in just about every city builder out there, yet this is something you see in every real town and city in the world. Obviously the code constrains zones to R[esidential], C[ommercial], I[ndustrial], etc., but is there a way to make it work? (brianf408, *Reddit.com*, March 13, 2015)

In response to similar comments, Colossal Order has stated that mixed-use zoning may be implemented in future versions of *C : S* (Paradox Interactive 2015b).

Historic Preservation

The preservation of historic (as well as simply older) buildings is considered a key element in the formation and maintenance of local place identity (Jivén and Larkham 2003). Jacobs (1961, 188) noted that older buildings, and particularly those that have yet to be fully renovated or modernized, also help to maintain economic diversity and vitality by providing affordable space for new businesses: "Old ideas can sometimes use new buildings. New ideas must use old buildings." CBGs have often neglected to incorporate this crucial element of urban planning and design. While *SimCity 4* shipped with three distinct architectural eras (Chicago 1890, New York 1940, and Houston 1990), and later added a fourth (contemporary European) as part of the Rush Hour expansion (Kramer 2003), the more recent *C : S* was released with only one architectural style, a kind of generic Euro-American contemporary blend. In *C : S*, individual buildings are dynamic in the sense that they may undergo upgrades, becoming larger and/or increasing in value as local conditions permit. Players can also assign certain ordinances and regulations (e.g., density caps, heavy traffic ban, increased education budget) to designated city districts, providing some degree of intraurban specialization. As a whole, however, cities appear temporally static, lacking the layers of history and heritage that enhance a city's unique sense of place. Cities in *C : S* feel generic, as if they could have been built anywhere. As a result, the terrain (which may be altered by the player using the game's built-in terrain editor) and the various terrain/climate themes (i.e., North, Sunny, and Tropic) play a vital role in establishing a city's unique identity.

In *SimCity 4*, players can preserve individual buildings amid changing economic conditions by assigning them historical landmark status. These buildings may still be abandoned, as well as destroyed by natural disasters, but they will not be redeveloped without the player's permission. This type of historic preservation is conspicuously absent among the latest generation of CBGs, including *SimCity 2013* and *C : S*. Even in *SimCity* 4, however, buildings—historic or otherwise—cannot be repurposed, which forces players to demolish existing buildings to meet shifting market demand. The renovation and repurposing of older buildings, particularly former warehouses located within the urban core, has constituted a key component of urban redevelopment strategies in recent years (Hannigan 2007). The absence of adaptive reuse in CBGs gives the impression that any type of redevelopment necessitates new construction; a paradigm that in real life proved costly and often unsustainable throughout the mid-twentieth century (Teaford 2000). The inability of the software to adapt to changing conditions in this manner lends to the superficiality and inauthenticity of simulated cities, particularly among areas of higher density (Fig. 1). Additionally, as Lobo (2004, 8) observed of *SimCity 4*, "historic preservation, although available, offers no advantages, nor will any of the styles really affect the development of your city," making historic preservation an aesthetic concern only.

Cars Are King

Featuring buses, passenger and cargo rail, subways, cruise and cargo ships, planes, and cars and trucks with several road and highway options, *C : S* is one of the most multimodal CBGs to date. The game also includes pedestrian pathways that may be elevated, though bicycle and bicycle lanes are curiously absent (as they are from every CBG and expansion to date). Despite a dearth of

Figure 1. Lacking historic preservation and variation in architectural styles, in *C* : *S* the city center (left) can feel just as generic as the suburbs (right). (*Source:* Paradox Interactive.) (Color figure available online.)

public transit options, the online forums suggest a clear preference for cars, roads, and highways. On Reddit, where users can "upvote" posts they like, highly complex road systems and highway intersections often reach the top the /r/citiesskylines Web page, indicating their popularity among players. *C* : *S*'s Unity3D game engine allows the representation of each individual automobile, turning traffic flow into a mesmerizing ballet. Players also have unprecedented freedom to build and experiment with a variety of roadway and highway configurations. Automotive traffic provides immediate visual feedback; traffic jams indicate inefficient road networks, while swiftly moving automata are often interpreted as a sign of successful planning. This rather simplified approach to traffic engineering, where the primary goal is to tame automotive congestion, leads many players to exhibit a kind of "freeway fetish" (Fig. 2).

