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To the Center of Nowhere: Deep Mapping Digital Games' Paratextual Geographies

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Abstract:	<p>Games are possibility spaces and the experiential circumstances generated by the execution of digital game code are paratextual thresholds of transition and transaction. If games are paratexts, game design is a form of modelling; game-playing is a form of transactional mapping; and the critical engagement with games is best approached via a modified version of "deep mapping," a digital humanities process indebted to textual studies approaches. This paper will explore the paratextual idea of deep mapping in relation to Hello Games' constantly evolving <i>No Man's Sky</i>, and <i>The C64</i>, a full-sized reissue of Commodore 64 hardware by Retro Games Ltd. Overall, the use of deep mapping to comprehend the paratextual thresholds of games validates the importance of textual studies approaches, acknowledging the complex relationship between physicality and virtuality while also reconfirming that games require methodologies that move beyond reading paradigms and the exclusive framework of textuality.</p>

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Introduction

The short history of video game studies is cratered with efforts to adaptively utilize methods and vocabularies developed for the critical exploration of other media forms, such as literary studies, cinema studies, architecture, and theories of theatre and performance. While such attempts can produce useful understandings of the ways that video games simultaneously incorporate and support multimedia and multimodal perspectives, functions, and operations, they also introduce limited and limiting approaches that problematize a full and complex understanding of these experiences. However, textual studies—itsself a broad, multi-disciplinary approach to manuscript, print, and digital multimedia texts—initially appears better suited to a consideration of video game media than less inclusive methodologies.

Before applying such ideas to video games, though, the fundamental differences between such game experiences and print-based storytelling need to be parsed. Digital games are possibility spaces in which a reactive system responds to users' actions within a framework of play defined by rule-based affordances and constraints. While some game systems generate linear, predictable, and similar experiences for all gamers—akin to interactive digitally-experienced visual novels—many games offer more complex environmental choices that distinguish each playthrough as unique. Even early games like 1980's *Rogue*, which offers a procedurally generated dungeon area, opponents, and rewards, allows players to choose their own pathways through such an environment. The experience of such games is unstable and unpredictable, not pre-rendered, materialized, or even experientially repeatable in the ways that a typical print-based novel can be read. While a novel's rich and variable possibility field of interpretative difference is enabled by individual interpretations calibrated by unique subjective contexts, along

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3 with the inherent potential of figurative and intertextual complexities, most printed novels'
4 words are specifically and inflexibly ordered on each page, producing a common denominator
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6 encounter with and singular pathway through the linguistic code that generates the story. Simply
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8 put, while readers creatively and imaginatively respond to a novel's constructive linguistic
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10 prompts, novels' linguistic codes do not generate an executable experience that either directly
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12 responds to specific reader input or creatively disrupts linear reading experiences (save for
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14 "Choose Your Own Adventure-type books and other print-based literary experiments such as
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16 Raymond Queneau's *Cent mille milliards de poèmes* and Mark Z. Danielewski's *Only*
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18 *Revolutions*). This distinguishes digital games from novels in that a game's compiled code
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20 operates behind the scenes, generating an emergent multimedia interface for players who will
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22 never interact directly with this source code.
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30 **Theoretical foundations: text and paratext**

