Research Article

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Simulation and Representation: A Thomist Theory of Video Games

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Abstract: This paper draws on the philosophy of Jacques Maritain, a "semiotic Thomist," to examine lingering issues from the ludology–narratology debate in video game studies. Participants in this debate were explicitly concerned with the compatibility of narrative and play. However, some of their positions anticipated a persistent ambiguity in scholarly accounts of how simulation accomplishes representation. We propose a clarification grounded in Maritain's Thomistic metaphysics and derived semiotics, arguing that simulation is a highly developed form of representation, not its antithesis. We also articulate what distinguishes video games from other media: they exhibit distinctive representational depth and intimacy. The signified, in terms of its own formal causality, uniquely inheres in the simulative (procedural) sign, while the subjectivity of the player is integrated into the fundament of signification.

Keywords: game studies; metaphysics; epistemology; Maritain; Thomism

1 The "Debate" in Game Studies

At the turn of the twenty-first century, in the nascent field of video game studies, the near-mythic ludology–narratology debate took place, centered on the relation between narratives and games. Participants questioned the compatibility of simulation and representation.

Espen Aarseth argued that games "redefine literature by expanding our notion of it."[1] While "any textual situation must contain some kind of information feedback loop",[2] games display a "different teleological orientation" and invite players to "complete the text."[3] A game-text is "not a chain of signifiers"; rather, it can be seen as "a machine – not metaphorically, but as a mechanical device for the *production and consumption* of *signs,*" which "is not complete without a human operator."[4]

In addition, the traditional semiotic "threesome" of author, text, and reader is subverted by the so-called "cybertext," within which "the boundaries between these elements are not clear but fluid and transgressive, and each part can only be defined in terms of the other two."[5] Previous "models of textuality" have not "taken this performative aspect into account."[6] A cybertext, in Aarseth's sense, is thus a text whose signification depends essentially on the participation and input of its user. The cybertext "shifts the focus from the traditional threesome" to the "cybernetic intercourse between the various part(icipant)s in the textual machine."[7] Games, as cybertexts, have "certain requirements built in that automatically distinguish between successful and

1 Aarseth, "Cybertext", 22.
2 *Ibid.*, 19.
3 *Ibid.*, 20.
4 *Ibid.*, 21.
5 *Ibid.*
6 *Ibid.*
7 *Ibid.*, 22.

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unsuccessful users."[8] Unlike the reader of a novel or the viewer of a film, the player of a game tries, and may fail, "to change the work from one state to another."[9] Further, the player's progression through the game is divorced from its signification, since the player "must explore actively and nontrivially to make sense of [what is signified]."[10] Aarseth concludes that games "cannot be measured by old, unmodified aesthetics."[11] They constitute a new type of "ergodic literature."[12]

Gonzalo Frasca agreed,[13] and made even stronger claims. Traditional semiotics, he said, cannot deal with these new texts, with "adventure games and textual-based multi-user environments, because these works are not just made of sequences of signs but rather behave like machines or sign-generators."[14] Conventional media "are representational, not simulational. They excel at producing both descriptions of traits and sequences of events (narrative)."[15] In contrast, "a flight simulator or a simple toy plane are not only signs, but machines that generate signs according to rules that model some of the behaviors of a real plane."[16] Games, too, are simulations, and

> to simulate is to model a (source) system through a different system which maintains to somebody some of the behaviors of the original system. The key term here is 'behavior'. Simulation does not simply retain the – generally audiovisual – characteristics of the object, but it also includes a model of its behaviors. This model reacts to certain stimuli (input data, pushing buttons, joystick movements), according to a set of conditions.[17]

Thus, "simulations can express messages in ways that narrative simply cannot."[18] Authors of simulations "give away part of their control over their work."[19] These works exhibit an "alternative semiotical structure," which is "essentially different" than representation[20] Following Frasca, we treat video games as a simulative medium and use "games" and "simulation" interchangeably.

Janet Murray, on the other hand, argued that "part of the early work in *any* medium is the exploration of the border between the representational and the actual world"; we "need time to get used to any increase in representational power."[21] In the second part of *Don Quixote*, she recounted, published 10 years after the original, characters "discuss the reception of the first part and quarrel with the representation of their adventures. Cervantes shows them meeting people who have read about them, mingling readers and fictional characters in the same illusory space."[22] Similarly, at the advent of the novel form, Laurence Sterne "wrote a self-deconstructing memoir in which the narrator inserts blank pages, numbers chapters as though they have been rearranged and sends us back to re-read passages," doing everything possible to remind us of our role in the physical act of reading.[23] Likewise, the "borders of the illusion" are destabilized and made to shift by the common eighteenth-century practice of presenting novels as collections of real letters, or, more recently, by the "fusing" of actor and character in the person of Jerry Seinfeld.[24] Games may afford "new opportunities to practice the active creation of belief" and to participate in the content of the text, but they do not have a monopoly on such processes.[25] Even the act of reading is "far from passive. We cast actors or people we know into the roles of

8 *Ibid*., 179.
9 *Ibid*., 181.
10 *Ibid*., 125.
11 *Ibid*., 23.
12 *Ibid*., 179.
13 Frasca, "Simulation".
14 *Ibid*., 223.
15 *Ibid*.
16 *Ibid*., 224.
17 *Ibid*., 233.
18 *Ibid*., 225.
19 *Ibid*., 229.
20 *Ibid*., 222.
21 Murray, "Holodeck", 103.
22 *Ibid*., 103–104.
23 *Ibid*., 104.
24 *Ibid*., 105.
25 *Ibid*., 111.

characters, perform their voices in our heads, assemble the story into cognitive schemata that make up our own systems of knowledge and belief."[26]

Aarseth and Frasca, with Juul and others, were widely understood as proponents of "ludologism," the view that games are "abstract systems independent of the cultural and narrative dimensions of representation (emotions, ideology, identification with characters)."[27] Murray, meanwhile, was deemed by Frasca a proponent of games as "extensions of drama and narrative."[28]

That either party intended to establish a categorical distinction between games and narrative is doubtful. Years after the publication of *Cybertext*, Aarseth said that he was reacting against "sloppy scholarship," "poor theorizing," and a "one-sided focus" on narrative or representational elements, rather than imposing "a ban against the application of narrative theory to games as such."[29] He then went on to dismiss the very existence of "ludology" and "narratology" as distinct views of video games.[30] In a 2025 interview conducted by Mejeur, Aarseth continued to insist the ludology–narratology "debate" was based on a misunderstanding, and that all parties believed at the time in the unproblematic existence of "hybrid" games which combine play with narrative.[31] Frasca, meanwhile, in a footnote to the paper cited above, recalled his own prior suggestion that "simulation and representation only differ in a matter of degree"; it was for the sake of "clarity during [the] early days of ludology" that he thought it "safer to consider them as different."[32] He has on other occasions confirmed his commitment to the existence of narrative video games.[33]

These qualifications indicate that the ludology–narratology controversy was not as controversial as it appeared to be, at least according to some involved. This view has gained traction. A correspondent remarked to us that "the ludology–narratology debate is a little old-fashioned within gaming scholarship," and that "nearly all game scholars today accept that games can be both fictions and games." Direct participants in the debate now tend to dismiss the original locus of tension, as the representational and narrative capacities of simulative media have been widely conceded.

Nevertheless, the tension between proponents and critics of narrative video games has "flared up" sporadically.[34] In 2017, Ian Bogost, a well-known and influential figure in game studies, argued that games are an inferior storytelling medium; why, he asked, even if a game's story is high quality, does it need to be told as a video game?[35] This prompted a response from Murray.[36] If taken seriously, Bogost's remarks call into question the value of creating the "hybrid" narrative games that Aarseth described to Mejeur. Further, Vossen contends, drawing on numerous figures in game studies, that the boundaries of the field were established by the so-called ludologists, including Aarseth; scholars inclined to different methodologies, she argues, are effectively excluded.[37]

A more fundamental problem that emerged within the debate remains unresolved. While it is now widely accepted that narrative games can exist, Aarseth and Frasca advanced strong claims about the incompatibility of simulation and representation. These claims prefigured an ambiguity in scholarly explanations of how video games embody and represent meaning that has outlived the ludology–narratology controversy. It underlies Bogost's suggestion that games are better without stories and continues to shape treatments of the medium's expressive capacities, as we will discuss below.

26 *Ibid.*, 110.
27 *Ibid.*, xiii.
28 Frasca, "Simulation", 221.
29 Aarseth, "Narrative", 2.
30 *Ibid.*
31 Mejeur, "Definitions", 132.
32 Frasca, "Simulation", 235.
33 Frasca, "Ludologists".
34 Murray, "Why Some…".
35 Bogost, "Video Games".
36 Murray, "Why Some…".
37 Vossen, "Young Scholars", 83–84.

This paper engages, from the vantage of Jacques Maritain's so-called "semiotic Thomism," with the claims of Aarseth[38] that games destabilize the "semiotic threesome," and of Frasca[39] that simulation conveys meaning in an "essentially different" way from representation. We will begin with a survey of foundational concepts intended to familiarize the general reader with Thomist philosophy in the Maritainian vein. The concepts surveyed will be used to elucidate the distinctive representational character of simulation, thereby resolving the ambiguity prefigured by the claims of Aarseth and Frasca.

We aim to convince the reader of two complementary propositions using Thomist metaphysics, its derived epistemology and semiotics. First, simulation is essentially continuous with previous forms of signification. Second, it is characterized by unique representational depth and intimacy, for which reason it can be said to embody meaning; the simulative or procedural sign exhibits a special metaphysical resemblance to the signified while incorporating the agency of the interpretant into the sign.

2 The Fundamentals of Thomist Ontology, Epistemology, and Semiotics

2.1 Why (This) Thomism?

The effort to produce a Thomistic interpretation of video games may appear strange. As one interlocutor put it, a "Thomist approach to these questions [seems] like asking for a peanut butter and bicycle sandwich."

In our view, theoretical tools not typically associated with game studies are needed to address a problem with deep philosophical roots. Clarifying the ambiguous semiotic nature of simulation requires an account of representation in terms of metaphysical likeness; a factor of identity between signified meanings and signs, simulative and otherwise, must be recognized. This would both elucidate the unique representational capacities of video games and move beyond metaphor in explaining how simulation retains behavior or embodies the signified. The blind spots of other approaches underscore the need for such an account.

