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Radical circles and visionary innovation: Angry birds and the transformation of video games

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Radical circle is an innovation approach, alternative in comparison to innovation teams and innovation communities, superior to these when detailed managerial guidance is not readily available because of high uncertainty, high ambiguity, or both. Through an empirical case analysis of Angry Birds, the video game, we strengthen earlier radical-circle research findings on how a common sense of malaise with a current situation and dominant visions sometimes a small group of creative individuals meaningfully together, each volunteering to contribute much to change situation and dominant meaningfully vision. We find in this case that radical circles were more fluid in their membership and boundaries than what these earlier studies have found. There was considerable change over time in both the radical circles and visionary innovation. After Angry Birds's launch, a huge and very active brand community ensued, with radical creativity, with innovative community members contributing meaningful new inputs both for free and for global market and industry transformation. We call for further research on why and how line-up changes in radical circles in between times of original visionary innovation and later-phase market and industry transformation may matter. We also call for further research to study in what kinds of situations, why, and how radical circles are a good approach to mobilize extra-organizational volunteers for visionary innovation of new-to-the world products or processes.

KEYWORDS
brand, community, ecosystem, innovation, radical circle, team, video game, vision

1 | INTRODUCTION

Management studies have for decades investigated the advantages of the team approach to innovation (Hammedi et al., 2011; Quinn, 1985; Stam et al., 2013; Wiita & Leonard, 2017) or how teams in many cases optimally combine different perspectives, competencies and technical skills (de Dreu et al., 2008; Ilgen, 1999; Khurana & Rosenthal, 1998). More recently, management studies have explored how digital technologies enable 'open innovation strategizing' and even greater advantages (Burger-Helmchen & Cohendet, 2011; Chesbrough, 2006; Felin et al., 2017; Frey et al., 2011; J. Füller et al., 2017; Howe, 2006a,

2006b; Leifer et al., 2000; McDermott & O'Connor, 2002; Pellizzoni et al., 2015; Remneland Wikhamn & Styhre, 2019; Sawhney et al., 2005), with a variety of sub-approaches related to one another: crowdsourcing, innovation marketplaces, and engagement with large communities of experts and/or users

One of the most widespread sets of assumptions behind this open-innovation strategizing has been that the greater number of ideas, idea creators, perspectives and innovation inputs, the more serendipitous and effective problem solving, the more efficient control of R&D costs, and the higher the probability of long-term innovation success (Afuah & Tucci, 2012; Benkler, 2017;

Chesbrough, 2003; Czarniawska-Joerges & Sevón, 2005; Dahlander & Magnusson, 2008; Hautz et al., 2017; Huston & Sakkab, 2006; Jeppesen & Lakhani, 2010; Laursen & Salter, 2006; Shan et al., 1994; Terwiesch & Xu, 2008).

However, very recently, management studies have begun to call into question that any open-innovation strategizing would always, as a rule, be more effective than teams and other traditional innovation approaches (Birkinshaw, 2017; Frey et al., 2011; Madsberg & Rasmussen, 2014; Pisano & Verganti, 2008)

Increasing the number of participants and ideas does not always have positive effects and can but lead to a classic paradox of choice: the higher the number of participants, the more difficult it is to move forward (Bernstein, 2012; Schwartz, 2005; Sinek, 2011; R. Verganti, 2009). Under high uncertainty or ambiguity, 'controlled chaos' (Quinn, 1985)—a state often associated only with only innovation teams but characterizing also innovation communities—easily turns into unproductive and even uncontrollable experience. Research revisiting innovation approaches now re-recognizes the time-old advantages of teams: creativity, commitment and motivation, characteristics that accrue from individuals' possibilities to collaborate by interacting directly with one another (Beersma & De Dreu, 2005; Ilgen, 1999; Khurana & Rosenthal, 1998; Paulus & Brown, 2010; Quinn, 1985; Remneland Wikhamn & Styhre, 2019; Stroebe & Diehl, 1994). This is not to say that teams would not still have their disadvantages. Teams are managerially assembled and guided, which is why they tend to be unable to be highly autonomous. Autonomy, is a fundamental requirement to foster radical and significant changes in the innovation direction or orientation of a firm and market (Sonnenberg, 2004).

In this paper, we investigate how and why, in conditions of high uncertainty and complexity, innovation can be approached through a route alternative to both innovation teams and open-innovation strategizing: innovation can emerge from a small 'radical circle' (Verganti & Shani, 2016) of people. In this kind of an innovation approach, collaborative creativity involves less working in a managerially guided team than it does working in a small group without managerial guidance. The small group sizes affords unorthodox thinking, co-creating and reframing emerging technological opportunities and new social behaviours in ways that give much space to alternative interpretations and transformations (Altuna et al., 2017; Dell'Era et al., 2008; Dell'Era et al., 2018; Dell'Era et al., 2020; Jepsen et al., 2014; Verganti, 2009; Verganti & Öberg, 2013; Verganti & Shani, 2016). Rather than considering an innovation to improve upon an existing value parameter, focus is on 'what is good' (Bloch, 1995; Hargadon & Sutton, 1997; Harrington & Fine, 2000; Sinek, 2011; Sutton & Hargadon, 1996). Radical circles is particularly appropriate for 'visionary innovation' (Caridi-Zahavi et al., 2016; Bellis & Verganti, 2020), that is, for significant changes in the innovation direction and orientation of a product and processs (Verganti, 2016).

The empirical case analysed here is that of Angry Birds, the highly successful video game launched in 2009 that transformed its market and industry. We trace the genesis of this video game to some of the innovative values behind it, as well as to the individuals and circles who embraced these values to emerge with radical visions and crazy ideas,

to a culture of cultivating and implementing a significant number of these ideas, to willing and able community of volunteers and to a transformation of the ecosystems in which they and many of the volunteers were embedded (Farrell, 2003; Garriga et al., 2013; Gustavsen, 1992; A. Hargadon & Bechky, 2006; R. Verganti, 2009; von Krogh et al., 2012). Through our qualitative analysis of this empirical case, we both strengthen earlier findings and open up new research questions.

2 | INNOVATION TEAMS, COMMUNITIES AND RADICAL CIRCLES

First, we briefly review the literature on innovation teams and innovation communities and then illustrate why and how radical circles matter.

