

# An Account of Proceduralist Meaning

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## ABSTRACT

Within both game studies and development communities, it is often argued that a game's processes (rules and goals) are of primary significance when considering a game's meaning. In opposition to this position, some claim that this approach denies player subjectivity by ignoring the dynamic, culturally-embedded ways in which players create, rather than receive, meaning through play. This paper clarifies the *proceduralist* position by exploring a notion of the procedural that necessarily includes the individual player as part of a circuit in which a computational machine is able to operate meaningfully. From this point, procedural rhetoric is reframed in the language of semiotics to demonstrate that the proceduralist position respects player autonomy and expects meaning to result from the harmonious alignment between the authorial sign system and the many cultural sign systems within which the player is embedded.

## Keywords

Procedural rhetoric, videogame interpretation, game design

## INTRODUCTION

It is often argued that a game's processes (rules and goals) are an *essential* aspect of a game and should be of primary consideration when creating a videogame. An early example of this can be seen in Chris Crawford's claim that since information processing is unique to computer-based media, and that interactivity is of primary significance to games, a videogame should strive to maximize the ratio between a game's processes (code, algorithms) and its instancial assets (hand crafted video, text, etc.) (Crawford 1982). In more recent years, game designers such as Rod Humble and Brenda Romero have argued that "a game needs nothing else apart from its rules to succeed as a work of art (Humble 2006)." This perspective that understands games as a system of rules has been referred to as *proceduralist* (Bogost 2009; Treanor et al. 2011).

Some argue that this approach toward understanding games does not account for the rich and varied ways in which people actually play with games. Wilson writes "framing game design as the art of 'system design' makes the critical mistake of focusing too intently on the media object itself (Wilson 2012)." Stenros and Waern lament that "games are most often seen as systems. This has made the play *activity* an under-explored area of game studies (Stenros and Waern 2011)." Taylor writes about how rules in games are created, negotiated and changed by players to create their own meanings: "it's not that play is either rule or nonrule based but a question of whose rules in which contexts (Taylor 2006)." These authors and more believe that a system centric view of games treats games as static artifacts rather than social or personal activities and it is these phenomena that are essential to understand if one is to understand a game.

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Framed in this way, two points of view can be identified: one perspective privileging the notion of game as systems of rules, and the other emphasizing how individuals and communities create meaning through play. As with most dichotomies, it is fairly easy to present the extreme of each perspective and make them seem ridiculous. Sicart takes this approach in his essay that condemns a process centric (or proceduralist) approach for being *totalitarian* because such a designer prescripts a player's choices before he or she ever makes them (Sicart 2011). Rather than simply continue a debate on this subject that presents simplistic and uncharitable views of the opposing camp, this paper is meant to provide a practical theoretical foundation for the proceduralist position that will help clarify the position. Also, with a stronger theoretical foundation, it is hoped that both players and designers can better understand the process centric meaning of games.

## **BROADENING PROCEDURALITY**

The proceduralist position strives to understand a game's meaning in the context of the processes that its system affords. This perspective can be contrasted with sociological perspectives that strive to understand a game in terms of player communities, or other accounts of games that describe how its meaning is situated in culture and history. While these other perspectives are valuable, the proceduralist strives to understand the inner workings of the game as a machine to which meaning is ascribed by players. The proceduralist project might be seen as sharing similarities with the New Criticism movement which strove to understand how language can be *charged with meaning*, without relying on authorial intention, individual experiences, or historical context. Another connection can be found in the movement's founding goal of making criticism become "more scientific, or precise and systematic (Ransom 1938)." To the proceduralist, creating and understanding games requires understanding system dynamics, which necessarily involves precise and systematic investigation into the precise operations that drive a game's system.