The closest precedent can be found in the work of Bogost himself, who, using object-oriented ontology (the focus of his Alien Phenomenology), elaborates a critical apparatus for approaching video games[40] and describes their rhetorical capacity.[41] This apparatus prominently features the notion of procedural expression,[42] on which we rely extensively. Indeed, Bogost seems to take for granted a key notion we intend to develop here: that video games are expressive and exist in "service of representational goals akin to literature, art and film."[43] He denies that games are mere "abstract rule systems" and suggests a reframing of the ludology versus narratology debate in these terms: it should be asked "if games *need* to produce stories while acknowledging that they *might* be able to do so."[44]

While this is compelling, it leaves some fundamental questions unanswered: what does it mean to say computer processes "invoke interpretations of processes in the real world"?[45] In what sense does procedural expression "capture" experience as a "system of related actions",[46] especially if we grant that the meaning signified by a computer procedure is "projected onto it by [an] interpreter"?[47] Bogost delves deeply into the capacity of games to convince and make arguments, especially pertaining to political and socioeconomic issues,[48]

38 Aarseth, "Cybertext".
39 Frasca, "Simulation".
40 Bogost, "Unit Operations".
41 Bogost, "Persuasive Games".
42 Bogost, "Persuasive", 4–64; Bogost, "Unit", 13–15, 46, 74.
43 Bogost, "Persuasive", 45.
44 Bogost, "Unit", 70.
45 Bogost, "Persuasive", 5.
46 Bogost, "Unit", 46.
47 Bogost, "Persuasive", 5.
48 See, for example, "Unit", 62, and "Persuasive," 34, 37, 45, 53.

but not into the question of correspondence or likeness between the game as representation and what it represents, a question that is decidedly metaphysical. He briefly gestures toward the Aristotelian notion of form; however, this gesture serves to illustrate his understanding of systems and is not meaningfully developed into an account of formal-causal resemblance.[49]

Murray, who treated procedural expression before Bogost, also glosses over this detail. She observes that simulation facilitates the "embodiment" of the signified without specifying the metaphysical or other basis of this embodiment.[50] In what sense, it might be asked, do represented entities inhere in the simulative sign, and what justifies the assertion that a player "embodies" them in virtue of pressing buttons on a controller? Similarly, Hawreliak devotes a chapter of his book to procedurality as a semiotic mode, asserting that it is a "means of making meaning".[51] However, he seems to regard procedural representation as reducible to "programming language"[52] and does not adequately explain how it transmits meanings such as "combat, war, weapons", nor how it can exemplify causal relationships.[53] Likewise, Galloway distinguishes between a video game's "diegesis", its "total world of narrative action", and "nondiegetic" components, from software to player inputs, external to this represented world.[54] However, the relationship between these elements is not defined in determinate, non-metaphorical terms, metaphysical or otherwise. It is unclear what it means for motion or relationality to "emanate outward from" and "inward to" the machine.[55] Nor is it evident how "nondiegetic play functions" mask, obfuscate and "cooperate with" diegetic objects.[56] Taken together, these analyses evince that an inexact understanding prevails within game studies of how procedural signs relate to the meanings they are said to communicate. In this respect, earlier claims of Aarseth and Frasca regarding the tension between simulation and representation remain relevant.

Articulating the simulative embodiment of meaning in metaphysical terms would clairfy how games are both like and unlike other representational media. For this, a robust account of formal causality, along with a derived semiotics, is needed to explain the real likeness between simulative sign and signified. Such an account would meaningfully supplement extant treatments of procedural representation, which presuppose, but only metaphorically justify, the inherence of represented meaning in video games.

It is unlikely that non-Thomist theories of the sign can provide this, given their divergent metaphysical commitments and implications. Some alternatives, such as Saussurean semiotics, treat signification as dyadic, involving signifier and signified.[57] As a result, they cannot furnish an explanation of the formal-causal proximity achieved by the procedural sign's interpretant, the player, to signified meaning. Kokonis has offered a cursory application of Peircean or pragmatist semiotics to the study of video games.[58] Like the semiotic Thomists, he acknowledges the triadic nature of signification. However, operating in a different metaphysical context and without recourse to formal causality, he does not address the unique resemblance that obtains between simulative sign and signified. Other systems, such as Paolucci's cognitive semiotics, view the sign as extrinsically or conventionally meaningful. Signified content is bound up, not with the metaphysical character of the sign's terminus, but with subjective enunciation and wider meaning-making tropes: "norms that are actualized, stereotypes that are virtualized, previously uttered enunciates that are realized".[59]

These semiotic systems cannot, in our view, be used to express the metaphysical likeness of signified form to procedural sign, nor the interpretant's intimate relation to that form. Doing so requires an understanding of signification as both triadic and grounded in a metaphysics of formal causation. Both factors are, as we argue,

49 Bogost, "Unit", 23.
50 Murray, "Holodeck", 223.
51 Hawreliak, "Multimodal", 86-88.
52 *Ibid*., 86.
53 *Ibid*., 86, 89.
54 Galloway, "Gaming Essays", 7–9, 14.
55 *Ibid*., 18.
56 *Ibid*., 32.
57 Saussure, "Course", 65–66.
58 Kokonis, "Intermediality".
59 Paolucci, "Myth of Meaning", 7–8.

integral to the uniqueness of video game representation. We will show that Thomist semiotics, which emerges organically from an appropriate metaphysical background, is well suited to articulating these relations.

It should be noted that Thomism is no more an undifferentiated tradition than semiotics, despite a common reliance on the corpus of Thomas Aquinas. As Ashley[60] and others have noted, it encompasses multiple subtraditions that diverge on questions of being, knowledge, causality and signification. The present analysis proceeds within the framework of what Ashley calls "semiotic Thomism," associated especially with Jacques Maritain and John Deely. All references to "Thomism" or "the Thomist[s]" that follow should be understood in this sense. Where appropriate, this framework will be supplemented by reference to so-called "Roman" or "essentialist Thomists," who, due to a mutual reliance on the commentarial tradition in general and John Poinsot in particular, share foundational commitments with the semiotic Thomists.

2.2 Act, Potency and the "Problem of the One and the Many"

According to the Thomist, the distinction between act and potency is fundamental: "prior to all logical and semantic issues whatsoever."[61] It arises in response to the problem of the one and the many.[62] Solving this problem is philosophy's central task,[63] a task necessary to reconcile being and identity with the reality of many, limited, and changing things.[64] The solution requires the principles of actuality and potency. The distinction between them, the keystone of Thomist philosophy in general, is foundational to each stage of our interpretation of video games. To communicate an adequate understanding of these metaphysical principles to readers unfamiliar with Thomism, we will examine the context of their emergence and contrast them with alternate ontologies.

2.3 Ontological Monism

The problem of the one and the many results from the affirmation that self-identical, distinct things exist alongside multiplicity, limitation and change.

There seem to be many beings. They are alterable and exhibit mutually exclusive characteristics that distinguish them from one another. The differentiation of a common actuality usually occurs by composition with extraneous differences. Genus, for example, is diversified by specific differences, as "animal" by the difference "rational." A species is multiplied by numerically distinct individuals. This cannot, however, be the case with being, since, self-evidently, there is nothing else to compound and diversify it: outside of being is nothing. If we affirm that something *exists,* if being and identity characterize the extramental world, it seems we are forced to conclude that multiplicity and change are *nothing*, not ontological realities. With nothing extrinsic to itself by which it might be diversified, being appears to be monolithic and homogeneous; it "excludes otherness and multiplicity… is immobile and so incompatible with change [and, with] nothing outside it, [being] excludes limitation."[65] Being *is*, while non-being is not, so difference and mutability can only be apparent.[66] It is easy to see how monism would preclude the representation of one kind of thing by another, along with any discussion of the semiotic capacity of video games.

These arguments, introduced in the first place by Parmenides, were, says Garrigou-Lagrange, more recently employed by Spinoza to demonstrate the existence of a single substance and the impossibility of a second.[67] Other

60 Ashley, "Wisdom", 44.
61 Long, "Analogia", 79.
62 Garrigou-Lagrange, "God" Vol. 1, 187; Doolan, "Aquinas," 211.
63 Phillips, "Modern", 164.
64 Long, "Analogia", 15–16; Maritain, "Preface," 58.
65 Long, "Analogia", 15.
66 Garrigou-Lagrange, "Order", 17.
67 *Ibid.*, 17.

monists characterize what they view as the singular existent in various ways. For example, Richard Rorty opines that all things are derivative modes, "p2+," of the primordial physical, "p1."[68] Novelist and philosopher R. Scott Bakker holds that "there is only all-encompassing mechanical nature, all the way down."[69] Both propound a monism with a physicalist flavor. In contrast, Rooney has recently treated Huayan Buddhism as an "immaterial" or idealist monism, which posits "One mind" as ontologically fundamental and casts materiality an illusion.[70]

2.4 Radical Ontological Pluralism

"In order," responds the radical pluralist, "to prove the possibility and existence of difference and motion, does it not suffice that I walk in front of you?"[71] Monism is inadequate to dismiss multiplicity, since it is given that *multiplicity exists*. The pluralist inverts radical monism to account for this. Being and identity, he opines, are themselves mere appearances, illusions which dissolve in becoming. That "which is, is not; and that which is not, is, for all things become and nothing is abiding. Universal contradiction is found everywhere… war between contraries is the mother of all things."[72] What the mind misperceives as self-identical things distinct from one another are nothing but collections of phenomena, "moments of a general flux."[73] If radical pluralism were true, simulative representation would have no determinate meaning to convey.