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32 This essential difference between print-based storytelling traditions and digital game-based
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34 interactive experiences problematizes the ways that the concept of "paratext" (which emerged
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36 from literary critical perspectives) can be considered and applied here. To provide a foundation
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38 for the discussion to follow, it will be useful to braid (and hack) two usually-incompatible
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40 perspectives on "text" to more effectively function within the complex media intersections that
41
42 constitute digital game experiences.
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47 Gregory Currie (1991), seems to have overlooked (or simply refused to acknowledge) Roland
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49 Barthes' (1977) conceptualization of "text" (discussed below) when Currie differentiates "work"
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51 from "text" by defining a "work" as not merely the canvas, score or text, but rather that action
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53 which resulted in their production, then moves on to delineate "text" as a particular iteration or
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3 witness of a work. Focusing on written language, Currie also exclusively and reductively
4 associates “text” with a word sequence (p. 327). For Currie, then, a “text” is stable and
5
6 identifiable, constituting a particular version or edition of manifested creative work. This
7
8 locatable and material specificity allows text to be perceived as a self-contained entity that can
9
10 then be hierarchically centralized, prioritized, and valued. Currie’s idea of text reinforces Gérard
11
12 Genette’s (1987) theory of paratextuality, which narrowly presents text as a “long sequence of
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14 verbal statements that are more or less endowed with significance” (p. 1) and which asserts
15
16 paratextual apparatuses as modes of presentation for the text, as means of making the text present
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18 in the world (his example is that paratext or “accompanying productions” related to the text are
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20 what allow a text to become a book). Genette’s theory posits paratexts as thresholds between
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22 “inside and outside” (p. 2), as a type of transitional and transactional interface between the self-
23
24 contained “inside” of a text and a larger “outside,” “off-text” zone. This model, like Currie’s, is a
25
26 conservative type of post-structuralism, attempting to decentralize the idea of “text”, but in doing
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28 so problematically reinforcing text as some kind of powerful ruling hub over subordinate, but
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30 authoritative paratexts that have some kind of privileged access to and influence on the
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32 emanations of that still-dominant textual power, akin to an essential advisor/ambassador between
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34 king and commoners.
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43 Conceptually, and politically, this is awkward and anachronistically troublesome for the feudal
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45 ways that it structures power relations, for its narrow definition of text that emphasizes linguistic
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47 codes while neglecting bibliographic codes, and in its perception of tangible textuality as
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49 somehow stable, vital, and coherent (yet inaccessible without its paratextual “lords”). Roland
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51 Barthes’ (1977) essay “From Work to Text” (published originally in French in 1971), reverses
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53 the above terminology, associating “work” with a definitive, tangible, commodifiable, and
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3 concrete object, and defining “text” as an experience of social play and co-creation, a networked
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5 web of signification and intertextuality, a process and methodological field rather than an act of
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7 production or consumption. This dematerialized, experiential idea of textuality, while still
8
9 linguistically situated for Barthes, achieves the same kind of decentralization that Genette
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11 attempts through his refocusing on paratextuality, but avoids Genette’s reaffirmation of textual
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13 dominance. As a result, Barthes’ idea of “text” already effectively constitutes the threshold zone
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15 of transition and transaction that Genette associates with paratext, aligning both concepts with
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17 the multimedia and multimodal interactions involved in the experience of digital games.
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22 This exploration of terminological possibility is necessary because the word “paratext” carries a
23
24 significant amount of critical baggage, and introducing it to address a problem in video game
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26 studies without fully accounting for the potential harms that it can do to this theoretical
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28 environment is irresponsible. As well, given that the definition of “text” implied by Genette
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30 relates more to Currie’s idea of a tangible, consumable edition than to Barthes’ idea of text as a
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32 field, process, and experiential activity, uncritically employing “paratext” inherently reinforces
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34 text-centric, discipline-specific politics in the midst of a unique opportunity to explore
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36 differently-oriented paradigms. Games are not texts in the sense that Currie and Genette
37
38 conceptualize texts---some games are only partly linguistic when their code is executed, and
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40 game experiences themselves are not tangible objects. Games are not word sequences or verbal
41
42 statements. They consist of source code compiled into machine language and executed by a
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44 computer processor. Their production and consumption are quite different from the book
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46 publishing industry that informed these terms and ideas. While games more usefully align with
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48 Barthes’ fluid, social understanding of text and Genette’s conception of paratextual thresholds,
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50 the persistence of “text” as a foundational term for game studies’ investigations limits the
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3 potential for a broader understanding of digital game experiences. This is not just a case of
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5 splitting hairs in relation to terminological difference---it's a matter of both establishing critical
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7 clarity and uncovering some of the inherent politics that migrate through such conceptual
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9 associations.
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11 12 13 14 **Games as paratexts** 15

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17 Mia Consalvo (2017) and Steven Jones (2008) have already modded and adapted the theoretical
18
19 function of the idea of paratextuality to video game studies in their respective works “When
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21 paratexts become texts: de-centering the game-as-text” and *The Meaning of Video Games*.
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24 Consalvo deconstructs the idea of center and margin, recognizing that games can function as
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26 central text or as marginal paratext depending on the research situation. Ultimately, she makes
27
28 the case for replacing the unhelpful idea of central texts with a broader conceptualization of the
29
30 “relatedness, interconnectedness, and contingent nature” of popular culture texts. Steven Jones
31
32 takes this further, acknowledging that the full potential of video games
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35 always extends outward from the game itself into the real social world, the “media
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37 ecology,” where technologies or expressions combine with corporate interests and
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39 audience demands, and the constructed “universe” of a game, including its paratextual
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41 materials (packaging, game guides, collectible objects, online stats), narrative elements,
42
43 story and back-story, and imagined gameworld. It doesn't matter if any particular player is
44
45 aware of every aspect of this extended “game;” it's a collective and potential reality, a
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47 transmedia, multidimensional grid of possibilities surrounding any given game. (p. 10)
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50 Games are thus part of a social, paratextual field of meaning (p. 9). However, because a “video
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52 game...is a system designed such that it only fulfills its potential for meaning when its specific
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54 technical features—from the code, to the interface, to the ruleset, to the player stats—are
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56 expressed as the game makes its way out into the world, when it's played,” (p. 9) games as
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58 systems are less central, material texts than intangible, paratextual “thresholds of transition and
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60 transaction” (Genette, 1997, p. 2). A video game is thus a “possibility space” (Jones, 2008, p. 15,

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3 quoting Will Wright), an intangible potential experience surrounded by both industry texts
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5 (trailers, reviews, walkthroughs, game guides) and fan-based extensions (fan fiction, wikis,
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7 clubs, etc.). Instead of serving as “paratexts” to a central “text”, though, these extensions
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9 materially and textually perpetuate anticipation and nostalgia, establishing a tangible “textual”
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11 frame around the fluid and subjective experience potential of a game.
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16 **Deep mapping as a critical approach to game** 17 **paratextuality**

