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Shane Denson, Andreas Jahn-Sudmann
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Digital Seriality: On the Serial Aesthetics and Practice of Digital Games

SHANE DENSON AND ANDREAS JAHN-SUDMANN

1. Introduction

In this paper we are concerned to outline a set of perspectives, methods, and theories with which to approach the *seriality of digital games and game cultures* – i.e. the aesthetic forms and cultural practices of game-related serialization, which we see unfolding against (and, in fact, as a privileged mediator *of*) the broader background of medial and socio-cultural transformations taking place in the wake of popular media culture's digitalization.[1] Seriality, we contend, is a central and multifaceted but largely neglected dimension of popular computer and video games. Seriality is a factor not only in explicitly marked game series (with their sequels, prequels, remakes, and other types of continuation), but also within games themselves (e.g. in their formal-structural constitution as an iterative series of "levels" or "worlds") as well as on the level of transmedial relations between games and other media (e.g. expansive serializations of narrative worlds across the media of comics, film, television, and games, etc.). Particularly with respect to processes of temporal "collapse" or "synchronization" (see sections 3a and 3b below) that, in the current age of digitization and media convergence, are challenging the temporal dimensions and developmental logics of pre-digital seriality (e.g. because once successively appearing series installments are increasingly available now for immediate, repeated, and non-linear consumption), computer games are eminently suited for an exemplary investigation of a specifically *digital* type of seriality.

In the following, we look at serialization processes in digital games and game series and seek to understand how they relate to digital-era transformations of temporally-serially structured experiences and identifications on the part of historically situated actors. These transformations range from the microtemporal scale of individual players' encounters with algorithmic computation processes (the speed of which escapes direct human perception and is measurable only by technological means) all the way up to the macrotemporal (more properly "historical") level of collective brokerings of political, cultural, and social identities in the digital age. To account for this multi-layered complexity, we argue for a decidedly interdisciplinary approach, combining media-aesthetic and media-philosophical perspectives with the resources of discourse analysis and cultural history. We approach the seriality of digital games both in terms of textual and aesthetic forms as well as in the broader context of serialized game cultures and popular culture at large.

By means of this multi-pronged approach, we hope to initiate a dialogue between (at least) two distinct fields of research: on the one hand, game studies, which has focused only sporadically and indirectly on serialization processes, and on the other hand, recent interdisciplinary and media-studies based work on seriality in film, television, and other media – research in which games are as yet practically unaccounted for. An investigation of digital serial forms brings into view a phase of

transformation in the experience and construction of seriality – a phase of transformation that, due to changes in the global media landscape, impacts the contemporary practice and aesthetics of popular culture far more broadly than just in those areas directly affected by digitization.[2] In our effort to identify specific differences between digital and non-digital forms of seriality, we seek to demonstrate, moreover, how games are central to our experience of these changes, and to show above all how the self-reflexive and self-historicizing impulses that have characterized serialized media throughout modernity are now – in the form of the digital seriality of computation-based gaming – crucially involved in shaping our experience of the contemporary world. The present paper is divided into several main parts. In the early, primarily orientational parts (sections 2 and 3), we aim to situate some first approaches with respect to existing research on games, digital media, and seriality. In the latter, more programmatic parts of the paper (above all, section 4), we develop some theoretical perspectives of our own and outline some areas for further research on the digital seriality of computation-based games and gaming cultures.

2. Locating Digital Seriality

The history of digital games is above all a history of popular series; it is the story, in other words, of countless sequels, prequels, remakes, hacks, mods, copies, updates, versions, cycles, and franchises. This observation about the essential seriality of digital games may seem obvious, even banal, to us in an age of quickly proliferating properties like *Bejeweled* or *Angry Birds* – game series that seem to spawn a new installment (or port or clone) every time we turn around, spreading rapidly across platforms and into a variety of merchandising outlets and tie-ins with other media. But if it is true that we have become sensitive to the seriality of such games and game-related phenomena, the story (or history) of digital seriality has yet to be told in any systematic manner (see Boluk and LeMieux 2012 for a rare treatment of seriality in videogames; also, three promising studies of digital serialization are forthcoming: Brown 2013, Salor 2013, and van den Berg 2013). This unwritten story would look beyond the endless stream of recycled physics engines and the birds (and other objects and characters) they've launched to fame; it would survey the history of gaming and look at games themselves as part of larger serial networks, where they often mark a "before," an "after," or a "meanwhile" with respect to the popular-cultural practices of other media. Sometimes, and most straightforwardly, this takes place in the context of transmedial narratives, where serialized forms and formats of digital gaming find a natural home (see Mittell 2012 for a comparison of game-based and television-based transmedia serialities). But seriality is both more far-reaching in scope and more fundamentally anchored in the media, the platforms, and the practices of digital gameplay.

Serial forms and functions are not restricted to the level of narrative or audiovisual representations, as expressed in the ongoing narratives and their recurring characters – like Zelda, Mario, or Lara Croft – that constitute a "game series" proper. Much more basically, computer games themselves constitute their own internal structures of seriality, e.g. through their familiar segmentation into distinct levels or worlds, thus establishing a serial schema of repetition and variation at the very heart of gameplay. At an even deeper level, and partially responsible for these serial

structures, games are constructed from iterative and modularized scraps of code, so that seriality might be seen to be hard-wired into games at their core. Back at the experiential level of our playful, active interface with them, as well, games employ a variety of structures and strategies of serialization. By the 1980s, a game like *Batman* (1986, for Amstrad CPC, Sinclair Spectrum, and other platforms then popular in Europe and elsewhere) was not only involved in transmedial relations with a heavily series-based character (who had himself sprung from the pages of a heavily series-based medium), but it had also begun introducing the now familiar mechanism of save points, thus ordering gameplay itself as an episodically segmented but continuing serial activity. On the side of production (and creative reception, for that matter – cf. Boluk and LeMieux 2012), add-ons, map packs, ports, mods, and hacks can be seen as further serial forms by which digital games, their diegetic worlds, and their underlying source code are all expanded or continued. Moreover, the seriality of digital games is not restricted to the level of software; it is also a hardware phenomenon, as is evidenced in the official and unofficial numbering of console generations: marking innovation serially, the first PlayStation (retroactively dubbed the "PSOne" or "PSX") is followed by the PS2, PS3, and PS4, for example, while the games industry generally follows a logic of the update and of competitive one-upmanship (see Jahn-Sudmann and Kelleter 2012 on "one-upmanship" or "outbidding" as a serial strategy in contemporary television). However, the progressive dynamics of linear seriality is complicated by the fact that gaming systems like the Atari Flashback, Flashback 2, and Flashback 3 revive old or "classic" games and platforms (Atari 2600, 5200, 7800) for the purposes of retrogaming (cf. Suominen 2008), while other systems like the new Xbox One, successor to the Xbox 360, refuse the additive logic of innovation (the would-be "Xbox 720") and perform a symbolic reboot instead.

The seriality of digital games is thus a multifaceted phenomenon that is complexly imbricated with, but irreducible to, the serial formats that have developed and proliferated across the media of modern popular culture (print, film, comics, radio, TV, etc.) since the nineteenth century (see the contributions to Kelleter 2012b, as well as Allen and van den Berg 2013; see also Boluk 2009 for reflections on the relations of pre-digital to digital seriality). Digital games therefore pose a basic challenge to existing research on popular seriality: Is it possible to account for the medial specificity of interactive digital gaming, without thereby overlooking the various historical and cultural connections between serial forms across media? In accordance with this question, we seek particularly to understand how the structural and processual conditions of the digital inform the practical and aesthetic dimensions of seriality. Our investigations are guided by the hypothesis that temporal dimensions, in particular, are subject to transformation in the contexts of digitalization, digital gaming, and the seriality of digital games, including serialization practices within the larger gaming culture.