This metaphysics, with its core tenets of universal mutability and the coincidence of opposites, goes back to Heraclitus, and repeats in the philosophies of Bergson and Hegel, though, the Thomists believe, with varying emphases. Bergson denies identity in the name of an anti-intellectualist dismissal of the "morcellation" between mover and moved.[74] To Hegel, being and non-being are opposed to each other by human convention. Ontologically speaking, they are identical in becoming.[75] Becoming, he says "contains being and nothing within itself and it does this in such a way that they simply overturn into one another and reciprocally sublate one another as well as themselves."[76] The philosophies of Bergson and Hegel were taken up in turn, with idiosyncrasies beyond the scope of this paper, by subsequent philosophers. One such philosopher is Deleuze, who posits that being is "Difference Itself"[77] and for whom "pluralism = monism."[78] Another is Žižek, according to whom "being is not identical with itself but thwarted, marked by a fundamental impossibility."[79]

2.5 The Failure of Monism and Radical Pluralism

The Thomist views both monism and radical pluralism as self-defeating.

The monist makes recourse to ontological difference in the attempt to explain it away: his account presumes the distinction between noumena and phenomena.[80] Things change, *if only in the phenomenal order*. A true monism would leave no room even for the apparent and phenomenal; homogeneous being is not capable of "appearing" as different than it is. The monist, then, relies on dual principles which are, despite their asymmetry, ontological, having efficiency in the world. He is, Plato observes, "forced to use 'being' about everything, while using it separate from many other things and from itself. [He's] powerless to stop doing it… [He doesn't] need

68 Rorty, "Mirror", 124.
69 Bakker, "Visions".
70 Rooney, "Material Objects", 157–158.
71 Garrigou-Lagrange, "Order", 16.
72 *Ibid*., 14.
73 *Ibid*., 206, 213.
74 Garrigou-Lagrange, "God" Vol. 1, 129.
75 Garrigou-Lagrange, "Order", p. 213.
76 Hegel, "Logic", 146.
77 Deleuze, "Difference", 117–119.
78 Deleuze, "Line", 47.
79 Žižek, "Sex", 84.
80 Garrigou-Lagrange, "Order", 18–19.

other people to refute [him, since he] carries an enemy within to contradict [himself]."[81] While he emphasizes the universality of "being," he likewise admits a distinct, phenomenal kind of being is real. Thomists have argued that this admission is inescapable in any "restricted theory" of identity and composition.[82]

The radical pluralist, on the other hand, intends to preserve becoming in the absence of anything that becomes. In this, he is also committed to what he sets out to dispute: the self-identity of, and distinction between subject, mover, and end, without which the notion of flux is incoherent. Radical pluralism, "in which being and non-being are alleged to exist simultaneously, must lead to the admission of perpetual repose rather than movement, [since] there is nothing left which beings may become" – no distinction between the beginning and the end of a movement.[83] If the former is already the latter, the transition between different states is impossible. Becoming "is always the movement of a subject," constituted by the passage from one distinct, self-identical state [of indetermination] to another [determination].[84]

2.6 Solving the Problem

The Thomist holds that the solution to the problem was discovered by Plato, who conceded the first part of the monist formula, "being is," while denying the second, "non-being is not."[85] Non-being, said Plato, with Aristotle and the Thomists after him, "somehow *is*."[86] This non-being is not contrary nor extrinsic to that which is; rather, it is "different from it."[87] This difference emerges from and "shares in" that which is and, because of that sharing, itself exists.[88] It is neither the privation of actuality nor imperfect actuality. It is *potentiality*, a positive, "real capacity for being," which receives and limits the actuality from which it is distinct.[89]

This potentiality is undetermined being, a "relative absence of" actuality.[90] As such, it is not a negative term. It is a real metaphysical principle, consisting in its essence of a relation to the actuality by which it is specified.[91] The very notion of potency, says Maritain, is thus explained, for potency "is fundamentally relative," and "all the intelligibility it possesses is [in] reference to a particular act."[92] The relation between act and potency is asymmetrical and reduplicative: actuality is ontological fullness, potency is a limited capacity to receive and share in this fullness.[93]

Potency and actuality, then, are two real and distinct principles "intrinsic to the existing being."[94] They divide reality, such that every being which exists is either pure act, or a composite of potency and actuality.[95] These principles are "analogous" or "transcategorical": properly metaphysical notions, which are found, "intrinsically and properly," in things that differ from one another essentially.[96] Whether a being is an idea, an atom, an elephant, or any other entity, it needs to exist and to change. It needs to be different from, while interacting with, other beings. As such, it will be a composite of actuality and potentiality.[97]

81 Plato, "Sophist", 252c.
82 Rooney, "Material Objects", 156–160.
83 Garrigou-Lagrange, "God" Vol. 1, 132, 136.
84 Garrigou-Lagrange, "Order", 72.
85 Garrigou-Lagrange, "Essence", 30; "Order," 18–20.
86 Plato, "Sophist", 241d.
87 *Ibid.*, 280.
88 *Ibid.*, 282.
89 Garrigou-Lagrange, "Essence", 36–37; Plato, "Sophist", 247e.
90 Garrigou-Lagrange, "Common Sense", 132.
91 Grenier, "Thomistic" Vol. 2, 66, 75.
92 Maritain, "Preface", 106–107.
93 Doolan, "Aquinas", p. 211.
94 Garrigou-Lagrange, "Essence", 64.
95 Grenier, "Thomistic" Vol. 2, 70.
96 Garrigou-Lagrange, "God" Vol. 1, 169, 177; Maritain, "Degrees," 226–227.
97 Maritain, "Degrees", 192–193.

2.7 Participation: Asymmetrical and Reduplicative

According to the Thomist, monism is correct in recognizing being as actuality itself, the "most excellent and perfect form of all, which actuates all things, even their forms."[98] However, the monist is wrong to hold that being is "one in intelligible structure and in nature," like a genus.[99] Rather, it encompasses limiting, receptive *potencies* that share in actual being.[100] The problem of the one and the many is resolved insofar as potency is emergent from and essentially relative to the actuality in which it participates. It is not a separable, independent, or parallel thing that adds something new to actual being *from without*. It depends upon and asymmetrically reduplicates the actuality in which it participates. It receives, in a limited way, an ontological principle that is unbounded in its own order.

This explains how being can "be possessed by many different subjects" and "offers an answer to the ancient Parmenidean problem of the one and the many."[101] Being's potencies arise from within itself and are defined in relation to its inner richness. Monism is answered, yet its deepest insight is retained. There is nothing beyond being. However, being is polyvalent, not homogeneous. The space is carved out for an account of simulative representation: there are distinct things of different kinds, each capable of interacting with and actuating others.

2.8 Conclusions About Act and Potency

In conjunction with monism, the Thomist affirms that nothing can be added to being from without. The error of monism is to characterize all multiplicity as an addition to being from *without*. In truth, there is not "more being" after the genesis of composite, changing things;[102] potency reduplicates what actuality already is. Together with pluralism, the Thomist holds that "multiplicity and becoming are givens."[103] Actual being is infinitely participable,[104] a "variable enveloping an actual multiplicity."[105] There is enough room on earth and in heaven for more than we can ever dream of. As Bogost says, "anything is thing enough to party"[106] and "all things equally exist," which is possible precisely because "they do not exist equally."[107]

In every limited, changing being, actuality is a *formal cause*, the principle that "determines and specifies" a thing, making it the kind of thing it is.[108] Potency is a *material cause*, the principle "from which a thing is made,"[109] and it receives all its determination from actuality. All limited and changing beings exhibit both principles.[110] They exist insofar as actuality is received by a limiting subject or material principle; the delimited actuality thus participated constitutes the essence or formal principle of any given creature.[111] The composition of potentiality with actuality makes possible the multiplicity of beings and the changeability of individual things.

This composition also accounts for knowledge.

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98 Garrigou-Lagrange quoting Aquinas, "Essence", 34.
99 *Ibid*., 38.
100 *Ibid*., 34, 64.
101 Doolan, "Aquinas", 211.
102 Garrigou-Lagrange, "God" Vol. 2, 38.
103 Garrigou-Lagrange, "Common Sense", p. 132.
104 ST i.14.12.
105 Maritain, "Degrees", 227.
106 Bogost, "Alien", 24.
107 *Ibid*., 24.
108 Grenier, "Thomistic" Vol. 2, 306–307.
109 *Ibid*.
110 Garrigou-Lagrange, "Essence", 42; Grenier, "Thomistic" Vol. 2, 177.
111 For this "predicamental" participation that results in creaturely essence, in contrast to the "transcendental" participation yielding a distinct act of existence in which the essence itself participates, see Doolan, "Aquinas", 221–222, 228–233, 243, Fabro, "Selected", 84–89, and Mitchell, "Aquinas", 12–16.

2.9 Knowledge

An analysis of video game signification must account for the receiver of what is signified: of knowers who enter semiotic relations.

Thomist epistemology applies the principles of act and potency, formal and material causes. Knowers are "distinguished from non-knowers by the fact that non-knowers exist solely according to their own form," whereas the knower both remains itself and at the same time "possess the form of another thing; for the species of the known is in the knower."[112] A knower, while being himself and retaining his identity, is in potency to forms beside his own. A non-knower can "change or become other but cannot *itself* be the other as other."[113] Unlike non-knowers, which change only by suffering the corruption of their current form and the generation of a new one in its place, knowers "receive into themselves that which is other, *as other*, so they exist in themselves, maintaining their forms, while also becoming other things."[114] In knowledge, the "knower *is* the known thing," and the two are "more unified than matter-form composites, insofar as a third or new thing is not made from them."[115]

All this requires (a) a *real distinction* between specifying actuality and the potency informed thereby,[116] and (b) the existence of both physical and intentional modes of being as distinct potencies, equally receptive of common specifying actualities.[117] Intentional being is characterized by Thomists as "immaterial": in its intentional existence, "the [knower] is not only its isolated self but is identified," in a non-physical, non-substantial way, "with other things in the physical environment."[118] Intentional existence allows for the knower "to receive the form of the other without that form carrying with it the other's matter, and without entering into the knower's matter."[119] Dissect the brain of the knower and you will not find a miniaturized, physical copy of the known, nor any physical component which constitutes the knowledge act. So, says Aquinas, "the nature of a non-intelligent being is more contracted and limited, whereas the nature of intelligent beings has a greater amplitude and extension."[120] This "immateriality" is "simply rooted in form as such in its difference from matter" – in act, that is, as distinct from potency.[121] In knowledge, one and the same actuality is doubly participated in: on the one hand as the mind-independent ontological principle of a substantial thing, and on the other, as specifying the intentional potencies of the knower.[122]

Knowledge, then, is a special participation of potency in act. The form of the known is an extrinsic actuality by which the knower's intentional potency is informed. The knower shares, reduplicatively and "immaterially," in the intelligible content of the known.