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20 If games are less textual (in the ways that Currie and Genette define “text”) and more
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22 insubstantially and dynamically paratextual in nature, and game studies involves the exploration
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24 of their labyrinthine geographies as well as a cartographic consideration of the broader
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26 circumference of their social architectures, then our overall critical interaction with games can be
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28 understood as a process of complex mapping, not reading. The design of games is a form of
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30 modelling; the playing of games is a form of transactional and emergent mapping between
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32 software, player, and player networks; and the critical engagement with games is best
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34 approached via a modified version of “deep mapping,” a Digital Humanities process indebted to
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36 textual studies approaches.
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42 Since mapping is a process entangled in structures of power, politics, and history, its application
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44 as a mode of critical engagement and exchange with mediated cultural experiences needs to be
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46 interrogated. Traditional forms of cartography are never innocent: they involve much more than
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48 just processes of imaging and imagining, mediating landscapes into functional diagrams that
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50 highlight and provoke particular forms of traversal. At its most benign level, mapping is a
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52 process of knowledge and mastery, of discovery motivated and moderated by the desire for
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3 control and dominance. However, this action is also always a form of violence, a curational
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5 deformation and distortion of the possibility space of the landscape that prioritizes and excludes
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7 while politically serving and reinforcing dominant fictions. This reductive flattening of the
8
9 dimensionality and complexity of such environments replaces dynamic and unpredictable
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11 experience with a pragmatic and predictable imaginary. However, as David Bodenhammer
12
13 (2015) writes in “Narrating Space and Place,” an alternative method of *deep mapping* attempts to
14
15 work against such problematic shortcomings by understanding “space and place as the product of
16
17 interrelationships, coexistence, and process, always changing and always in the state of
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19 becoming” (p. 22). In other words, deep mapping—“simultaneously a platform, a process, and a
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21 product” (Bodenhammer, Corrigan, and Harris, 2015, p. 3) can be applied as a method of critical
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23 paratextualization, “explor[ing] dynamic representations and interactive systems that will prompt
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25 an experiential, as well as rational, knowledge base” (Bodenhammer, 2015, p. 18), and generate

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32 a new creative space that is visual, structurally open, genuinely multimedia and
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34 multilayered. Deep maps do not explicitly seek authority or objectivity but provoke
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36 negotiation between insiders and outsiders, experts and contributors, over what is
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38 represented and how. Framed as a conversation and not a statement, they are inherently
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40 unstable, continually unfolding, and changing in response to new data, new perspectives,
41
42 and new insights.

(Bodenhammer, Corrigan, and Harris, 2015, p. 4)

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44 Such descriptions align deep mapping approaches with the experience and function of digital
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46 games, of Genette’s paratextual functioning and Barthes’ textual fluidity in general, and—more
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48 specifically—of existing paratextual cultural practices surrounding and enabled by digital game
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50 thresholds. In this way, deep mapping processes act as a critical form of paratextual
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52 engagement, critically mirroring and lucidly augmenting existing aspects of the environments
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54 and networks that they illuminate.

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3 In coming to understand the necessity and applicability of this proposed shift to deep mapping as
4 a way to engage with the complex paratextuality of digital games, I'm inspired by many of my
5 own memories with digital game experiences, which have involved mapping processes of one
6 kind or another: Drawing top-down maps of Skara Brae and its dungeons from *The Bard's Tale*
7 on graph paper to trade with other gamers in middle school; lost weekends with friends
8 imagining the details and lived lives of inhabitants of *Ultima III*'s low-res, iconographically
9 represented geographies; my son grabbing the controller from me in frustration as I die yet again
10 in *Dark Souls* after failing to accurately map the patterns and tells of my foe in a particularly
11 difficult battle; seeming to speak in tongues while verbally exchanging the Konami code with
12 friends (*up, up, down, down, left, right, left, right, B, A*). These are transactional mapping
13 activities related to a play-engagement with specific game-based experiences, taken into a shared
14 social circumstance relative to the spatiotemporal context of that specific mapping activity. In
15 this sense, every player is a paratextual witness, a uniquely particular node in a shared network
16 generated by a game's experiential circumstances. According to this perspective, then, there is
17 little if any stable textual center to "read," but instead a hyperbolic application of Barthesian play
18 within a layered textual network of transactional and transitional thresholds. Deep mapping as a
19 critical method leans back on a mapping paradigm as a conceptual frame, but also evolves that
20 frame beyond the transactional mapping processes of gameplay and beyond the traditional
21 perception of seeing games as literally or metaphorically geographical. Deep mapping processes
22 critically engage with the time, space, and intertextual/interparatextual connections and
23 complexities that combine within multi-media and remediative experiences.

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Deep mapping is thus an extension and generous curation of these broader, integrative
intricacies, an acknowledgement of the complex network inhabited by those who have

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3 independently experienced particular game-based thresholds, contextualized with additional
4 layers of consideration that account for complex and overlapping spatiotemporal, material, and
5 experiential frameworks. As a broad and inclusive method, it is well-suited to engage with the
6 multimodal and multimedia circumstances of the lived experience of gaming. David
7 Bodenhamer, John Corrigan, and Trevor Harris (2015), in the introduction to their edited volume
8 on *Deep Maps and Spatial Humanities* indirectly affirm such applicability, writing that

17 [h]umanists view the world as extremely complex with endless connections among
18 events and actors and multiple causes for effects that exert continuing influence on the
19 world of thought and behavior. This sense of weblike interrelatedness plays itself out
20 within two dimensions--space and time... For the humanist, space is not only physical
21 space but occupied space, or place, and the concept, like that of time, exists not simply in
22 a real world but in memory, imagination, and experience (p. 2).

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25 This networked perspective confirms that a critical engagement with games require
26 methodological approaches that move beyond dominant reading and traditional mapping
27 paradigms and the exclusive framework of print-based textuality, while still acknowledging the
28 complex relationship between physicality and virtuality. To explore the above acknowledgement
29 of the paratextual nature of digital game experiences and to exemplify the usefulness of deep
30 mapping critical processes to such experiences, the unique circumstances and characteristics
31 related to Retro Games' recent release of *The C64*, a retro-edition full-sized Commodore 64
32 emulator and Hello Games' *No Man's Sky*, will be considered.

