

The Ontology of Interactivity

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When discussing modern entertainment, people frequently use the terms “interactive” and “non-interactive” despite the fact that there is no clear consensus on what these concepts mean. To this point, in the book *Rules of Play*, Salen and Zimmerman write, “Interactivity is one of those words which can mean everything and nothing at once.” (2005: 58) Despite this ambiguity, there is an apparent consensus that interactivity is essential to understanding the difference between computer games and other forms of entertainment. It is often said that computer games are different from films, literature, and other works of art precisely because computer games are interactive and these other media are not. Not only is interactivity considered to be necessary to a computer game, but games are often criticized by gaming reviewers for having long non-interactive portions such as cutscenes, suggesting that interactivity is essential for a computer game to be successful (Newman 2004). So what is interactivity?

Before I attempt to answer this question, let me make some clarifying remarks. First, I’ll be using the term “artworks” in my discussion, but I use this term with no evaluative connotation. I mean it simply to indicate instances of works in the relevant media, so here artworks include all computer games, films, paintings, novels, and so on, regardless of their level of artistry or aesthetic quality.

Second, the terms “interactive” and “interactivity” can be used in many different contexts, and these contexts affect the meaning of the terms. Interactivity might be used to describe the difference between internet banner ads and pop-up ads, which require a mouse click to close. The context of my inquiry is limited by the specific questions most central to my research. I am not aiming to define the field of computer game studies or academic studies of interactive media. Rather, my goal is to define interactivity in a manner that can be used to potentially differentiate between computer games and traditional, non-interactive artworks such as film, literature, and so on. Further, since I take it that the main reason to differentiate these types of works is to help us understand our experience of those artworks, my account will aim towards that purpose.

This approach excludes certain understandings of interactivity. For example, you might argue that an artwork is interactive based on the viewer’s participation in cognitively processing the sensory experience of the artwork into meaningful parts. On this account, you would say that a viewer interacts with a film when she visually processes flickers of light and perceives those flickers as a representational image. Or, at a higher cognitive level, one could argue that readers interact with books in that they connect the words in the book to images experiences from their own lives. But this is not the sort of interactivity I want to investigate, because this sort of interactivity applies to any experience we have with any aspect of the world, artwork or not. Although it is important to understand how people mentally process their environments, this type of interactivity cannot differentiate between interactive and non-interactive media.

Another type of interactivity I want to exclude from this discussion is interactivity that is based on audiences using an artwork outside their immediate engagement with it. People interact with artworks in many aspects of their lives, from everyday conversations to conventions where people dress in costumes based on fictional characters. However, these types of activities are equally appropriate to computer games, films, literature, and so on. This broad sense of interactivity would allow any artwork to be considered interactive, and thus does not help us understand why we currently distinguish between interactive and non-interactive artworks.

Most definitions of interactivity require that the audience of an artwork change the artwork itself. I will refer to changing the artwork itself by using the term “aesthetic structure.” Aesthetic structure is the arrangement of the formal elements that compose the artwork. The aesthetic structure of a painting is the arrangement of paint on canvas. The aesthetic structure of a film is the particular combination of projected images and sounds unique to each film. The aesthetic structure of a videogame is, like a film, the arrangement of the images and sounds of the game, but can also include tactile features such as controller rumble.

A small caveat necessary for a good account of interactivity is that interactivity does not require that an audience take action to change the aesthetic structure of an artwork, just that the audience has the ability to do so. We might agree that a certain computer game, such as the classic *Space Invaders*, is interactive. Someone might press a button to begin playing a game of *Space Invaders*, much like someone might press a button to start a DVD movie. However, if, after the game starts, that player takes no action, the game will quickly end. Yet, we would not conclude that the videogame was not interactive just because the player did not interact with it. We would say that the player did not take advantage of its interactivity. So what is important is that the artwork has the potential for the audience to change its aesthetic structure, not that the audience actually changes it.

My account of interactivity rejects several ideas used in the account of interactivity given by Dominic Lopes in his article, “The Ontology of Interactive Art”. Let me explain why. Lopes writes:

Games are ‘strongly interactive’ because their users’ inputs help determine the subsequent state of play. Whereas in weakly interactive media the user’s input determines which structure is accessed or the sequence in which it is accessed, in strongly interactive media we may say that the structure itself is shaped in part by the interactor’s choices. Thus strongly interactive works are those whose structural properties are partly determined by the interactor’s actions. By a work’s ‘structural properties’ or (more briefly) ‘structure’, I mean whatever intrinsic or representational properties it has the apprehension of which are necessary for aesthetic engagement with it...It should be kept in mind that what is in question here is not the structure of a work as its user experiences it, for that is ‘interactive’ in some broad sense for all works of art, but the structure of the work itself. (Lopes, 2001: 68)