2.10 Signs

This brings us to the notion of the sign in a "wide sense": one thing that represents or makes known the form of another thing.[123] This notion is intimately bound up with knowledge. The knower knows by his use of, or even his intentional existence *as*, a sign: a thing which is entitatively itself, and, in its specifying formal causality, something else.

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112 Garrigou-Lagrange, "Philosophizing", 64; ST i.14.1.
113 Maritain, "Degrees", 119.
114 Garrigou-Lagrange, "Philosophizing", 66.
115 Garrigou-Lagrange, "Philosophizing", 72; Maritain, "Degrees," 119.
116 Maritain, "Degrees", 131n.
117 *Ibid.*, 129–131.
118 Deely, "Intentionality", 14.
119 *Ibid.*, 20.
120 ST i.14.1.
121 Deely, "Intentionality", 16.
122 Deely, "Physiosemiosis", 29.
123 "Sign in a wide sense," that is, a sense encompassing the various divisions of the sign described in Section 2.11. See Deely, "Intentionality", p. 150n; Maritain, "Degrees", 414; Pointsot, "Tractatus", 226.

Signification is always a triadic relation, as Deely,[124] expounding on Maritain and Poinsot before him, has stressed. First, it involves a signifying material cause, a fundament, whose function is to make known. This fundament stands in potency to the form of the signified, though in different ways depending on the precise character of the sign in question, as will be shown in the next section. Second, it requires a signified formal valence, a terminus, that which is made known.[125] This is actuality in relation to the fundament which it specifies. Finally, and most crucially, there is a party to whom the sign conveys meaning, whose knowledge act is itself in potency to the form conveyed by the sign.

This third component of signification is the interpretant. Without this component, there is no representation; there is [at best] only formal-causal similarity between would-be sign and signified, as between members of the same species which resemble one another. The being of a sign "formally consists in the position it occupies respecting the signified directly and interpretant secondarily."[126] Signification occurs solely upon recognition of the signified by an appropriate interpretant in and through the sign. This is what differentiates known objects from physical things: a "relation to the knower on the basis of which every object, whether also a thing of nature or not, exists as presented in awareness."[127]

2.11 The Division of Signs

We are progressing toward a fully realized Thomist account of video games as a medium of signification. How they signify in distinction from other media requires an examination of the Thomist classification of signs.

Some signs are merely conventional and relate to the signified by means of human use. They convey the known other only by extrinsic denomination.[128] Such is language, which consists of sensible qualities (sounds or page marks) arbitrarily associated with things signified. All conventional signs signify instrumentally: the knower must "pass on" from the sign to attain the meaning it transmits, as will be described below. Here the signifying fundament is in potency, not to receive the form of the signified as such, but to be used by an interpretant in communicating it.

Other signs "naturally" and intrinsically convey the formal causality of the known.[129] Like all signs, these involve an existential fundament and semiotic terminus. The fundament differs, as a thing, from the signified. By contrast, the terminus, in its intelligible content, is intrinsically relative to the known thing. Here, the relation of signification is "mind-independent," arising from the physical or ontological character of what is made known.[130]

Natural signs can be both instrumental and formal.[131]

An instrumental sign is anything that, "being itself first known, makes some other thing known consecutively: a streak of smoke we see rising into the sky, a portrait on canvas"; these are objects "upon which our knowledge first bears, only to pass from thence to other objects known thanks to these," that is, to the fire causing the smoke, to the sitter whose qualities the portrait replicates.[132] The qualities the natural, instrumental sign captures are intrinsic to, or organically resultant from, the signified itself, not conventionally associated with it. They are, however, at a remove from its nature, which is known over and above them as an additional valence of meaning. The instrumental sign is defined by this: it is known before it makes known something else.[133] The fundament of the instrumental sign does not stand in potency to the substantial form of the signified; smoke does not become fire. Rather, smoke is causally specified by and congruous with the actuality of fire. The smoke, its

124 Deely, "Intentionality", 116–118.
125 *Ibid.*, 175.
126 *Ibid.*, 116.
127 *Ibid.*, 194n.
128 Grenier, "Thomistic" Vol. 1, 32; Poinsot, "Tractatus", 269–271.
129 Grenier, "Thomistic" Vol. 1, 32.
130 Poinsot, "Tractatus", 138–139.
131 Grenier, "Thomistic" Vol. 1, 31–32.
132 Maritain, "Degrees", 127.
133 *Ibid.*, 412.

color, motion, density, and behavior, exists in potency prior to combustion, only to be actualized by fire's operation. In this way, smoke, as signifying fundament, is in potency to fire's formal causality, not by sharing the form of fire, but by being causally shaped by it.

A formal sign transparently manifests the other. It is not a formality apprehended first that subsequently makes known a separate, distinct meaning. Rather, "it is anything that makes known, before being itself known."[134] The actuality informing its fundament is the signified's own nature, "without numerical distinction" or mediation.[135] No leap of the mind to another meaning, as from smoke to fire, is required, because in its "intelligible constitution," the formal sign is identical with the known.[136] This fundament is in potency to, and becomes actuated by, the form of the signified as such.

Thomists classify the concepts (species expressae) of rational beings as natural, not conventional, formal, and not instrumental signs: they terminate in the selfsame essence of the known. Smoke is a natural and instrumental sign: a thing known first, which then signifies another meaning, fire, to which it is inherently and mind-independently related. In comparison, words, spoken or written, are conventional as well as instrumental. They mean what they mean not due to their intrinsic qualities, but thanks to extrinsically assigned significance. They direct interpretants beyond themselves to the signified.

2.12 Speculation Versus Connaturality

The intentional participation of the interpretant in the signified can be speculative and abstract, such that a thing is known in a universal mode apart from its substantial existence. Speculative knowledge includes natural philosophy, mathematics and metaphysics.[137] In such knowledge, the sign terminates in a meaning with no individuality or directly sensible qualities: the notion of a trans-individual specific type (animal, human), of pure number or being. The signified formality is known at a certain degree of abstraction, separated from the subjects in which it exists mind-independently.[138] This formality, "without numerical distinction," mutually actuates these subjects and the sign it specifies.

In abstract knowledge, the sign's fundament is the knower's own intentional act, which is both separate from the mind-independent existence of what is known, and which does not permeate the formality signified.[139] For a form to be known abstractly, the fundament whereby it exists in knowledge must entirely fade from view.[140] The distinction between the signified form and its intentional mode of existence is "of capital importance."[141] The signified would not be an *abstraction* capable of informing diverse individuals if the existence of the knowledge act specified its content or modified its intelligible constitution. Nor would it be known as the form of *another*. Instead, an individuated quality[142] of the knower himself would be apprehended; if, says Maritain, the knower's intentional act impinges on the signified in abstraction, then "all sciences would be absorbed into a single science – and it would be psychology."[143]

134 *Ibid*., 127.
135 *Ibid*., 416.
136 *Ibid*., 132.
137 Maritain, "Degrees", 2, 37–41.
138 There are three degrees of abstraction: from singular but not sensible matter, as "human" abstracts from this flesh and these bones; from both singular and sensible matter, but not quantity, as with mathematical objects; and from all matter, as with the notions of sign, being qua being, the true, the beautiful, etc. See Grenier, "Thomistic" Vol. 1, 225–229; Maritain, "Degrees", 37–41.
139 Maritain, "Degrees", 132.
140 *Ibid*., 418.
141 *Ibid*., 92.
142 *Ibid*., 133.
143 *Ibid*., 128.

Apart from abstraction, things can be known using "means other than concepts."[144] Intelligence and sense are not disjointed nor discontinuous; the intellect, as Aquinas says,[145] is the actuating form of the body and pervades its parts, including the organs of sensation. Thus, knowledge can proceed from "sense as permeated by intellection."[146] Here, the known is perceived in its individuality, as it actuates the sense-faculties of the knower in the concrete. Thomists deem this apprehension of concrete, subjective form "knowledge by connaturality."[147]

Connatural knowledge is different from speculative knowledge. The latter presents the known "stripped of proper existence as reduced to the condition of objects of thought… a mode of being essentially incomplete."[148] Connatural knowing "compensates" for this "lack of direct intellectual knowledge of the particular."[149] It places the knower "in immediate connivance" with the known thing[150] through its very action upon the senses, *actio in passio*.[151] The thing's individuality specifies and permeates the formality known.

When a physically present thing is connaturally apprehended, its influence upon the knower's exterior senses is an ineliminable part of the knowledge act's signifying fundament; the mind-independent existential mode of the known conveys its own form to the knower. Here, the gap between sign and signified is reduced in a manner that mirrors the representational intimacy we will attribute to video games.

To reiterate, signification is a "triadic relation within which some representation is made [by the sign] *to* something other *both* than itself *and* than the object it represents."[152] When, as in speculative knowledge, the signified form specifies an intentional fundament distinct from its extramental basis, sign and the signified "make two from the point of view of entity."[153] They share a specifying form; however, mind-independent existence is abstracted from, while the form's intentional existence in knowledge must recede before apprehension to convey it as both abstract and other. Contrarily, when connatural apprehension is founded on immediate sensory contact, this "two-ness" is diminished. The signifying fundament does not convey a signified form that exists at a remove from itself, nor does it need to recede. Rather, it is continuous with the other apprehended as an individual, mind-independent subject. The concrete thing's direct causal influence evinces the form of the same thing.

Aquinas explains how this causal influence is exerted.[154] The sensed thing specifies the sense organ by means of an "immutation." This immutation is not always "natural;" it need not actuate the senses with the physical characteristics of the sensible object. The eye does not become red when it sees an apple and instead receives redness "spiritually," in a sense-specific way. Nevertheless, in every case (sight included), sensation is directly actuated by the sensible itself, whose concrete being immutes the sense organ. If a visible thing did not reflect or scatter light, it would not be seen, and if a hot surface did not transmit heat to the hand, heat could not be felt. Connatural apprehension of a present, sensible thing therefore requires the direct causal influence of what is sensed. In such cases, there is existential continuity between the signifying fundament of the sense act (the impressed species of external sense) and the signified thing. The mind-independent entity of the known directly actualizes the knower's senses and is inseparable from the sensed form.