33 34 35 36 37 38 39 40 41 42 43 44 45 **Case study 1: *The C64* as a deep map edition**

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47 The full-sized re-issue of the "Commodore 64" 8-bit computer in late 2019 (rebranded as "*The*
48 *C64*" by Retro Games Ltd.) can be understood as immersive/experiential deep mapping of the
49 original computer hardware released in January 1982, as a scholarly edition that incorporates
50 hardware and software emulation with additional capabilities, performative enhancements, and
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3 contemporary curatorial hindsight. In David Bodenhammer's (2019) lecture "Spatial Humanities,
4 Deep Mapping, and the Future of History," he outlines the design requirements for deep maps
5 which include being **flexible** (inviting exploration), **user-centric** (supporting differing views),
6 **path traceable** (supporting narration), **open** (admitting new material), and **immersive** (evoking
7 experience). *The C64* reissue asserts an unconventional critical engagement with the original
8 machine and the game experiences that it offered---it is a deep map of the original Commodore
9 64's paratextual thresholds of transition and transaction.

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20 *The C64* reissue is a commercial curiosity, capitalizing on the popularity of recent releases of
21 miniature editions of older game consoles and taking advantage of consumer nostalgia, but going
22 a step further by being a full-sized, fully-functional and **immersive** material imitation of a
23 Commodore 64 computer. The original Commodore 64 contained the computer hardware and
24 keyboard in a single unit, could be connected to a CRT television or to a number of compatible
25 monitors (which produced better sound output), and its functionality could be extended with tape
26 drive, disk drive, cartridge, joystick, printer and modem peripherals. While it functioned as a
27 home computer and could be used to run word processor, spreadsheet, and presentation software,
28 it supported a significant number of game software programs (*Gamebase64*, an archiving project
29 for C64 games currently has 26,900 games listed in its database). My family acquired one of
30 these computers in 1983 and my middle school and early high school years were defined by the
31 game experiences it offered.

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49 Physically, interacting with Retro Games' *The C64* is similar to interacting with the original
50 machine. However, the internal hardware is quite different in weight and profile (see figures 1
51 and 2), and replaces the original joystick and cartridge ports of the original with modern HDMI
52 and USB ports. While the weight difference caused by this lack of internal hardware in *The C64*

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3 is mitigated by the inclusion of a metal plate underneath *The C64*'s keyboard, the hollowness of
4 the new machine reveals itself in the sound of the keyboard keys, which feel similar to the
5 original, but make a different sound when pressed. Overall, though, the material feel of the
6 reissued C64 is nearly identical to the original, allowing contemporary users to engage in an
7
8 **immersive** and **path-traceable** experience of novelty or nostalgia with the machine nearly 40
9 years after the Commodore 64's release.

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12 Instead of booting directly to the original Commodore 64 start up screen (Figure 3), *The C64*
13 boots through a RetroGames logo before offering a **flexible** selection display, where users can
14 choose to go to the classic start-up screen or to a carousel GUI to boot one of 64 pre-installed
15 games (Figure 4). *The C64* allows users to also boot into Vic20 mode, which emulates the
16 Commodore 64's predecessor, the Commodore Vic20 computer (released in 1980). The system
17 thus remains **flexible** and **open** to running additional Commodore 64 and Vic 20 games: software
18 images can be run on the system by loading them from a USB key, and new programs can be
19 written, executed, and saved using this machine. Although *The C64* uses HDMI output for its
20 display, it can cycle through emulated displays that extend its **user-centric** aspects, some of
21 which even simulate CRT scanlines to demonstrate what an early 80s experience with the
22 Commodore 64 would have been like, encouraging **path-traceable** engagements.