2.1 | Innovation teams

Many companies—69% according to Barczak et al. (2009)—organize their new product development projects according to cross-functional teams of people that operate in different functions (e.g., marketing, R&D, manufacturing, engineering, and purchasing). Frequently, organizations create teams to imagine innovative ideas and facilitate the alignment of employees towards a shared direction (Stam et al., 2013). Numerous studies have attempted to specify the optimal composition of innovation teams facing a specific problem to be solved (Berchicci & Tucci, 2010; Cox et al., 2003; Hackman, 1987, 1990; Hollahan & Markham, 1996; Katz, 1997; O'Connor & McDermott, 2004; Pearce & Sims, 2002; Sarin & O'Connor, 2009; Sethi, 2001; Slater et al., 2014; Taylor & Greve, 2006). Good teams embody a variety of competences, creativity and perspectives to collectively determine innovation as a collective and social act (Fleming et al., 2007). Moreover, cross-functional collaboration increases the likelihood of innovation success (Ainamo, 2007; Gatignon & Xuereb, 1997; Gersick, 1989).

In turn, the relevant limitations of teams are that a manager-assembled team is not the optimal design when the goal is visionary innovation (Caridi-Zahavi et al., 2016): redefining the problem itself, radical innovation, and transforming the dominant vision of the future of the industry (Gersick & Davis-Sacks, 1990). Visionary innovation is deemed to benefit from collaborating in very small numbers, even in pairs (Bellis & Verganti, 2020; Sonnenberg, 2004; Wu et al., 2019). Participants in projects of new-to-the-world innovation ought to be recruited informally through volunteerism—through a manager's or a champion's personal networks (O'Connor & McDermott, 2004; von Krogh et al., 2012).

2.2 | Innovation communities

Among open-innovation strategizing, innovation communities have attracted much attention in the last two decades, spurred by the rise

of open innovation, defined as a distributed innovation process that rests on managing the flow of knowledge across firm boundaries (Chesbrough, 2010; Chesbrough & Bogers, 2014). These inflows and outflows of knowledge in turn enable accelerating internal development and external exploitation (Chesbrough, 2006; Chesbrough & Crowther, 2006; Enkel et al., 2009; Füller et al., 2008; West & Bogers, 2014). At the forefront of this interest in innovation communities has been 'crowdsourcing' (Howe, 2006a): the idea of outsourcing innovation to a large group of people working collaboratively or individually (Howe, 2006b), rather than to a specific agent/contractor (an organization, informal or formal team or individual), or performing the task in-house. Crowdsourcing is now in wide use in industries such as automobile, fashion, photography, and fast food. Regardless of the application domain and nature of the task, crowdsourcing entails three assumptions: (1) the existence of an easily identifiable and transmittable task/problem; (2) the larger the number of participants (typically experts and/or customers/users), the larger the number of ideas and (3) the more ideas, the higher the capacity and capabilities for innovation (Afuah & Tucci, 2012). This kind of 'distributed problem-solving model' (Brabham, 2008) is deemed effective to tap into and exploit the so-called 'collective brain' (Ebner et al., 2008).

As a rule, open-innovation strategizing is not always more effective than traditional problem-solving approaches involving innovation teams (Birkinshaw, 2017; Madsberg & Rasmussen, 2014), however. In conditions of high uncertainty, increasing the number of participants and their ideas can lead to the classic paradox of choice: the larger the volume of information, the more difficult it is to move forward (Bernstein, 2012; Schwartz, 2005; Sinek, 2011; R. Verganti, 2009). Similarly to innovation teams, an innovation community usually works best when put to work on a granular problem, on incremental innovation, but is less effective in revolutionary or radical innovation (Garriga et al., 2013). Similarly to a team, an innovation community tends to require managerial guidance or a central propagator, a third party, that interprets, refines and governs system set-up and ways of collaboration (Pisano & Verganti, 2008; von Krogh et al., 2012). The third party can also be the form of a product-feature innovation challenge, such as those posted at Innocentive.com's open innovation marketplace or for T-shirt designs at Threadless.com (Pisano & Verganti, 2008). The function of the third party is to guide or imprint the community-wide consensus of a system architecture (Ainamo, 2005; Schröder & Hölzle, 2010; Simsek et al., 2015; Torvalds & Diamond, 2001).

2.3 | Radical circles

Group theories of 'democratic dialogue' suggest that behind many significant changes in the innovative direction of artistic or scientific fields is a 'collaborative circle' (Farrell, 2003; Gustavsen, 1992; Harrington & Fine, 2000). 'Small groups of tightly-knit individuals' facilitate and promote individual creativity and stimulate collaboration with outside volunteers (Verganti, 2009). Such circles follow no

organizational tradition and legacy but devise their own rules of the game (Altuna et al., 2017; Farrell, 2003; Verganti & Shani, 2016). Especially in its imprinting stage, this type of organizational solution may fall 'under the radar', with each member of the circle encouraging the others to heterodoxically think and envision in highly unconventional ways (Haefliger et al., 2010; Verganti & Shani, 2016). Managerial guidance is absent or nearly absent.

According to Verganti and Shani (2016), a radical circle is driven by a 'common sense of malaise towards the current situation' in a given industry or industries, in a stark challenge of the dominant vision. Embracing small-group ideation and democratic dialogue encourages thinking along new innovations directions that radically differ from the pre-existing, with potential to change interpretations of what is meaningful in an industry and its market (Altuna et al., 2017; Dalpiaz et al., 2016; Hargadon & Sutton, 1997; Verganti & Shani, 2016). In the first instance, these take the form of visionary innovation: significant change in the innovative direction of a product or process (Verganti, 2016), a redefinition of meanings, the basic assumptions and parameters of a product or process. As a radical circle evolves, new rules of the game are cocreated to disrupt and revolutionize the dominant vision (Dalpiaz et al., 2016; Djelic & Ainamo, 2005; Hargadon & Sutton, 1997). What is akin to what Kim and Mauborgne (2004) call 'value innovation', Christensen (1997) calls 'disruptive innovation', Sarasvathy (2003) calls 'effectuation', and Verganti (2009) calls 'innovation of meaning' (see also Brown & Vergragt, 2008; Doz & Kosonen, 2010; Burger-Helmchen & Cohendet, 2011).

Similar to radical technological innovation and its requirement of profound changes in the dominant technological regimes (Bijker & Law, 1994; Callon, 1991; Geels, 2004; Latour, 1987), visionary innovation requires a deep reinterpretation of the socio-cultural context (Verganti, 2009). Visionary innovations need to inspire others outside the original radical circle, not only for these to envision complementary frames but also to come up with new and alternative 'interpretations', filters and criteria (Altuna et al., 2017; Farrell, 2003; Verganti & Öberg, 2013). By design or emergent evolution, foresight or hindsight, such interpretation further changes the system and opens up structural holes for others to tweak the system, to pilot system-wide change or both (Ainamo, 2005; Dalpiaz et al., 2016; Djelic & Ainamo, 1999, 2005; Maguire et al., 2004; Perkmann & Spicer, 2007; Simsek et al., 2015). Through 'effectuation' (Sarasvathy, 2003), what was earlier an overly strange, visionary or radical innovation (Berends et al., 2014) thus becomes a market success and transforms an industry, even everyday life.