144 *Ibid.*, 116.
145 ST i.76.1.
146 Maritain, "Creative", 152.
147 Maritain, "Approaches", 54.
148 Maritain, "Degrees", 7.
149 Maritain, "Art", 209.
150 Maritain, "Degrees", 299.
151 *Ibid.*, 125.
152 Deely, "Physiosemiosis", 33.
153 Maritain, "Degrees", 132.
154 ST i.78.3.

2.13 Artworks and Texts as Signs

The connatural apprehension of a concrete reality is not, however, limited to the physical interaction of the knower with a present sensible thing. It also includes "contact" with individual things imagined or remembered by the powers of the interior senses.[155]

Further, it includes concrete things that are rendered present artifactually, as in a painted scene, or even a scene described using words, which impinge not on the exterior senses, but the imagination.[156] Here, connatural knowledge takes place through a sign whose fundament *is* existentially separate from the signified. Man-made artifacts that work as signs to enable connatural apprehension are artworks. Maritain defines an artwork as a sign that facilitates "the perception of intelligible form in and by things of the sense."[157] Artworks qualify as "texts," and the terms are used interchangeably in this paper. In keeping with a definition adopted from Aarseth[158] and Bosman and van Wieringen, a text is "not only a written [work], such as a novel or poem, but any form of expression in which a message is communicated from a sender-entity to receiver-entity. A painting, statue, drama in a theater, architectural building, or video game can be understood as a communicative text."[159]

The immediate physical interaction of the known thing with the knower's sense faculties, then, is not the necessary or defining characteristic of connatural apprehension. What matters instead is whether the known is grasped in a non-sensible and abstract formal notion, or by means of properly sensible qualities which coincide with individual, mind-independent existence: the distinction between the definition of man as a rational animal, on the one hand, and on the other, a visual presentation or verbal description of the physical properties and behavior of a particular man. Sensible characteristics conveyed by an artifactual substitute, a textual sign or artwork, can facilitate connatural apprehension.

Maritain's application of the remote–proximate matter distinction[160] to works of art[161] helps clarify how a textual proxy can convey another substantial thing. As mentioned, in connatural knowledge, immediate sensible influence is the basis for direct awareness of the known. This awareness obtains straightforwardly when the known is physically present and itself sensed. When it is not, it cannot influence the knower's sensorium directly, so another physical thing must do so in its stead.

Artworks are signs that represent concrete realities distinct from the physical work. The properties that immute the interpretant's sensorium are conveyed not by the existence of the signified thing itself, but by that of an artifact. The work's individual mode of existence, therefore, which is distinct from the signified's, needs to fade from view, like the conceptual fundament of the speculative concept. It must, as a proxy, facilitate an epistemic leap beyond itself to the signified thing whose properties it captures. In turn, these properties manifest the concrete being the author has chosen to signify.

The distinction between these elements should be carefully noted. There are *the proximate, tangible components of the work* – the graphics, paint, or words comprising the artifact. Then there is *the remote matter the artifact conveys* – simulated behaviors, a painted or described scene capturing the visible characteristics of represented things. Finally, there are *the represented things themselves*, whose behavior is simulated, whose physical characteristics are painted, or which are described. The proximate makes the remote matter known as a physical surrogate and sign thereof. Meanwhile, in the remote matter, the terminal representational content which the artist has chosen to depict is attained – the thing(s) whose behaviors are simulated, or whose properties are portrayed in a scene. The distinction between proximate and remote matter is necessary for an artifact to function as a sign of a different concrete thing and thereby facilitate connatural knowledge.

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155 These, according to Aquinas, are common sense, imagination, the estimative and memorative powers; see ST i.78.4.

156 ST i.78.4.

157 Maritain, "Art", 98.

158 Aarseth, "Cybertext", 62.

159 Bosman and van Wieringen, "Video Games", 12.

160 This distinction is mentioned by Aquinas in the context of the sacrament of penance (ST iii.84.2) and by Grenier in discussing the syllogism ("Thomist," Vol. 1, 83).

161 Maritain, "Art", 58, 193, 246.

This distinction can be illustrated with an individual tree taken as the terminal content of an artistic representation. The remote matter of this representation would be the brown bark and green leaves of the tree in a painting; these visual elements compounded by the tree's (procedurally encoded) susceptibility to being cut down or burned in a simulation; a description of the same physical characteristics in a novel. However, these elements are not available to the interpretant of the sign directly and are instead known through the artifact at hand. The proximate matter of this artifact would be the pigment on a canvas; the pixels on a monitor rendering a tree visible in a simulation; the words on a page conveying its description in a novel.

Represented meaning is retained to varying degrees by the remote matter of different media, and some forms of remote matter rely on an intermediate valence of meaning rather than leading directly to the concrete things they transmit. A painted scene, for example, through visible qualities, more resembles the signified than descriptions conveyed by words, which descriptions are themselves signs. This will be addressed in greater detail below. All such media, insofar as the representation terminates in concrete individuals and not abstractions, facilitate connatural knowledge: the "immediate connivance" with the known through its action on the senses, whether exterior or interior, directly or through an artifactual proxy.

3 Games as Representation

This survey of the Thomist notions of signification, connatural knowledge and remote matter has equipped us to describe the generic continuity between video games and other representational media, as well as what makes them unique.

A sign is a thing which, through itself, makes another thing known; the formal causality of one being is conveyed to an interpretant, another being, using the fundament of the sign. Given the ontology articulated above, there is a signifying potency distinct from, and informed by, the signified actuality of another. This is possible in the first place owing to the real distinction in all things between act and potency, formal and material causes. In connatural signification, the semiotic fundament is inseparable from the action, upon the knower's senses, of a concrete thing, which is known either in itself or through a textual proxy.

Within this framework, simulation is uncontroversially representational: it makes known a thing other than itself, a concrete reality which is apprehended connaturally. This is true of the simulation's audiovisual elements, the sounds and images that proximately actualize the knower's senses. It is also, and more importantly, true of the simulation's remote matter: the behavior of signified things.

Murray[162] and Bogost[163] characterize this remote matter as "procedural"; Hawreliak notes that "procedurality is an established, core concept in game studies".[164] Video games represent things by modeling their behavior with procedures, that is, rules of existence and action in virtual space. The author of the game, Murray says, "writes rules for the interactor's involvement [and] the conditions under which things will happen in response to his actions."[165] Included are "all of the interactor's possible performances," the "properties of the objects and potential objects in the virtual world and the formulas for how they will relate to one another."[166] In this way, the rules or procedures *encode* behavior.[167] They specify the causality exercised by agents and received by patients in virtual space: a spectrum of possible actions, different conditions under which these can be performed and their resultant effects.

In Sekiro (Miyazaki 2019), for example, the rules governing the virtual world dictate that the player can move in three dimensions, swing a sword, jump and grapple up certain structures. If he moves over water he will sink; into fire, he will burn. If he swings his sword in proximity to a character in the world, that character will bleed. If his character is struck in turn, he will suffer damage; if he suffers enough damage, he will perish and must restart

162 Murray, "Holodeck", 347.
163 Bogost, "Persuasive", 4.
164 Hawreliak, "Multimodal", 82.
165 Murray, "Holodeck", 187.
166 *Ibid.*
167 *Ibid.*, 223.

from a checkpoint. The represented behaviors of simulated things are thus made executable by the player-interpretant, who actualizes causal possibilities specified by the rules through his play.

As such, a video game is not a non-referential or self-referential artifact; the tangible components of the work recede from apprehension as they communicate its remote matter. "No one," says Kirkpatrick, "talks about pressing [the] X, circle and triangle" buttons on their controller as they play, nor do they talk about observing the pixels and colors on a screen.[168] They talk about what their physical inputs induce within the virtual world which has been procedurally encoded. As Galloway notes, there is a distinction between "non-diegetic operator acts",[169] physical inputs on part of the player, and "diegetic operator acts", the virtual behaviors that player inputs cause "inside the imaginary world of gameplay";[170] a distinction, in our terminology, between proximate and remote matter.

This means that what Aarseth calls a "machine for the production of signs" is itself a sign, a thing which, pending player involvement, "embodies" the "complex, contingent behaviors" of represented things.[171] Only then does it produce (for passive "human consumption") the representations visible on screen. The very construct that governs tactile and sensory components of the game, the "machine that generates signs," makes known concrete realities other than itself, precisely because it procedurally "models their behaviors."[172]

3.1 The Representational Breadth and Depth of Simulation

The capacity of simulation to *embody* or *model* the signified has not, as we have mentioned, been adequately treated in video game studies. Games "simulate processes with processes",[173] we are used to reading. What exactly does this mean? How does a simulated thing inhere in the game, and how does its behavior relate to extra-textual player inputs in turn? There is an ineliminable metaphysical question that needs to be answered: is there a real resemblance between the procedural sign and what it signifies? Failing to specify the nature of this resemblance leaves open the possibility that simulative "embodiment" is purely metaphorical.

The capacity in question can be explained using Maritain's notion of "degrees of interiority,"[174] which designates a relation of the remote matter of the sign to the meaning it signifies. A medium's degree of interiority encompasses both its representational breadth, the scope of the represented content it can be informed by, as well as its representational depth, the formality according to which this content inheres in the work.

That media exhibit distinct degrees of interiority follows from the diversity of their potencies. Actuality and potency "exist in the same genus":[175] potency is a capacity for a *determinate* actuality. Thus, anything in potency is receptive to certain actualities, to the exclusion of others. A glass of water is inadequate matter for a sculpture of Apollo, inorganic compounds for rational animality, and so on.