3. Contextualizing Digital Seriality

3a. Digitality, Media Convergence, and Seriality

With the emergence and spread of digital media, the structures and operations of popular seriality established across commercial media channels since the nineteenth

century (cf. Kelleter 2012b, Allen and van den Berg 2013) have been fundamentally problematized, particularly as regards their media-historical – and medially self-historicizing – functions (cf. Engell 2001 on serial historicization; see also Denson and Mayer 2012b and Jahn-Sudmann and Kelleter 2012 for more specific investigations and case studies). Novel forms of seriality in the age of digitalization are closely and prominently related to the phenomenon of "media convergence" (cf. Jenkins 2006a; from a media-theoretical perspective: Kittler 1986; for a critical approach: Winkler 2004). Jenkins's notion of "convergence culture" describes a new media landscape which privileges "transmedial" over monomedial – or "plurimedial" (cf. Denson and Mayer 2012b) – formats, thus transforming the contexts and conditions in which serialization processes take place (Jenkins 2006a; cf. also Kelleter and Stein 2012, Stein 2012). Transmedial formats go beyond linear forms of serial narration, and they differ also from the more fragmented manifestations of a twentieth-century "remake culture": these newer types of seriality are arranged around the construction and piecemeal exploration of singular, often monolithic, and more or less coherent worlds that span the borders of various media – expansive worlds that open up to users through the medially discrete entry-points of comics, film, TV series, and computer games – while simultaneously exhibiting a high degree of formal openness with regard to the narrative order of texts and events, and thus allowing for a highly variable sequence of consumption. This flexible approach to the sequentiality, rhythm, and frequency of serial reception corresponds in many respects to the more general increase of interactive choices and activities available to media consumers in the digital age. Interactivity is therefore an important background for the seriality of digital games, but it also forms the medium's central appeal and purpose: digital games' processual screen events are generated above all through the interaction between games and gamers, and this activity is both serially organized (in itself) and also available (from an extrinsic point of view) to the serial articulations of transmedial and related forms of narration and "world-building."

In this context, the apparent timelessness produced by digital media convergence is crucial: in our "convergence culture," historically diverse media contents exist in a state of synchronicity, permanence, and random and repeatable accessibility. But while some critics see digital media portending the virtual end of (media) history (e.g. Kittler 1986), we see the phenomenon of seriality in digital games and game series as a continuation of both the history of popular seriality and of modern media history generally (compare also Winter 2011: 325-328). Nevertheless, we believe that digital seriality must also be understood as the expression of a transformation, if not a radical break, in modern media history (cf. the abundant literature on "new media"; Hansen 2010 provides a useful and relevant introduction). With the emergence of digital media, all media are digitally reconfigured and "remediated" (cf. Bolter and Grusin 1999, as well as McLuhan 1964 before them). Most pertinently in our context, the traditional media of serialized production (print, film, television, comics, etc.) are affected in a variety of ways and to various extents. Serial literature from the pre-digital era is increasingly transferred and archived in digital storage media: penny papers, dime novels, and pulp formats from the nineteenth and twentieth centuries are being digitized en masse by commercial and non-commercial institutions (cf. Mussell 2012 on the significance of these practices). Classic, contemporary, and forgotten film and television series are bundled and released in elaborate DVD box sets (Mittell 2011). Meanwhile, comics, film, and television productions also migrate

to new online outlets, where they are available for legal or illegal download or streaming.

As a result of these transformations, serial forms and processes, as well as their underlying temporalities, are thus subject to radically new conditions of mediation. A "logic of the database" (Manovich 2001: 218) emerges, opening long-running, linear narratives to new forms of experience, as text-based searchability and near-instant access to complete series frees their storyworlds from the publication and distribution frequencies that governed their consumption in the pre-digital era (cf. Mussell 2012). Accordingly, media users have significantly more power to decide when and how fast they will consume a series, and phenomena such as "binge viewing" become an option with digital infrastructures (cf. Mittell 2011, Kelleter 2012a). Since consumers of series were previously more dependent on the periodical rhythms of a temporally unfolding distribution process, serial productions had to find ways to deal with the dynamics of remembering and forgetting (Engell 2010) – for example by reminding the reader or viewer what had happened in previous installments or episodes ("Previously on…"; cf. Meteling, Ott, and Schabacher 2010), or, alternatively, by capitalizing on the viewer's forgetfulness in order to downplay narrative inconsistencies or tacitly revise past events. In contrast, however, digital networks (such as the Internet) tend not to forget. The developmental logic and historicity of serial installments is therefore constituted (or reconstituted) differently in a digital media environment, and the temporality of serial forms is thus open to new forms of experience.

3b. The Serial Aesthetics of Digital Games

It is against this background of temporal and experiential transformations in the wake of digital and convergent media developments that we approach the aesthetic forms and cultural practices of seriality in digital games. Game studies provides an essential context for coming to terms with these phenomena, but existing research in the field has seldom dealt with seriality per se. Isolated studies do indeed look at various game series (sometimes under the heading of "convergence" in Jenkins's sense, e.g. Ip 2008, MacCallum-Stewart 2010), but theories of seriality and serialization processes are only tangentially at stake. Interestingly, however, game studies' formative debate over "narratological" and "ludological" approaches to interactive digital gaming already touches upon issues that are of key importance to an understanding of digital seriality – especially as regards the temporal impact of digital technologies on serially unfolding stories (and/or quasi-narrative or non-narrative events). Thus, while the generally formalistic parameters of the "ludology vs. narratology debate" are now widely disparaged (cf., for example, Bogost 2009), and it is occasionally doubted whether the debate really ever took place at all (Frasca 2003), we believe that essential insights into the dialectics of digital seriality – i.e. the dialectics of a specifically *digital* form of popular *seriality* in general – are to be gained by re-visiting this storied episode in the history of game studies.

The basic outlines of the debate are familiar to us all. On the one hand, narratologically oriented theorists like Janet Murray (1997, 2004) or Marie-Laure Ryan (2006) argue that, with the introduction of interactivity, digital platforms generally and computer games in particular have significantly and lastingly changed

the parameters of storytelling. But against the narratologists' implicit claim that the telling of stories is one of the central functions of digital games, the ludologists (e.g. Eskelinen 2001, Juul 2001) argue that narrative elements are only marginal or secondary with respect to the primary "core" of gameplay, which involves the player in negotiations not with stories but with formal rule-sets. In its most extreme form, the ludological perspective goes even further, positing not only a hierarchical but an antagonistic relation between this core and the "shell" of narrative (and more broadly representational) elements. Juul (2001) attributes the conflict between properly ludic and narrative elements to the medial specificity of interactive games, which hold out spaces for action, movement, and decision rather than presenting linear narratives. Espen Aarseth (1999) describes these spaces in terms of "ergodic phenomena" (32); combining the Greek *ergon* (work) and *hodos* (path), the concept of ergodicity describes digital games, in contrast to other textual forms, as a type of discourse "whose signs emerge as a path produced by a non-trivial element of work" (32). Thus, a game's narrative "script" is not pre-existent, not just "there" for us to read like a novel, but it is instead generated at the moment of interaction, on the fly and in response to a user's input. As Juul (2001) argues, this implies a fundamental paradox with regard to the temporal levels distinguished by narratologists for traditional (i.e. non-interactive) forms of storytelling: because of their ergodic form, digital games collapse the otherwise distinct levels of "story time" (the time of *histoire*, or of the diegetic world and events being narrated), discourse or "plot time" (the time of *discours*, or of the narration itself, which can dilate, compress, and rearrange diegetic events for various effects), and the time of actual media consumption (the empirical time of reception). While classical narratology explored the gaps between these levels as essential to the phenomenon of narrativity (cf. Benveniste 1966, Metz 1981, Genette 1994), Juul's early ludology is built on the premise of their indistinguishability in digital games.

