The Pyrrhic Victory of Game Studies: Assessing the Past, Present, and Future of Interdisciplinary Game Research

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Abstract

Although game studies are widely viewed as an interdisciplinary field, it is unclear how interdisciplinary they actually are. In response, this article reads scientometric data and game studies editorials, handbooks and introductions through the lens of interdisciplinarity studies to assess game studies' status as an interdiscipline. It argues that game studies show drivers and hurdles typical for interdisciplines. Yet instead of establishing themselves as the broad umbrella interdiscipline of digital game research, they are becoming *one* narrow cultural studies multidiscipline *within* the growing and diversifying field of game research and education. Researchers from fields like human-computer interaction or communication are abandoning game studies venues in favor of disciplinary ones – ironically thanks to game studies legitimizing game research. The article suggests that a design orientation and cross-disciplinary boundary objects such as middle range theories could help to broaden, deepen, and secure future interdisciplinary game research.

Keywords: game studies, game research, interdisciplinarity, multidisciplinarity, transdisciplinarity, interdisciplinarity studies, design studies

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1. Introduction

Since their inception, game studies have been framed as an inherently *interdisciplinary* endeavor (Aarseth, 2001; Raessens & Goldstein, 2005; Mäyrä, 2008, 2009; Egenfeldt-Nielsen, Heide Smith & Tosca, 2012). In this, they partake in a general trend towards interdisciplinarity (Jacobs & Frickel, 2009). Particularly from the 1990s on, political, funding, and academic bodies have pushed interdisciplinary research and education. Disciplinary knowledge production has become too specialized and self-referential to solve our increasingly complex societal issues. Real innovation occurs when researchers work across disciplines on shared problems in applied contexts – at least that is the overt rationale (Weingart, 2010; Frodeman, 2010). Game studies are very much chiming in with this rhetoric (Mäyrä, 2009, p. 314–316). Yet compared with other contemporary interdisciplines like cognitive science (Thagard, 2010) or science and technology studies (STS) (Jasanoff, 2010), there is little reflection and clarity within game studies what interdisciplinarity means, how interdisciplinary game studies are, and what ramifications all this holds for the health and future of the field (Waern & Zagal, 2013, p. 1). In response, this article draws on *interdisciplinarity studies* (Frodeman, 2010) – a now significant body of research in science and technology studies and science policy – to assess the past, present, and future interdisciplinarity of game studies.

Probing the historical emergence of game studies, the article first demonstrates that game studies showcase drivers and barriers typical for interdisciplines. Using taxonomies of interdisciplinarity, the article then assesses how interdisciplinary current game studies are. Based on existing data and illustrating cases, it argues that game studies have sown the seeds of their own contraction into a narrow multidisciplinary field by establishing the relevance of game research across disciplines. In closing, the article articulates recommendations for sustaining interdisciplinary game research, namely a design orientation and the establishment of cross-disciplinary medium-range theories.

Thanks to the recent upsurge of scientometric studies of game research (Boutet, Coavoux, & Zabban, 2014; Carter et al., 2014; Mäyrä, van Looy & Quandt, 2013; Melcer et al., 2015; Quandt et al., 2015), the article will proceed argumentatively, reading existing data through the lens of interdisciplinarity studies. In terms of defining its object, it operates from the stance that academic fields are social constructs: they are categories and communities that people talk and act and materialize into and out of being (Golinski, 2005). Hence, making statements about the existence and identity of a field is never just descriptive. Every such meta-statement is always also a social and political act that

(re)produces the existence and boundaries of the field it refers to (cf. Gieryn, 1983). Instead of claiming objective knowledge about "game studies" or stipulating it as an etic analytic category, the article therefore follows the anthropological strategy to reconstruct the *emic discourse* of the game studies field (Headland, 1990). That is, it describes how self-identifying members of game studies construe its identity to each other, chiefly in outlets members acknowledge as central to their community (cf. Melcer et al., 2015), and textual genres whose professed purpose is to state "official" lines, such as proclamations by academic associations (*DiGRA*), editorials in relevant journals (*Game Studies*, *ToDIGRA*, *Games and Culture*), and introductory textbooks and handbooks. In contrast, the article uses "game research" to refer to all game-related academic research, no matter whether game studies members count it as game studies or not.

2. Past: The Expectable Rise and Growing Pains of Game Studies

Following the social constructivist logic, "game studies" began as an academic field when actors started to use the label to declare its existence and identify actors as belonging into it. As game studies have institutionalized, its members have become more willing to acknowledge and engage with precursors such as leisure studies (Rojek, Shaw & Veal, 2006), the philosophy of sport (Reid, 2012), the simulation and gaming community (Crookall, 2012), The Association for the Study of Play,[1] the International Society for Board Game Studies,[2] or new media studies (Wardrip-Fruin & Montfort, 2003).

Less conciliatory, it was in the early 2000s that scholars declared the "Year One" of game studies to fend off "colonising attempts" from e.g. "the current pseudo-field of 'new media'" (Aarseth, 2001), founded DiGRA in 2003, "the premiere international association for academics and professionals who research digital games and associated phenomena",[3] and organized DiGRA's "inaugural conference", declaring it "the largest event in the history of game studies so far" and "an important watershed moment".[4] Drawing on similar work around the specificity of hypertext and interactive fiction afforded by computing technology (e.g. Aarseth, 1997), game studies' initial claim to demarcation and existence were the "fundamentally unique aspects" of *digital* or *computer* games (Aarseth, 2001), which (the claim went) could not be fully captured by any existing field: 2001 was year one of "Computer Game Studies" (ibid.); DiGRA is the "Digital Games Research Association"; and the first handbook of the field, edited by co-organizers of the first DiGRA, was a *Handbook of Computer Game Studies* (Raessens & Goldstein, 2005; emphases added).