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25 Bodenhammer's requirements for the design of deep maps are woven throughout *The C64*'s
26 design. This re-released and enhanced computer system is simultaneously a platform, process
27 and product, a remediative double logic of immediacy (erasure of mediative awareness) and
28 hypermediacy (media awareness through mediational plenitude) (Bolter and Grusin, 1999, p. 5),
29 a threshold that functions as a paratextual possibility space and which engages the memory,
30 imagination, and experience of its users in ways that recall and extend the original Commodore
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3 64. The ways that *The C64* invites exploration, supports narration, admits differing views, and
4 evokes experience makes it an example of deep mapping, of critical paratextualization.
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10 While *The C64*'s deep map enables and extends experiences related to the paratextual thresholds
11 created by the Commodore 64's original hardware, it's important to note that variant versions of
12 Commodore's 64K computer were released between 1982-1993.ⁱ In 1986 the outer case was
13 redesigned and this revision was sold as *The C64C* from 1986-1993 alongside the original
14 version. During this time, *The C64C* went through a few circuit board redesigns and chip
15 consolidations to reduce manufacturing costs.ⁱⁱ Indeed, hardware design revisions have always
16 been a part of the life of a game console. Similarly, game software, like literary publications,
17 move through numerous editions or versions, many of which substantially change a digital
18 game's form, content, and experience. Such iterations often contain bugfixes, engine
19 optimizations, and other small changes that make the game experience more enjoyable and
20 consistent for the player, but more substantial alterations can evolve a game's objectives or
21 mechanics, and expand, revise, curtail, or remove its content. Cartridge-based distribution in the
22 early days of home consoles made such upgrades and versioning less desirable: games were
23 released in more or less finished form. If these releases were buggy or limited in any way, such
24 games were panned by critics and consumers, and such shortcomings became a part of their
25 history and legacy. The infamous example of Atari's E.T. game (and the burying of unsold
26 copies in a New Mexico landfill), well documented in Chapter Five of Raiford Guin's (2014)
27 *Game After*, is a good illustration of the inability of game studios to make up for underdeveloped
28 game experiences post-release in the early days of commercial game software. Unlike cartridge-
29 based games for consoles, many games for Commodore and TRS-80 computers were written in
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3 Basic and thus able to be modded by users. As well, I can even remember employing trial and
4 error changes via a machine language editor to increase my in-game resources and money for
5 role-playing games on my Commodore 64. Floppy disk-based games also made copying,
6 rewriting, and modification possible, and software cracking groups often justified some of their
7 pirating activities for the Commodore 64 by arguing that their efforts to break copy protection
8 schemes were healthier for a user's computer hardware overall. A self-published (and ironically
9 copyrighted) 1986 manual called "Kracker Jax Revealed," by the U.S.-based Kracker Jax
10 Protection Busters (KJPB) cracking group, asserts:
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21 Owners of the 1571 disk drive may not realize it, but every time they boot their favorite
22 program and it bangs the disk drive head, that program is using this form of protection. It
23 is common knowledge among experienced users that this form of copy protection is
24 hazardous to the health of the 1541 drive. Let's face it; would YOU write a program that
25 purposely banged YOUR disk drive's read/write head against its end stop?
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29 This protection is still being used by many software publishers, knowing full well that the
30 drive knock is probably the major source of alignment problems with the 1541/1571 disk
31 drives. We at Kracker Jax can't see any purpose in the continuation of this form of
32 protection.
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36 ...It is this protection type that we especially urge you to learn to break, just so you can
37 preserve the alignment of your disk drive.
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39 (Page A-1)
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41 As digital gaming hardware has further evolved to depend on online connections and
42 downloadable content, most physical releases are now often patched and updated by the
43 developer before a player can even start the game for the first time. These "day-one" patches,
44 while commonplace, have generated consumer criticism toward a game industry that now seems
45 comfortable in releasing not-quite-finished products to meet release expectations and deadlines.ⁱⁱⁱ
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47 However, such post-release patches, fixes, and expansions (the latter of which are often
48 monetized as a form of serial content delivery) also allow developers to adapt to player requests
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3 and responses, to extend the “life” of the game, and to atone for any missteps in initial product
4 quality or functionality. This iterative practice in which games evolve along a developmental
5 continuum, sometimes for decades beyond their initial release, also includes publisher and efforts
6 to “remaster” older games for newer hardware and audiences, as well as community-initiated
7 efforts to modify and continue developing game updates long after developers and publishers
8 have moved on. One notable “official” example of this reworking process is game studio
9 Naughty Dog’s efforts to remaster and re-release its critically acclaimed Playstation 3 (PS3)
10 exclusive release *The Last of Us* on the Sony Playstation 4 (PS4) console. Chris Young (2016)
11 usefully illuminates the bibliographical challenges and frustrations related to “describing and
12 classifying born-digital texts” using this case study in his article “The Bibliographical Variants
13 Between *The Last of Us* and *The Last of Us Remastered*” (p. 484). Young’s fascinating study
14 identifies at least 24 unique product codes for the various PS3 and PS4 versions and editions of
15 the game, but—using patch and update file information (iterations which would suggest further
16 additions to his list of 24 variants) —comes to the conclusion that there are only two unique
17 executable files, and thus two unique editions of *The Last of Us* (p 470-71). However, a
18 Bloomberg report by Jason Schreier (2021) correctly anticipated yet another “remake” of the
19 game for the Playstation 5 console that further complicates Young’s abovementioned findings.
20 Such practices make it difficult to determine whether a definitive “edition” of a game exists,
21 aligning many games with the unique publication histories of Walt Whitman’s *Leaves of Grass*
22 or William Wordsworth’s *Prelude*, which were constantly added to and revised in many editions
23 throughout these poets’ lifetimes, and continue to be republished and re-released in new editions
24 for modern audiences. Ultimately, this current practice not only demonstrates another way that
25 games resist and problematize some of the current perspectives in bibliography and textual
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3 criticism (as explored by Matthew Kirschenbaum (2002) in “Editing the Interface: Textual
4 Studies and First Generation Digital Objects”), but also adds another layer of complexity to the
5
6 notion of what a game is and how it differs from traditional notions of “text.” More specifically
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8 and importantly, though, this practice has allowed the unique title *No Man’s Sky* to avoid the
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10 landfill fate of The E.T. game and to become much more than originally intended by both
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15 developers and players in the years since its initial release.
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18 **Case study 2: *No Man’s Sky* as a model for deep mapping**