The claim that a game is meaningful through its processes is far from clear. The field of artificial intelligence has struggled with related issues when trying to determine what it means for a system to be *intelligent* (Agre 1997; Mateas 2001). One perspective sees computational intelligence as problem solving through the manipulation of internal symbols (mentalist AI) and the other sees it as activity in an embodied environment (interactionist AI). The mentalist perspective lends itself toward creating systems that focus on solving problems using approaches associated with activities that happen inside the mind (e.g. forming goals, planning, etc.). In contrast, the interactionist perspective focuses on agents that acknowledge and react to context (e.g. exhibit reactivity and improvisation). For a mentalist, the interactionist will have a hard time building systems that engage in complex symbolic behavior (e.g. language use) without recourse to concepts of symbolic representation. For an interactionist, the mentalist will have a hard time building systems that take physical action in the world because of an overemphasis on the manipulation of internal symbols.

This debate from the field of artificial intelligence helps identify what is at stake in this debate in games research. Parallels can be drawn between the mentalist and the proceduralist positions and the play-centric and interactionist positions. Where interactionists accused the mentalist approaches of attempting to create a notion of intelligence that existed without context, those of the play-centric perspective are concerned that proceduralists are striving to create games that are meaningful without players (Pratt 2012). The reaction has been to deemphasize the importance and role of procedural rhetoric in games. The proceduralist is concerned that the play-centric

perspective overstates the freedom of players at the expense of the still to be explored field of procedural rhetoric.

Before we start choosing sides, we should remember that these characterizations do not necessarily describe the practice of any particular game designer or researcher. Those of the play-centric, interactionist-leaning position certainly would not deny that the space of possible actions unconstrained by the game system (reified as program code in videogames). Likewise, the proceduralist does not believe that player activity is irrelevant have no significance to the meaning of a game. However, these exaggerated positions do serve as warnings as to where errors might be made without theoretical diligence.

In this spirit, the following thought experiment will present the design process of an imagined *naive* proceduralist that falls prey to the dangers that those dissatisfied with the proceduralist approach warn of. By identifying possible faults of an approach that privileges a game's processes, a more subtle proceduralist approach that acknowledges the importance of players will be presented.

### **The Naive Proceduralist**

The following is a caricature of the design process of an imagined process-centric, or proceduralist, designer. Through this exaggerated position, several possible problematic conceptions about how processes convey meaning can be extracted.

We begin by imagining a game developer that wants to make a game about some domain like global warming. First, the designer decides what message he wants players to walk away with. Let's say he wants to advocate that government regulation of carbon emissions is the best way to prevent global catastrophe. Because this designer is a "proceduralist," he now goes about trying to harness the "unique" potential of videogames to express messages through gameplay, rather than through just telling players a message as would be done in traditional media like literature and film. It is important to the proceduralist that players *experience* messages rather than simply be presented with information. Because he wants to advocate for the regulation of carbon emissions, he puts the player in the role of someone who can, at least symbolically, exercise this sort of power: the leader of a country.

Now the designer imagines that he just needs to get the player to choose to create the regulations in the game. This implies that the player must have the gameplay option of creating this regulation and once the regulation is applied, the problems of global warming will begin to subside. To give an incentive to choose this action, the designer creates some rules that cause water levels to rise at the start of the game. If the player doesn't manage to curb this trend, by putting into place regulations on carbon emissions, the game will end in failure. With this imagined dynamic, the designer feels comfortable that a player *should* decide to enact the regulation or lose the game. And with this, the designer feels content that the game is representing his desired message through processes, and he can start ornamenting the game with additional gameplay as well as instancial assets that represent the game state. Perhaps the designer repeats this process of imagining a message, constructing a scenario where the player is expected to enact some choice that embodies some message, creating a game that presents several messages through its processes.

Several problems arise from this naive approach. First of all, the complexity and quality of the supposed procedural messages can hardly be said to stand up to the expectations of

the proceduralist evangelists, as even if this game succeeded in representing the designer's intent to a player, it is not clear that the resulting game is any more impactful or relevant than a short paragraph of text describing that carbon emissions are related to global warming. Also, this gameplay experience is lacking one of the most essential rhetorical strategies a game can employ: providing a high agency experience for the player (Treanor and Mateas 2009). The player's limited choices are not likely leave the player feeling like he can take the actions that the domain suggests. Especially considering a hotly contested subject like global warming, one would expect that a game would allow players to explore the moving parts of this issue, rather than be told a didactic message. While it may be the case that, as described, the imagined player wouldn't have any reason *not* to take the intended action of enacting the regulation, it seems more likely that a player would feel compelled to outright stop playing the game than be forced to choose among limited actions when other possibilities for action obvious to the player have been so overtly excluded from the game. And surely, if a game is never played, there's no sense in which the game can be said to convey a message.