3 | RESEARCH PROCESS

To empirically illustrate not only why but also how radical circles matter, this study builds on the first author's access to Rovio Entertainment (henceforth Rovio), the company behind Angry Birds and Hewlett-Packard (HP) and Nokia, two large firms that constitute the other key corporate actors in this story.

3.1 | Data collection

From 2003, the first author began engaging in participant observation (Whyte, 1999), taking inspiration from 'thick description' (Geertz, 1973) and collecting data from innovation managers in and around Nokia and HP through face-to-face interviews, each lasting between 30 min to 3 h. Thick discription is based more on the phenomenon itself than on any existing body of literature, driven more by the 'substantive domain' rather than by 'conceptual' or 'methodological' ones (Brinberg & McGrath, 1985). As he did many times over the subsequent almost 20 years, the author interviewed his main informant years before this informant would become the main 'protagonist' (Pratt, 2009) of or for Angry Birds (Table 1).

From 2008, the author would also seek out interviewees in Rovio and generally in the video games ecosystem in Finland. Participant observation took the form of engaging in field events related to video games, startups and corporate innovation and entrepreneurship in Finland (e.g., IGDA—International Game Developers Association; Slush—Northern Europe's largest start-up and tech-event founded by Vesterbacka and Pär Andler in 2008 with 25,000 participants by 2019), scientific and outreach events in and across universities such as Stanford and MIT, as well as reviewing empirical studies on video games and related industries. He consulted practitioner books, official websites, specialized magazines, books and scientific collaborations to triangulate the date and evidence. He did not shy away from the diversity of perspectives and roles among interviewees (De Massis & Kotlar, 2014), as his focus was on understanding the 'cultural system' (Dubois & Gadde, 2002; Geertz, 1973) to which each of his many informants belonged.

3.2 | Data analysis and iteration with further data collection

In 2016, the two other authors of this paper joined the inductive qualitative research project (Pratt, 2009) in the form of an exploratory, embedded and longitudinal single-case study of Angry Birds (Eisenhardt & Graebner, 2007; Halinen & Törnroos, 2005; Siggelkow, 2007; Yin, 2003). We built our dataset on the many verbatim statements and compiled first-order codes (Table 2).

We let our interviewees to tell their stories freely, rather than guide them with very precise questions. Analysis of the statements and their iteration with other data began thus to reveal temporal narratives of events at play to us, flavoured by the cultural biases of our informants, yet collectively neutral in approaching the original sequences of events (Schein, 1991). We increasingly came to understand and learned to streamline our originally somewhat unfocused topic of scientific inquiry with established qualitative research procedures and protocols towards a relevant innovation model and scientifically rigorous findings (Cloutier & Ravasi, 2021; von Krogh et al., 2012). We repeatedly triangulated our data for internal consistency, credibility, validity and increased reliability (Brinberg & McGrath, 1985; Yin, 2003). Thus, we did not as much 'manipulate the

data' (Miles & Huberman, 1994) as we did (1) categorize interview data into first-order codes in line with conventional innovation-management language (Table 2); (2) contextualize the data and first-order codes into second-order themes to identify the more general context, factors and relationships and (3) document and capture the variables of interest in aggregate dimensions for our conceptual framework and explanation of the phenomenon that we have been studying (Cloutier & Ravasi, 2021; Gioia et al., 2013; Yin, 2003). As is often the case in qualitative research, more than once we came across something even more interesting than what we had learned earlier and revisited and even changed our theoretical ideas (Alvesson & Sandberg, 2012; Davis, 1971; Whyte, 1999). Figure 1 depicts the results of our data analysis and interpretation of how and why we have found a radical circle in the case of Angry Birds to self-form as follows: (1) more than one individual experienced a similar sense of malaise in the current situation; (2) they co-created visionary innovations of how to 'change the world' and not only the immediate situation and (3) they together developed requisite capabilities so as to enact some of these visionary innovations, given enabling technological change.

4 | EMPIRICAL RESULTS

We next describe the industry structures and established regimes that the story of Angry Birds is embedded in, and how Peter Vesterbacka, an account manager in 1999 at Hewlett-Packard's (HP's) Finland office, became a protagonist of radical circles in and around HP. The visionary innovations ultimately leading to Angry Birds would not be realized for years. In anticipation of or preparation for the emergence of the enabling technology and ecosystem, Vesterbacka would within HP set up 'Mobile e-Services Bazaar' as an incubator for mobile technology applications, as well as outside HP set up 'Mobile Monday' as a community of developers, startups and industry innovators and 'Slush' as platform for startups from all over the world to connect with investors, mentors, partners and each other. In part unwittingly, in the process, he would also come to challenge what was the dominant vision in video games.

4.1 | Dominant vision of what are video games: Dual industry structure, established regime

Playing video games until the 1980s had been a relatively orderly activity, involving visiting a dedicated game arcade. Then, home computers and consoles had come on the market. In the 1990s, personal computers, laptops and digitalization had begun to take a big chunk of the home console market, enabling 'hardcore' or expert users to develop games on their own. By the early 2000s, many games would be technologically advanced, complex and highly sophisticated (Aoyama & Izushi, 2003; Lehtonen et al., 2020). In this context, North American studios as a rule were already specializing in coming up with battle and competition games for which they would be known:

TABLE 1 Data collection (interviews)