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21 *No Man’s Sky* is a multi-platform, procedurally-generated experience which hosts a universe of
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23 255 galaxies and well over 18 quintillion unique planets to explore. Developer Alex Wiltshire
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25 said prior to the game’s release that the game’s universe is so vast, “if you visit each [planet] for
26
27 a single second, it will take you 585 billion years to see them all” (Wiltshire). None of these
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29 locations are pre-built or pre-rendered by the game designers or stored on a hard disk or server,
30
31 but their complex ecosystems are generated algorithmically by hundreds of rules from a specific
32
33 map “seed”, a short string of code that triggers the production of the location when a player gets
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35 near. These are not randomly generated planets, however. The code seeds are shared by all
36
37 users of the game, which means that different players will see the same universe, galaxies and
38
39 planets, but such locations will be built on demand by the game engine as each player
40
41 approaches them. In this way, Hello Games, the developers of *No Man’s Sky*, can fit an almost
42
43 impossibly large and interesting environment on a single game disc/download file while still
44
45 allowing for shared multiplayer opportunities across this vast universe. Many other games, like
46
47 *Minecraft*, use similar “seeds” of code to procedurally generate and then share worlds between
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49 players (without necessitating that the developer handcraft and manually arrange each
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51 pixel/voxel/block) of such worlds. Unlike the pre-defined “seeds” of *No Man’s Sky*, however,
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3 *Minecraft*'s world generation process involves a randomly generated "seed" code so that—
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5 theoretically at least--an infinite number of unique and unanticipated worlds can be created for
6
7 the *Minecraft* player.
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11 These seeds operate like Roland Barthes' (1977) idea of "text": a code that "practices the infinite
12
13 deferment of the signified" (p. 158), acting as an irreducible plural (p. 159), involving "activity,
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15 production, practice" (p. 162), both playful and playable (p. 162), a network (p. 161) that needs
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17 to be opened out and set going (p. 163), a "social space" that requires collaboration from its
18
19 player. In other words, these seeds characterize the robustness, and the impossibility of applying
20
21 a traditional sense of ownership and authorship to the experience that is *No Man's Sky*. What the
22
23 seeds ultimately generate, and what players experience, is a shared paratextual universe.
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27 Another way in which *No Man's Sky* turns away from authorial and authoritative traditions (in
28
29 addition to its title's affirmation of the impossibility of such ownership in such a vast universe) is
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31 that it was originally released with no extrinsic motivation for the player to follow, other than a
32
33 suggestion to find the galaxy's center if they so wished. If players chose to make their way to
34
35 the center of the galaxy, they would simply warp to a new galaxy and start the process all over
36
37 again, leading to an endless and ultimately purposeless journey. These dissimilarities between
38
39 the operations of digital game experiences and the material conditions of literary production and
40
41 consumption from which cultural and media studies scholars have inherited many outmoded and
42
43 insufficient critical terms, methods, and perspectives, justifies the need for alternative approaches
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45 and categories when critically engaging with the plenitude of *No Man's Sky*'s paratextual
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47 essence.
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53 The universe of the game is far from static, though, despite its deterministic mathematical
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55 foundation. In the awkward spirit of colonialist "discovery," players can be the first to come
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3 across and name planets, flora, and fauna in this universe, and such credited discoveries are
4
5 communicated from the game developer's server to any other players who encounter that
6
7 particular planet if playing while connected to the internet. Player discoveries are added to their
8
9 "Galactic Index, which in turn feeds into the Atlas, "the big encyclopedia of everything that
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11 anyone has ever discovered in *No Man's Sky*" (Loveridge). This feature emulates an
12
13 inexhaustible cataloguing opportunity for those with archival and categorizing interests, but also
14
15 offers a subtle critique of such pioneering efforts: given the size of the game's universe, it is
16
17 unlikely that any other player will see (or care) about your discoveries. The Atlas adds to the
18
19 existing ways that *No Man's Sky* as a game experience operates on the level of paratextual
20
21 excess, overwhelming but also confirming the necessity and originary importance of its initial
22
23 seed. As well, using terms like "Atlas" and "Index" to describe the tools that the game uses to
24
25 collect and organize its players' influence and impact, simultaneously invokes books, maps and
26
27 the ways in which we organize access to their knowledge. The bookmap paratext Atlas of *No*
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29 *Man's Sky*'s universe, like that paratextual universe itself, is always slightly changing as a result
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31 of each player's encounter with and within it.
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39 Additionally, players can build any number of inhabitable structures or "bases" on the planets
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41 that they visit. As the game was initially distributed on three different platforms (PC,
42
43 Playstation, and Xbox), these constructions were initially only discoverable by other players who
44
45 were playing the game on the same platform as the base creators. However, the game's June
46
47 2020 update introduced crossplay to the universe, meaning that player creations from each
48
49 platform are now discoverable by all players on all platforms. All players are now impacting the
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51 same in-game universe, whereas prior to June 2020, three different and distinct versions of this
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53 universe existed, one for each platform. Bringing these communities together and synthesizing
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3 their existing contributions into a single experience while still avoiding reductive centralization
4 and hierarchical perceptions is one of the ways that *No Man's Sky* functions as an example of
5 paratextual excess and as an example of deep mapping processes while also critiquing the
6 positivist tendencies that often accompany encyclopedic mapping endeavors and completionist
7 gameplay.
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16 In other words, the collective, evolving, and multi-platform experience of *No Man's Sky* operates
17 as a simulation of deep mapping, as a demonstration of the ways that complex and fluid
18 networks of interaction and experience can be conceptualized, organized, sustained, and
19 critically realized. However, in the midst of such plenitude, how does history function in both
20 *No Man's Sky* and in the use and operation of deep mapping as a critical engagement with the
21 complexities of game studies? In addition to its significant use of procedural generation
22 methods, the unique development history of *No Man's Sky*, like the game itself, explicitly
23 exemplifies the ways in which the digital game is an evolving possibility space, an experience
24 engine that is itself unstable in that the version initially issued on physical media usually requires
25 a day one patch and subsequent (and frequent) updates to the extent that specific versions often
26 don't get a chance to enjoy even a few days of play. Released on August 9, 2016, *No Man's Sky*,
27 while impressive in what it was able to achieve, failed to live up to its marketing promises and to
28 the expectations that such promises generated in its consumers. Consequentially and
29 impressively, Hello Games has continued to deliver significant and substantial free updates to the
30 base game over the past 6+ years (See Figure 5), in addition to releasing incremental bugfixes
31 and patches to improve the moment-to-moment quality of the game. These updates have
32 evolved the experience of *No Man's Sky* into a vastly different and more complex and engaging
33 environment than it was at launch.
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3 How to preserve the unique experience of each update for such quickly evolving games? This
4 rapid edition iteration means that we don't get to experience a version for long, so being able to
5 roll back or through various iterations (like the remasters of *Monkey Island* games, where players
6 can instantly switch between updated graphics and original VGA screens) is another example of
7 applying deep mapping critical methods to game experience. *No Man's Sky*, despite its iterative
8 flexibility, has not incorporated such rollback potential and neglected to preserve or snapshot
9 certain experiences through the timeline of its development. So while the game effectively
10 models the kinds of critically illuminating operations that deep mapping can bring to the
11 possibility spaces of cultural productions, the developer's commitment to progress highlights the
12 additional critical necessity of collecting and making accessible all of the experiential
13 "witnesses" that appear throughout a video game's development. Bodenhammer, Corrigan, and
14 Harris (2015) suggest that "within a deep map we can develop the event streams that permit us to
15 see the confluence of actions and evidence. We can use path markers or version trackers to
16 allow us (and others) to trace our explorations and we can contribute new information that
17 strengthens or subverts our argument which is the goal of any exploration." (p. 4) Such deep
18 mapping strategies can function as a preservation strategy in relation to game updates and
19 enhancements but are also essential in relation to many other dynamic and unstable features of
20 our existing digital environments. For example, more recent game console interfaces and menus
21 often undergo radical redesigns during the lifecycle of a console generation, and the baseline
22 experience of access and navigation to these GUI environments can change as dramatically as
23 the *No Man's Sky* experience has changed for its players since release. Our mobile phones often
24 undergo similar UI updates, changing our experiences with and expectations of these devices
25 over time. Deep mapping methods, akin to the ways that the Internet Archive's *Wayback*

