This article can be found in *Glimpse* (a publication of the Society for Phenomenology and Media): Volume 2, Number 1, 2000.

Race Cars, Hallways, and Monsters: Computer Games and the Phenomenology of Perception

Jonathan Weidenbaum

Jonathan Weidenbaum, currently writing his dissertation, is a doctoral candidate in the Department of Philosophy at New York State University at Buffalo. Research led him to Merleau-Ponty, whose Phenomenology of Perception *is now an integral part of his thinking*

In his biography of the perceptual psychologist James Gibson, Edward Reed describes the the most general features exhibited by the first digital flight simulators, a technology developed by a student of Gibson's:

> Many of these simulations involve the presentation of a flowing gradient of optical texture below a virtual observer. The rate of flow of this depicted ground plane specifies the velocity at which you perceive yourself to be travelling, and the pattern of flow specifies the direction of movement and the layout of the ground.
>
> —Reed, *James J. Gibson and the Psychology of Perception.* (114).

This basic model shared by most computer games and simulations is now taken for granted and sounds common-sensical and unimpressive when first brought to attention. In playing a computer game we may find ourselves, say, either in the driver's seat of a car or with a constant overhead view of a car as it speeds down a track or highway. It is perhaps the same if we are in the driver's seat of a spaceship and steer over the surface of an alien world or dogfight enemies in space. All of these simulations share the illusion of movement: either a plane of textures and gradients extending from beneath us into the horizon, or various planes of textures and gradients lying beneath us, over us, and either side as the floor, ceiling, and walls respectively. When pressing the up arrow key or moving the joystick forward, the gradients on each plane begin to move toward us, yielding the illusion that we are actually moving forward. When pressing the left arrow key or moving the joystick left, the textures and gradients begin to move toward our right, yielding the illusion that the world is passing us by in that direction as we move left. This same model persists whether we are supposedly driving down a racetrack or speeding down a post-apocalyptic highway, stalking the corridors of another dimension or running through an alien infested laboratory. There are, of course, plenty of details to be added to the model I have sketched above, which I will account for in section one of this essay. In section two I will proceed to show how Gibson's work in the study of perception has provided decent theoretical explanation for the perceptual features found in computer games. I will then argue in section three that it is Merleau-Ponty's phenomenological analysis of meaning which presents a deeper understanding of the "feel" and atmosphere of contemporary computer games.

Perceptual Embeddedness

In computer games and simulations, I am always situated in the sense I have described in the introduction. I am almost never without a layout of textures and gradients extending underneath and/or around me. I, in fact, lean on my external environment, for without this system of textures and gradients I would lack a sense of place and position. The illusion of movement created by the motion of the surrounding gradients is supported by our kinesthetic sense, namely, our awareness of what arrow keys we are pressing or the direction in which we move our joystick. I have described this process above but without stressing the extent to which these

components work together. The point is that the information of our simulated environment and that of our own bodily movements (pressing keys and handling a joystick) form one perceptual system.

Seamless Transitions between Perspectives

There is a smooth passage from one perceptual perspective to another rather than a succession of snapshots or locales, the active exploration of a single unfolding horizon rather than an intellectual pasting of different scenes together. One vista leads naturally into another without abrupt change: I gradually follow the length of a hall until it opens into a large dungeon in the Nazi castle, or I drive over a mountain pass while the next mountain range begins to disclose itself far ahead.

Boundedness of Objects

The graphics of computer games segregate quite naturally into cars, boxes, tables, and stairs. Objects are seen as solid and bounded units, not combinations of associated points. They are seen immediately as separate from their backgrounds. The sizes and outlines of objects are constant, and do not seem to change shape when I view them from different angles or distances. Any distortions in their phenomenal size or shape is prevented by the place they have in relationship to the textures and gradients of their environment (visual context) as well as the position they have in relationship to my simulated body and the awareness I have of its movement (kinesthesis).