Company	Interviewees	Job position	Interview date	Interview duration (hours)
Rovio Entertainment	Peter Vesterbacka	(Leader, HP mobile e-services Bazaar from 1999 to 2006) Marketing Director from 2009 to 2017 (Rovio, Rovio Mobile, Rovio Entertainment)	12 Dec 2001	3
			02 Feb 2002	1
			02 Sep 2007	2
			19 Nov 2008	2
			5 Sept 2012	1
			12 Nov 2012	1
			15 May 2013	1
			02 Feb 2018	1
			27 Aug 2020	2
	Niklas Hed	Founder and creative director	05 Mar 2011	2
	Ville Heijari	University relations	03 Sep 2012	1
	Ville Herttua	Marketing and animation Rovio Entertainment	15 Feb 2012	3
			15 May 2012	1
			12 Nov 2012	2
	Ting ting	Key account manager, founding member China	03 Sep 2012	1
Finnish Mobile Game Ecosystem	Pär Andler	Ecosystem program manager, Hewlett-Packard	12 Dec 2001	1
			02 Feb 2002	1
	Anssi Vanjoki	Executive VP, Nokia Mobile Phones	04 Nov 2002	2
	Janne Kettula	Head of design, Nokia Gear, Nokia	18 Nov 2008	1
	Pia Erkinheimo	Head of crowdsourcing, Nokia Strategy	15 Sept 2009	1
			04 Oct 2010	2
			07 Nov 2011	2
	Allan Halme	Nokia Strategy	15 Sept 2009	1
	Timo Koola	Founder and CEO, Symble	05 Oct 2010	2
	Samuli Syvähuoko	CEO, game brewery (ex-CEO, e.g., remedy)	03 May 2012	4
			08 Nov 2013	2
			09 Nov 2014	2
	Mikko Kalhama	Managing director, design forum Finland	21 Jan 2013	2
	Miikka Lehtonen	Post-doctoral researcher, Aalto University	13 Nov 2014	1
	Ilkka Paananen[a]	Founder and CEO, Supercell	02 Jun 2017	2
	Timur Haussila	Team leader, Supercell	08 Aug 2017	2
	Ville Taka	Successor to Peter Vesterbacka at HP (later e.g. Solita, Nokia)	05 Mar 2017	4
			08 Feb 2018	1
	TeemuLeinonen	Assoc. prof., new media design and learning, Aalto University	03 Jun 2017	1
	Touko Tahkokallio	Game designer, Supercell	08 Aug 2017	2
Other	Marja Kuutti	CEO, smart textiles Bazaar	08 Feb 2018	1
	Lars Cosh-Ishii	Mobile Monday Tokyo	03 Feb 2021	1

[a]Interviewed by Teemu Leinonen in May 2017.

Activision Blizzard with Call of Duty, World of Warcraft; Electronic Arts with FIFA, Battlefield, Mass Effect; Take-Two Interactive with Civilization, NBA 2K series, Grand Theft Auto; ZeniMax Media with Doom, Fallout, The Elder Scrolls and Niantic with Ingress. Human-computer interaction in this North American worldview was but an afterthought (Norman & Verganti, 2014).

Much of what was left of the global market was taken by Japanese studios and the 'creative resources nurtured by popular cartoons and animation sector, combined with technological knowledge accumulated in the consumer electronics industry' (Aoyama & Izushi, 2003). Distinctive of Japanese games were 'images and influences [...] cityscapes, food, and modes of fighting [...] futures [...]

TABLE 2 Data table (excerpts from data compiled 2001 to 2020)

Direct quotes	First-order codes
Communities of practice need a center ... How do we outsource: ... what we ourselves can do vs. what we can buy ... Crowdsourcing [is] 2nd level [way] to combine lessons within Nokia ... to change perceptions outside. Those now working for Apple ... we can easily convert them ... We just [first] need to get our technological offering into shape ...	• Incumbents' (e.g., HP, Nokia, Microsoft) attitude of supremacy • Assumed entry barriers (e.g., technology offering comes first)
We [at HP] do not really need mobile phones because we have pay phones ... [at Nokia] [we] take the basic assets from the ... teams inside Nokia and then we distribute ... [to] everybody as subcontractors ... harvesting ideas ... quantify ... how many working hours and if these were out employees, how much open source code [per hour] ... so that we would beat our competitors ... One business ... apply this model to another business ... Microsoft ... they have a functional organization ... then games should be team-based ... Industry policy [in Finland]: a good script, good design, and technology or the game engine—if one of these is missing, then a game does not work out ...	• Assumptions of stable demand (e.g., value parameters are known) • Consolidated myths (e.g., community requires center)
Not much of an ecosystem was in this [above] way[s] created ... Big corporations are really really bad at creating new business ... We could not get our ideas across ... You cannot rely on ... guys [who say] we do not really need mobile ... Do you work for the dinosaur or for the small furry animal? ... Do the right thing for the organizations—despite the organization! ... attitude and ambition ... think different! ... think big! ... There's no limit ... change the world ... crazy ambition ...	• Incumbents regime as enemy (e.g., they are not to be relied on) • Desire of change, even rebellion
Smallness, what delightful clarity! ... small global core team ... always better to have a core team. Same bunch of people 'all the time' in different constellations ... it is a small scene, discrete characters ... and of course many small groups, too ... single minded passion ... what it is that ought to be done, why ... not what I know but who I know ... do what you believe [in] ... A lot of crazy ideas. Execute quite a few of them ... A big goal ... just do it! ... why not? ... It's not a job; it has to be more! ... Otherwise, life's too short ... boredom is never an option ...	• Self-formed 'band' of individuals (e.g., Vesterbacka and Fiorina) • Mutual affinities (e.g., disruption, radical innovation)
Placing yourself in the middle of the eco-system ... I do not have a problem of people not taking me seriously because I do not take myself seriously ... To know a little ... e-services ... mobile ... Ask yourself: If everything was shared? ... Everything's going mobile ... Be told not to do it, do it anyway ... Act now! ... Put yourself [fully] into the game ... Take risks ... Live with the consequences ... I know Carly [Fiorina, HP's new CEO from 1999] already from 1996, we had been in several same meetings ... In 1999, I just walked into her office ... If we never try, we will never get there ...	• Forward-looking attention to weak signals • Bravery
We got rid of the HP competence center ... instead ... diverse backgrounds and interests ... music, birdwatching wind-surfing, games ... Bazaar ... many bazaars ... the first rule is that there are no rules ... over time ... many ...	• New platform (e.g., HP e-bazaar) • New connection interface (e.g., Nokia S40)
Assembly event ... I was the only one there who had been abroad ... HP and Nokia ... A student team called Relude ... we took the team into bazaar ... renamed Rovio in 2004 ... people start thinking is this something they want to do ... Mobile Monday ... Silicon Valley, I know my way around [but] Slush: different, better! Why? It is built by volunteers ... volunteers are the ones who really make it happen ... volunteers, it all comes from them ... everything is always communal ... we share, help each other ... we have just a crazily good ecosystem! ... the startup scene [is] lots of fun, and kind of hands on ... more opportunities in the startup, more resources in the large corporation ...	• Sharing economy (e.g., assembly, Mobile Monday) • Collaboration with startups (e.g., Silicon Valley, e-Bazaar, Slush)
AppStore in 2008 ... at Rovio I said come up with a game for AppStore ... games ... have critical mass ... a hot spot akin to the Silicon Valley model ... the first 51 games were failures ... then Angry Birds ... we were onto something ... characters that are human ... everyone liked ... casual play ... everyday ... entertainment .... Video games as fun! ... huge crowd around us ... in Atlanta, this older gentleman wanted to have his picture taken with me ... I started to do Angry Birds full-time ... my condition for being there was 'let us not sell out!' ... after the first 100 million, each next one easy ... fastest growing brand ever ... one billion ... two billion ...	• Casual mobile game (e.g., on AppStore platform) • Innocently fun games as major segment (e.g., Angry Birds)
A branded community, a strong story, and that is where the intent takes off ... at the core ... games and fans of course ... but also animation and all that ... [take, for example, the] Fun City project, and even more extreme ideas ... we produce 'Angry Birds experiences' to our fans ... a kind of "Mickey mouse strategy" ... let us beat Disney! ... Disney in 1928 had one charactered, we already had several ... fans of the brand ... free to play ... digital distribution costs nothing ... and we have brought the	• Online lifestyle brand diversifying into offline (e.g., cuddly toys, soft drink, animation, theme parks) • Co-design with fans of the brand (e.g., with NASA scientist)