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3 *Machine* preserves and allows access to earlier versions of constantly-changing webpages,
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5 furthers a kind of textual criticism approach to digital experiences, but beyond the *Wayback*
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7 *Machine*'s simple (and often insufficient) ad hoc cataloguing of variants, incorporates the
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9 preservation of such variation within a broader understanding of games as paratextual thresholds
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11 of experience potential and social opportunity. This kind of deep mapping approach to the
12
13 preservation of such unstable environments would encompass but also extend the emulation,
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15 virtualization, migration, and metadata encoding recommendations put forward in the *Preserving*
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17 *Virtual Worlds Final Report* a technical report that resulted from 4 years of collaborative, multi-
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19 institutional research into digital preservation strategies by McDonough, Olendorf,
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21 Kirschenbaum, Kraus, Reside, Donahue, Phelps, Egert, Lowood, and Rojo (2010). As
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23 acknowledged in the report and amplified by Young (2010) and Newman (2012), though,
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25 without broader industry collaboration, all efforts to preserve game software and hardware itself
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27 will be hindered. However, understanding and deep mapping games as transitional and
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29 transactional paratextual fields diminishes some of this focused preservational anxiety. Indeed
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31 Newman's (2012) suggestion that games are "less...fully formed objects for play and more as
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33 suites of resources to be played with" similarly leans into this idea with its affirmation that
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35 "digital games simply cannot be conceived of as static objects or texts" (p. 123).
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44 **Conclusions**

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46 The unique and continuing evolution of *No Man's Sky* exemplifies and justifies the necessity of a
47
48 deep mapping engagement with its dynamic complexity. As well, the game models and
49
50 showcases a kind of deep mapping process as part of its playable experience through the ways
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52 that players can collectively impact the game's Galactic Index and Atlas. This game, together
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54 with *The C64* provoke further potential dialogue regarding the ways that we need to confront and
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3 avoid the conceptual and practical limitations related to the incorporation of traditional critical
4 methods and terminology into game studies' practices. One could imagine a deep mapped
5 critical edition of *No Man's Sky* that functions similarly to *The C64*, where users would be able
6 to cycle through and experience all of the game's major and minor updates. An enhanced critical
7 experiential edition platform of *No Man's Sky* might also correlate the various versions of the
8 game experience with archived critical reactions, reviews, messageboard comments, let's play
9 videos, wikis, etc., letting simultaneous users constellate and compare their own routes within an
10 environment that functions paratextually. Less ambitiously but equally valuable, scholarly
11 critical editions of the possibility spaces that are constituted by games should involve the kinds
12 of deep mapping exemplified through *No Man's Sky's* gameplay and *The C64's* experiential
13 platform. Both of these examples have demonstrated the importance in game studies of
14 replacing unhelpful anachronisms that rely on textual materiality and stability with decentralized
15 paratextual complexities and deep mapping methodologies that engage with thresholds of
16 transition and transaction. In summary, this article defines games as uniquely paratextual, asserts
17 that their particular paratextuality necessitates a careful modification of literary critical
18 perspectives as applied to games, and offers a deep mapping critical method as a way to fully
19 acknowledge and critically engage with such paratextuality.

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43 It's necessary to finish by acknowledging the overall tension between the way that this article
44 calls for deep mapping and a different kind of engagement with video games, and the way that it
45 remains embedded in textual critical practices. In fact, I'm already frustrated by the inadequacy
46 of having to use language to both comment on the insufficiencies of language as an exclusive
47 and limited critical apparatus for engaging with game experiences and to adequately exemplify
48 the kind of critical practice that I'm discussing here. Additionally, I'm also unsatisfied with the
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3 way that this essay petrifies ideas that continue to develop in my mind and through discussions
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5 with colleagues. In a sense this article already emerges stillborn, devoid of the vitality necessary
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7 to engage with the kind of plenitude that constitutes an engagement with and critical reflection
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9 on digital games. Hopefully though, this paper has managed to operate at a level of Barthesian
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11 textuality, provoking openings and serving as a paratextual threshold to the complex and often
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13 ephemeral experiences of video games.
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ⁱ See this web page for a list of release variants for the commodore 64: <https://www.c64-wiki.com/wiki/C64>

ⁱⁱ See this web page for a list of hardware revisions to *The C64C* computer: <https://www.c64-wiki.com/wiki/C64C>

ⁱⁱⁱ In contrast to the “new and improved” practices of a commercial games industry that caters to consumers and fans, some game designers consciously make use of bugginess, outdated engines, and the appearance of unfinishedness as part of their aesthetic and experience. *Deadly Premonition* (2010) and *Paratopic* (2018) are two such examples. Ironically, even these titles have been “fixed” by numerous post-release patches since their initial releases.