Linking of Perception with Motility

The phenomenal structures of any game, the appearance of objects, walls, etc., are partially dependent upon our actual and possible simulated movements. Computer-game perception is intimately linked with motility. When a visitor to my apartment quickly glances at a scene from my computer, they often remark on the lack of clarity or smoothness found in the details of a particular game. If they were, however, to sit at the computer and play for a while, these deficiencies would increasingly go unnoticed; the phenomenal features and structures of the game become more determinant and sharply defined as players move about and perform tasks in the virtual world. The constancy and boundedness of objects in computer games seem to become more substantial as we walk over and around them.

Furthermore, simulated events and obstacles seem to call for certain movements, and carry meaning for my virtual body's projects and possibilities. The open hall, the stretch of road, the crack in the floor, the staircase and elevator, each of these seem to ask for certain joystick movements and keyboard combinations, the right movements which would allow me to maneuver around, over, and through them.

Synthesia

The visual and auditory components of computer games are mutually supportive. They often fuse to create a single texture and atmosphere. It is not unfair to say that turning off the sound of a computer game often results in a completely altered "look," where the visual appearances of the game become somewhat flattened and bare in the absence of sound. The alien world is composed of large rock islands floating by a gas cloud in space. The sound of a wind-like howling heightens the sense of darkness and emptiness of space, and the low-formidable music seems to resonate throughout the green surface of the island emitting a feeling of distance and the unnatural. When these sounds are turned off the very green of the extraterrestrial floor seems to lose depth, and the galaxies in the distance lose some of their impression of absolute expanse and solitude.

Unique Invariants for Sentient Agents

The different kinds of causation and movement found within computer games possess their own specific style, a character which is irreducible to an atomistic succession of moments or component parts. This is most evident in the simulations of other living agents, for example, the movements of enemy or friendly vehicles, aliens, soldiers, monsters, etc. The giant and armored alien lumbers back and forth, stopping here and there to gaze and growl at us, while the rogue vehicle stops short with a screech and slowly turns around to face us with his rocket launcher. These actions appear purposeful instead of incidental, they are the outer extensions of an inner nature and are always recognized as such. There is a pattern or habit of movement which supersedes each particular action taken in itself, the appearance that each move is informed by a single intentional core. In short, I see the agent's personality on the surface of its movements.

Perceptual Distance

I am never completely immersed in the game to the point where I confuse it with reality. Though they may be clever and engaging enough to

frighten me or excite me at various points, there is still something ultimately artificial about the simulated environment. One obvious reason is that I turn them on or off. Another is that they lack the fine-grained details presented to us by the real world. The most important reason, however, is that the experience of playing a computer game affords us two sets of visual stimuli at the same time: the simulation of movement through a three-dimensional computer game world on the one hand, and the sides and edges of the computer screen on the other. And, since I am never completely still while operating my computer, I occasionally glance at my computer screen in a diagonal fashion revealing an empty space in the back of my monitor. In other words, the computer game horizon is bounded; I have the experience of one world sectioned off by another, a vision of depth and movement almost magically confined to a fixed and solid window.

Ecological Psychology

I have already mentioned how the basic framework at work in most computer games and simulations is borrowed from the work of James Gibson and his students. It is also true that nearly all of the details I have described above find their equivalent in Gibson's theories of perception, as well as the theories of other important psychologists who are sympathetic to the ecological approach. Ecological psychology is a view of perception as an embodied and embedded process, as the body's relationship to its environment. Instead of being a place for the passive receiving of stimuli through separate sense channels, the body is a living unity which actively orients its perceptual systems toward relevant information as it is found in the environment. In short, humans don't see the world with their eyes. They see the world with their eyes on a mobile head, which in turn sits on a mobile body, a body that changes its position with the use of its legs; all of which may, for instance, be searching for a chair to sit on. The chair, in turn, has significance for our body. We extract information from the world in an immediate and pre-reflective manner, carrying our body's concerns with us all the while. Meaning is then a real and intrinsic part of experience, not merely something the mind projects onto the world.