A professed urban planner on Reddit garnered some thoughts on the subject of automotive primacy, posing the question: "Why the love for the highways?" One respondent observed that each new city in *C* : *S* (as well as *SimCity 2013*) requires a highway connection, which "leads people to naturally expand along that highway as they progress," but also noted that "people really like building highways everywhere (it is fun after all!)" (william_13). A player from New York City suggested that a deeply engrained car culture, particularly in the United States, may provide some explanation:

> [O]nly a minority of people and/or players are interested in livable street-oriented traffic design. As an American, I can say that the majority of us over here still live in a world where a car is your life line and lifestyle due to the fact that our country is connected almost exclusively by an expensive and expansive Eisenhower/Moses style interstate system that leaves little pocket change left over for alternative transportation. (freeradicalx, *Reddit.com*, April 25, 2015)

Figure 2. Elaborate highway systems and interchanges are a common feature among cities built in *C* : *S*. (*Source:* Reddit.com/r/CitiesSkylines.) (Color figure available online.)

The notion that a player embedded in a more autocentric culture will tend to build more autocentric simulated cities is a logical one, and one I think is worthy of further investigation. Regardless, however, it may be said that CBGs like *C : S* and *SimCity 2013* make it easy to rely heavily, if not exclusively, on automotive transportation despite the availability of other transit options. In both games, traffic congestion can often be most swiftly and effectively ameliorated by upgrading from two, to four, to six lane roads. If a traffic jam is particularly stubborn, a six-lane one-way road might be in order! Induced demand, in which more lanes spur more demand, and ultimately more traffic, is clearly not a consideration. And since more traffic does not translate into higher maintenance costs, continually increasing the roadway capacity is a logical congestion abatement strategy, as are streamlined superblocks and limited-access freeway systems straight out of Le Corbusier's *Radiant City* ([1933] 1967).

Theillusion that additional capacity solves all transit ills is compounded by the fact that no CBG to date has accurately portrayed the resultant demand for parking spaces. In *C : S*, vehicles may park parallel along streets and in surface parking lots adjacent to buildings. These surface parking lots are unrealistically small, however, with 10+ story buildings often having no more than a half-dozen (and often no) parking spaces. While it isn't uncommon for dense urban environments to feature subsurface parking garages, it takes a substantial leap of faith to assume that every building in the game is equipped in this way. So what if a CBG dared to adopt a more realistic parking model? Steve Librande, a lead designer on *SimCity 2013*, is said to have remarked, "so much of the screen would be dedicated to asphalt that it'd be too boring to play" (Dzieza 2013).

Society Simplified

Introduced just days after the game's release, the user-generated *first person camera* modification for *C : S* allowed players to view their cities from near ground level. Though the developers have stated that the game was never meant to be viewed from such a perspective, players were quick to criticize the lack of diversity among the simulated, or Cim, citizens (referred to as Sims in the *SimCity* universe). Cims apparently are only of one race: Caucasian. This is not unusual; CBGs have altogether ignored the issue of race and ethnicity. The incorporation of unique racial and ethnic identities within simulated cities would certainly add to their complexity and realism, though perhaps not necessarily to their entertainment value. The potential implication, however, is that players may come to underestimate or disregard the important sociospatial patterns and inequities that often manifest themselves along racial and ethnic lines.

In contrast to race or ethnicity, socioeconomic status—though simplified—has played a key role in CBGs from the very beginning. In most games, the capitalist aspiration for ever-increasing wealth lies at the core of the simulation. In fact, simulated cities and their citizenry typically evolve in a rather predictable economic sequence. Cities are initially populated with less affluent, working-class citizens employed in heavy manufacturing, retail, and other low-skill occupations. As the player builds more and increasingly advanced educational institutions, residents become better educated and wealthier while employed in cleaner and more knowledge-intensive industries. More affluent residents in turn demand better police coverage, health care, education, and entertainment amenities. Gentrification spreads like a contagion, though in the simulated world of the CBG, displacement is generally of no consequence. In *C : S*, for example, if land values rise and educational requirements are met, households simply upgrade their property by replacing the existing home with a more valuable (and often larger) one (*C : S* Wiki 2015b; Fig. 3). There is no physical displacement. Gentrification, therefore, may be construed by the player as a relatively simplistic and benign process, a sentiment not far removed from prevailing neoliberal ideology.