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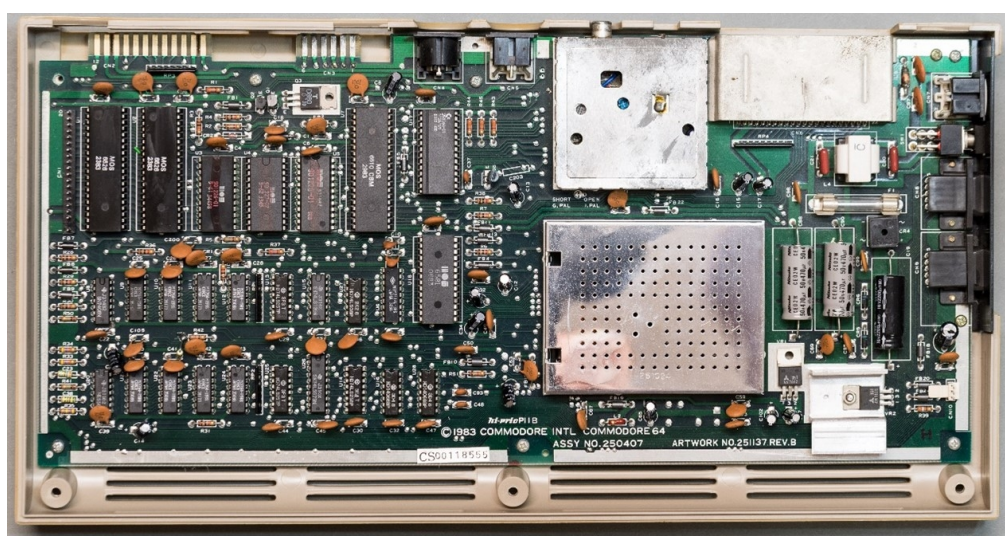


Figure 1: Commodore 64 original mainboard (Image from: https://upload.wikimedia.org/wikipedia/commons/8/8e/0430_-_C64_Mainboard_ASSY250407_RevB.jpg)

145x75mm (220 x 220 DPI)



Figure 2: The inside of RetroGames' The C64 (<https://i.ytimg.com/vi/yeb2d5UHz6M/maxresdefault.jpg>)

142x80mm (96 x 96 DPI)

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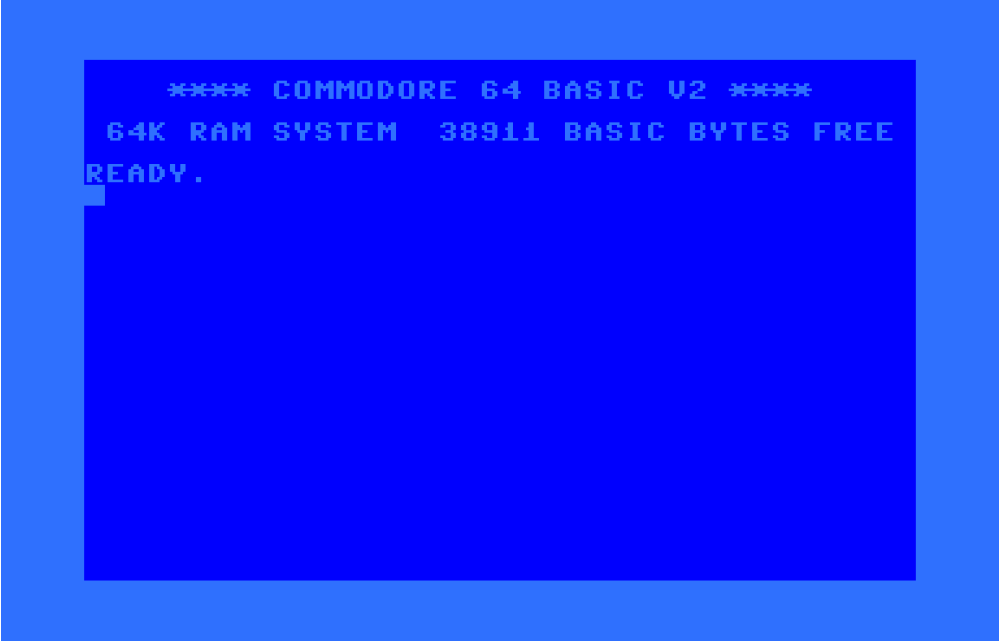


Figure 3: The original Commodore 64 start-up screen

541x348mm (72 x 72 DPI)



25 Figure 4: The initial selection screen from Retrogames' C64
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27 739x419mm (38 x 38 DPI)
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Figure 5: A visual representation of all of the major content and functionality updates released for *No Man's Sky* from 2016-2020. (Image from: <https://www.nomanssky.com/2020/09/no-mans-sky-origins-coming-next-week/>)

392x240mm (87 x 87 DPI)