This straw man design process literally prescribes what a player will do and why. Implicit is tacit agreement with Sicart's claim that "Proceduralists believe that... behaviors can be predicted, even contained, by the rules, and therefore the meaning of the game, and of play, evolves from the way the game has been created and not how it is played (Sicart 2011)." But as Nelson points out, this condemnation to a proceduralist approach can be seen instead as "opposition, aesthetically and/or politically, to certain kinds of unsubtle, didactic rhetoric in general—of which unsubtle, didactic procedural rhetoric is one variety among many (Nelson 2012)." But what does a less didactic design process look like? Surely, a design and interpretive method that can take account of how meaning arises through interaction with a game system must have a more thorough account of both the role of the player and of computational processes than this naive proceduralist.

### **The Game as Mechanism**

Avoiding the pitfalls described above while still maintaining the priorities of the proceduralist perspective involves creating a conception of a game's meaning that accounts for both player subjectivity and the system properties that constrain what it is possible for a player to do. In his writings challenging commonly held notions of the metaphysics of computation, Brian Cantwell Smith writes that "computing is best understood as a dialectical interplay of meaning and mechanism (Cantwell Smith 2010)." For Cantwell Smith, when people casually conceive of computers as processing information or manipulating symbols, they do not do "justice to [the] concrete empirical practice" in which computation exists "in the wild." In other words, while these notions may be expedient or seem like good characterizations to programmers, they do not accurately describe how computation actually functions when situated in the world. His solution is to frame computation as being characterized by a dialectical relationship between a mechanism and how an interpreter ascribes meaning to it.

Cantwell Smith's objection to traditional conceptions of computation can also applied to the naive proceduralist position. For instance, when a designer describes that because a player will cause some represented entity A to collide with B, causing B to be removed, the player will understand that A destroyed B, this does not describe the situated process by which players actually find the game meaningful in the world, but only reiterates the intention of the designer. Borrowing from Cantwell Smith's characterization of computation, a proceduralist should assume that a game's *meaning* arises from the

dialectical interplay between the game as mechanism and the meaning ascribed to it by the player.

The mechanism of a game can be best understood as the enframing aspects of the game that a player does not change during play. For videogames, this will include the game's code and physical interface elements, where for analog games this might include the rule set, tokens and physical conditions that are prerequisite to the game's operation (e.g. a table to rest the game board upon). Modding practice and house rules can change the enframing aspect of a game, but this occurs outside of play. And if it does occur during play, then there is a broader enframing aspect (mechanism) which doesn't change during play. This notion of a game's mechanism is different than what is commonly referred to as a game's mechanics. When someone says they like the jump mechanic in a game, they are already interpreting a part of the game's mechanism as representing a jump. The most important thing to recognize about a mechanism is that it is meaningless until it is encountered by players. For instance, the code inside of a machine may have been created by a programmer with a certain output in mind, and he may be able to tell stories about how it operates, but this concept of a game as mechanism strives to ensure a strict separation between the game as machine and the meaning that players ascribe to it. In other words, until the audience encounters and interprets a game, the code can be treated as nothing more than abstract causal flows that each interpreter ascribes meaning to.

It is worth nothing that understanding a game's mechanism is different than looking at the source code. Parts of a game's code may be necessary for it to function but don't contribute directly to interpretations. For example, knowing the precise way collision detection is computed may not directly impact the meaning players ascribe to a game, while the fact that a game employs collision detection at all is highly relevant to meaning ascription (see the discussion of graphical logics in (Mateas and Wardrip-Fruin 2009)). By constructing an analysis of how a game is operational based on player experience, rather than studying the source code and algorithms that comprise it, the player and critic are forced to focus on the relationship between mechanism and meaning.