The visual information presented to us by the environment is the structure of ambient light or optical array. This is the invariant pattern of light emitted directly from the environment, and is shaped in the form of occluding edges, cracks, corners, boundaries, and of course, textures and gradients. A major point of this essay is that computer games cleverly utilize this system of perceptual invariants in order to simulate the same optical patterns as would be experienced in the real world. Furthermore, the perspectival and embodied nature of the subject is also simulated through the requirement of using a keyboard or joystick, through the corresponding changes among the optical patterns afforded by the screen, and through other visual and sensory information. The simulation of the optical array along with the simulation of our kinesthetic sense yields the perceptual constancy of objects and colors (invariants through change), the perception of a single unfolding horizon (the merging of each vista into one another), the meaning and relevance found in various perceptual features for our simulated body (a high wall, an open door, an angy monster), and the highly unique invariants of purposeful beings (aliens, soldiers, and so on). Computer games also exploit the intersensory nature of our experience of the world, our perceptual systems. For instance, objects are designed to speak to our tactile sense (the stalactites hanging off the cave ceiling look hard and brittle, the transparent pool of water looks penetrable).

Lastly, in his *Ecological Approach to Visual Perception*, Gibson includes a discussion of film which highlights the major difference between the perception of the film-world and the real world. The difference is, as discussed in the last section, the two contrasting sets of information presented to us by the film—its sense of depth and movement on the one hand, and the bounded and flat nature of the screen on the other. I would argue that it is the same perceptual situation for a computer game as it is for a film.

Merleau-Ponty and Meaning

Almost every concept discussed by Gibson has its parallel in the phenomenology of Merleau-Ponty, though cashed out in ontological rather than naturalistic terms. Merleau-Ponty, however, has gone further than Gisbon in his analysis of meaning. It is Merleau-Ponty's investigation of meaning which makes the most sense out of the personality exuded by computer programs. I will first describe this feature of computer games in some detail, then use Merleau-Ponty's analysis of meaning to provide some clarity into the irreducible nature of meaning and atmosphere in

the computer game experience.

Interstate 76 (one of the games I have been alluding to thoughout this paper) is a car combat game which takes place in an alternate 1970's, blending the post-apocalyptic road warrior motif with hard-boiled characteristics and dialogue borrowed humorously from 1970's T.V. action dramas like *Starsky and Hutch* and contemporary retro-style films like *Pulp Fiction.* Players drive around popular cars armed with machine guns, rocket launchers, and flamethrowers, and duel it out in various settings in the Southwest of the United States.

One thing that stands out in *Interstate 76* is the interaction of the colors found in the game: the sun-burnt yellows, tans, and browns found on the outfits and cars of the main characters, popular 70's colors. These colors and images are heightened with the soundtrack of the game: "funky" guitar riffs and assorted sounds stereotypically familiar from popular 1970's film and television (the sound of the classic chase scene, the wounded buddy scene, and so on). All of this is included under a sense of situation, the feeling of absolute freedom while speeding down an open highway after surviving a battle, or the sense of desperation and purpose in fending off enemies from a secluded fortress town. Each situation in turn wears its distinctive character all over its surface, informing all of the particular colors, sounds, and images which comprise it. The approaching of a bandit-ridden mountain pass, for instance, is the shadows of the mountains looming over the road, the partial absence of the sky, the foreboding browns and reds of the mountain side, the inadequacy we feel in light of our lack of ammunition and damaged body armor.

Another thing that stands out in *Interstate 76* is our own place in all of this texture—the very feel of slamming on the breaks and skidding around to face our enemy while blasting him with machine guns, or rushing high speed over the various jumps and viewing the landscape from a higher altitude. Our sense and appreciation of these things are often heightened by the surroundings and sensory context afforded by the game. For instance, the gravelly noises heard when driving over the canyon floor, or the intensified reds of an empty ghost-town at dusk while battling some computer generated enemy. The point here is that our own activities and movements are essential to the texture of the game and operate within the larger tissue of colors, sounds, and images provided by the game environment.

