10

Architectural Approaches

This chapter builds the bridge from polygon game worlds to architectural theory. It combines architectural concepts in a basic framework, which is then used to look at a number of sample structures. Architecture helps describe how a game world can gain significance and a quality or "place," which is at the core of the last chapters of this book. Depending on their interaction with the world, players change their positioning toward these environments and take on a role. This role, its limitations, and its possibilities are discussed before part III introduces story maps. Story maps offer a model to understand the player's overall comprehension of the engagement with the game world.

A designer of 3D video games uses evocative narrative elements in the virtual space and the interactive access to stimulate the player's participation and comprehension of the game world. One way to arrange this stimulation is the structure of the navigable virtual space. How then does space connect to the work of evocative elements? What processes can be shaped by a spatial design and how might they influence a player's comprehension of game events? What is the functionality of rule-driven, architectural game spaces?

It is the use of and interaction with the game world, or any other space, from which the character of the space can evolve. As Alexander recognizes: "*A building or a town is given its character, essentially, by those events which keep on happening there most often*" (1979, 66; italics in original). Like digital game worlds, architectural space comes to life through the way it is used, and specific structures can help particular patterns evolve. But this is not a one-way connection. At the same time, patterns of use reflect on architectural arrangements. Learning from architecture, 3D games can assist concentration on

certain patterns of events and make others less likely to occur. They can also realize that the ultimate target has to be meaningful usage of these space, which means that they might be literally taken over by players and remodeled by their activity. How can architectural theory be applied to video games and help to identify and enhance the properties of video game spaces?

Numerous analyses of architectural structures define elements or patterns connected to particular qualities that affect the inhabitants. Elements have been defined ranging from basic geometric shapes (e.g., Ching 1979) through interconnected patterns of use (Alexander 1964, 1979; Alexander, Ishikawa, and Silverstein 1977) to cognitive structures (K. Lynch 1960) and social spaces (Hillier and Hanson 1984). Unifying these categories is beyond the scope of this (and probably any) book. The patterns and elements do not assemble into one singular structure and cannot be forced into a fixed "meaning." Ching explicitly excludes such an attempt (1979, 386), as do Lynch (1960, 9) and Mitchell (1990, 204). Alexander, however, addresses the task of matching meaning, structure, and use when he proclaims: "There is one timeless way of building" (1979, 7) that encapsulates all fundamentally active patterns. "The quality without a name in us, our liveliness, our thirst for life, depends directly on the patterns in the world, and the extent to which they have this quality themselves. Patterns, which live, release this quality in us. But they release this quality in us, essentially because they have it in themselves" (ibid., 122).

Alexander's universal combination of meaning and structure focuses architectural complexity in one holistic concept. The all-embracing presence of this "quality without a name" renders it problematic but nonetheless inspirational. Alexander makes this theory more concrete in a collection of spatial patterns (Alexander, Ishikawa, and Silverstein 1977). Chapter 10 does not seek to define a single "language of architecture" but to identify a framework of spatial understanding on different levels, which can be applied to game spaces.

First, it will develop its model from an assembly of various architectural theories and try to interconnect their key features in an admittedly simplified model. Then, it covers some specifics that are outside the scope of traditional architecture but integral to the nature of virtual space. Chapter 11 will apply these theoretical references to some examples drawn from typical game-like spatial structures.

10.1 Preparing the Model

Influenced by Heidegger, architectural theorist Norberg-Schulz (1980, 10) starts his analysis of space by dividing architectural space into two classes:

human-made space (settlements) and natural space (landscapes). Natural places are identified as landscapes with extension and surface relief, whose characters are defined through texture, color, and vegetation. Human-made spaces show human beings' understanding and shaping of the natural space that they build in. "The existential purpose of building (architecture) is therefore to make a site become a place, that is, to uncover the meanings potentially present in the given environment" (ibid., 18). These human-made places relate to natural spaces in three different ways:

- They make the natural space more *precise*—including the visualization of the natural space, the understanding of it, and the resulting building in it; for example, where the natural space indicates a direction, a path can be created.
- They *complement* the natural space—adding what seems to be lacking in the natural space; for example, a canyon might be crossed by a bridge built to allow further access.
- They *symbolize* the human understanding of nature—including the translation of acquired meaning of a space into another medium: "The purpose of symbolization is to free the meaning from the immediate situation, whereby it becomes a 'cultural object', which may form part of a more complex situation, or be moved to another place" (Norberg-Schulz 1980, 17, still based on Heidegger). For example: the Golden Gate Bridge has become a cultural icon beyond its functionality as a connecting bridge reproduced in various forms and media.

All three effects are interconnected in the process of creating a place. Before one can build a bridge or any other structure that uncovers the qualities of the given space, one has to understand that a certain spot is a good place for such a structure. Such an understanding depends on a "reading" of space, a concept that leads into the realms of spatial recognition and cognitive mapping.

Cognitive maps are complex mental interpretations of a real or fictional environment, and its components that live in the fictional plane. Roger M. Downs and David Stea argue that "cognitive mapping is a process composed of a series of psychological transformations by which an individual acquires, stores, recalls, and decodes information about the relative locations and attributes of the phenomena in his everyday spatial environment" (qtd. in Kitchin and Freundschuh 2000, 1). The process for generating such a map differs from observer to observer. Kevin Lynch refers to the "light of his [= the observer's] own purposes" that is responsible for the generation of differing maps from

the same environment (1960, 6). We can already add that for video game spaces the presentation is an essential part in this "light."