### **The Proper Proceduralist**

We can now describe a more nuanced conception of a proceduralist game that accounts for the subjectivity of its players. For a proceduralist to succeed in creating a game that is meaningful through its processes, players must ascribe meaning to the game as machine. Without interpreters, a process inside a digital computer can amount to no more than abstract causal flows of electrons. Likewise, the mechanisms of physical games, like football or board games, are not meaningful until a player puts them into operation by ascribing them meaning. Game rules must be first interpreted by players and then understood as the vehicles of metaphors about some domain. The ways in which players will narrate the operation of the machine will be arise from an interplay between the preexisting beliefs about the represented entities (visuals, sound, story) and the ways that these entities are manipulated by the game's processes.

Viewed in this way, a proceduralist cannot be accused of treating players as mere "activators of the process that sets the meanings contained in the game in motion (Sicart 2011)." On the contrary, it is impossible for game designers to *embed* any meaning at all inside of a game, as they have no power over how players choose to narrate the operation of the game as machine. Furthermore, if the game does not afford interaction that the player finds meaningful in the greater scope of their life, the player will most likely seek something else to engage with, and cease to play. If the processes never even occur, it is

incoherent to argue that the game as mechanism without narration *contains* meaning. If a proceduralist wants to create a game with some specific meaning, it is important that the game actually have players that want to engage with it such that they naturally create the processes that align with the authorial intent.

Using the language of semiotics, Mateas characterizes how systems signify by stating “Every system is doubled, consisting of both a computational and rhetorical machine (Mateas 2003).” Each machine is productive of its own signs that audiences synthesize into what they consider the system to mean. The rhetorical machine refers to the many sign systems in the world. These are the systems of signification that the author has no control over such as cultural considerations and personal history. The computational machine is then described of being made up of two semiotic systems which are productive of different syntagms. The first system (system<sup>1</sup>) is the system architecture. This is comprised of the data structures and algorithms that manipulate them. In a game like *The Sims*, part of system<sup>1</sup> would be the artificial intelligence system that manages the agent’s needs (such as hunger, hygiene etc.). Notice how this characterization of the AI system already involves interpretation as the concepts of *managing*, *agents* and *needs* are not inherent in the system itself, but instead narrations of system<sup>1</sup> that the author uses to create content for. Thus, the author’s understanding of this system will constrain and afford what *content* (syntagm<sup>1</sup>) he is able to create for the system. For example, because *The Sims*’ AI system is able to be conceived of as modeling physiological needs, the game’s authors/programmers were able to create and tune particular representations of needs.

The second system, system<sup>2</sup>, refers to the system in operation in front of a player. System<sup>2</sup> is the instantiation of the syntagm<sup>1</sup>’s as they execute. System<sup>2</sup> is productive of its own syntagm<sup>2</sup>’s (e.g. specific traces of behavior in a play through the game). These syntagms make heavy use of *handled* signs such as the customary meaning of animations, language spoken by the characters, etc., which are not strictly represented in the system. Syntagms<sup>2</sup> are not amenable to perfect prediction as the sign systems of the rhetorical machine are always out of the creator’s grasp.

A proceduralist, then, is someone who can both understand how to create systems that they can reliably author for, and anticipate the ways in which cultural context is going to influence the output of the system once it is running *in the wild*. Predicting how a player might encounter system<sup>2</sup> is the most difficult problem of procedural rhetoric. Producing a game that expresses an intended meaning will always involve iterating upon the design of system<sup>1</sup>, as informed by investigations into the systems of the rhetorical machine that will ultimately interact with system<sup>2</sup> to produce the artifact’s signification (syntagm<sup>2</sup>). This process will always be imperfect as the systems of the rhetorical machine are irreducible and impossible to formalize.

One strategy for attempting to understand or account for player subjectivity can be seen in Gingold’s concept of the “human play machine (Gingold 2009).” Designer’s can imagine players as a complicated system that can afford many types of interaction, or *play capacities*, with system<sup>2</sup>. For example, a player might consider their senses, culture, language, emotions, imagination, etc. when choosing how to act. While Gingold’s concept may be seen as systematizing players, the number of play capacities far exceeds the number of considerations that a designer can practically have. The goal is to account for as many as possible. Without carefully considering the many ways that a player might engage a game, a designer makes the mistake of reducing players to pieces of the game as machine, rather than individuals. It is imprudent for a designer to make this mistake, as it

is unlikely that players will choose to engage a game that does not respect their autonomy.