In the philosophy of Merleau-Ponty, meaning, though ultimately indefinable, presents itself in qualities, textures, and situations which enter and permeate our experience in a preconceptual and involuntary fashion. Meaning, therefore, is sensory and visceral, but it is never presented in a series of atomistic qualities which require adding together. The colors, images, sounds, and situations found in *Interstate 76* interweave into series of irreducible textures or levels of meaning, and are all ultimately included under one very large texture; namely the personality of the game. This irreducible nature of personality is best captured by Merleau-Ponty's description of a piece of wood from *The Phenomenology of Perception:*

> Everything appears to us through a medium to which it lends its own fundamental quality; this piece of wood is neither a collection of colors and tactile data nor even their total *Gestalt* but something from which there emanates a woody essence; these "sense data" modulate a certain theme or illustrate a certain style which is the wood itself and which creates round this piece of wood and the perception I have of it a horizon of significance (450).

A scene from a computer game may use specific sounds, colors and images to create a certain style, that which manifests . . . "the thing in its suchness or carnal particularity" (Singer 240).

The cars, roads, and characters of *Interstate 76* each exude their own style, and each has their place within the larger styles exhibited by the scenarios, situations and overall narrative of the game.

But the style of a computer game, as with all meaning, does not sit ready-made or pre-packaged in front of a perceiver. It, instead, resonates throughout our whole field of experience, filling us with a particular mood and ambience. The grim character of the dark mountain pass haunts us with an ominous atmosphere. This colors both the subsequent developments of the game as well as the active mode we take on in relation to the simulated environment. The styles used in computer games, films, and art are used to effect a certain manner of being in the player or spectator, and actually embody that manner of being, that mode of existing. The bright and open highway we see quite literally is the psychological openness we gain after the battle is behind us. The dark and cramped appearance of the mountain pass is the dark and cramped feeling experienced

when cornered into an uncomfortable and inescapable situation. Merleau-Ponty discusses this existential nature of the image:

> The phantasms of dreaming, of mythology, the favorite images of each man or indeed poetic imagery, are not linked to their meaning by a relation of sign to signified, like the one existing between a telephone number and the name of the subscriber; they really contain their meaning, which is not a notional meaning, but a direction of our existence. (*Phenomenology of Perception*, 285).

Lastly, we have seen how our own movements form an intimate part of the computer game style, and actually arise out of its texture. This is in fundamental agreement with Merleau-Ponty's most general themes of incarnate subjectivity and embodied freedom, and lines up well with his strong criticisms of Sartre's ontological dualism. Consciousness, for Sartre, is a nothingness which cuts into being. Merleau-Ponty has none of this however, and denies the view of consciousness as a kind of hole in existence. Perception is instead an embodied and embedded process (as described throughout this essay), and we are caught up in and over our heads in Being. Or, in the ontological language of the later Merleau-Ponty, we are part of "the fabric of the world." Merleau-Ponty, "Eye and Mind" (163).

Biblography

Gibson, James. (1986) *The Ecological Approach to Visual Perception*. London: Houghton Mifflin Company.

Merleau-Ponty, Maurice. "Eye and Mind." (Carleton Dallery, trans.) From (1964) *The Primacy of Perception*. (James Edie, ed.) Illinois: Northwestern University Press.

Merleau-Ponty, Maurice. (1962) *Phenomenology of Perception*. (Colin Smith, trans.) New York: Routledge.

Reed, Edward. (1988) *James J. Gibson and the Psychology of Perception*. New Haven: Yale University Press.

Singer, Linda. "Merleau-Ponty and the Concept of Style." From (1993) *The Merleau-Ponty Aesthetics Reader*. (Galen Johnson, ed.) Illinois: Northwestern University Press.