[1] http://www.tasplay.org/, accessed December 10, 2015.
[2] https://web.archive.org/web/20140205020357/http://www.boardgamestudies.info/, accessed December 10, 2015.
[3] http://www.digra.org/the-association/about-us/, accessed December 10, 2015.
[4] http://digra2003.org/, accessed December 10, 2015.

The second crucial component of this early boundary work was casting game studies as an *interdiscipline*. Parsing the constitutional declarations, textbooks and handbooks, we can distinguish four different framings of this interdisciplinarity as (1) a practical consequence of the field's newness, (2) a necessity of the complex nature of its object, (3) the field's major strength and (4) its major challenge.

First, given that game studies are a young field still in the making, it shows all the traces of its assemblage. Like any social actor, game studies are made of *other* actors (Latour, 2005), and not enough time has passed to invisibilize the seams. As Aarseth (2001, n.p.) put it: "We all enter this field from *somewhere else*". By necessity, the faculty, theories and methods of today's game programs are mainly recruited from or informed by other disciplines (Mäyrä 2009, p. 313).

The second framing, starting with Salen and Zimmerman (2004), argues that the "complex and polymorphous nature of games" (p. 4) warrants and indeed *requires* integrating multiple viewpoints.[5] Because games are "perhaps the richest cultural genre we have yet seen," "like architecture, which contains but cannot be reduced to art history, game studies should contain media studies, aesthetics, sociology etc. But it should exist as an independent academic structure, because it cannot be reduced to any of the above." (Aarseth, 2001, n.p.) Egenfeldt-Nielsen, Heide Smith and Tosca (2012, p. 2) similarly state: "Understanding how games work and why they look the way they do requires an interdisciplinary approach." Mäyrä (2008, p. 10) concurs: "the reality of games and play does not fit in any narrow model. Games, players and their interactions are too complex and interesting in their diversity to allow for all-powerful simplifications." He expands in a later text: "since games involve both representations and actions, both variously coded structures and their actual instantiation during the performance of play, there is an inherent need for multi- and interdisciplinary collaboration in the area of game studies." (Mäyrä, 2009, p. 319)

Along these lines – third –, interdisciplinarity is seen as a *major strength* of game studies: "different emphases and foci for the study of games remain, and that is the single most valuable contribution of this debate for game studies: games can be several different things, depending on how one approaches them." (Mäyrä, 2008, p. 10) As Krzywinska, Mäyrä and Crogan (2005, n.p.) put it in the first DiGRA "Hardcore" column:

> "The diversity of interests in the emergent field of digital games research is perhaps its primary strength. […] What is remarkable, and exhilarating, about this burgeoning field of inquiry is that it includes academics from a wide variety of disciplinary backgrounds, each using different methodologies and coming to the subject with diverse interests and concerns."

[5] A science studies scholar might counter that *any* entity is (or can be traced as) an over-complex assemblage. Only the modern disciplining of knowledge gave rise to the idea that the world is organized into separable "physical," "chemical," "economic," "psychological" etc. strates (Latour, 1993).

They continue that this diversity – fourth – presents a *major challenge*: "With so many differently framed perspectives and investments it is inevitable that what constitutes as core to the academic study of digital games is subject to, sometimes heated, dispute." (Krzywinska, Mäyrä and Crogan, 2005, n.p.) In the words of Mäyrä (2008, p. 6): "game studies is a multidisciplinary field […]. It is only when one starts to organize this diversity […] that things get complicated."

In short, strategically or not, game studies defined its identity against existing fields through interdisciplinarity – down to the very label "studies": Originally used for research on geographic regions or historical periods, it has come to refer to research around a particular cultural group or phenomenon that lacks a disciplinary core, integrating multiple approaches instead (Repko, 2011, pp. 8–11).

2.1 Drivers

Why did actors in the early 2000s feel compelled to construct game studies as a new interdiscipline around digital games? Following the Scientific and Intellectual Movement (SIM) framework, the emergence of an interdiscipline is little different from that of social movements and subcultures (Jacobs & Frickel, 2009). SIMs are "fundamentally political outcomes, the result of struggles for resources, identities, and status" against the resistance of existing institutions (Jacobs & Frickel, 2009, p. 57). Recent historical studies have identified a number of drivers and correlating types of interdisciplines (Jacobs & Frickel, 2009). Against this literature, game studies appear as an amalgam of multiple drivers and types:

Similar to *topical interdisciplines* like urban studies, game studies organized around a subject matter – digital games –, to then expand into related phenomena. Many actors who claimed that digital games required their own field in the 2000s today urge to extend that field to non-digital games (Björk et al., 2015) and more broadly, "the study of play in society" (Mäyrä et al., 2015).

Like most interdisciplines, game studies responded to new *epistemic questions* and *social issues* brought about by new technologies (Jacobs & Frickel, 2009). Digital games spurred utopian hopes of transforming education (Prensky, 2001; Sawyer, 2002; Gee, 2003) as well as moral panics about video game violence, social isolation, and addiction (Senate Governmental Affairs Committee, 1993; see Ferguson, 2011, Karlsen, 2015, for reviews). In Germany, to give but one example, almost all game-related research in the early to mid-2000s concerned the effects and potential ban of so-called "killer games" (Hans-Bredow-Institut, 2007).