TABLE 2 (Continued)

| Direct quotes	First-order codes
brand into the physical world ... a lifestyle brand ... Angry Birds space idea came from a fan of the brand working at NASA ... A large bunch of people, easily thousands ... ... Angry Birds ecosystem ... all the players in the ecosystem ... win ... Everyone's close to one another ... A positive spiral ... Supercell is in games, Rovio is in the space of entertainment ... Everything's on a platter ... I introduced him [Ilkka Paananen of Supercell] to venture capitalists ... and Ilkka understood that when Angry Birds had succeeded the benchmark needs to be raised ... get, keep, monetize ... we learned from them about the freemium business model, how it works out ...	
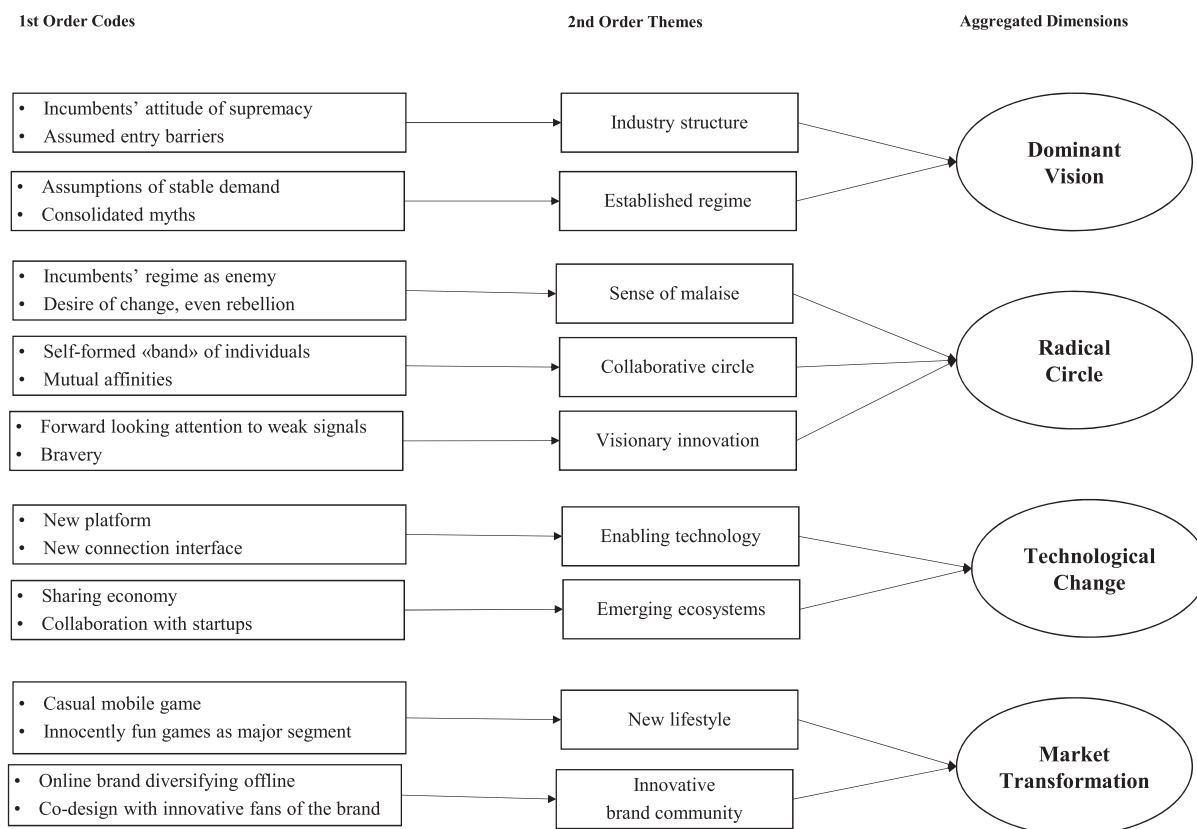
FIGURE 1 Data structure

dystopian, if stylish, decorated in neon and kanji characters' (Consalvo, 2006).

The foregoing industry structure and regime thwarted then the introduction and entry of new game behaviours around the industry and market. The Americans and the Japanese only in principle accepted that play and fun are precisely the kinds of behaviour that lead to great product innovation (Dougherty & Takacs, 2004), but, around the world, it was in practice common sense that in video games each new dominant design technology would mean the extinction of old or small-time devices, operating-systems and games, so that demand for 'good' games would remain stable:

I said already then [at the turn of millennium voicing] that good games are about a good script, good design, and technology that is the 'game engine'—if one of these is missing, then a game does not work out. (Interview with Mikko Kalhama, 21 Jan. 2013)

It was within this context that Peter Vesterbacka, an account manager with a highly independent mind, based at HP's Helsinki office, made a presentation in June 1999 at the global headquarters in Palo Alto, California. His overall message was that a diversity of other digital and mobile offerings (rather than only digital) would soon

proliferate in the global market, with Finland as 'lead market' globally and model of how this emerging ecosystem of 'mobile and internet' (HP Measure, 1999) would unfold:

> Finnish Nokia's ... new mobile-phone S40 operating system for 'smart' or ICT-enabled mobile phones, game consoles, and other kinds of mobile e-services ... I asked ... Do you work for the dinosaur or the small furry animal? (Interview with Peter Vesterbacka, 2 Feb. 2018)