Because their potencies differ, each medium is less or more broadly receptive of signified actuality. The characteristics of an artifact's proximate matter restrict the remote matter it can convey and, in turn, its capacity to signify. This receptive scope is what we understand as *representational breadth*. The more, says Maritain, a medium can be "laden with signification,"[176] the more it can express a self-contained universe of meaning,[177] and the "greater and richer and higher will be the possibility of delight and beauty." Thus "the beauty of a painting or a statue," where the physical artifact conveys a scene or object, is "incomparably richer than the beauty of a carpet, a Venetian glass, or an amphora," which are self-referential or minimally referential arrangements of physical

168 Kirkpatrick, "Aesthetic", 97.
169 Galloway, "Gaming Essays", 7–8, 12.
170 *Ibid.,* 7, 22.
171 Murray, "Holodeck", 88, 223.
172 Frasca, "Simulation", 224.
173 Hawreliak, "Multimodal", 82.
174 Maritain, "Art", 57.
175 Grenier, "Thomist" Vol. 2, 74.
176 Maritain, "Art", 57.
177 Maritain, "Creative", 160.

stuff.[178] Meanwhile, poetry and music, which can represent subtle meanings and complex movements, exceed sculpture and painting, which are restricted to the representation of directly perceived sensible realities.[179]

What about games? In the best cases, the complex behaviors they procedurally encode are used to communicate whole virtual worlds, with unique histories, speciation, and politics, as *Sekiro* (Miyazaki 2019), *Death Stranding* (Kojima, 2019), and *Persona 4* (Hashino 2012) demonstrate. In terms of this signified content, games exhibit a representational breadth comparable to epic fantasy and to myth.

However, they advance on these literary modes in *representational depth*: how, to use Murray's language, they encompass and transmit, "embody and execute,"[180] the same signified meaning through their remote matter. They do not use words, which, as conventional and instrumental signs, only resemble the signified by extrinsic denomination. The most fleshed out fantasy world, conveyed by words, is not present in the marks on the page, nor in the descriptions these convey, which are themselves signs indicating physical realities removed from the description. Instead, games use the complex behavior of represented things:[181] their very operations. By means of procedurally encoded behavior, simulative remote matter can communicate living, causally active ecosystems of meaning. By conveying signified things using their own operations, games adequately circumscribe their "inner states."[182] The simulated thing is "retained," as Frasca notes, in the remote matter of the text itself, as acting and reacting. It is immanent to the simulation, present in the formality of its own nature.

What does it mean to say that procedurally encoded behaviors allow the signified to be embodied? Can visual media, which capture the sensible characteristics of represented things, be said to do the same? The Thomist, with Murray, would say no. The Thomist, however, can pinpoint the metaphysical reason why procedural signs permit the player to embody the signified: there is a continuous form, a shared actuality between a thing and its operations. Behavior, which the simulation captures, functions for connatural apprehension as a natural and formal (not conventional and instrumental) sign of the thing it makes known to the player.

Sensible characteristics and operations relate differently to the beings from which they derive. Maritain explains that things in the physical world are not known by human beings in their essences or from the inside out.[183] Instead, they are known insofar as their operations and sensible properties impact the sensorium of the knower, thereby expressing the formal causality of the known thing: its nature or essence, what it is.[184] Sensible properties play an instrumental role, but operations are the expressive means par excellence.

This, Aquinas explains, is because "form is the principle of action," and "everything acts in keeping with its species."[185] The essence and behavior of a thing share a common formality, since this behavior is an application of what the thing is to a context outside itself.[186] This is not, ontologically speaking, to conflate operations and essences. In composite, changing things, operations are [proper] accidents.[187] It is, rather, to observe that formal-causal sameness prevails between an essence and its operations. The essence of a thing preconditions and specifies its action: how it can actuate potencies in its environment and exert influence on the world. This ensures a knowable continuity between a thing's nature and the behaviors thereby determined. Operations, Maritain says, are "intelligible manifestations" of form, its unfolding and externalization.[188] Even operations that manifest only the generic and not the specific difference of a being, as living and sensing manifest the animality rather than the rationality of man, nonetheless have the essence as their first principle and proceed necessarily from it.[189] To know a thing's operations is the surest way to know it.

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178 Maritain, "Art", 57.
179 Maritain, "Creative", 160.
180 Murray, "Holodeck", 223.
181 *Ibid*., 88, 223.
182 *Ibid*., 278.
183 Maritain, "Degrees", 220–221.
184 *Ibid*., 125n.
185 CG ii.49.5.
186 *Ibid*., ii.57.9.
187 Maritain, "Preface", 112–114. Thomists hold that action is identical to essence in God alone: see CG i.87.4, i.92.2.
188 Maritain, "Degrees", 221n.
189 Maritain, "Introduction", 142, 146.

Conversely, clusters of sensible properties, colors, shapes and the like, are "common accidents."[190] They depend on extra-essential material conditions and have no determinate relation to any nature or individual.[191] Beings of many species and genera can be orange or tall (common accidents), whereas only a rational animal can sense, laugh or understand (operations which directly express animality or rationality). Common accidents act as natural but merely instrumental signs. They allow what Murray calls the "observation" of the entities they characterize.[192] This observation, focused on external properties, is not sufficient to know a thing definitively. These properties may be what the knower encounters first, and may even be necessary to perceive its operations, but they fail to adequately communicate the formal causality or whatness of a thing. While they naturally inhere in the known, they do not reduplicate and directly manifest its nature, as operations do. An epistemic leap beyond common accidents is required to attain knowledge of the thing whose accidents they are.

This evinces the special representational depth of simulation, which, in its remote matter, retains the behavior of represented things. Due to this retention, the actuality of the signified inheres most adequately in the signifying potency of a video game. Other media describe or enable observation; the representation lacks formal-causal continuity with the signified. The thing represented is either not immanent to the text at all (the written word), or its common accidents alone are present (visual media). The representational breadth of other media, the scope of meaning they can receive, may be the same, but the mode of representation, the way the text circumscribes the signified, is not. In capturing its behavior, the simulation adequately encapsulates, by means of its operations, the very nature of the thing signified. Existing accounts of procedural representation, including those of Murray and Bogost, lack this precise account of the relation between signified things and the encoded behaviors used to represent them.

3.2 Games Overcome the Knower–Known Distinction

There is more to consider: how the interpretant relates to the sign. Games signify using operations, and operations are performed by an agent.

Though they convey the known thing connaturally, the subject–object distinction is sustained by non-procedural media, where the signifying fundament is a concrete artifact extant in distinction from the knower. The viewer of a painting or film knows what he sees by the action of the artifact's colors on his sense organs, the reader, insofar as conventional signs make present to his imagination a concrete reality distinct from himself. The interpretant can only grasp the representation "transobjectively," which, in Maritain's usage, means in opposition to the subject-vantage of the reader or viewer.[193] This is equally true of speculative knowledge; though an abstracted form has for its semiotic fundament the intentional act of the knower, this fundament is transparent. The abstraction is known precisely insofar as it is *other*, an object, a valence of meaning distinct from the knower's subjectivity. In these cases, the components of signification remain distinct: knower from signified from sign.

This is not so in games, where, as an implication of their representational depth, a unique relationship between the interpretant and sign obtains. This uniqueness was already prefigured for us, though at a different juncture of the semiotic triad. When a present sensible reality "immutes" the knower's senses, it delivers *its own* form to be apprehended connaturally. The known thing and sign no longer "make two from the point of view of entity."[194] There is an existential confluence of the signifying fundament and signified meaning. The latter is known by means of its own mind-independent being, which does not recede from apprehension and instead permeates the formality signified.

In simulative representation, the being of the player serves as the signifying fundament. Simulation, insofar as it conveys meaning through operations, requires the special involvement of an operator. It is powered by

190 Maritain, "Degrees", 220.
191 Maritain, "Introduction", 151.
192 Murray, "Holodeck", 223.
193 Maritain, "Degrees", 99.
194 *Ibid*., 132.

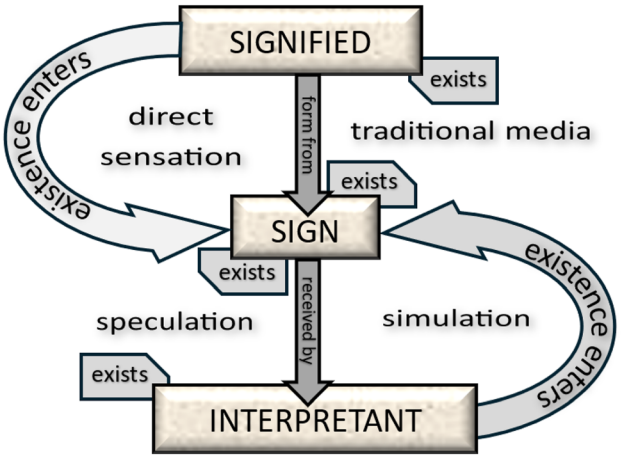

Figure 1: The fundament of signification.

interpretant action[195] or agency.[196] The player is required to existentiate the representation by performing its contents: he enactsthe spectrum of behaviors that the game proccedrually encodes. We will call this *representational intimacy*. Not only do games embody the operations of what they simulate, they accomplish this embodiment in and through the interpretant's own existence. Unlike in speculative knowledge, the act of the knower cannot fade from view. It permeates simulated meaning, becoming integral to its apprehension. The sign and interpretant are not two discrete entities. Instead, the player himself, as he personally exists and operates, is the potency actuated by signified form, the stuff it is imposed upon. This form cannot relate to him as a distinct object to a knowing subject. Reversing Maritain's language, simulated meaning can only be received *transsubjectively*, in the first person: known not as other, but insofar as the interpretant knows and is himself.

So, the interpretant of the simulation and the remote matter of the sign, the player and the retained operations of the signified, must cohere. The player plays by subjectively performing, not merely objectifying, a signified thing; he does this by enacting the procedurally encoded behavior of the signified in the first person. The signified thing's operations, which circumscribe its nature, must be imposed on the player himself, not a semiotic fundament he observes from without, or which is not apprehended at all. Resultantly, the interpretant penetrates the sign more intimately than in any other medium. A "reader can identify strongly with a certain character in a book or film, but cannot control [embody, exemplify] that character,"[197] nor can he conduct "extensive experimentation" on the representation.[198]

Thus, games are especially developed and receptive signifying media: they exhibit unique semiotic depth and intimacy. They capture the operations of signified things, enabling the representation of content as broad as in film or literature, but in terms of that content's own formal causality. Relatedly, they convey this content through the interpretant's own existence and action, allowing access to signified form circuitously, insofar as the player knows himself, "not as object but as subject."[199] The player realizes, in a novel and unprecedented way, the identity with the other as other that characterizes all knowledge (Fig. 1).