The debate between narratological and ludological positions raises a number of interesting questions about the role and relation of digital games in transmedial serial forms, as well as in the larger context of digital media convergence. Are games able to complement and continue the serialized narratives articulated in transmedial assemblages of film, television, and other storytelling media (as Jenkins 2006a suggests)? Or is the connection purely superficial, a marketing practice that exploits the thematic and iconic contents of serial narratives as mere "packaging" (Juul 2001) for games (as in the worst of superhero-themed videogames)? On an aesthetic and formal level, it is necessary to approach these questions by way of the two previously sketched revisions of temporal structures in digital media – i.e. the "synchronization" processes implied by digitalization and media convergence on the one hand, and the "collapsed" ergodic-interactive temporality of digital games on the other. The few (narratologically or ludologically oriented) studies of temporal structures in digital games generally either restrict themselves to proposing formalistic models, or they concentrate exclusively on the emotional and cognitive involvement of the player (cf. Nitsche 2007). A more historically attuned engagement with phenomena of temporality in digital games is largely lacking, as is the connection to larger theoretical discussions of digital media and time – or the nexus of temporality and seriality. This latter nexus in particular is overlooked in ludological characterizations of gameplay because proponents of this position generally focus more on the integral "flow" of present events in a continually updated "now" of ergodic play rather than on its segmentation into discrete gaming sessions (on the concept of "flow" in a broader

sense, cf. Csikszentmihalyi 1975; in a different sense, in the context of television studies, cf. Williams 1974). However, the relation between a game-immanent continuity of temporal experience and the empirically discontinuous sessions out of which it emerges would seem to be homologous to the relation between the diegetic continuity and discontinuous reception of episodes that we find in serialized literary, filmic, or televisual productions (cf. O'Sullivan 2006, 2010 on the role of temporal gaps in serial reception). And just as serial forms more generally continue to thrive in today's popular culture – *despite* contemporary synchronization processes that work to "bundle" series into units and to make their installments co-present in digital networks, in DVD boxes, or in graphic novels, for example (cf. Kelleter 2012c) – so too, therefore, do digital games continue to articulate a form of seriality that arises *despite* the collapse of temporal levels in the real-time interaction of gameplay. As a result, we believe that a successful theoretical account of seriality in digital games will be neither strictly narratological (because insufficiently sensitive to the temporal transformations introduced in ergodic interactivity) nor narrowly ludological (because unable to see beyond these transformations towards the persistence of serial segmentation), but will instead adapt elements of both approaches in an effort to account for both continuity and discontinuity, medial specificity and serial commonalities. In this way, we believe, the serial structures of digital games will emerge as genuinely *exemplary* for the larger field of digital seriality – i.e. for the forms and functions of popular seriality under conditions of digital convergence and synchronicity.

The relations between serial continuity and discontinuity that arise in ergodic-interactive games correlate in various ways with the interplay of repetition and variation that might be seen to constitute the structural core of serial narration (cf. Eco 1985). The precise nature of these correlations remains to be determined through concrete analyses of the formal, phenomenological, empirical, and cultural structures regulating practices of segmentation, integration, and continuation in games and game series. Until such a body of research has been conducted, the mere identification of a formal correlation between the episodic/serialized structures of gameplay and of ongoing stories does not imply anything about that correlation's broader significance, but it does hold out the promise of bridging the gaps – without thereby effacing them – between various media, between ludic and narrative forms, and between the specific case of digital games and the broader phenomenon of popular seriality in the digital age. Accordingly, it recommends to us a comparative methodology that will make these gaps both visible and navigable. For example, in order to understand how players are integrated *serially* into the diegetic world of a game, i.e. by way of and over the course of a series of sessions, episodes, or installments of a game series, existing theories and research on immersion (e.g. Thon 2006), identification (e.g. Kennedy 2002, Taylor 2003), and participation in digital games (e.g. Jenkins 2006b, Squire 2011) will have to be critically reviewed and expanded with respect to recent studies of film, television, and literature conducted from within a more decidedly seriality-oriented research paradigm (cf. Mittell 2006, Denson 2011c, Kelleter 2012b, Allen and van den Berg 2013). In this context, one of our own particular interests is to understand the affective and phenomenological dimensions of such serialized engagement (see section 4 below), and so it will be important to compare the findings of other affect-oriented studies of digital media environments (e.g. Hansen 2004, Shaviro 2010); we believe that the latter, in turn, will profit from a careful consideration of seriality's functions in these

environments. Finally, these investigations will have to be set in relation also to studies of both open (serially ongoing) and closed (i.e. non-serial) formats across media, with a view particularly towards their characteristic modes of interfacing – e.g. vis-à-vis theories of "suture," which purport to explain the mechanisms by which spectators are integrated into the diegesis of a film (cf. Silverman 1983). In this way, we hope to bring to light the specifically serial nature of digital games and their formal-aesthetic structures – both in closed, non-continuing titles and in explicitly marked game series and serialized franchises.

3c. The Cultural Practice of Digital Seriality

The seriality of digital games is of interest not only as an aesthetic-formal configuration, but also as a cultural practice. Games and play have long been the subject of cultural anthropological investigation (Huizinga 1955 [1938], Caillois 1961, Bateson 1972), and these approaches, familiar in the field of game studies, have been adapted to some extent for digital games (e.g. Wolf and Perron 2003, Salen and Zimmerman 2004). Somewhat surprisingly, however, the largely formalistic reception of these works in game studies has compounded the field's blindness to seriality. Play itself, we must recall, is an essentially serial activity, characterized by ritualistic practices of repetition and variation (cf. the contributions to Schechner and Schuman 1976). This is true of the rule-governed actions executed inside the "magic circle" of gameplay, but it also points us beyond that circle and reminds us that any such realm of immersion has its own cultural history, one in which the rules of play have been practiced, rehearsed, revised, and improvised before they could be tacitly assumed as the invisible background for action. The erection of a magic circle, in other words, is never so magical as to be completely integral and self-sufficient, for it always also represents (from an external point of view) a single episode in an ongoing series. Indeed, it is precisely the circle's serial iteratability, the fact that it has been practiced and made reproducible as a realm of cultural practice, which guarantees the magical integrity it seems to have when we are immersed in it.

For this reason, it is necessary to complement formalistic approaches to the serial aesthetics of digital games with another perspective, which will highlight the cultural histories and socio-cultural practices of digital seriality. How do gamers interact with game series, and how do gaming cultures arise from collective serialized activities and discourses? There are many ways in which to approach these questions, including direct empirical observation, or by way of discourse-analytical (Foucault 1972) and media-archaeological methods (Parikka 2012, Huhtamo and Parikka 2011), as well as through the lenses of cultural studies and culturally oriented media studies (e.g. the essays collected in Durham and Kellner 2012). The goal, in any case, would be to move beyond text-based approaches, not merely to contextualize them, but to understand how games and game series are implemented in social contexts and how these contexts (gaming cultures, subcultures, transnational fan cultures, etc.) are themselves shaped by and around the serialized activity of digital gameplay.

Existing studies of race, ethnicity, or gender in games, game series, and gaming communities (e.g. Kennedy 2002, Dyson 2008, Brock 2011, Poor 2012) offer a good starting point, but they too have generally failed to account for aspects of seriality.

Nor will it do simply to look at the evolution of, say, representations of gender over the course of the *Tomb Raider* series; more centrally at stake, in terms of seriality as a cultural practice, is how such representations are imbricated into the serialized practices and discourses of a community. Under the heading of "imagined community," Benedict Anderson (1991) has theorized the collective and identity-forming functions of serialized media consumption in the pre-digital age (arguing that the seriality of newspapers and later photography, for example, were instrumental in instilling pre-twentieth century notions of "national identity") (cf. also Anderson 1998; see Chatterjee 1999 for a critical response; in connection with popular seriality: Denson 2012, Denson and Mayer 2012b, Kelleter 2013, Mayer 2012). Occasionally, similar claims are made for "cyberspace" or for networked, transnational Internet cultures (cf. Chun 2012; see also Winter 2011: 325-328). But if studies of game series and their characters (Lara Croft, Mario, etc.) generally focus on textual/audiovisual developments within a series at the expense of social-contextual serial practices, theories of digital-based imagined communities generally fail to correlate such practices with the content-level serialities of serialized media (i.e. their open-ended textual and aesthetic forms, in contrast to their serialized consumption). What is called for is a perspective that would encompass and correlate both of these aspects within a larger framework of popular seriality, relating one to another the iterative deployment of digital games and platforms, the formal qualities of their serialized contents, the practical serialization of individual and collective gameplay, and the serially ongoing negotiations of community that take place upon that basis. Such a perspective on the cultural practices and serial aesthetics of digital gameplay would allow for a critical reexamination of the parameters of imagined community-building in the age of digital synchronicity, while the significance of digital-era transformations would be discernable through a comparative recontextualization vis-à-vis the larger history of popular seriality. What role do ludic serialities – including both formal/textual and social/contextual serialization practices – play in the construction of (trans)national and (sub)cultural identities today? In order to answer this question, we must place digital games and game cultures within the longer cultural history of serialized popular culture, which has played a central role in the modern, commercialized lifeworlds originating in Europe and North America since the nineteenth century, and has been embodied in a variety of media – dime novels, film serials, radio series, film remakes, television series, as well as, more recently, the "sprawling" forms of seriality in transmedia franchises (on the history of seriality, cf. Hagedorn 1988, DeForest 2004, Kelleter and Stein 2009, 2012, Denson and Mayer 2012b; on "sprawling" serialities, cf. Kelleter and Stein 2012).