Previous work argued that consistent and comprehensive accountability of a game's processes is a primary value of proceduralist design (Treanor et al. 2011). If there are aspects of a game that do not contribute, or even worst detract, from a designer's intended representation, it is less likely that players will regard the game in a desired way. While for visual rhetoric this is commonly accepted (e.g. offensive imagery for no purpose will distract from the desired representation), games will often have processes that are not accounted for or even prevent the desired interpretation from being possible. One example of this can be seen in *Bioshock* where the game's ambitious narrative critique of a philosophy is undermined by violent and conventional gameplay.

Jason Rohrer's *Passage* is an example of a proceduralist game that many people have found meaningful. *Passage* "presents an entire life, from young adulthood through old age and death, in the span of five minutes (Rohrer 2007)." According to Rohrer, each game mechanic had specific representational authorial intent and the game is considered to be one of the founding games of what has been called the proceduralist style (Bogost 2009). The game's success can be attributed to Rohrer's ability to design the game such that players naturally interpret the rules as meaningful as culturally situated individuals. It isn't the case that authorial intent is actually *embedded* in the game and players merely activate the flow of signification, players actively create and negotiate meaning as independent subjects. What makes this a proceduralist game is that the ways that most players find the game meaningful involves the procedural aspects and these interpretations *happen* to align with Rohrer's stated intentions about how the rules of the game were meant to be metaphorical (Fagone 2008; Rohrer 2007). In the semiotic language, Rohrer was able to author for a system<sup>1</sup> (graphical logics) that when put into operation, creating system<sup>2</sup>, and put into contact with the sign systems of the world, were able to produce syntagm<sup>2</sup>'s that aligned with the intentions of the authored syntagm<sup>1</sup>'s.

Contributing factors for *Passage*'s success are the high level of agency achieved by limiting the fidelity of the interaction and visuals (Mateas 2006) and music that sets an introspective tone. However, other factors have less to do with the artifact itself, but more to do with the cultural milieu of the time. When *Passage* was released, film critic Roger Ebert had recently declared that games could never be art (Ebert 2005). While these historical and cultural considerations are not the focus of a proceduralist perspective, they can still have a strong effect on how games are meaningful to players. In this case, Rohrer became the foil to Ebert in an ongoing debate about the deserved cultural status of games and this debate likely brought brought attention and authenticity to Rohrer's work.

In summary, a proceduralist is someone who treats a game's processes as primary when considering a game's meaning. A proceduralist must accept that the only aspect of the game that they have direct control over is the game as mechanism and that the meaning of the artifact is ultimately produced through the dialectical interplay between the mechanism and ways that players ascribe meaning to it.

## CONCLUSION

This account of a proceduralist position is intended to address two misconceptions about the role of procedurality in a game's meaning. First, the concept of a process centric design and interpretive perspective has come under attack from those who believe that it prescripts player choice and denies player subjectivity. Second, some who might be said

to have a proceduralist approach may not recognize the difficulties of procedural representation.

A naive proceduralist believes that because rules are present, a player will find them meaningful. A proper proceduralist recognizes that determining meaning is an irreducible task that will necessarily involve the individual players who synthesize the meaning themselves as individual subjects. Play centric perspectives are helpful in that they remind us just how varied the perspectives can be with which someone might approach a game, but they do not help us better understand and innovate on the mechanisms that underlie the play activity.

The main purpose of identifying and advocating for a proceduralist perspective is to enable creators to make new kinds of games, and players to understand new aspects of the world. Particularly when creating a proceduralist game, the designer must consider the rhetorical significance of the process oriented aspects of the artifact that they are considering that are difficult to grasp. It is arguably much easier to capture visual and aural renderings of perspectives than it is to render the principles that help shape experience. With games, the proceduralist sees an opportunity to attempt to represent the procedural aspects of reality that are difficult to express with other media.

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