4 Back to Game Studies

A game, then, is a thing that, as a signifying fundament, represents or makes known a signified actuality beyond itself. As an artwork, it signifies connaturally: it does not represent the known in abstraction from concrete,

195 Galloway, "Gaming Essays", 2–8.
196 Murray, "Holodeck", 188–189.
197 Bosman and van Wieringen, "Video Games", 12–13.
198 Folkerts, "Playing", 13.
199 Maritain, "Existence", 57.

sensible reality, but by means of sensible concreteness. Amongst such representational media, video games are unique both for their representational depth and intimacy. They circumscribe the formal causality of the signified in terms of its own behavior, rather than its common accidents. Since this behavior, qua behavior, must be subjectively embodied by the player, games diminish the existential difference between the interpretant and fundament of the sign.

Now we will apply these insights to the claims of Frasca and Aarseth.

4.1 Point 1: Simulation is Semiotic

To begin with, Frasca's denial of the semiotic capacity of games is unfounded. He associates representation with a restricted type of signifying potency, that is, the representation of "generally audiovisual characteristics" in a determinate order.[200] Games, he opines, deprive authors of the ability to convey meaning "through sequences of causes and effects,"[201] so they are essentially different from other representational media.

However, as he himself concedes, simulation "retains the behavior of the object," the operations of the simulated thing. These operations are eminently causal; a procedurally encoded spectrum of behavior exists precisely to structure in-game causality, determining which actions are possible and what effects they will produce. Such causal sequences must be authorially specified in advance, as will be argued below. Through these predetermined sequences of retained behavior and their outcomes, a virtual world is communicated to the player.

The representational character of simulation follows directly. Signification occurs when one thing is made known to an interpretant through another thing. Simulation makes something known by retaining its behavior, that is, by procedurally encoding its operations and effects. In doing so, it conveys not merely audiovisual qualities or accidents, but the formal causality of the simulated thing. Since through one thing (the simulation), another thing (the simulated reality) is made known to an interpretant, representation is accomplished.

Consequently, the opposition Frasca draws between simulation and signification cannot be sustained. Nor can the purported antithesis between causal sequence and representation. Simulations operate precisely by encoding causal relations, and it is through these relations that virtual objects are signified.

4.2 Point 2a: All Signs are "Ergodic"

Secondly, on the Thomist account, Aarseth exaggerates the uniqueness of player participation and the interaction of sign, signified, and interpretant in the cybertext. *All signs* are this way, "interpreted according to what they are for me as an animal of a certain species."[202] There is a ubiquitous "cybernetic interplay" between the triadic elements of signification, which Aarseth himself seems to admit.[203]

Indeed, whatever the proportion of physical, intentional or other meaning "interwoven" within it,[204] no sign is "complete without an operator" to interpret its meaning. Signification, as distinct from brute physical existence, includes the mediate, relational position of the (material fundament of the) sign relative to both the signified and interpretant,[205] who plays an active role in unfolding its meaning. Participation in a game does require an unprecedented union of knower and known. As Aarseth remarks, "the performance of the reader takes place in his head," at a remove from signified meaning, while the user of a cybertext performs in an "extranoematic sense," subjectively and causally integrating with the signifying fundament of the text.[206] However, this is

200 Frasca, "Simulation", 223–224.
201 *Ibid.*, p. 229.
202 Deely, "Intentionality", 149.
203 Aarseth, "Cybertext", p. 55.
204 Deely, "Intentionality", 52.
205 *Ibid.*, 116–118.
206 Aarseth, "Cybertext", 1.

congruent with the nature of signs in a wide sense, where meaning appears to, and must be actively unfolded by, an interpretant.

So, against Aarseth,[207] all signs involve what he attributes to cybertexts: the active and nontrivial exploration of their respective interpretants. Indeed, every interpretant must change the state of the sign before it from "unsolved" to "solved"[208] while perceiving one thing (the signified formal valence) through another (the signifying material cause or fundament). Recognizing the content of a sign apparent to sense perception requires, says Deely, the "transformation by the intellect's own activity" of sensible qualities into the intelligible content they convey; sense impressions are "interpreted or completed" in the course of attaining their meaning.[209] Against Frasca,[210] all signs involve "manipulation rules" and require that the interpretant act in a certain way, in pursuit of a goal, to penetrate to the signified. This is unavoidable if fundament and terminus, material and formal valence of the sign, are distinct, if the relation between them is not entirely whimsical, and if the meaning conveyed can vary between interpretants. Active participation on the part of an appropriate interpretant, correctly applied, is required to attain the signified through the signifying material cause.

Deely provides a helpful example.[211] A dinosaur bone is discovered in the dust. The perceiver or interpretant of the bone may be a non-human animal, who perceives the bone as excellent to chew on. It may be an ignorant human, who perceives the bone as an excellent club. To understand the bone as the bone of a dinosaur (and not as a chew toy or instrument of war), to perceive in it the entity to which it belonged, requires a degree of paleontological awareness in the human observer, in addition to his human constitution, which is not something all potential observers share. The bone was the bone of a dinosaur all along; the Thomist would classify it as a natural and instrumental sign thereof. But for this meaning to be adequately signified by it, the bone must be objectified by a sufficiently knowledgeable human observer.

As much as the dinosaur bone, conventional signs, such as those comprising written language, exhibit the "rules of use" which Aarseth appears to think are unique to cybertexts: rules which "automatically distinguish between successful and unsuccessful users."[212] The effort exerted by a literate human reader and an illiterate animal or gust of wind in respect of the same text clearly evince this. It appears to us, then, that signs in general are "ergodic" and "require nontrivial effort" to traverse.[213] Even mere animal awareness of the physical environment objectifies known meaning "otherwise than it exists either in sensation or independently of awareness," in a way that is bound up with the experiential significance peculiar to the knowing creature (desirability, threat, neutrality).[214]

It should be emphasized, with Deely, that there is a constant interplay between the elements of the sign: material fundament, formal terminus, interpretant. Each sign ___

makes us aware not merely of something other than itself, but of something more than we were previously aware of, and becomes in turn an object generating a new interpretant and requiring yet a further sign, ad infinitum from the perspective of finite consciousness.___[215] Not only games, then, but all signs are "produced and consumed," and function as a "machinic" basis for the ceaseless generation of further meanings. They are, each and all, cybernetic systems or feedback loops. This implies that, even where the sequence and order of signs is rigidly fixed (as in traditional narrative media), the reader must "explore actively and nontrivially to make sense" of the representation. If it is false to hold that the physical perception of a body part is sufficient to make known the body that it came from, it is false to hold with Aarseth that the interpretant's progress through any text neatly overlaps with the narration or the physical organization of conventional signs, and that "narrative discourse

207 *Ibid.*, 125.
208 *Ibid.*, 181.
209 Deely, "Intentionality", 57.
210 Frasca, "Simulation", 231.
211 Deely, "Intentionality", 195.
212 Aarseth, "Cybertext", 179.
213 *Ibid.*, 1.
214 Deely, "Intentionality", 55.
215 Deely, "Physiosemiosis", 33.

constitutes a single plane of communication."[216] The unfolding of actual meaning from the signifying potencies that receive it can take place wholly apart from the temporal or physical act of perception and initial signification. Something read or viewed may be impenetrable in its full meaning to a given observer; an obscure meaning might be grasped long after the act of reading or watching the physical work; divergent meanings behind conventional signs might be extracted by diverse interpretants; or initial exposure to the work might not coincide with penetration of its conventional signification. The course of communication is always variegated because it is interpretant-dependent. Games, we posit, are an *advanced case* of the shifting interrelation of machinic, material components, formal meanings and human interpretants; but all representation involves nontrivial and active extraction of meaning.

4.3 Point 2b: The Distinguishing Characteristics of Simulation

If this is so, what claims to uniqueness do games have as a medium? This is clarified by the role of proximate matter in all signs, and the special representational depth of video games.

The physical artifact which the player of a game interacts with is as much a conventional sign as the written word; button presses and even pixels on a screen relate to procedurally encoded meaning due to human designation, not to any natural affinity or resemblance (as obtains between the concept, as formal sign, and what is conceptualized; or the bone and the animal which it belonged to; or operations and the nature they express). Different "simauthors," as Frasca calls them,[217] can devise distinct input schemes and technological means to represent the same virtual behavior. These conventional signs are the tangible element of the simulation, at hand and physically accessible to the interpretant. Their correspondence with the content that the game's author intends to represent depends on authorial fiat and the understanding of the player. "The constitution of virtual objects," Bucchioni and Declos remark, "requires something else than the mere presence of digital objects. Mental states or propositional attitudes must feature in the favourable circumstances required for the constitution of virtual objects."[218] The resemblance between player input and audiovisual information, on the one hand, and simulated behavior in the virtual world, on the other, obtains only through the player's successful interpretation of authorial convention. A gesture of "taking as" is necessary to bridge the gap between these two elements. In this sense, we agree with Bogost that works of procedural expression "must entail" interpretation, and that their meaning is not intrinsic to the physical artifact.[219]

As described in Section 2.12, Maritain calls the tangible aspects of the artwork which the interpretant directly interacts with its "proximate matter," as distinguished from the sensible qualities of represented things that these physical components make known (the "remote" matter). Think of the difference between a canvas with pigment and the physical characteristics painted; a television screen and the scenes depicted; pixels and controller inputs, and behaviors in a virtual space. Nontrivial interpretative effort, which not all interpretants can exert, is required to penetrate to remote matter through the proximate elements of the representation that are directly accessible to the interpretant. This is true of games as much as of "narrative media" like books and films. Cybertexts are not unique for somehow obviating the need to actively interpret proximate textual matter. They do not magically and transparently unite the reader to the representation without a mediating physical artifact.