Henry Jenkins's (2006a, 2006b) observations on transmedial seriality as an aspect of cultures of convergence offer one important point of reference for a comparative and historicizing investigation of digital seriality. Of particular relevance in this context is his discussion of the role of digital games within the transmedia franchise of *The Matrix* (2006a: 93-130). *Pokémon* represents a further, more game-centric serial franchise, whose popularity in Japan and America (and beyond) speaks to the connections between inter- and transmedial constellations on the one hand and inter- and transnational complexes on the other (cf. the contributions in Tobin 2004; more generally on Japanese games in the US: Kohler 2005, Consalvo 2007, Ryan 2011; on the links between transmediality and transnationality, with regard to the medium of comics: Denson 2012, and with regard to film: Jahn-Sudmann 2009). In looking at such examples, we will have to consider the transmedial roles of games and game

series from a historical, social, as well as medial and material point of view. Especially useful for developing such a perspective are those moments when an established (pre-digital) figure – like the serial figure Batman – is taken up and redeployed in a game-based serialization. Appearing as the protagonist in over twenty games for various platforms since 1986, the figure has undergone repeated revisions and modifications in appearance, ability, narrative/thematic framing, and interface potential with gamers. Transitional phenomena between pre-digital and digital serial forms, such as the example of Batman represents, appear particularly significant for a cultural-historical perspective on digital seriality: a plurimedial figure like Batman (who had appeared in comics, television, film, etc. prior to games) already tends, in a pre-digital media ecology, to react to media changes in a highly self-reflexive manner, hence highlighting its own conditions of mediation (on the self-reflexivity of serial figures, cf. Denson 2011a, Denson and Mayer 2012b; on Batman as a serial figure: Pearson and Uricchio 1991, Jenkins 2009, Denson and Mayer 2012a, Stein 2013). Such figures therefore provide a convenient index of both the continuities and discontinuities between a specifically digital seriality and the serial culture of the pre-digital era. Placed in the context of their reception and use by media consumers, they promise to deliver richly detailed snapshots of our serial media culture in transition.

Finally, the concrete practices of reception and use might be approached via the perspective of actor-network theory (ANT), as it has emerged in the writings of Bruno Latour (e.g. 1993, 2005) and others, in order to better understand the cultural work of digital games and game series. While several ANT-oriented studies of videogames have appeared in recent years (e.g. Cypher and Richardson 2006, Giddings 2007), the main focus has been on the interactions between individual players and the technical apparatuses of digital gaming platforms. Nor has seriality played a role in these investigations, although an ANT perspective is precisely suited to illuminate the complex articulations of seriality and collectivity that we have here been considering. With respect to the series-oriented actions (i.e. actions related to or constitutive of series, as well as serially executed actions) of media producers, users, and other actors and actants within the commercial, technological, aesthetic, and social networks surrounding digital games, ANT's methodological focus on the concrete mediations of agency in assemblages that are "simultaneously real, discursive, and social" (Latour 1993: 64) offers a way to think about how games that are *textually* situated in the above-mentioned transmedial contexts can also mark, in terms of *cultural practice*, a "before," an "after," or a "meanwhile" with respect to other popular-cultural media practices and thus serve as nodes for various networking and community-building processes.

4. Ludic Serialities

Whereas the previous sections of this paper explored a number of contexts within which to study digital seriality, we turn now to the task of bringing these perspectives together in order to outline a program for a more detailed examination of the various levels of seriality informing digital games, game series, and gaming cultures. As should be clear by now, our interest in *digital seriality* is an interest in both the *aesthetic forms* and the *cultural practices* of serialization as they are articulated in

and around interactive digital media. We focus centrally on serialized games (paradigmatically, game series consisting of sequels and continuations numerated "part 1," "2," "3," etc. or designated according to similar systems of serialization), because these forms of serialization explicitly mark the functional constitution of seriality itself – viz. an open-ended "operational aesthetic" of reflexive, productive, and contingently revisionary relation to the form of the series' own genesis (cf. Engell 2004, Jahn-Sudmann and Kelleter 2012; on the notion of "operational aesthetics," see Harris 1981, Gunning 1995, and Mittell 2006). Series, in other words, are self-observing systems that reflect on the dynamics of their own ongoing development, constantly re-adjusting the relations between their present state, their origins, and their future potentialities (cf. Kelleter 2012d). Serial structures in the medium of digital games are no exception, and they can accordingly be consulted as indices of the much broader transformations taking place in our current transition to a convergently digital popular culture.

We distinguish three (partially overlapping) categories or levels of digital seriality that are pertinent in the context of digital games:

- *intra-ludic seriality*, which manifests itself *within* games (paradigmatic for this level are the structures of repetition and variation that characterize the various "levels" or "worlds" of a game);

- *inter-ludic seriality*, which emerges *between* games (paradigmatic for this level are the explicit continuations of games – sequels, prequels, remakes, etc. – that identify game series as such);

- *para-ludic seriality*, which is constituted *outside* of the actual games (paradigmatic for this level are the transmedial narrativizations of game scenarios – e.g. adaptations on film or television, in comics and other media – often in connection with the merchandising of iconic game-related figures and/or the social practices of fan communities).

On the basis of these distinctions, we propose looking at serialization processes in digital games and gaming cultures from two distinct perspectives:

- From the perspective of a philosophically informed *media aesthetics*: An affective-phenomenological (rather than empirical) approach addresses above all the significance of the primarily intra- and inter-ludic serialities that inform gameplay. Of particular interest here is the serialized negotiation and aesthetic mediation of the difference between human temporal experience and the nonhuman temporalities of digital media (e.g. the microtemporalities of computer technics and the apparent synchronization processes effected in networks and databases under conditions of digital media convergence). The aim of this perspective is to deliver qualitative descriptions of the processes of temporal-serial experience that transpire at the interface between humans and digital technologies. The focus here thus lies on what we call the phenomenon of *serial interfacing* between games and gamers.

- From the perspective of *media history/cultural history*: This socio-cultural and media-ecological perspective aims to illuminate the serial practices of digital

games, especially at the inter- and para-ludic levels, in the context of collective negotiations of community and of the broader sociopolitical imagination (e.g. categories of identity and difference such as nationality, ethnicity, race, gender, or age, as they are reinforced or opened to question through serialized gameplay and related practices of gaming communities). This analytical mode seeks to locate the practices and experiences of play in their concrete historical and cultural settings. The focus here lies on what we term phenomena of *collective serialization*, i.e. processes of community-formation in connection with the consumption of serialized media.