There are some serious problems with this account. Lopes asserts that what is important is the structure of the work itself, rather than the audience’s experience of the work’s structure. His argument is that the audiences experiences all art as interactive in some sense, so it is not useful

to think about whether the audience's experience is interactive. There are two problems with this approach. First, the audience's experience is not a monolithic thing. It is true that all works of art are interactive in some sense, such as the sense I described earlier in which audiences perceptually process a work of art. Yet, there are other aspects of an interactive experience that do not equally apply to all artworks, such as the experience of changing the aesthetic structure of an artwork. Some artworks allow audiences to do this, and others do not. This difference has a large impact on how we experience these artworks, and seems essential to answering questions about interactivity.

Second, Lopes's own account requires a reliance on audience experience. Consider Lopes's definition of structure. He states that structure is "whatever intrinsic or representational properties [an artwork] has the apprehension of which are necessary for aesthetic engagement with it". Yet these properties differ according to the medium of each artwork. For example, to properly engage with a film, it is necessary to apprehend the length of time we see the images presented. In contrast, when reading a comic book, it is not necessary to apprehend the time we see the presented images to properly engage with the comic book. It is understood that comic book readers will each look at the images for different lengths of time. Looking at the images for any particular length of time is not necessary for aesthetic engagement with the comic book.

This fact undermines Lopes's attempt to exclude audience experience from his definition of an artwork's structure. It is impossible to identify the structure of an artwork without reference to the audience's experience of the artwork, because what constitutes the structure of an artwork is what the audience must apprehend to engage with the artwork. We can only say that apprehending time is necessary for film and not for comic books in reference to the audience's experience of the artwork. There is no such thing as "the structure of the work itself" outside audience experience.

A second major problem with Lopes's account is that it fails to properly distinguish between what he calls strong and weak interaction. I propose that no such distinction can be drawn. On Lopes's account, in strongly interactive artworks, the audience changes the work's structural properties, while in weakly interactive artworks, the audience changes only which structures are accessed or in what order they are accessed. Thus, Lopes apparently holds that the order in which parts of a work are accessed are not part of its structure. Yet he provides no reason to believe this. It seems clear that the temporal arrangement of the formal elements of an artwork are, at least for some media, part of its structure, in that the arrangement must be apprehended to aesthetically engage with the work. This fact undermines the notion that there is any justification for segmenting interactivity between 'weak' and 'strong' in this way.

If I am right that there is no real distinction between weak and strong interactivity, then it is not sufficient to say that an artwork is interactive just in case audience actions change the aesthetic structure of the artwork? Not quite, because audience action can change the aesthetic structure of non-interactive artworks in addition to interactive ones. It is obvious how audience action changes the aesthetic structure of computer games. You use the controller to change the images and sounds onscreen. When you press a button, maybe a virtual gun fires, causing changes in both image and sound. But audience action can also change the aesthetic structure of ostensibly non-interactive media. For example, if you watch a movie on DVD at home, you can make

numerous adjustments to its presentation. You can turn the volume off. You can turn the color off. You can skip around between chapters and watch the film out-of-order. The same holds true for other media. You can deface a painting or make inappropriate noises during a musical performance. Yet we would not say that these media are interactive—we would say that the audience who does these things is not engaging properly with the artwork. In other words, the audience is not engaging with the artwork as the artist intended.

An account of interactivity must account for the artist's intentions. For a work to be interactive, it is not enough that the audience be able to change its aesthetic structure; the artist must intend that the audience take action to change the aesthetic structure of the artwork, and the audience must change the work's aesthetic structure in a manner intended by the artist. This does not mean that the specific changes made by the audience are intended by the artist, but just that the audience changes the artwork within by using some specified range of actions intended by the artist. For example, an artist might intend that the audience for a skateboarding computer game decorate the character's skateboard, but he need not intend that the audience decorate the skateboard with any particular result.

So, an artwork is interactive just in case (a) the audience can change the aesthetic structure of the artwork it is engaging with, and (b) the audience can change the aesthetic structure of the artwork in a manner intended by the artist. Yet there is still the possibility that an artwork fulfills these criteria and yet would not generally be considered interactive in the sense we commonly use the term. Imagine an artwork that is created such that audience action changes the aesthetic structure of the artwork, yet that fact is never communicated to the audience. For example, we might imagine an art installation that is essentially a slideshow which seems to randomly change between numerous different slides. However, unbeknownst to the audience, the artwork is set up to slightly vary the order of the slides based on the amount of noise in the room. Although this artwork is created with the intention that audience action will change the aesthetic structure of the artwork, and audience actions actually do change the aesthetic structure of this artwork, the artwork does not seem to be interactive in the same way that *Space Invaders* is interactive. I propose that this is so because our notion of interactivity entails the concept of the audience voluntarily choosing to take action to alter the aesthetic structure of the artwork, rather than doing so unknowingly and unintentionally.