Closely connected to this, like queer studies and other interdisciplines organized around the *life experience* of a social group (Jacobs & Frickel, 2009, p. 57), game studies were fueled by a subculture establishing and acquiring legitimizing academic knowledge and positions: game studies scholars are *aca/fans* (Hills, 2002) that turn their passion into a research profession, defending their lifestyle through

research that defuses moral panics and elevates gaming as valuable cultural practice. The majority of self-identifying game researchers also self-identifies as "gamers" (Mäyrä, van Looy, & Quandt, 2013, pp. 11–12). Quandt and colleagues (2015) found an overlapping age, identity, and discipline gap: Researchers that are young, teach games, and self-identify as game researchers and/or gamers show a significantly greater belief in the positive effects of digital games. Thus, when an older generation of psychologists rang alarm bells regarding video game violence, it was the young generation of game aca/fans that came to the rescue, as can be seen in self-confessed aca/fan Henry Jenkins' (1999) congressional testimony in the wake of the Littleton School shootings, or the "Open Statement" (Adachi et al., 2013) signed by 230+ media scholars critiquing the American Psychology Association's 2005 policy statement linking aggressive behavior to video game exposure. This puts game studies in a tradition with cultural studies, comic studies, or hip-hop studies that render popular culture respectable through scholarship (Railton, 1999). Indeed, when Dyer-Witheford and De Peuter (2009, pp. xxiv-xxviii) chart the maturation of games research as three quasi-Hegelian generations of condemnation, celebration, and emancipated critique, they closely match the generations of cultural studies charted by Jenkins (2006, pp. 11–12): from scholars that establish popular culture as worthy of attention by academically distancing oneself from them, to scholars that celebrate, embrace, and identify with popular culture, to scholars that engage in informed critique 'from within.'

Finally, like social work and other *professional preparation interdisciplines*, game studies answered to and capitalized on economic demands (Jacobs & Frickel, 2009, p. 58; Klein, 2010): nurturing national "creative industries" through research transfer and vocational training for game designers and developers. Early game studies publications opened with an almost ritualistic self-legitimizing appeal to the growing economic importance of digital games (see only Raessens & Goldstein, 2005, p. xii). Arguably the most influential ranking of (mostly) US and Canadian game programs, the annual Princeton Review "Top Schools for Game Design", explicitly focuses vocational training for game design and development.[6] Even successful game research centers like the Center for Games and Playable Media at UC Santa Cruz advertise with their Princeton Review ranking.[7] According to a 2015 survey among 73 international game programs, the overwhelming majority of the top ten required courses teach design, development, and production. Instead of providing the overarching educational umbrella, "critical game studies" is listed as *one* component course of game education programs – and is absent in 39% of said programs (Steinkuehler et al., 2015, p. 10, 13). Produced by the Higher Education Video Game Alliance

[6] http://www.princetonreview.com/college-rankings/game-design, accessed December 10, 2015.
[7] https://games.soe.ucsc.edu/node/1374, accessed June 19, 2016.

(HEVGA), the first international organization of game programs in higher education, the report itself puts the value of game education chiefly in terms of the economic importance of vocational training:

> "Video game education programs are fostering the next generation of video game engineers and designers, creating an environment of committed students, establishing a pipeline of talent, and improving diversity in the field. The findings and statistics that follow signal positive momentum for the video game industry as it continues to drive job creation and economic growth nationwide." (Steinkuehler et al., 2015, p. 3)

2.2 Hurdles

Shifting from drivers to hurdles, again, game studies offer a picture common for interdisciplines: In the early years of a new interdiscipline, its subject matter lacks theory-based legitimacy within traditional disciplines, and potentially relevant existing bodies of knowledge are still uncharted. Thus, researchers collaborate across disciplines to mutually support claims to legitimacy and the search for relevant knowledge (Raasch et al., 2013). The new subject generates early attraction for young scholars, as it features ample opportunity to break new research ground, a relative lack of competition and freedom from established frameworks and institutions, easy public visibility, and a supporting groundswell of student interest (Pfirman & Martin, 2010). The formation of organizations and venues like DiGRA or the *Handbook of Computer Game Studies* (Raessens & Goldstein, 2005) showcase exactly this collaborative searching and support movement. And fourteen years in, game studies "is still dominated by PhD students and untenured faculty, not to mention master students." (Aarseth, 2015) Quandt et al. (2015, p. 987) likewise found a very small age difference between professors and PhD students in digital game research, indicating the youth of the field.

However, interdisciplines and their young researchers quickly encounter barriers: less recognition by established scholars; doubts regarding the quality of interdisciplinary work; friction due to incompatible epistemic cultures, not the least when it comes to peer review; fewer sustained funding and publication opportunities; less representation in academic political bodies; less teaching support infrastructure; inertia of disciplinary and administrative institutions; lacking field-defining theoretical frameworks; and more than anything else, an academic labor market organized into disciplinary sub-markets, and hiring and promotion criteria that are unclear and/or beholden to the discipline of the host department, devaluing novel, atypical interdisciplinary research (Jacobs & Frickel, 2009; Pfirman & Martin, 2010; Holbrook, 2010). None of these issues will be news to any game studies scholar (see e.g. Mäyrä, 2009; Aarseth, 2015).

3. Present: The Pyrrhic Victory and Narrowing Mind of Game Studies

As Waern and Zagal (2013, p. 1) observe, the terms "multidisciplinary," "interdisciplinary," and "transdisciplinary" are often used interchangeably to describe game studies, without much thought what these terms entail (see Mäyrä, 2008, p. 3, 6, 11 for one example). To rectify this, this section will clarify terms, drawing on current taxonomies in interdisciplinarity studies, to then assess how interdisciplinary game studies are.