We position these two modes of approach against the background of the far-reaching media-historical transformations taking place with the emergence of a global digital media ecology (see section 3a above). These processes of change, according to our central hypothesis, are registered (and can accordingly be studied) in the practices, experiences, and implications of the serial-temporal structures of digital gameplay. Of decisive importance for this hypothesis are: 1) a homology between the temporal "collapse" of real-time interaction in digital games and the "synchronization" processes that form an aspect of digital culture more generally (see section 3b above), and 2) the integration of serial games and game series in the discursive, medial, and socio-cultural fabric of our contemporary convergence culture, where they serve important cultural functions with regard to the changing parameters of digital-era forms of community (see section 3c above). On the basis of these two central relations between the serial structures of digital games and the larger ecology of our digital media environment, our complementary media-aesthetic and cultural-historical perspectives work together to illuminate not only the forms and processes of seriality in digital games, but also the changing contexts and conditions of popular seriality in the twenty-first century – and with them the very conditions of experience and practice in our increasingly digitally mediated lifeworlds.

As indicated above, the common ground for both analytical perspectives is located in the forms and practices of serialization that emerge on the inter-ludic level and generate explicitly marked game series (e.g. *Super Mario Bros.*, *Super Mario Bros. 2*, *Super Mario Bros. 3*, etc.; *Final Fantasy*, *FFII*, *FFIII*, *FFIV*, etc.; or *Pokémon Red* and *Blue*, *Gold* and *Silver*, *Ruby* and *Sapphire*, *Diamond* and *Pearl*, etc.). Of the three levels of ludic seriality sketched above, it is certainly this inter-ludic form that most closely resembles the dominant types of popular series of the past two centuries (as expressed in the ongoing tales of serialized novels, film serials, comic books, radio and television series, etc.). For example, by numerating their installments (according to a scheme of parts 1, 2, 3, etc.) or otherwise signaling continuation among serial parts, videogame series highlight their sequential structures and present themselves on a narrative level as the continuing unfolding of a previously established storyworld. These series can therefore be identified and analyzed with the help of categories developed in the growing body of research on pre-digital forms of seriality – for example, notions of "cumulative narrative" (Newcomb 1985), "operational aesthetics" (Mittell 2006, following Harris 1981), "serial one-upmanship" or "outbidding" (Jahn-Sudmann and Kelleter 2012). More significantly, though, the comparison with earlier (literary, filmic, televisual, etc.) forms of seriality allows for the identification of specific *differences* that arise between digital and pre-digital serialities, thus pointing to the still ongoing emergence of new forms of popular culture that manifest themselves (exemplarily, though by no means exclusively) in

digital games and the practical and experiential contexts of gamers' serial activities. Branching out from the common denominator of inter-ludic seriality towards the intra- and para-ludic serialities of digital games and gaming cultures, a media-aesthetic focus on "serial interfacing" and a media-historical approach to "collective serialization" work to reveal these differences from two complementary and complexly interlinked perspectives.

	intra-ludic seriality	inter-ludic seriality	para-ludic seriality
Serial Interfacing (media-philosophical / media-aesthetic perspective)	X	X	
Collective Serialization (media-historical / cultural-historical perspective)		X	X

4a. Serial Interfacing

Adjusted for focus on phenomena of seriality, early "ludological" positions offer a first glimpse of such differences (see section 3b above). In contrast to media such as film and television, game series' framing stories often turn out to be relatively marginal in comparison to the serializing effects of players' interactive engagement with games and their formal and procedural logics. For example, the patterns of repetition and variation that organize gamers' interactions with hardware and software across the various levels of *Super Mario Bros.* (the eight "worlds," each subdivided into four "stages") are more significant from an intra-ludic point of view than the rudimentary narrative that is related over the course of the game: In order to rescue the kidnapped Princess Toadstool, our protagonist Mario runs and jumps his way through the Mushroom Kingdom, fighting countless enemies – who have various abilities but absolutely no depth of character – along the way. Repeatedly, this culminates in a boss battle in the castle at the end of each "world." And repeatedly, Mario finds there a princess, but unfortunately – with the exception of the final castle – it's always the *wrong* princess, so he has to set out once more. This repetitive story is varied somewhat over the course of Mario's inter-ludic serialization (the setting shifts, for example, from the Mushroom Kingdom to outer space), but from an intra-ludic perspective the narrative content remains clearly subordinate to the interactive gameplay that it frames. This hierarchy, which marks a significant difference from many pre-digital serial media forms, accentuates an important aspect of digital media generally: their open processuality, which problematizes the discrete temporal dimensions (*histoire*, *discours*, reception) of narration (see section 3b above; on the basic process-orientation that distinguishes digital media from the more object-like media of the nineteenth and twentieth centuries, cf. Hansen 2009). The framing story about Mario's quest is static and predictable, but its instantiation in a concrete game

session is subject to all sorts of eventualities because the player directly controls Mario and acts in real time. The comparison between digital inter-ludic and pre-digital narrative serialities must therefore be supplemented with a media-phenomenological investigation of serial interfacing, in order to come to terms with the changed (and still changing) material and affective basis of digital seriality (cf. Hansen 2004, Shaviro 2010 for two approaches to the affective implications of material/medial transformations in the wake of digitalization).

The significance, in this respect, of serial interfacing can be gleaned paradigmatically from the example of the so-called *bullet time* employed in games like *Enter The Matrix* (2003) and *The Matrix Online* (2005) or in game series like *Max Payne* (2001, 2003, 2012). As an aesthetic operation in which an impossibly fast-moving (virtual) camera dolly revolves around human actors and nonhuman objects as they move in extreme slow-motion (or, most radically, as they are frozen in the form of perspectively manipulable still images), bullet time was made famous, above all, through its use in the first installment of the Wachowskis' popular *Matrix* film trilogy (1999, 2003, 2003). On the basis of its spectacular and innovative character, the effect itself soon underwent a form of serial continuation and dissemination in numerous artifacts across a variety of media – not least of which: the videogame tie-ins to the transmedial universe of *The Matrix*, as well narratively unrelated games and game series such as *Max Payne*. Moreover, and despite some of the hype about its unprecedented novelty at the time, *The Matrix*'s use of bullet time was not without conceptual and technical predecessors; on the contrary, it points to a (somewhat scattered, but essentially serial) historical lineage of similar or related aesthetic effects and techniques, from the chronophotography of Eadweard Muybridge and Étienne-Jules Marey to the short film *The Campanile Movie* (1997, Paul Debevec), which visual effects designer John Gaeta himself cited as a central reference for the conception of bullet time in *The Matrix* (Silberman 2003).

In terms of visual execution, the bullet time of games like *Max Payne* or *Enter the Matrix* might not be able to compete with its spectacular staging as a special effect in the Wachowskis' films (with the possible exception of the most recent *Max Payne* installment); in games, this spectacle quality is still there, but it is subordinated in some respects to the effect's foregrounded ludic functionality: bullet time is there to help the player master in-game events by slowing down one's opponents' – and one's own – movements, while the technical polling of input devices continues to take place in real time. With respect to the affective dimension of the gamer's experience, however, bullet time *qua* gameplay mode has consequences that are not altogether different from those of bullet time *qua* cinematic spectacle. Byron Hawk (2007) has argued that bullet time in the *Matrix* films corresponds to the "virtual" as described by Brian Massumi (2002): it depicts something that happens so fast that the human brain is incapable of perceiving it – "something that happens too quickly to have happened, actually" (Massumi 2002: 30). According to Hawk, bullet time is nothing less than a watershed moment in the history of cinema, because spectators had until then experienced only "static points" but no true motion: for example, the cinemagoer would see a shot of someone firing a gun, followed by the corresponding impact pictured in the next image. But, according to Hawk: "With bullet time, viewers see the trajectory, the movement of the bullet, slowed down, intensified, so they can get a sense of that movement, which is a primary form of reality beyond static points of visual perception" (Hawk 2007: 118).