Each observer's cognitive map is unique. A tourist and a local police officer might read the same city structures—for example, the Golden Gate Park—but their cognitive maps differ completely, reflecting their subjective perspectives, individual experiences within the city, and the conditions of those experiences. However, Lynch analyzes the way observers create such a cognitive map of a city and extracts five shared elements that define evolving cognitive maps for different individuals:

- path—evoked, for example, by images of streets or rail tracks;
- landmark—evoked, for example, by monuments or historic sites;
- edge—evoked, for example, by rivers or seashores;
- node—evoked, for example, by crossings; and
- district—evoked, for example, by suburbs (K. Lynch 1960, 49–83).

These five elements are distinct parts of the mental image of a spatial structure that help observers to generate a cognitive map of the environment. Depending on the observer's position, a single spatial structure can have different connotative elements attached—for example, a bridge might be a path to use for someone standing on it, a landmark for orientation for someone far from it, or—if too low—an edge for a ship trying to pass under it. Perspective, positioning, and the "light of the purpose" profoundly influence these assignments and the generation of the cognitive map. As these factors change, cognitive maps are constantly updated and rearranged. During the exploration of a physical space "nothing is experienced by itself, but always in relation to its surroundings, the sequences of events leading up to it, the memory of past experiences" (ibid., 1). The resulting cognitive map ties spaces together in a meaningful way, assembles events in a spatial order, and positions the human in relationship to them.

Here, Alexander's "pattern language" is a good reference point. As unifying as the "quality without a name" might be, Alexander also recognizes that every culture, every subculture, and in fact every member of a culture, can and should have its own collection of "patterns." But he also argues that shared pattern systems can be identified. His collection of 253 patterns is one of these pattern systems. It consists of spatial hypotheses of which some, he claims, have qualities of archetypes. "In this sense, at least a part of the language we have presented here, is the archetypical core of all possible pattern languages, which can make people feel alive and human" (Alexander, Ishikawa, and Silverstein 1977, xvii). The patterns differ widely in size, from large regions

inhabited by two to ten million people (pattern 1: Independent Regions) to "what kinds of things to pin up on the walls" (pattern 253: Things from Your Life) (ibid., 1165). One of the more archetypical patterns is that of arcades described as ambiguous spaces between the inside and the outside of a building that—through their ambiguity—make the building more "friendly" (ibid., 581). Arcades are described with a perspective to how a visitor might encounter them and in terms of "paths," "places," and "edges." For example, Alexander, Ishikawa, and Silverstein argue that "to establish this place as a territory which is also *apart* from the public world, it must be felt as an extension of the building interior and therefore covered" (ibid., 582). Kevin Lynch's principles reappear in the details of such a pattern. They materialize in detailed spatial observations.

Ching concentrates on visible architecture and provides detailed definitions of those visual properties at work in architecture that can be applied to evoke the images leading to more complex forms such as Alexander's patterns or Lynch's key elements. He defines "visual properties" as consisting of "shape/size/color/texture/position/orientation/visual inertia" (Ching 1979, 51). The resulting combinations of properties are manifold, but Ching establishes limited ordering principles, among them:

- Axis—A line established by two points in space and about which forms and spaces can be arranged.
- Symmetry—The balanced distribution of equivalent forms and spaces about a common line (axis) or point (center).
- Hierarchy—The articulation of the importance or significance of a form or space by its size, shape, or placement, relative to the other forms and spaces of the organization.
- Rhythm/Repetition—The use of recurring patterns, and their resultant rhythms, to organize a series of like forms or spaces.
- Datum—A line, plane, or volume that, by its continuity and regularity, serves to collect, gather, and organize a pattern of forms and spaces.
- Transformation—The principle that an architectural concept of organization can be retained, strengthened, and built upon through a series of discrete manipulations and transformations (ibid., 333).

These ordering principles determine the visual properties, which then can evoke Kevin Lynch's "mental images." In terms of design, a bridge, for example, consists of various visual properties arranged in a special way: arcs, beams, surfaces as shapes, pillars of a certain size arranged in a certain repetitive pattern, concrete or metal as colored textures, all occupying a given

position and orientation within the surroundings. These ceilings, pillars, and pathways can add up to make an arcade "friendly."

Various examples have demonstrated that virtual space is filled with evocative narrative elements that help to transform its arbitrary origins into meaningful worlds. In the design of these game worlds, combining Ching's theories with those of Lynch and Norberg-Schulz is strikingly helpful. The visual properties of a video game space correspond with the immediately visible geometrical information in a game world and can be analyzed and designed in accordance to Ching's principles. Indeed, the modeling functions of a 3D creation program like *Maya* copy Ching's "visual properties." They can also be encountered in structures that might follow Alexander's pattern. In combination with interactive events and explorations, these structures can evoke certain readings of a space. These readings use Lynch's definition of the main structural elements and lead to a mental image of the space for the visitor—a cognitive map. Based on such an understanding of the space, the player forms a new interpretation of the virtual world. Here, Norberg-Schulz's outline can describe the possible nature of this evolving relationship to virtual space. The combined model presents a connection from the single evocative spatial element and its visual appearance to the overall context that is projected into a space.

Although this brief overview of architectural theories cannot hope to offer an in-depth evaluation of their claims, in summary, it provides a way to describe how evocative spatial features can affect a player's perception and interaction. But having prepared the architectural vocabulary for game spaces, one immediately faces another challenge: virtual space is not restricted by the same limitations as the physical space on which these architectural theories are based.