3.1 A Taxonomy of Interdisciplinarity

Interdisciplinarity broadly describes a spectrum of increasing dissolution of disciplinary boundaries, *multidisciplinarity* (MD) being the weakest and *transdisciplinarity* (TD) the strongest form, with *interdisciplinarity* (ID) forming both the middle and umbrella term (Klein, 2010, p. 16). Along this spectrum, ID researchers have identified several dimensions (Huutoniemi et al., 2010, pp. 81–85):

- *scope*: from *narrow ID* spanning only few, homogenous disciplines, to *broad ID* spanning multiple disciplines with highly heterogeneous epistemic cultures;
- *type*: from *partial* to *full* integration: integrated objectives; dialogic and interactive collaboration between disciplinary researchers; integration of multiple forms of evidence and methodological approaches towards new, disciplinary-spanning frameworks with relevance across disciplines;
- *rationale*: from *instrumental ID* (answering social and economic problems) to *critical ID* (questioning and challenging dominant orders).

Turning to the individual terms, *multidisciplinarity* denotes the *juxtaposition* of disciplinary entities that still retain their disciplinary identity (Klein, 2010, p. 17). Other frequent terms are *encyclopedic* or *indiscriminate ID* (simply putting different disciplinary knowledges in one container, as in an encyclopedia), or *pseudo ID* – the notion that the wide remit of a field (philosophy) or applicability of a method (mathematical modeling) would already bridge disciplines. Richer forms of MD are *contextualizing ID* (e.g. a biology problem is the context for a computer science project) and *composite ID*, where different disciplinary assets are used to solve one problem, but still in a non-integrated fashion: each discipline can produce its "deliverable" independently as a sequential input into the next.

To illustrate: A curriculum that juxtaposes courses on game engines, virtual ethnography, and game design patterns, a handbook that enlists different disciplinary viewpoints on roleplaying games, a research project that puts a economic, technical, and user perspective on in-game purchases side-by-side would all count as multidisciplinary.

Interdisciplinarity, in contrast, is characterized by the *intentional interaction and integration* of disciplinary viewpoints (Klein, 2010, p. 18). It is commonly differentiated into empirical, methodological and theoretical ID (Klein, 2010; Huutoniemi et al., 2010, p. 84). *Empirical ID* describes the integration of

multiple sources of evidence or data to answer a research problem. *Methodological ID* means that methods and conceptual tools from different disciplines are combined – in a weak, *auxiliary* fashion, when one field merely borrows another field's method for one time, a stronger, *supplementary* fashion when a field integrates and comes to rely upon another field's methods and concepts (e.g. psychological testing in educational research), and *structural* if the cross-fertilization leads to the creation of new methods, such as game theory in mathematics, economics, and biology. *Theoretical ID* is viewed as an even deeper disciplinary integration, where new theories are intentionally developed and then used to inform and organize new research endeavors. This may take the form of *integrated ID*, where theories and insights of one field are integrated into and transform another, or *generalizing ID*, where one theoretical framework is used across and informed by multiple fields.

To illustrate again, a curriculum in which ethnographic fieldwork and game programming are integrated as part of one game development project, an article that draws on behavioral economics to answer a game balancing problem, a model of game engagement that merges sociological and psychological processes and concepts, or a method for assessing player cooperation that integrates biofeedback, proxemics, and a humanities-derived conceptual coding of player action types would all constitute interdisciplinary game research.

Transdisciplinarity, finally, is understood as an overarching synthesis that fully transcends the organization of knowledge and knowledge production into disciplines (Klein, 2010, pp. 24–26). This may take the form of a unified *summa* of human knowing, or unified paradigms like Marxism, structuralism, or cybernetics. Historically, transdisciplinarity has remained more of an ever-elusive aspiration. The fact that it by definition seeks to transcend the limits of an individual subject matter makes it hard if not illogical to construe a hypothetical illustration limited to games. The extension of games into a universal representational calculus and engine for all human culture suggested in Hesse's novel *The Glass Bead Game* (1975/1943) maybe comes closest to a transdiscipline of games.

3.2 How Interdisciplinary Are Game Studies?

So how do game studies measure up? Regarding *curricula*, a cursory survey of high-ranking game design programs[8] suggests overwhelmingly encyclopedic and occasionally composite MD: Programs are often compartmentalized into different quasi-disciplinary tracks, even hosted by different departments. In the consistently top-ranked games program at the University of Southern California, for instance, students can either take a BFA in interactive entertainment, hosted by the School of Cinematic Arts, or a BS in computer science, hosted by the School of Engineering. Although the two degrees share courses, those courses are also compartmentalized: each focuses on "pure" design, computer science,

[8] http://www.princetonreview.com/college-rankings/game-design, accessed December 10, 2015.

humanities, or social science topics, and is taught by faculty from different disciplines hosted in different schools.[9] Integration of perspectives is rarely actively nurtured through explicit pedagogies (DeZure, 2010); at best, it is simply expected from students as part of a production studio or capstone project.