Hawk points here to an important aspect of our experience of bullet time, even if his claim that the cinema had only pictured immobile instants until then is ultimately open to doubt. For bullet time, as it is employed both in film and in digital games, makes visible the duration of that which is not actually perceptible – what we could call, with Bergson (1911 [1907]), the "rhythm of duration" itself or, with Deleuze (1989 [1985]), the ineffable "interval" that gives rise to the revolutionary effect of the "time-image" in post-War cinema (cf. also Tofts 2007). In digital games, bullet time furthermore stands out for the way it aesthetically exposes or "mediates" (in a sense owing to Latour 1993) *algorithmic time* – it makes experientiable, that is, exactly that level of digital microtemporality that a player does not and cannot perceive, especially when he or she is wrapped up affectively and responding quasi-automatically to the constant flow of challenges that the game presents. Against this blindness to computational temporality, bullet-time sequences put the player in a position to experience an otherwise unheard-of level of control over space *via* the manipulation of time, so that an algorithmically generated time is rendered – paradoxically – as a *haptically experientiable duration*. This transduction produces not so much a substantial as in fact a relational duration – that is, a duration that *marks the difference between the time of conscious experience and the imperceptible time of microtemporal computation processes* taking place during each and every gameplay event.

And because bullet time is serially organized on the intra-ludic level – because, in other words, the effect is progressively but intermittently (i.e. with gaps between discrete episodes) re-activated under certain conditions, and not simply repeated but varied in a range of forms – the phenomenological implications sketched above are compounded over time: the perception of an in principle invisible time of algorithmic computation, as mediated by digital games employing the bullet-time effect, is strengthened through repeated exposure, over the course of which such experience is given the quality of an experimental configuration, a setting in which one can probe, aesthetically and ludically, the temporal parameters of a new form of "anthropotechnical interface" (cf. Denson 2011b). Moreover, the bullet time of digital games is serially organized not merely in the sense of being continually repeatable within a particular game; rather, the effect gains partial autonomy and becomes visible as part of a larger series of similar processes precisely when it is activated outside of an immediate gameplay challenge, i.e. apart from the diegetic and functional motivation of the effect within the game (e.g. in an empty hallway, where no opponent is threatening the player, and where there is accordingly "no good reason" to activate the bullet-time perspective – except for the perhaps unconscious purpose of probing, in the manner described above, the temporal dimensions of interfacing with the computer). In inter-ludic perspective as well, it is precisely with respect to such moments of "unmotivated" or "gratuitous" experimentation that the aesthetic differences between various implementations of bullet time – in various games and over the course of ongoing game series, as well as in various media and transmedial assemblages – becomes most clearly visible and open to critical scrutiny; here we witness a culture testing, by means of its popular media, the aesthetic bounds and trajectories of its transition to a computational environment. And it is therefore not without significance, finally, that we find – at the level of para-ludic seriality – countless examples attesting to the "serial autonomy" of bullet time in contemporary social network-driven online spaces, e.g. in the compilations of especially spectacular instances of the effect that gamers have uploaded to

YouTube, thus making their own unique and individual experiences of serialized temporal-technical mediation available for comment, comparison, and community-building.

4b. Collective Serialization

User-generated videos and related para-ludic practices lead us to the level of collective serialization, where materially "unique and individual experiences" (as we put it above) are subject to reproduction, collocation, exchange, and interchange. In short, experiences that were uniquely "mine" become open, at this level, to appropriation by "you," and they form a potential basis for the recognition and negotiation of "our" shared experience; here, the individual turns collective as the unique goes serial in digital environments. From a comparative cultural and media-historical perspective, Benedict Anderson's notion of "imagined community" (see section 3c above) facilitates a focus on these socio-cultural dealings with intra- and inter-ludic serialities, including their tendency to generate para-ludic discourses and material practices of all sorts. Anderson's concept has previously been marshaled to help explain pre-digital (cinematic and other) forms of seriality (cf. Denson 2013, Denson and Mayer 2012b, Mayer 2012, 2013),[3] but here again we find differences that are owing to the historical and medial specificities of digital seriality (see section 3c above). To begin with, the expansive transmedial franchises into which games and game series are often integrated exhibit a level of narrative, material, and operational totality ("vastness" – cf. Harrigan and Wardrip-Fruin 2009) that is virtually unheard of in pre-digital forms of seriality. More significantly, though, the digital "world building" (Jenkins 2006a: 114) that is characteristic for contemporary expressions of popular media convergence gives rise to structures and formats of community-formation that presuppose a new flexibility in the temporal organization of serial consumption: a transmedially mediated world does not have to be disclosed or explored in linear fashion, and the general digitalization of media contents of all sorts optimizes the accessibility of networked, co-present serial units, which can now be consumed according to (relatively) arbitrary frequencies, rhythms, and speeds.

It is precisely in this connection that the processual openness of games is of particular significance. For the real-time interactivity of digital games, as we have seen, puts the teleological "directedness" of narratives partly out of play and places gamers in the role of actors whose own subjectivities are open, on the basis of games' temporal indeterminacies, to negotiation and revision. This has consequences on the para-ludic level of imagined communities because not only diegetic identities (imagined identifications with fictional avatars) but also players' real-world social self-descriptions and collective negotiations of nation, class, gender, ethnicity – or simply their imagined inclusion in the class of gamers – are activated in serialized gameplay, reinforced through serial repetition or potentially opened up to revision. Anderson has shown how the serialization of media like the daily newspaper was involved in the production of collectives – or "serialities" (Anderson 1991, as well as Sartre 1991 [1960]) – such as the nation. Setting out from the practices accompanying long-running inter-ludic series, we can now ask about (and begin to trace) the implications of serialized gameplay's negotiable categories, agencies, and identities for the social world of lived differences and hierarchies, along with their

principles of inclusion and exclusion, as they are being re-articulated under digital conditions.

To approach such questions, we must keep in mind the complex imbrication of para-ludic processes of collective serialization ("high-level" serial processes, if you will) and the experimental probings of computational temporalities that take place at the level of intra-ludic seriality ("low-level" serialization). Anderson's conception of a seriality of nationhood, based in the seriality of the daily paper, suggests the same sort of connection between the minute level of concrete material media practice and the broad level of discursive, cultural, or imagined realities. Accordingly, our division of (affective-phenomenological vs. cultural-historical) perspectives must be seen as heuristic rather than metaphysical; it is a device for focusing attention rather than for marking ontological differences between levels or fields of activity. As we have seen, an examination of bullet time as a serialized form of aesthetic experimentation leads us necessarily to the serial proliferation of YouTube videos documenting those experiments, so that the prima facie isolated activities of individual gamers necessarily raise broader questions of community. Conversely, as well, collective negotiations of gaming (and other digital-era) communities are inseparable from low-level interfaces with computational technologies and the temporalities they embody; the seriality of collective serialization is itself a properly temporal experimentation, one that concerns the larger temporalities of historical becoming in relation to their transformation at the molecular level of digital computation. Again, micro- and macro-levels are exemplarily mediated, we contend, at the intermediate level of inter-ludic seriality, where processes of change become visible over the course of years and decades rather than milliseconds or millennia. It is here that the complementarity and interconnection of low-level and high-level transformations become scrutable to the complementary perspectives of a more local and formally interested media-aesthetics and a more global cultural interest in the political organization of subjectivity within a digital media ecology.

What we are suggesting, in short, is that processes of collective serialization are intimately tied to the same basic transformations that are at stake in practices of serial interfacing, which we described earlier as mediating "the difference between human temporal experience and the nonhuman temporalities of digital media." Hence, with respect to gameplay's cultural and thematic framings, it is no surprise that space-age scenarios have occupied a central place in computer games from the start; sci-fi visions of the future offer one means of imaginative engagement with the historical estrangement of our sensorial capacities from the computerized processes and "alien" (i.e. nonhuman) temporalities that increasingly structure our environments. Moreover, these technology-centric scenarios foreground an operational aesthetic according to which early gamers (often computer scientists, programmers, and tinkerers of various stripes) could imagine themselves operating machinery from the future or from an advanced civilization. But whereas the relatively recent example of bullet time emphasizes the incredible speed of our contemporary technical infrastructure, which threatens at every moment to outstrip our phenomenal capacities, earlier examples often mediated something of an inverse experience: a mismatch between the futurist fantasy and the much slower pace necessitated by the techno-material realities of the day.