While unaffiliated with gentrification or rising land values, under certain conditions in *SimCity 2013*, Sims may become homeless. This occurs when low-wealth Sims cannot find work and must abandon their homes. The homeless then migrate to local parks, which, according to Maxis Senior Producer Kip Katsarelis, "makes [the parks] less effective" and increases the crime rate (Younger 2013). Not surprisingly, the homeless are viewed by many players as a nuisance only, prompting hundreds of blog entries and forum posts discussing how best to remedy the *homeless epidemic*. Someone has even organized a portion of the resultant commentary into a 600-page, two-volume book entitled *How to Get Rid of the Homeless* (Bittanti 2015). Proposed strategies for eliminating the homeless have ranged from a sanitization campaign involving the destruction of all parks and abandoned buildings where homeless Sims find shelter, as well as reducing garbage from which, apparently, they acquire sustenance (!), to increasing the availability of jobs and placing residential zones closer to places of employment (Maiberg 2015). As one blogger lamented, "This is perhaps one of the saddest cases ever of art imitating life. Or maybe it's life imitating art, since those responsible for the urban design of major cities seem to have taken the same uncritical logic of the gamers" (Reed 2015). It is perhaps telling that the game, despite offering a wide variety of tax-funded ordinances, does not give the player the option of funding voluntary homeless shelters, low-cost housing, or other public services designed to help disadvantaged Sims. Though some players may still opt to treat the homeless as an undesirable element (Anderson 2013), this would at least provide the player with an alternative approach with which to experiment.

With the exception of homelessness in *SimCity 2013*, CBGs have largely ignored the pervasive issue of housing affordability and associated spatial inequities. The informal settlements (i.e., slums or shantytowns) so prevalent among the burgeoning cities of the developing world for example, have yet to be represented within CBGs. Admittedly, the development style and unique challenges facing cities of the

Figure 3. Buildings, like this detached single-family home, can be upgraded up to five times in *C : S*. (*Source:* Author's own screenshots.) (Color figure available online.)

Global South could easily constitute a simulation all their own. By accommodating different development patterns into a single simulation however, the game could provide an engaging way to learn about, contrast, and experiment with, a more diverse array of extant development patterns. Other types of spatial inequality (if not repression) written into the urban landscape, such as fortress architecture, gated communities, and private security forces represent yet another ubiquitous feature of the modern city yet to be explored in CBGs.

Sim Utopia?

AsLees and Demeritt (1998) observed, at its core *SimCity* represents a utopian urban vision: one in which urban renewal is a panacea for urban decay; pollution, and other environmental ills can be mitigated through economic and technological growth; and all crime and vice may be overcome if only the player's intent and digital treasury are up to the task. *SimCity* and other CBGs tend to present a sanitized and idealized urban reality; one that is colorful, upbeat, full of vitality, and potential. The authors argue that *SimCity*'s antithesis is Sin City, a dystopic image of the city rife with pollution, crime, and disease. It is an image born of the grimy and congested nineteenth century industrial city, and compounded by the economic hardships and urban decay following mid-twentieth century deindustrialization. This dichotomy between *SimCity* and Sin City, between utopia and dystopia, is as common a motif in video games as it is in literature and film (Mennel 2008; Gibbons 2011; Schulzke 2014). CBGs are unique in that they allow the player to construct their own urban realities. And while players may choose to integrate elements of both *SimCity* and Sin City, the game mechanics tend to steer them toward realizing the former through incentives such as specialized buildings (e.g., opera house, stock exchange, sports stadium) and technologies (e.g., advanced energy production, space travel), and disincentives, such as demand caps that may only be overcome by adding additional health/recreation/cultural amenities and other upgrades.