Regarding *research*, game studies are likewise disintegrated into sub-communities – a common phenomenon of interdisciplines (Jacobs & Frickel, 2009, pp. 58–60). From the outset, scholars observed a split in the game studies community between *humanities* scholars interested in games (their formal specifics and how they express meaning), and *social science* researchers interested in players (their culture, how they use games and how games affect them), and between *nomothetic* category and theory development and *ideographic* work defending the idiosyncrasies of individual cases (Aarseth, 2007; Egenfeldt-Nielsen, Heide Smith & Tosca, 2012). Underneath these two camps, Egenfeldt-Nielsen, Heide Smith and Tosca (2012, pp. 10–12) find five clusters: the textual analysis of games by literature and film studies; the observation of players by sociology, anthropology, and cultural studies; the analysis of culture by cultural studies; philosophical inquiries into the ontology of games; and metrics studied by computer science and psychology. Konzack (2007) identified eight rhetorics of contemporary game research. And in a keyword and venue cluster analysis of core game research venues from 2000 to 2014, Melcer and colleagues (2015) identified seven different sub-communities (constituted by strongly linked venues).

3.3 The Pyrrhic Victory of Game Studies

In fact, one could claim that game studies' success in establishing the relevance of games as a research topic across disciplines has fed its disintegration as an interdiscipline. As the "origin" disciplines of game studies build up an internal critical mass of game-related venues, reviewers, theories, methods, and funding, their gravity is pulling researchers into topical subfields within their home disciplines, away from the interdiscipline game studies.

The case of human-computer interaction

In human-computer interaction (HCI), for instance, games were traditionally accidental to its main research streams, as evidenced by their absence in standard handbooks and textbooks (Dix et al., 2004; Rogers, Sharp & Preece, 2012; Hartson & Pyla, 2012). This has radically changed in the past decade. A community of HCI researchers has managed to grow and organize game research within the premier scholarly organization of HCI, ACM SIGCHI (Special Interest Group on Computer-Human Interaction), which hosts the premier HCI conference, CHI (Annual SIGCHI Conference: Human Factors

[9] http://viterbi.usc.edu/admission/curriculum.htm, http://cinema.usc.edu/interactive/degrees.cfm, accessed December 10, 2015.

in Computing Systems). They instituted an official SIGCHI games and play community (Bernhaupt & Isbister, 2013), a regular Special Interest Group meeting, Student Games Competition, and Game User Research workshop at CHI,[10] and from CHI 2016 on, an official games and play subcommittee – meaning a games-dedicated reviewing committee and thus, track.[11] The share of game-related papers and notes at CHI has risen sharply from 2.5% (2 papers) in 2003 to 8% (32 papers) in 2013 (Carter et al., 2014). And that excludes the newly created topical conference CHI Play, with 30 accepted submissions in 2014 and 40 in 2015, or other newly formed venues such as *Advances in Computer Entertainment Technology*, starting 2004, or *Entertainment Computing*, starting in 2009.

There are now established game research topics germane to HCI: game usability, user research, and user experience (Isbister & Schaffer, 2008; Bernhaupt, 2010). Analyzing a decade of game-related CHI publications, Carter and colleagues (2014) found five topical research clusters: applied gaming; game design, evaluation, and development methods; tangible, public, and location-based gaming; interface design; and player experience. Notably, Carter and colleagues did *not* find significant or sustained work on questions considered core to game studies; cross-citation between HCI and game studies only occurred within the smallest research cluster, player experience (Carter, Downs, Hansen, Harrop & Gibbs, 2014, p. 33).

The case of communication research

Similarly, whereas game research was traditionally fringe in communication research, it has institutionalized in the past five years. ICA, the largest international scholarly organization of the field, formed a Special Interest Group Game Studies in 2011, which became an official division in 2015, with voting rights and its own dedicated conference sessions at the ICA's premier conference, the synonymous *ICA*.[12] Communication research has seen a massive growth in game research, both in its core journals (Quandt et al., 2015) and the *ICA* conference (from 23 game-related papers in 2005 to 92 in 2014, not counting papers presented at game-focused pre-conferences, which began in 2013[13]). The largest European communication research organization, ECREA, likewise formed a Temporary Working Group Digital Games Research in 2011, which became an institutionalized Section in 2015,[14] organizing pre-

[10] http://gur.hcigames.com/, accessed December 10, 2015.
[11] https://chi2016.acm.org/wp/guide-to-selecting-a-subcommittee-for-submission/#games-and-play, accessed December 10, 2015.
[12] http://game.icahdq.org/ , accessed December 10, 2015.
[13] http://convention2.allacademic.com/one/ica/ica05/index.php, http://game.icahdq.org/ohanaFiles/file/ICAGSBUSINESSMEETINGMINUTES2014.pdf, accessed December 10, 2015.
[14] http://www.digital-games.eu/?p=611, accessed December 10, 2015.

conferences to the main ECREA conference *ECC* since 2011, topical conference series like *multi.player*,[15] and from 2016 on, a whole games track at *ECC*.

Game-related communication research again forms a homogenous body of problems, theories, methods, and authors: overwhelmingly using laboratory experiments and surveys to study the uses and effects of games understood as entertainment media, framed through psychological constructs such as aggression, mood management, presence, involvement, self-determination, or appreciation (Vorderer & Bryant, 2006; Reinecke & Trepte, 2012). In a sense, the uncomfortable co-existence of largely quantitative, psychological media effects research and largely qualitative media studies research on the active audience in early game studies (Egenfeldt-Nielsen, Heide Smith & Tosca, 2012, pp. 255–280) has been resolved not through integrating both in interdisciplinary models and projects, but through disaggregating researchers into different communities.