The example of *Super Star Trek* (1978) illuminates this inverse sort of experience and casts a media-archaeological light on collective serialization, by way of the early history of gaming communities and their initially halting articulation into proto-transmedia worlds. *Super Star Trek* was not the first – and far from the last – computer game to be based on the Star Trek media franchise (which encompasses the canonical TV series and films, along with their spin-offs in comics, novels, board games, role-playing games, and the larger Trekkie subculture). *Wikipedia* lists over seventy-five Trek-themed commercial computer, console, and arcade games since 1971 ("History of Star Trek Games") – and the list is almost surely incomplete. Nevertheless, *Super Star Trek* played a special role in the home computing revolution, as its source code's inclusion in the 1978 edition of David Ahl's *BASIC Computer Games* was instrumental in making that book the first million-selling computer book.[4] The game would continue to exert a strong influence: it would go on to be packaged with new IBM PCs as part of the included GW-BASIC distribution, and it inspired countless ports, clones, and spin-offs in the 1980s and beyond.

A quick look at the game's source code reveals that *Super Star Trek* didn't just come out of nowhere, however:

Program Listing - The Game

```
12 REM SUPER STARTREK - MAY 16,1978 - REQUIRES 24K MEMORY
30 REM
40 REM ****          **** STAR TREK ****          ****
50 REM **** SIMULATION OF A MISSION OF THE STARSHIP ENTERPRISE,
60 REM **** AS SEEN ON THE STAR TREK TV SHOW.
70 REM **** ORIGINAL PROGRAM BY MIKE MAYFIELD, MODIFIED VERSION
80 REM **** PUBLISHED IN DEC'S "101 BASIC GAMES", BY DAVE AHL.
90 REM **** MODIFICATIONS TO THE LATTER (PLUS DEBUGGING) BY BOB
100 REM *** LEEDOM - APRIL & DECEMBER 1974,
110 REM *** WITH A LITTLE HELP FROM HIS FRIENDS . . .
120 REM *** COMMENTS, EPITHETS, AND SUGGESTIONS SOLICITED --
130 REM *** SEND TO:  R. C. LEEDOM
140 REM ***              WESTINGHOUSE DEFENSE & ELECTRONICS SYSTEMS CNTR.
150 REM ***              BOX 746, M.S. 338
160 REM ***              BALTIMORE, MD  21203
170 REM ***
180 REM *** CONVERTED TO MICROSOFT 8 K BASIC 3/16/78 BY JOHN BORDERS
190 REM *** LINE NUMBERS FROM VERSION STREK7 OF 1/12/75 PRESERVED AS
200 REM *** MUCH AS POSSIBLE WHILE USING MULTIPLE STATEMENTS PER LINE
205 REM *** SOME LINES ARE LONGER THAN 72 CHARACTERS, THIS WAS DONE
210 REM *** BY USING "?" INSTEAD OF "PRINT" WHEN ENTERING LINES
215 REM ***
220 PRINT:PRINT:PRINT:PRINT:PRINT:PRINT:PRINT:PRINT:PRINT:PRINT:PRINT
221 PRINT"                                    ,------*------,"
222 PRINT"                    ,------------    '---  ------,'"
223 PRINT"                    '-------- --'      / /"
224 PRINT"                      ,---' '--------/ /--,"
225 PRINT"                      '---------------'":PRINT
226 PRINT"            THE USS ENTERPRISE --- NCC-1701"
227 PRINT:PRINT:PRINT:PRINT:PRINT
260 CLEAR 600
270 Z$="
330 DIM G(8,8),C(9,2),K(3,3),N(3),Z(8,8),D(8)
370 T=INT(RND(1)*20+20)*100:T0=T:T9=25+INT(RND(1)*10):D0=0:E=3000:E2=E
440 P=10:P0=P:S9=200:S=2:B9=2:K9=0:X$="":X0$=" IS "
470 DEF FND(D)=SQR((K(I,1)-S1)^2+(K(I,2)-S2)^2)
475 DEF FNR(R)=INT(RND(R)*7.98+1.01)
480 REM INITIALIZE ENTERPRIZE'S POSITION
490 Q1=FNR(1):Q2=FNR(1):S1=FNR(1):S2=FNR(1)
530 FORI=1TO9:C(I,1)=0:C(I,2)=0:NEXTI
540 C(3,1)=-1:C(2,1)=-1:C(4,1)=-1:C(4,2)=-1:C(5,2)=-1:C(6,2)=-1
600 C(1,2)=1:C(2,2)=1:C(6,1)=1:C(7,1)=1:C(8,1)=1:C(8,2)=1:C(9,2)=1
672 FORI=1TO8:D(I)=0:NEXTI
710 A1$="NAVSRSLRSPHATORSHEDAMCOMXXX"
```

Here, the opening comment lines ("REM" indicates a non-executable "remark" in BASIC) mention not only the "Star Trek TV show" as an influence, but also a serial trajectory of inter-ludic programming, modification, debugging, and conversion (porting) that begins to outline a serialized collectivity of sorts. Beyond those participants mentioned by name (Mike Mayfield, David Ahl, Bob Leedom, and John Borders), a diffuse community is invoked – "with a little help from his friends…" – and, in fact, solicited: "comments, epithets, and suggestions" are to be sent personally to R. C. Leedom at Westinghouse Defense & Electronics. Reminiscent of a comic-book series' "letters to the editor" page (cf. Kelleter and Stein 2012), this invitation promises, in conjunction with the listing of the game's serial lineage, that readers' opinions are valued, and that significant contributions will be rewarded (or at least honored with a hat-tip in the REM's). Indeed, in these few preliminary lines, the program demonstrates its common ground with serialized production forms across media: since the nineteenth century, readers have written to the authors of ongoing series in order to praise or condemn – and ultimately to influence – the course of serial unfolding (cf. Hayward 1997, Looby 2004, Smith 1995, Thiesse 1980); authors dependent on the demands of a commercial marketplace were not at liberty simply to disregard their audience's wishes, even if they were free to filter and select from among them. What we see, then, from an actor-network perspective, is that popular series therefore operate to create feedback loops in which authors and readers alike are involved in the production of serial forms (cf. Kelleter 2012a) – which therefore organize themselves as self-observing systems around which serialized forms of (para-)social interaction coalesce (cf. Kelleter 2012d, as well as the contributions to Kelleter 2012b).

The snippet of code above thus attests to the aspirations of a germinal community of hackers and gamers, which has tellingly chosen to align itself, in this case, with one of the most significant and quickly growing popular-culture fan communities of the time: viz. the Trekkie subculture, which can be seen to constitute a paradigmatic "seriality" in Anderson's sense – a nation-like collective (complete with its own language) organized around the serialized consumption of serially structured media. And, indeed, the computing/gaming community had its own serialized media (and languages) through which it networked, including a plethora of computer-listings newsletters and magazines – such as David Ahl's *Creative Computing*, where *Super Star Trek* had been published in 1974, before *BASIC Computer Games* made it more widely known; or *People's Computer Company*, where Bob Leedom had mentioned his version before that; or the newsletter of the Digital Equipment Computer User Society, where Ahl had originally published a modified version of Mike Mayfield's program. These publications served purposes very much like the comic-book and fanzine-type organs of other communities; here, however, it was code that was being published and discussed, thus serving as a platform for further involvement, tweaking, and feedback by countless others. Accordingly, behind the relatively linear story of development told in the REM's above, there was actually a sprawling, non-linear form of para-ludic serialization at work in the development of *Super Star Trek*.[5]

And yet we see something else here as well: despite the computing industry's undeniable success in moving beyond specialized circles and involving ever larger groups of people in the activity of computing in the 1970s (and gaming must certainly be seen as central to achieving this success), the community described above was still operating with relatively crude means of collective serialization – more or less the

same paper-bound forms of circulation that had served the textual and para-textual production of popular serialities since the nineteenth century. In many ways, this seems radically out of step with the space-age fantasy embodied in *Super Star Trek*: in order to play the game, one had to go through the painstaking (and mistake-prone) process of keying in the code by hand. If, afterwards, the program failed to run, the user would have to search for a misspelled command, a missing line, or some other bug in the system. And God forbid there was an error in the listing from which one was copying! Moreover, early versions of the game were designed for mainframe and minicomputers that, in many cases, were lacking a video terminal. The process of programming the game – or playing it, for that matter – was thus a slow process made even slower by interactions with punch-card interfaces. How, under these conditions, could one imagine oneself at the helm of the USS Enterprise? There was a mismatch, in other words, between the fantasy and the reality of early 1970s-era computing. But this discrepancy, with its own temporal and affective dynamics, was a framing condition for a form of collective serialization organized along very different lines from contemporary dreams of games' seamless integration into transmedia worlds.