4.2 | Radical circle: From a sense of malaise to visionary innovation of 'mobile e-services

Some hardcore computer experts in the June 1999 meeting resisted Vesterbacka's ravings about information technology (IT) converging with communications technology ('C') into an integrated 'ICT' industry. Disregarding their parochialism, Vesterbacka but raved on that it ought to be clear that Finnish Nokia's S40 operating system was the cue for HP to partner with Nokia. Together HP and Nokia could and would take on firms such as Sony and Microsoft:

> You can't trust guys who say we don't need mobiles because we have pay phones ... More resources in large organizations ... changing the world .... HP was strongest in the North American market, while Europe was Nokia's. HP and Nokia had done business since 1994 and Nokia was HP's third largest customer in Europe. (Interview with Peter Vesterbacka, 27 Aug. 2020)

Vesterbacka was aware that at Nokia, too, 'motivations revolved more around the experience of working together as a team within Nokia on incremental innovation than on anything else' and that Nokia 'treated its partners as suppliers of resources' and considered any new technology to 'belong to the heart of its own ecosystem' (Interviews with Janne Kettula, 18 Nov. 2008; Pia Erkinheimo, 4 Oct 2010; Hed, 2011; Peter Vesterbacka, 15 May 2013). He also knew that evolutionary innovation dominated the work culture at HP more than would have prevailed the remnants of an older tradition of disruptive innovation from 'back in the day' in the 1940s (Fast Company, 2003).

In July 1999, HP had a new 'radical CEO' (Fast Company, 2003) coming from Lucent: Carly Fiorina. Conveniently, Vesterbacka knew Fiorina through Nokia. He knew Fiorina well enough to sense that he could get her support. Fiorina's leadership style was to 'support those she believed contributed to her in the company', even at the cost of many others she 'left outside that circle' (New York Times, 2015). Fiorina and Nokia's CEO also knew each other quite well. Hence, following his own slogan of 'Just do it!', Vesterbacka walked into Fiorina's office in September of that year, and at an industrial event in Geneva in October she announced the new 'Fiorina vision' for HP: mobile e-services and a partnership with Nokia.

A few months later, Andrew Bolwell, HP's official 'Chief Disruptor', joined the Fiorina-Vesterbacka circle. Bolwell and Vesterbacka envisioned an 'HP global network' for mobile e-services. Vesterbacka and Pär Andler (Vesterbacka's right-hand man in Helsinki) converted the space that Vesterbacka had set up after his September return from Silicon Valley into HP's first Mobile e-Services Bazaar, kicking off a multitude of skunkwork projects for creativity, visionary innovation and ever-new creative options in and around the e-Bazaar for 'massive' bottom-up change. Vesterbacka established side projects in Helsinki, such as working to produce a rock band called Kemopetrol. Another side project was getting together with video-game entrepreneur Ilkka Paananen and others with whom the e-Bazaar appeared to have mutual affinities to ramp up Mobile Monday, a global network independent of HP. Mobile Monday was not so much intended to develop HP's mobile-e-services business but to nurture the mobile-creative-business (Interview with Lars Cosh-Ishii, 3 Feb. 2021). Interesting dialogue and great ideas about 'sailing, birdwatching, and video games' characterized their activities and led to weird slogans and their documentation:

> Think different!... Act now!.. Just Do it!... Think big!... Change the world! It's not a job, it has to be more! The first rule is that there are no rules.[1] (Interview with Peter Vesterbacka, 2 Feb. 2018; HP Mobile e-Services Bazaar, 2004)

Enthusiasm spread virally, not least because everybody in and around HP knew the Bazaar was officially under the wing of their CEO. Soon, the radical circle grew to 20 strong. Internally and externally of their circles, the members stirred up sensitivities of how business and lifestyles would change:

> To challenge the whole sociocultural zeitgeist ... HP's Mobile e-Services Bazaar is a dynamic marketplace of solutions and technologies for emerging mobile e-services. HP Bazaars are located in technology epicenters around the globe, including Helsinki, Finland, Silicon Valley and Singapore, with satellite offices in Amsterdam, the Netherlands, Bangkok, Thailand, Beijing and Toronto. These regional centers of innovation are focused on connecting application providers, technology providers, carriers, venture capitalist, system integrators, and customers. Participants will be able to view and test new mobile e-services, join special interest groups, access relevant information and gain access to a constant supply of innovative, new solutions. (HP Mobile e-Services Bazaar, 2004)

In 2003, Vesterbacka sat on the jury of a competition at the Assembly Demo Party. the most important event for coders, professional amateurs and hackers in Finland.

We organized a competition with Nokia for best idea for a mobile video game … At that point, the idea was that new talents get a job or start a company of their own … The goal was to break through new business [… with HP as employer and/or partner] collaborate with them … Win-win … a prize sponsored jointly by HP and Nokia … What if everything was shared? (Interviews of Peter Vesterbacka, 2 Feb 2018 and 27 Aug 2020)

One of the student teams from the Helsinki University of Technology calling themselves 'Relude' (Niklas Hed, Jarno Väkeväinen and Kim Dikert) won the competition with a game idea called King of the Cabbage World. Vesterbacka took the Relude startup under the HP Mobile e-Services Bazaar's wing (Taloussanomat, 2004). King of the Cabbage World never would make it into a fully fledged game, and Relude ended up selling the half-finished concept to Sumea (then the most established and highly successful Finnish video game studio), which would not much later launch the game as Mole Wars. Meanwhile, in 2005, Niklas Hed found himself as the only remaining original Relude founder. He teamed up with Vesterbacka and they changed Relude's name to Rovio, Finnish for 'bonfire', 'pyre' or 'pile of stuff on fire', to signify that their mission would be to go beyond mere survival or business as usual:

Have a goal and crazy ambition … look at the games market, many … fantastic games, but you never hear of them … do things differently … do not be afraid of going into new areas … you have to be a bit crazy … Act now! … Think different! … Have fun! … Remember to ask yourself 'How difficult can it be?' … And you have to believe that it [whatever you do] will eventually be successful. (Interview of Peter Vesterbacka, 2 Feb. 2018)

Technologies evolved, and times changed. In February 2005, Carly Fiorina lost her job. HP'a mobile e-services bazaars closed one by one: 13 months later, also Vesterbacka left HP.