Games are unique for their remote matter, which more adequately encapsulates the signified, whose own formality, via simulated operations, is immanent to the text. As we have seen, they exhibit *representational depth* that other media lack; the signifying potency bears a metaphysical likeness to the signified actuality, with the former reduplicating the nature of the latter. The medium's unique remote matter is a function of its intricate and reactive proximate matter: computers enable the procedural "embodiment" of complex behaviors (more on this below). In turn, these circumscribe the natures of things whose behaviors they are. The behavior simulated "on

216 Aarseth, "Cybertext", 125.
217 Frasca, "Simulation", 230.
218 Bucchioni and Declos, "Constitution", 13.
219 Bogost, "Persuasive", 5.

the other side" of monitors and input devices, thanks to the formal-causal continuity between operations and nature, share (not merely conventionally) in the likeness, the selfsame actuality, of the represented content. The proximate matter must be actively interpreted as with other media, but its capacity for executing rules facilitates the remote matter's enhanced resemblance to the signified.

This cannot be said of the meaning of words, nor of common accidents which visual media capture. Words, as they are accessible to a reader, terminate in further signs: descriptions and linguistic constructions are the remote matter beyond the tangible components of the text. The marks on a page (as much as verbal utterances, if the text were spoken) carry the reader beyond the textual artifact. From here, on the "other side" of this proximate matter, nominal articulations await, and a further leap is then required to advance to the things described. Thus, the represented content of the work is here most removed from the text. The sign is doubly conventional.

Visual media transmit common accidents of the signified in a way that is directly perceptible to a viewer. Something physically shared with the things represented is present in the work beyond its proximate matter. But these common accidents, as remote matter, relate indeterminately to signified things; they do not present the signified in the terms of its own formal causality, and can inhere indifferently in various subjects. Recall the example of physical dimensions and color. These accidents function as instrumental signs. The common accidents, like brute proximate matter, must themselves be actively interpreted to access represented meaning.

Simulation, meanwhile, captures the operations of the signified. As such, the remote matter of the text directly manifests the signified's formal causality: between operations and the nature operating, there is a shared actuality. Simulation can exhibit this representational depth thanks to its responsive and non-static proximate matter. The computer, which enables procedural representation, was, says Murray, "designed not to carry static information" but to "embody" the "exact or general rules of behavior that describe any process, from running payroll to flying an airplane."[220] This is the basis of the "increase in representational power" afforded by games, which we "need time to get used to."[221] Operations are, as noted above, "intelligible manifestations" of the operating thing, applications of its whatness or nature. Static proximate matter cannot embody them, though it may enable their observation from without (as in film). The actuality of a represented being, in terms of its operations, is directly "behind" the tangible computer interface, immanent to the procedures it executes. No further translation, as from descriptions to the thing described, or common accidents to a determinate formal cause, is required.

The above considerations pertain to the relation of the signified to the sign. The representational depth of simulation also implies special *representational intimacy*. Games are unique because the interpretant existentially coheres with the fundament of signification: a player must subjectively enact the sign's remote matter, the procedurally encoded behaviors of the signified. In a simulation, technological control interfaces "extend the agency of a human interactor into virtual space," linking his "movements with those of [his] surrogate body" and allowing him to act within the representation.[222] The player of the game and simulated meaning "beyond the screen" coalesce; player agency becomes the signifying fundament for virtual behaviors and, through them, the very formal causality of signified beings. The representational depth and intimacy of games are intertwined; interpretant agency is presupposed by a medium that communicates meaning using operations.

Here our account becomes precise: all signs involve the active interpretation of the proximate, physical qualities of an artifact. In this, games are like other representational media. However, only games involve the interpretant's active participation in the remote matter of the text, which remote matter reduplicates the signified's own nature. This observation meaningfully supplements existing treatments of procedural representation by clarifying how simulation embodies meaning. Having penetrated the proximate matter of the work, the player attains the nature of the signified as such, not conventionally rendered, nor in common accidents; he attains it in the first person, by means of his own subjective involvement and not as an object distinct from

220 Murray, "Holodeck", 88.

221 *Ibid.*, 103.

222 Whistance-Smith, "Expressive", 65.

himself. Representational depth and intimacy make games unique, even as they share with other media the requirement of ergodic engagement with proximate matter.

So, if Aarseth sought to erect a categorical divide between games and traditional narrative media by pointing to the player's active interpretation of the former, and if Frasca went further by positing "essentially different" mechanisms behind representation and simulation,[223] both positions are obviated, and ambiguities surrounding procedural representation dissolved, by a metaphysically informed account of signification. Nevertheless, their intuition of distinctiveness is retained. Games do what other media do – represent meaning; they involve what all media involve – active interpretation by a "reader" of the proximate physical characteristics of the work. They are unique in that they integrate the interpretant's existence into the fundament of signification while distinctively ingraining the formal causality or nature of the signified in the text itself. In this, games discharge a function that is in line with traditional representation. The difference, we conclude, is one of degree, not essential type.

4.4 Point 3: Players are Not Authors

Thirdly, note how our interpretive scheme, while recognizing the interplay between them, imposes clarity on the roles of player and author. The player can manipulate the video game; but he is not the author of its meaning. He contributes, with his agency, to the potency upon which this meaning is imposed. He possesses what the Thomists call "freedom of exercise," or of efficient causality: the freedom, as a participant in the game's remote matter, to act or not. This is the freedom possessed by all intellectual creatures with free will. It is distinguished from "freedom of specification" or [of] formal causality: the freedom to determine [formal and final causes], what things are, and what action follows from their natures.[224] Since, as we have seen, form is the principle of action, things lack such freedom; their agency is preconditioned by what they are. In the context of a game the freedom of specification possessed by the author alone determines the player's identity in the virtual world, his spectrum of possible actions, the procedures which encode virtual entities, and possible outcomes within the simulation. The player does not have this freedom, just as, in the ontological order, free agents (who can choose to act) cannot choose what they are or what kind of action they can produce. The player is free in relation to the act of playing or not-playing, but (barring external circumvention) he cannot determine the meaning signified by his play.

Thus, in *Sekiro* (Miyazaki 2019), the player has freedom of exercise over whether to play or not, carry certain items, or traverse a level at his leisure. He cannot play as another character, inhabit Japan in different historical periods, or progress through the game without violence. True, some games have branching narratives, affording players a broader spectrum of playable action, and possibly even enabling them to design a character. Despite this, whatever latitude is afforded a player, the crucial fact is the asymmetrical determination of his agency by the formal causality of the game – as *determined solely by the author of the work*. In-game agency, as Bosman and van Wieringen note, is "very much confined by what the [designer] allows the player to do"; there is a "theoretically calculable and practically containable number" of ways in which the player can act in the virtual world.[225] Every simulated behavior available for the player to enact is "selectively included" by the author in advance, in order "to produce a desired expressive end."[226]

Players may be free, says Declos, to "engage in a host of in-game activities in the order of their choice," ensuring that "each playing will be practically unique in terms of the fictional actions and events depicted on the screen."[227] But player agency is in potency to, and only discharged within, a preordained order of specification. In all cases, the player enacts a spectrum of playable behaviors engineered by the simauthor for the purpose of representing the virtual world. Even in an "extremely free" sandbox game that "seems to suggest absolute player freedom, the practicality of the medium prescribes absolute freedom is impossible"; only "relative freedom exists within the limits of available technology and – more importantly – within the authorial control" of the

223 "Frasca," "Simulation", 222.
224 Garrigou-Lagrange, "God" Vol. 2, 261.
225 Bosman and van Wieringen, "Video Games", 81.
226 Bogost, "Persuasive", 45.
227 Declos, "Ontology", 3.

designer.[228] Against Frasca, the simauthor *will* "be sure of the exact final sequence of events and results" within the simulation whose specification he controls;[229] he himself is the one responsible for predetermining them. In games, as much as in other media, alterability of the text and the agency of the interpretant are bound by authorial control over the contents of the representation.

It follows that there is not, as Frasca posits, an *essential* difference in manipulability between simulation and other media that would undermine the representational capacity of video games. There is, instead, a difference of degree. The simauthor can (though he need not) afford more opportunities for manipulation to the player (who can, for example, move his character about the virtual world at his own pace) than are available to a viewer of a film, whose sole manipulation is of conventional signs in accessing the content of the representation. In *Sekiro* (Miyazaki 2019), the player can explore Ashina Castle in any direction and for as long as he wants, whereas a film directs the viewer's gaze to elements of a scene for a static duration. Even so, to advance the story and progress through the text, the player must still meet fixed conditions: however long he takes to get there, and by whatever path, he must travel to the top of the castle and defeat Genichiro Ashina, the area boss, to advance the story. The distinction between signified actuality and signifying potentiality holds in both cases, across representational forms. This distinction allows us to distinguish between freedom of exercise and specification, and to locate manipulability within an order of specification predetermined by the author of the text.

5 Conclusions

We have seen how the subjectivity of the player enters the simulation's representational potency: the interpretant to whom the meaning of the sign appears coalesces with the signifying fundament of meaning. This is because simulation represents the signified through its procedurally encoded operations, which the player must enact. Consequently, the signified inheres in the simulation, and even in the player himself, according to its own formal causality, rather than in its common accidents or by extrinsic denomination.

The Thomist metaphysics of act and potency, then, furnishes an explanation of the semiotic nature of video games. It supplements extant accounts of procedural representation by moving beyond metaphor to explain the likeness between simulative sign and signified, dissolving ambiguities about how games embody meaning. Its founding principle is this: neither act nor potency, formal nor material causes fully account for anything, much less any text. Each being, and indeed sign, is a composite of form and matter, actual and potential principles.

Thus, games accomplish representation. A game is a signifying potency through which a signified actuality is known by way of its embodied operations. Insofar as a sign makes known something beyond itself, simulation, which retains the operations of the signified, is not opposed to representation. Rather, the formal-causal continuity implied by this retention shows that video games constitute a particularly developed phase thereof – for the very reason that Frasca and Aarseth denied they are representational.

Instead of games being better without stories, storytellers, it appears, are better off for the existence of video games. When the tension between simulation and representation is resolved in metaphysical terms, the reason for telling a story or transmitting meaning through video games becomes clear: new vistas of expressive potential and audience participation are opened.

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228 Bosman & van Wieringen, "Video Games", 81.
229 Frasca, "Simulation", 229.

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