To begin with, it is quite significant that *Super Star Trek*'s functional equivalent of the "letters to the editor" page, where the ongoing serialization of the game is both documented and continued, is not printed in an instruction manual or other accompanying paraphernalia but embedded in the code itself. In contrast to the mostly invisible code executed in mainstream games today, *Super Star Trek*'s code was regarded as highly visible, the place where early gamers were most likely to read the solicitation to participate in a collective effort of development. Clearly, this is because they would have to read (and re-write) the code if they wished to play the game – while their success in actually getting it to work were more doubtful. Gameplay is here subordinated to coding, while the pleasures of both alike were those of an operational aesthetic: whether coding the game or playing it, mastery and control over the machine were at stake. Unlike the bullet time of *The Matrix* or *Max Payne*, which responds to an environment in which gamers (and others) are hard-pressed to keep up with the speed of computation, *Super Star Trek* speaks to a somewhat quainter, more humanistic dream of getting a computational (or intergalactic) jalopy up and running in the first place. In terms of temporal affectivities, patience is tested more so than quick reactions. If bullet time slowed down screen events while continuing to poll input devices as a means for players to cope with high-velocity challenges, the tasks of coding and playing *Super Star Trek* turn this situation around: it is not the computer but the human user who waits for – hopes for – a response. As a corollary, however, relatively quick progress was observable in the game's inter-ludic development, which responded to rapid innovations in hardware and programming languages. This fact, which corresponded well with the basically humanistic optimism of the Star Trek fantasy (as opposed to the basically inhuman scenario of *The Matrix*), motivated further involvement in the series of inter-ludic developments (programming, modification, debugging, conversion…), which necessarily involved coder/tinkerers in the para-ludic exchanges upon which a gaming community was being built.

Interestingly, in this case, the primary interfacing activities – revolving around coding as an act of "serial interfacing" in the sense outlined above – were themselves strictly para-ludic (rather than intra-ludic) activities, but the distinction seems to blur in the

context of *Super Star Trek*'s inter-ludic career, which tellingly mediates low-level interfacing and high-level community-building as equally directed at the serialized task of building a better machine. In contemporary gaming cultures, the latter task has since given way, for the most part, to professional game developers. Mainstream games still employ operational configurations for players to manipulate, but they tend to contain such elements within the diegetic fantasy-world of the game – they certainly don't expect players to get their hands dirty with coding. What the example of *Super Star Trek* reminds us, however, is that even in the apparently more integral and contained spaces of contemporary gaming, there is still a deep realm of serial practice and collective seriality at stake in gameplay. The "magic circle" that gets ever more magically sealed off as the infrastructure of code is pushed out of view has a rich and deep history of material exchanges, inter-ludic genealogies, and para-ludic activities.

5. To Be Continued…

The scholarly study of digital seriality has just begun. The ideas presented here are primarily designed to outline possible research perspectives and to offer preliminary theoretical distinctions that suggest themselves when we turn our attention to the seriality of digital games. We find it hardly necessary, however, to emphasize the cultural relevance of a series-oriented approach in connection with the digital or the medium of the computer game. The notorious efforts to habilitate popular culture as a worthy object of academic study have rarely been very productive anyway. The field of game studies may well have understood this fact more quickly than television studies. Nevertheless, in memoriam of a controversy that maybe never took place (or just possibly never should have taken place), perhaps we will be excused if we repeat, in this context, a line of argumentation that we seem to have heard somewhere before: A focus on seriality does not imply that the medial specificities of the digital game should be ignored, or that we can simply apply approaches from television studies or popular culture studies, without modification, to digital games and game series. On the contrary, we are calling for a serious consideration of both the specificities of game-based serialities *and* the common ground they share with other media-cultural practices and aesthetic forms. Our model of a media-philosophical, media-archaeological, and cultural-theoretical approach to serial interfacing and collective serialization, we believe, does justice to this basic idea that continuity and change are not essentially opposed but capable of complex interrelation, and we have sought to remain true to this thought both on an epistemic and on a quasi-ontological level. What, after all, is a series if not the continuing production of the same in the guise of the new, or, conversely, the constant production of the new in the guise of the same? The series has recently been called – and rightly so, we believe – the central "mark of modernity" (*Signum der Moderne*) (Beil et al. 2012). Thus, in the context of digital games as well, we should reappraise the significance of serial processes; we should regard them as nothing less than the media of an experimental aesthetics of modern life, at least to the extent that they offer a playful mode of access to the vicissitudes of the modern lifeworld – even, and perhaps especially, where the media-aesthetic processes of the digital elude our conscious experience.

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Notes

1   In the following, and in accordance with the focus of the interdisciplinary research group on "Popular Seriality – Aesthetics and Practice" (http://popularseriality.uni-goettingen.de) from which our research stems, we are dealing above all with forms of *popular* seriality, i.e. serial forms and serialization practices as they have characterized popular culture since the nineteenth century. We are less concerned here with seriality as a practice in fine art or a topic in philosophy, though we share Stephanie Boluk's (2009) conviction that "[w]hat binds these competing modes of seriality, emerging out of fine art, popular culture, political science and statistics appears to be a relationship to industrial society as modes of mass production, consumption and organization rely heavily on serial logics." Kelleter (2012a) provides a detailed introduction to the relations of popular seriality and other fields of serial practice and theory.

2   In this paper, "digitization" refers to processes by which non- or pre-digital media forms are transferred (e.g. scanned) into digital media files, networks, archives, etc. – for example, the transfer of classical Hollywood films to DVD or BluRay or the scanning and storage of paper-bound books in systems such as Google Books. By way of contrast, we use the term "digitalization" to refer to a more sweeping transformation of contemporary culture, which encompasses not only digitization practices in the narrow sense but also the move to a largely digital-born production culture, the widespread mediation of communication generally in digital networks, and arguably a transformation of human subjectivities and sensorial capacities themselves in this move to a convergently digital media environment.

3   Furthermore, several projects now getting underway in the context of the research group on "Popular Seriality – Aesthetics and Practice" (http://popularseriality.uni-goettingen.de) are working with Anderson's concept of "imagined community" in various contexts. These are: Daniel Stein, "Serial Politicization: On the Cultural Work of American City Mysteries, 1844-1860"; Ruth Mayer and Ilka Brasch, "Serializing Mass Culture: Popular Film Serials and Serial Structures in the United States, 1910-1940"; and Frank Kelleter and Kathleen Loock, "Retrospective Serialization: Remaking as a Method of Cinematic Self-Historicizing."

4   A more complete story of the game's history can be gleaned from several online sources which we draw on here: Maury Markowitz's page devoted to the game, "Star Trek: To boldly go… and then spawn a million offshoots," at his blog Games of Fame (http://gamesoffame.wordpress.com/star-trek/) features comments and correspondence with some of the key figures in the game's development; Pete Turnbull also recounts the game's history, including many of the details of its many ports to various systems (http://www.dunnington.u-net.com/public/startrek/); atariarchives.org hosts a complete scan of the 1978 edition of *BASIC Computer Games*, from which we reproduce an excerpt below (http://www.atariarchives.org/basicgames/); and a recent article in *The Register*, Tony Smith's "Star Trek: The Original Computer Game," features several screenshots and code snippets of various iterations (http://www.theregister.co.uk/Print/2013/05/03/antique_code_show_star_trek/).

5   A better sense of this can be had by taking a look at all the various iterations of the game – encompassing versions for a variety of flavors of BASIC and other languages as well – collected by Pete Turnbull (http://www.dunnington.u-net.com/public/startrek/).