4.3 | Technological change: AppStore as enabling technology for new ecosystems

When Apple's AppStore opened in 2008, Vesterbacka suggested to Hed that Rovio ought to design games for this new platform. The first 51 new game ideas Rovio worked on were failures, not 'on fire' by any definition. In early 2009, Jaakko Iisalo, Rovio's graphic designer, came up with 10 new rough ideas for games, none of which interested anyone. However, one of the game ideas involved a cute set of fun and human characters in the form of angry-looking birds. These were loved for unfathomable reasons by everybody at Rovio, as well as by their families and friends. Tuomo Lehtinen, a programmer, designed and put together a prototype, almost casually at first and just for fun. He set up a team with Iisalo, the size of which would vary between

two and 20 members, operating outside Rovio's formal organizational and conventional schemes in conditions of high technological, social and market uncertainty about what they were to achieve. They borrowed the catapulting idea from Crazy Penguins Catapult, a 2008 game by Digital Chocolate, another Finnish game studio, and turned it into cute birds that catapult projectiles at the castle of evil pigs that have stolen their eggs. Developed into a fully-fledged prototype and game, Angry Birds was released for the iOS iPhone platform in December 2009, targeting kids and innocent-minded adults.

Within 5 months, Angry Birds was a worldwide hit. Vesterbacka started to work full-time at Rovio as the so-called 'Mighty Eagle' or Rovio's Marketing Director. Vesterbacka and Hed had the game ported for personal computers and consoles. Industry experts praised Angry Birds for the way it recombined addictive gameplay, a comical style, low price and long-term profit potential into a viable franchise. Rovio moved to new headquarters, a stone's throw from both Nokia and where Hed had studied, and six kilometers from HP. Rovio was re-named Rovio Mobile. Angry Birds attracted venture capital from Accel in 2011. Angry Birds was in stark contrast to the dominant American-Japanese paradigm, as the game represented a novel, completely non-violent and naïvely innocent and fun model. Players were no longer to take video games overly seriously or as dark matter. Human urges to play and have fun were at the heart of this new game: ever smaller mobile-phone screens afforded increasingly casual, rather than complex, forms of play and numerous games studios followed suit. Time magazine named Peter Vesterbacka one of the 100 most interesting people of 2011. The change in name to Rovio Entertainment the same year was a message that the game was an add-on to entertainment and brand management (Forbes, 2011), rather than a service, platform or device. By 2012, Angry Birds had over a billion downloads and was AppStore's most downloaded game for nearly 2 years. Vesterbacka announced Rovio had now:

Become the leading brand in the entertainment industry … out to beat Disney. (Interview of Peter Vesterbacka, 15 May 2013)

In this and other ways, Angry Birds had successfully taken advantage of new enabling technologies for the ever-increasing mobility of game play, contributing to the diffusion of new web-based interactions and lifestyles related to social media, smartphones, tablets and wearables. Rovio diversified into book publishing, educational services, playgrounds, entertainment parks and animation. Disney had long merchandized and promoted video games based on its position as a dominant firm in the entertainment market and popular culture (Clark, 2016). Angry Birds did the opposite to Disney (or Sony, Microsoft and Nokia): diversifying *from* a video game, rather than *to* video game. By 2016, an Angry Birds Movie surprised few. In 2017, Rovio Entertainment went public, valued at EUR 900 million:

Typically, you never end up going from here to there in a straight line. You have to come up with new ways fast. If you hit a wall, maybe it doesn't make sense to

bang your head against the wall: maybe you find a door … (Interview of Peter Vesterbacka, 15 May 2013)

4.4 | Market transformation: Brand community and innovative volunteers in co-creation

Before Angry Birds, most video games had been the passion of *cognoscenti* (hobbyists taking their pastime very seriously). Hardcore games about war and violence as a means of resolving disputes between young men (the popular World of Warcraft game says it all) dominated the market. All video games considered 'good' originated in North America or Japan and required millions of dollars of investment, development time and a dedicated console (e.g., Play Station or PC). Angry Birds was the breakthrough of a new model and lifestyle of innocent fun and casual play (e.g., while waiting for the bus): a radically human game for everyone, including novices, a game at a child's mental and skill level, with no need for parental control. Angry Birds was developed for a song (USD 100,000) and introduced for the iPhone as little more than *fingerübung* (finger exercise), alongside subcontracting for Nokia and other video game and software houses. Game development teams in the U.S. and Japan were huge, while the radical circle's kernel for the 10 year timespan leading to Angry Birds numbered two to four individuals: first, Peter Vesterbacka and Carly Fiorina; then Peter Vesterbacka, Pär Andler and Andrew

Bolwell and, finally, Vesterbacka and Niklas Hed (who delegated game development to the team led by Tuomo Lehtinen). By virtue of its simplicity, Angry Birds became a retro game almost instantly, foreshadowing the rise in the popularity of this genre.

This older gentleman [in 2010] wanted to have his picture taken at this event in Atlanta. I knew we were onto something! … I joined Rovio full-time … (Interview with Peter Vesterbacka, 2 Feb. 2018)

Angry Birds recombined interests and excited astoundingly diverse circles and communities, harnessing new enabling technologies. Angry Birds inspire also many more radical individuals, groups, and their followers than the Atlanta gentleman in Atlanta. An eager and cohesive community of innovative 'fans' became a source of valuable innovation inputs:

Fans [are] at the heart of the brand … This guy from NASA, a fan of the brand, he came up with the idea for 'Angry Birds Space'. (Interview with Peter Vesterbacka, 2 Feb. 2018)