This exodus to home disciplines is common in maturing interdisciplines (Jacobs & Frickel, 2009; van Rijnsoever & Kessels, 2011). Interdisciplinary publications consistently contribute less to career advancement than disciplinary ones (van Rijnsoever & Kessels, 2011). Hence, it is rational for researchers from established disciplines to shift from interdisciplinary to disciplinary publication venues where they can – and evidence suggests that they do (van Rijnsoever & Kessels, 2011). Given the choice, it is always prudent for an HCI researcher to prefer *CHI* over *DiGRA*, and for a communication scholar to try *Journal of Communication* before *Games and Culture*. This becomes more not less true as HCI and communication departments are starting to recruit for faculty with games expertise: a curriculum vitae of discipline-germane venues is always easier to hire, tenure, and promote than an interdisciplinary one (Pfirman & Martin, 2010).

3.4 The Narrowing of Game Studies

As a result, while game studies were initially formed to be the umbrella interdiscipline *of* (digital) game research, they have become a sub-community *within* game research. Just as game studies are *one* course component within current game education programs, the network analysis of Melcer and colleagues (2015) suggests that "core" game studies venues (*DiGRA*, *Games and Culture*, *The Philosophy of Computer Games*, *Game Studies*, *Eludamos*) form *one* cluster within the total network of game research. And this analysis excludes general-purpose venues in e.g. HCI or communication research, where we are seeing a massive growth of disciplinary game research. In parallel, the avowed umbrella

[15] http://www.digital-games.eu/?p=571, accessed December 10, 2015.

game studies conference *DiGRA* has been contracting from a peak of 133 full papers in 2009 to 90 full papers in 2011, 73 in 2013, and now 38 in 2015.[16]

What remains is an increasingly *narrow* interdiscipline (Klein, 2010). The most notable feature of current game studies introductions and handbooks is how small and homogenous their actual disciplinary scope is. The "origin" fields Aarseth (2001) lists are anthropology, sociology, narratology, semiotics, film studies, media studies, and English. Salen and Zimmerman's (2004) three schemata rules, play, and culture look at games and play entirely from a design, humanities, and social science perspective. Raessens and Goldstein (2005, p. xii) break out the six possible approaches to computer games as (1) philosophical and formal definitions and histories of computer games, their (2) design, (3) reception, and games as (4) aesthetic, (5) cultural, and (6) social phenomena. Egenfeldt-Nielsen, Heide Smith and Tosca (2012) spend a good 80% of their introductory textbook on humanities and cultural studies topics: defining games and game genres, game history, game aesthetics, games in culture, narrative, active audiences. The remainder touches on the game industry, serious games, and behavioral science approaches to game media effects. Mäyrä's *Introduction to Game Studies* (2008) is no different: it covers games as cultural systems, the history and definition of games and play, followed by four chapters on historical epochs and characteristic genres, concluded with one chapter on doing game studies whose "toolbox" only entails humanities, social sciences, design research, and game play as methods. Now all of this may reveal the disciplinary origins of the respective authors – Zimmerman having a background in design, Salen in graphic design, Raessens in media philosophy, Aarseth and Mäyrä in comparative literature, Smith in film and media studies, etc. But even so, the very fact *that* the defining texts are unanimously written by humanities scholars and designers is itself a symptom of game studies' narrow disciplinary remit.

As further evidence, a scientometric analysis of the core journals *Game Studies* and *Games and Culture* found that 49% of their articles come from humanities and art and design departments, only 22% from communication research, 15% from social sciences, and 4% from computer science (Boutet, Coavaux & Zabban, 2014).[17] A 2012 survey on the identity of game researchers distributed via ICA,

[16] http://www.digra.org/digital-library/, accessed June 19, 2016. This intentionally disregards the outlier of just 16 full papers in 2014, when DiGRA changed from a bi-annual to annual format. Even adding 2014 and 2015 (the first two annual DiGRAs) together yields 54 full papers, the lowest since 2009. Notably, DiGRA switched from chiefly full papers (2003-2007) to full papers and abstract-only presentations in 2009, so this steady decline in full papers *could* be a slow shift from full papers to abstracts. There is sadly no easily accessible record of DiGRA abstract-only presentations to test this alternative explanation. That being said, a shift from archival full paper submissions to abstract-only would itself be indicative of an exodus of computer science and HCI scholars, for whom conference proceedings count as prime publication outlets. Hence, abstract-only conference presentations are rare in these fields, whereas they are common in the more monograph- and journal-centric humanities and social sciences (Lisée, Larivière & Archambault, 2008; Engels et al., 2012).

[17] Discounting papers by authors from multiple disciplines.

ECREA and DiGRA found that 75% of respondents had a disciplinary background in the humanities, art, design, media studies and communication research (Quandt et al., 2015).

There are multiple ways of linking the rapid growth of game research in HCI and communication, the apparent stagnation of game studies, and the disconnect of the three fields. They could be due to HCI and communication researchers actively migrating from prior work in game studies into their home fields, as in other interdisciplines. They could be due to new researchers directly publishing in their home fields from the outset. Or they could be a mixture of the two. Whatever the case, game studies are today constituted by humanities, qualitative social sciences, and design scholars focused on games and play as *cultural* phenomena of meaning-making, with homogenous epistemic cultures: some form of constructivism, pragmatism, or transformative critical theory, with a tendency towards qualitative or textual analysis. The discourses acknowledged as "genuine" products of game studies – the magic circle, ludology versus narratology, procedural rhetorics, game design patterns – are matters of concern for humanists and designers. Even where authors discuss the internal rifts of game studies – games/texts versus players, formalism versus situationism – they discuss rifts *within* the humanities and qualitative social sciences. Economics (that games have particular markets, value chains, pricing, marketing, and business models) or computer science (that games involve particular engineering problems), their methods and research genres (models, simulations, experiments, system papers) don't even figure, despite their huge impact on the game industry. Where game studies have brought in technology – in platform studies –, it is unsurprisingly again to ask how technology affords and constrains cultural expression (Montfort & Bogost, 2009, p. vii).