Note that the concept of choice here includes both that the audience action be voluntary and that the effect of the action be communicated to the audience. This does not require that the audience know how their action will affect the artwork before the results are presented. Even if audience action causes an artwork to change in a random manner, that artwork would still be interactive.

So, my final account of interactivity: an artwork is interactive just in case (a) the audience can change the aesthetic structure of the artwork it is engaging with, (b) the audience can change the aesthetic structure of the artwork in a manner intended by the artist, and (c) the audience is aware of both (a) and (b).

One of the motivations for developing this account was to more clearly understand a key difference between computer games, which are interactive, and more traditional artworks,

which are generally not. Yet, although I stand by the account of interactivity just proposed, I don't think that we can necessarily use it to differentiate between computer games and other types of artworks, because there are actually numerous examples of truly interactive artworks that are not computer games.

For example, there is the genre of children's literature known as "gamebooks". For those of you not familiar with these books, they are written in the second person, and after every page or two the reader is given a choice on how the story will proceed. For example, the book might describe how you, the protagonist, approach a house, and then pose the following: "If you want to knock on the front door, turn to page 35. If you want to walk around the back of the house, turn to page 50." The page you turn to determines how the story proceeds, and you usually make a few dozen choices before the story ends. This artwork in the ostensibly non-interactive genre of literature clearly meets my proposed account of interactivity.

Another example is the theatrical musical *Drood!*, based on the unfinished novel *The Mystery of Edwin Drood*, by Charles Dickens. Before the last act of the musical, the audience is asked to vote on which character will be revealed as the villain. The result determines which version of the final act will be performed. Again, this is clear example of interactive art.

You may have noticed that I have been talking about my 'account' of interactivity rather than my 'definition' of interactivity. I am skeptical about the usefulness of definitions, especially ones aiming to provide necessary and sufficient conditions. What, then, do I mean by an account? An account is a definition by prototype description. In other words, I take it that a useful account of interactivity is one which successfully captures our understanding of the concept as applied to prototypical examples of the relevant concepts, which in this case would be artworks.

If we understand an account in this way, then the concept of interactivity re-captures its usefulness in distinguishing between computer games and other types of artworks. Although I give several examples of interactive artworks that are not computer games, these examples are not prototypical of their categories. Gamebooks are a very minor sub-genre of literature. *Drood!* is an exception among theatrical musicals.

Although substituting traditional definitions for prototype descriptions does lead to some ambiguity in categorizing objects, I don't see this as a weakness of this approach for two reasons. First, any definition based on necessary and sufficient conditions will break down at the margins based on non-prototypical cases. There will always be cases for which we do not have reliable intuitions about whether the case meets the definition or not.

For example, consider this potentially interactive artwork. Computer systems currently exist that change the aesthetic structure of an artwork based on audience reactions to what they are seeing and hearing on a screen. These systems can alter the artwork based on involuntary reactions such as pupil dilation, micro-expressions, or galvanic skin response. Would we consider such a system interactive? We could hold that it is, because the audience changes the aesthetic structure of the artwork, and it is intended that it do so; or, we could hold that it isn't, because the audience is not making any voluntary choice about whether or how the artwork is

altered. The truth is that this is an unusual type of art; so unusual that it is not a prototype of any common category, and I suspect that none of us have well-formed intuitions about it.

A second reason that I find the ambiguity of a prototype account unproblematic is that in our discussions and research, we intuitively understand that people unavoidably think in terms of prototypes, and we clarify whenever we are discussing examples that fail to match prototypical characteristics. What do I mean when I say that people unavoidably think in terms of prototypes? Take a moment and visualize a bird in your minds. Think about its color, where it is in terms of location, what it sounds like. How many of you were imagining an ostrich? None, because an ostrich is a very non-prototypical bird. We naturally gravitate to imagining prototypes. Due to this fact, when we are discussing examples, we tend to clarify their non-prototypical features. Thus, if I were telling a friend about my experience of watching the musical *Drood!*, I would invariably mention its unusual audience-vote structure specifically because it is unusual. Similarly, when we are discussing computer games as compared to films or books, if we are discussing non-prototypical examples, we will invariably aim to eliminate any ambiguity through additional description. Thus, an account of interactivity by prototype description identifies the central elements of interactive art, but its lack of hard line categorization of artworks does not cause any real problems for us in discussing interactivity.

References

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