The *Cities of Tomorrow* expansion for *SimCity 2013* is notable among CBGs in that it overtly incorporates both dystopic and utopic urban potentialities. On the one hand, players can construct The Academy, a kind of super-university that curiously requires wealthy rather than highly educated workers. From there players can research technologies that enable the development of an eco-utopian world free of pollution and waste, and powered by an endless supply of clean energy. The Academy "thrives in a gleaming and pristine city of rich people" (Stone 2013), encouraging the player to build an abundance of elite megatowers that naturally house only wealthy residents (Fig. 4). Alternatively, the player may instead focus primarily on maximizing profit through the consumption of natural resources. To initiate this pathway, players construct OmegaCo, a sinister megacorporation that devours oil, ore, water, and electricity to produce omega, an addictive and toxic substance used to produce nearly everything (Gior-

Figure 4. Utopic (left) and dystopic (right) images of the future city in the *Cities of Tomorrow* expansion for *SimCity* (2013). (*Source:* Electronic Arts.) (Color figure available online.)

dano 2013). In contrast to the gleaming white megatowers of the wealthy, OmegaCo workers reside primarily in normal megatowers: dark monolithic structures punctuated with pulsing neon lights (Fig. 4). The OmegaCo pathway is perhaps symbolic of where we are now (simply replace *omega* with *oil* and the story sounds much more familiar), while The Academy represents our hopes for the future. In either case there is a sense that progress and technological advancement are inexorably linked, though society may still choose whether this progression demands the exploitation of human and natural resources. Additionally, the complete spatial segregation of wealthy and regular citizens is undoubtedly an exaggerated reflection of our current struggles with inequity and inequality, which as the game suggests, may ultimately be the most challenging dystopic urban malady to resolve.

Final Thoughts

No gaming simulation can be expected to reproduce urban systems in all their intricacy—nor would they necessarily aim to given that their primary purpose is to entertain. Indeed, as the quote at the start of this article by *C : S* lead designer Karoliina Korppoo suggests, video game developers pursue realism in games only insofar as it advances the game's playability and marketability. Will Wright similarly described *SimCity* and his other Sim-titles as software toys. Unlike building blocks or Lego bricks, however, these toys do not present their patron with a blank slate; they come prepackaged with built-in rules and assumptions that the player must negotiate en route to realizing their own urban vision. The game developers' assumptions about the physical, social, and economic forces underpinning urban systems shape and constrain how these visions unfold. Given the potential of CBGs as a learning medium, this in turn may lead to a distorted and incomplete understanding of "how cities work in real life" (Jacobs 1961, 4).

Reflecting on the limitations and biases of CBGs need not be only an academic exercise. When used in the classroom as a formal pedagogical tool, students may benefit from critically appraising the simulation and reflecting upon the game's biases as well as their own. At the grade school level this task could simply involve asking students to identify ways in which the simulation is unrealistic, or fails to reflect particular attributes of real cities. Students at the university level can take this exercise further by identifying how their knowledge and experience have shaped how they approach the game. Engaging with CBGs at both the beginning and end of the course could also help students assess how their assumptions and knowledge of real cities have evolved, as well as their ability to critique their own assumptions and biases, and those of the game developers. Even outside the classroom players have opportunity for reflection. Online forums like Reddit, for example, allow users to critique each other's cities and techniques. Often this exposes the player to alternative values and perspectives, setting the stage for reflective thought.

While there may be no one ideal city, there does exist a number of widely accepted metrics for urban livability and sustainability, chief among them human-oriented design and equitability. The overwhelming emphasis thus far on personal transportation, placeless autocentric development, and highly simplified social dynamics prompts the challenge to develop CBGs that are neither utopia nor dystopia, but rather more comprehensive and conscientious representations of urbanity in all its variety. Tempering this prescription, however, is the firm acknowledgement of each players' agency. Players, like the games, are not a blank slate; they bring to the game environment knowledge and experience, as well as preconceived biases and stereotypes of cities and their inhabitants. CBGs may thus present a unique window on what society has come to value or at least expect of their urban places. Indeed, both as window on art imitating life, and as a potential lens through which life may come to imitate art, CBGs are likely to have far

greater impact on our urban world than any single planning textbook.

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