Yet even this narrow focus on games and play as cultural phenomena again is often multidisciplinary, juxtaposing different rhetorics, theories, methods in journals, books, and conference halls. There is some empirical and auxiliary methodological interdisciplinarity. Good examples are Linderoth's, Björk's, and Olsson's (2014) study of pickup groups in *Left 4 Dead 2* that integrates sociological frame analysis with game design patterns, or the *Game-O-Matic* project that combines rhetorics and computer science (Treanor et al., 2012). But game studies are lacking genuine new theory/method couplings, let alone theories that organize research across disciplines and paradigms. Thus, game studies is at present a narrow and partially integrated interdiscipline at most, lacking integrated objectives, dialogic collaboration between diverse disciplinary researchers, and routine integration of multiple forms of method and evidence.

Indeed, game studies have reacted skeptical if not hostile to new game research entrants, as the case of gamification shows. Appearing on the cultural landscape around 2010, gamification – the use of game design elements in non-game contexts – presents the newest iteration of applied games and play, rapidly outpacing serious games in public attention (Walz & Deterding, 2015). One might assume that

game studies would actively embrace gamification as a widening of its relevance. Instead, game studies scholars predominantly critiqued gamification as "a perversion of games" (Bogost, 2011; cf. Deterding, 2015 for a review). A recent systematic review suggests that gamification research overwhelmingly appears in HCI, computer science, marketing, and education venues, not game studies (Seaborn & Fels, 2015).

This aversive reaction has been partially motivated by a perceived lack of rigor among industry gamification proponents, and partially by defending the epistemic sovereignty of game studies over games: gamification has nothing to do with "real games" and its proponents don't "really" know or care about them because they don't subscribe to (and cite) what game studies scholars say "real games" "really are" (cf. Consalvo & Paul, 2013). Underneath this boundary work (Gieryn, 1983), Deterding (2015) observed a clash of *rhetorics* – bundles of worldviews, epistemic interests, and importantly, values and moral politics, analogous to the rhetorics of play research identified by Sutton-Smith (1997). Whereas game studies scholars predominantly subscribe to romantic, progressive values of "games for games' sake" and games as a means of individual expression and questioning the social order, the incoming marketers, economists, and designers often subscribe to a rational, conservative instrumentalization of games and play to reinforce and perfect the standing social order (Deterding, 2015; Carter et al., 2014).

4. Future Scenarios

One possible response to this picture is to actively embrace the reality of games research differentiating into intra-disciplinary fields and game studies as the cultural studies of games and play as meaning-making phenomena – analogous to e.g. film studies. This would mean a clearer, but also smaller epistemic and practical authority claim of game studies. Another response would be to try and deepen and broaden the interdisciplinarity of game studies, looking at the success factors of established interdisciplines like cognitive science, HCI, or communication research.

4.1 Institutional scenarios: applied game design studies

As noted earlier, the most persistent institutional barrier to interdisciplines are disciplinary labor markets and hiring and promotion criteria. The most promising *institutional* scenario for an interdisciplinary game studies thus likely consists in its establishment as an *application-oriented* field like nursing, management studies, or HCI, since these fields have been able to find and sustain a stable demand for their education and research, and to grow a labor market which chiefly hires and promotes faculty "from within." (Jacobs & Frickel, 2009). In this light, the vocational orientation of today's game education programs appears as an actual boon. What they need for full institutionalization are interlocking

terminal degrees and recruitment and promotion criteria: game programs that train, hire, and promote game PhDs and MFAs.

Following this logic, a *design orientation* likewise holds promise for growing and sustaining game research. Pragmatically, research *on* game design (and how to improve it) promises immediate impact, which is all the more relevant given the ongoing political shift of research evaluation towards impact (Huutoniemi, 2010; Holbrook, 2010).

Second, carpentry (Bogost, 2012), critical making (Ratto, 2011), research-creation (Chapman & Sawchuk, 2012), and design(-based) research (Collins, Joseph & Bielaczyc, 2009) not only speak to games as complex cultural artifacts and the design inclinations of many current game scholars and students: they realize designing as a genuinely different and valuable pedagogy and mode of inquiry in itself.

Third, design, broadly understood as a reflective practice around the solution of wicked problems, is an inherently interdisciplinary process of integrating multiple practices and knowledges (Boradkar, 2010). Design and design studies have wrestled intensely with bridging the epistemological gap between research and practice. Thus, game *design* studies, informed by design studies and understood holistically as research *about*, *through*, and *as* game design, may be a way of bridging both multiple disciplines and research and practice (Kultima, 2015). The interrelation of design practice and design studies may provide a useful template: Where design practice is engaged in "trans-sector, transdisciplinary problem-solving," design studies deliver practically useful knowledge and tools *and* serve as a reflexive social, political, moral inquiry into and critical corrective of design practice (Boradkar, 2010, p. 283; Klein, 2010, pp. 22–23).

Finally, according to Melcer et al. (2015), learning and education form the central research cluster connecting all other clusters in current game research. Similarly, applied gaming for learning, health, and social change are central research themes in HCI (Carter et al., 2014) and communication research (Vorderer & Bryant, 2006). Thus, the design of applied games and play for learning and social change (including understanding and improving their development, evaluation, and social and psychological functioning) appears to be the application context best positioned to actually connect the full diversity of game research across disciplines.

4.2 Epistemic scenarios: boundary objects and middle range theories

Epistemically, the main challenge is the lack of cross-disciplinarily "robust" research questions, constructs, and paradigms that flow from and generate value for multiple disciplines and societal concerns, require the integration of multiple methods and data sources, and result in cross-disciplinarily useful concepts and frameworks (Huutoniemi et al., 2010, p. 83). That is, instead of trying to *first*

establish consensus about shared questions and ways of answering them, game scholars might look for shared *boundary objects* (Star, 2010): concepts and frameworks whose relevance, use, and understanding can remain discipline-specific and thus enable "cooperative work in the absence of consensus" (Star, 2010, p. 604).

In communication research, for instance, news framing (De Vreese, 2005) has become a highly fruitful middle range theory (Merton, 2007) connecting numerous paradigms. News framing studies how issues like global warming are construed in different ways, and how these "spins" get transferred. Thus, one news frame – portraying gay marriage as a matter of religious tradition, *or* as a matter of economic equality, etc. – can be traced from societal stakeholders (using expert interviews and document analysis) to newsrooms and journalists (through ethnographic studies of work), to actual news media (through quantitative and qualitative textual and visual content analyses), to how these materializations affect media users (through experimental studies), to the prevalence of certain frames in a community (through discourse analyses). The boundary object "news frame" is flexible enough that different researchers can both operationalize it within their own epistemic paradigm *and* collaborate with each other. This suggests that game studies might likewise look for middle range theories whose epistemic objects allow operationalization within divergent epistemic paradigms to broaden and build interdisciplinary work.

If cognitive science is any indication, one should expect that these middle range theories will connect some disciplines more than others (Thagard, 2010). Cognitive science set out to integrate neuroscience, artificial intelligence, psychology, philosophy, linguistics, and anthropology (Thagard, 2010, pp. 235–236). But research quickly solidified around specific edges: artificial intelligence and psychology in agent modeling; artificial intelligence and linguistics in computational linguistics; linguistics, philosophy and psychology in embodied cognition; etc. In game research, the combination of rhetoric and computer science in procedural rhetorics, of formal design and computer science in procedural content generation, or of psychology and computer science in player modeling and adaptive gaming are first hints where strong interdisciplinary vertices might grow: namely around the use of computational tools for the research questions and practical needs of other fields.

5. Conclusions

Propelled by hopes and fears around the new technology of digital games, a gamer subculture legitimizing its lifestyle through academic and cultural institutionalization, and economic interest in growing national game industries, game research and education have seen rapid growth in the past fifteen years. As part of this groundswell, in the early 2000s, a community of scholars formed *game studies* as an umbrella interdiscipline for digital games research. Interdisciplinarity, the intentional interaction and integration of disciplinary viewpoints, was framed as a centerpiece of its identity: a practical consequence

of its newness, a necessity of the complex nature of games and play, a major strength and challenge, and a logical outgrowth of the general push for interdisciplinary research. After an initial fast institutionalization, game studies encountered typical barriers of interdisciplines: a lack of reputation, power, and resource access; incompatible epistemic cultures impeding peer review and collaboration; and disciplinarily organized academic labor markets and hiring and promotion criteria.

Especially in response to the latter two, researchers from disciplines such as communication research or HCI are increasingly foregoing interdisciplinary game studies venues and topics in favor of more career-advancing disciplinary ones, now that their home disciplines are instituting game research venues and topics of their own. Ironically, this exodus has been partially enabled by game studies establishing the relevance of game research. Game studies scholars in turn interact only little with this new disciplinary game research (as evident in cluster analyses), or even react hostile to new entrants e.g. around gamification, as these subscribe to different moral politics of play and contest the epistemic sovereignty of game studies. Thus, while *game research* is expanding and diversifying, *game studies* are increasingly coalescing into a relatively closed community *within* it, composed of humanities, design, and cultural studies scholars with homogenous epistemic cultures. Within current, predominantly vocational game design education, game studies have similarly become one sub-topic among many. In addition, game studies themselves retain internal rifts between humanities and social sciences, nomothetic and ideographic work, making them more of a narrow multidiscipline than the broad interdiscipline they set out to become. That being said, both disciplinary exodus and internal fragmentation are common issues in interdisciplines. In a way, game studies are a typical interdiscipline in that they are not very interdisciplinary, and becoming less and less so.

One valid response to this is to embrace game studies as the cultural studies of games as meaning-making phenomena. Another possible trajectory towards a stable broader interdisciplinarity is to institute game studies as game *design* studies and education around applied games and play. The latter may seem to clash with the more critical politics and theoretical interests of many game studies scholars, but it bears repeating that design studies function as both instrumental support *and* critical corrective, and that current game studies comprise only a fraction of the actual volume and diversity of contemporary game research. Yet no matter whether broad interdiscipline or narrow cultural studies of games, to institute itself, game (design) studies need to develop interlocking terminal degree programs and academic job markets, and middle range theories with epistemic boundary objects that allow collaboration despite divergent epistemologies.

All that being said, one should not forget that interdisciplinarity is itself a rhetoric, an aspiration, and a means to and end – *promising* that discipline-crossing research produces innovation that furthers intellectual and social progress (Frodeman, 2010). As Jacobs and Frickel (2009, p. 60) conclude: “We do

not believe that the case has been fully made, theoretically or empirically, for the general superiority of interdisciplinary over disciplinary knowledge." Hence, one may question whether interdisciplinary game research is ultimately worthwhile. Then again, interdisciplinarity is valued and rewarded by policy-makers, research funding bodies, and university administrations – a political asset that should not be needlessly abandoned.

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