Angry Birds inspired new kinds of interpretations in Finland and elsewhere, within and outside video-game ecosystems, strengthening various radical circles' interactions with one another. Figure 2
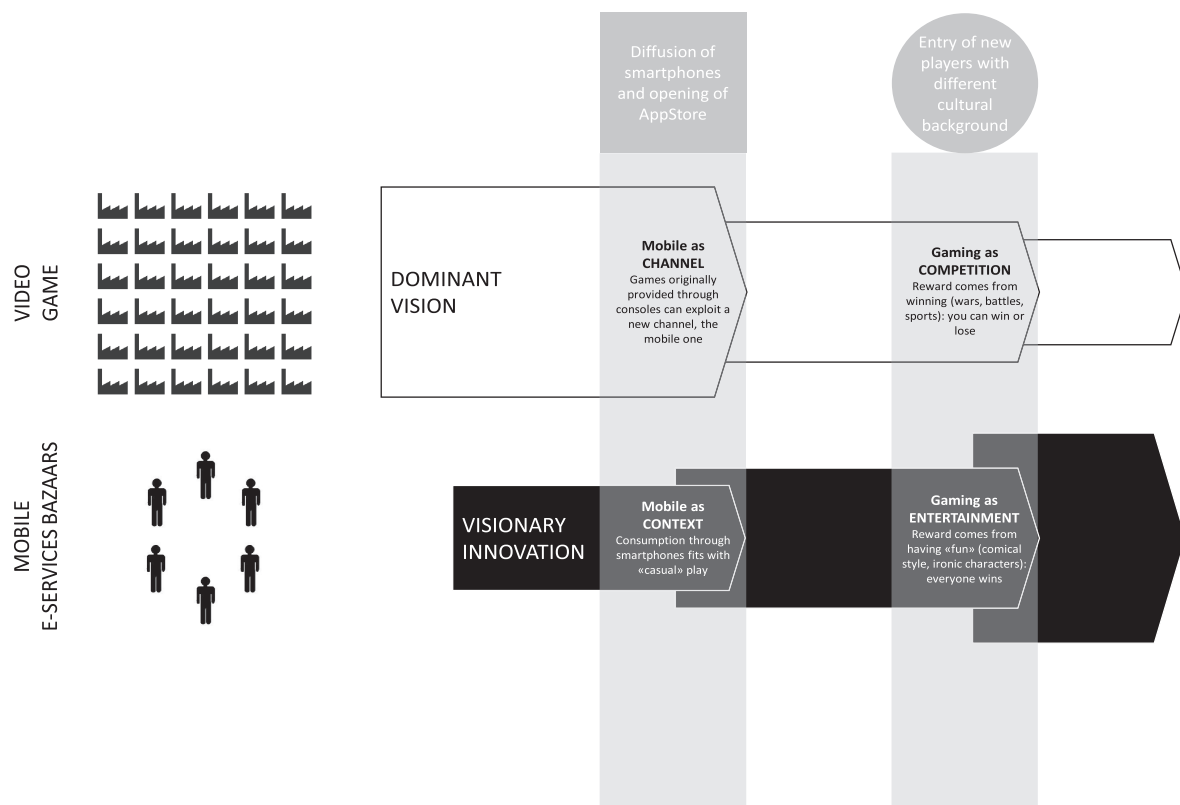

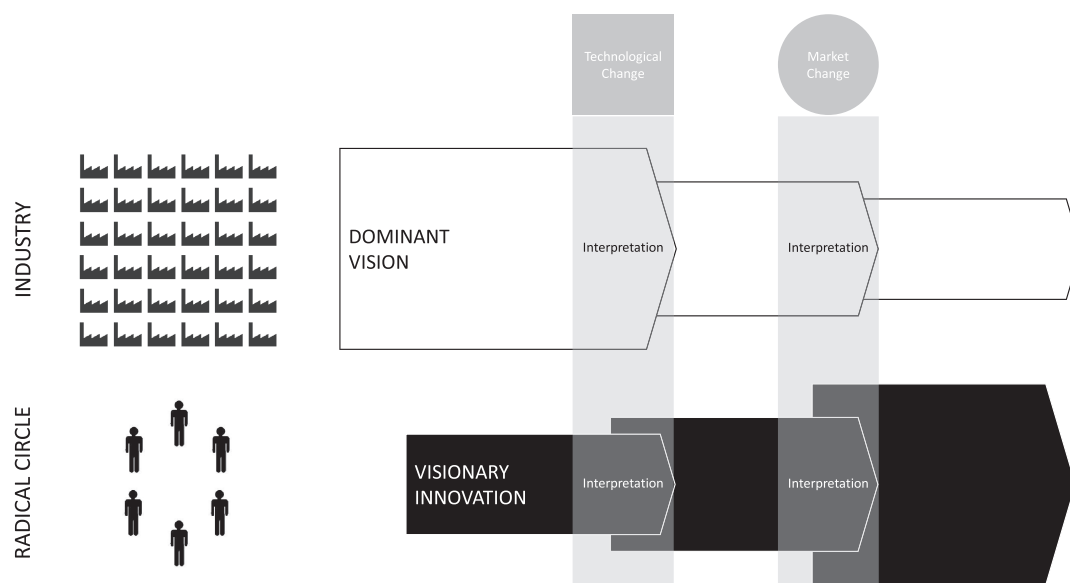FIGURE 2   Angry birds and the transformation of video games

FIGURE 3 Radical circle and visionary innovation

illustrates building blocks of Angry-Birds-led transformation of video games.

Supercell, an even more successful Finnish video game firm from 2012 than was Rovio, and similarly tracing its history in part to Mobile Monday, would feed back to Rovio on how their circle had developed mobile and casual games, the freemium business model, big-data analytics, financial exit and so forth. Angry Birds may not have changed the video game industry once and for all, but its then-new direction of casual fun attracted fans in unprecedented numbers, transforming the video game market by introducing a new major market segment. The overall evolution traces back to Peter Vesterbacka's 1999 visit to the HP headquarters and, even more, the e-Bazaar.

> In hindsight, it all traces to Bazaar [...] Extreme ideas [...] build a brand not for a hundred days but for a hundred years [...] focused on the brand, and not the game [...] that is part of the craziness [...] Think big! We are going to beat Disney!   (Interview with Peter Vesterbacka, 2 Feb. 2018)

5 | CONCLUSION

In this paper, through our case-based and inductive qualitative research, we have empirically demonstrated some of the benefits of a self-formed radical circle as an organizational solution (Farrell, 2003; Gustavsen, 1992; Verganti, 2009). We strengthen earlier findings as why and how radical circles autonomously formed is an organizational solution and strategy with advantages over innovation teams and communities assembled by innovation managers. Our empirical case analysis of the Angry Birds the video game suggests that radical circles are a particularly effective approach when it comes to visionary

innovation and conditions of high uncertainty, high ambiguity, or both. The radical circle behind Angry Birds had a sense of malaise, collaborated creatively and engaged in visionary innovation, behind which features were desire of change, even rebellion; tightly-knit ties and mutual affinities in the 'band' of individuals; forward-looking attention to weak signals based on boundary-spanning beyond the immediate circle, as well as bravely hybridizing who ideates, why, how, and what in ones' circle. Figure 3 schematizes the industry versus radical-circle innovation and transformation.

In addition to strengthening earlier findings, we add that visionary innovation is a process that is easier to amplify and sustain in a radical circle because visionary innovation benefits from having a group smaller than a crowd for this purpose (Birkinshaw, 2017; Caridi-Zahavi et al., 2016; Frey et al., 2011; Madsberg & Rasmussen, 2014; Pisano & Verganti, 2008; Verganti, 2016). Unlike in team and community intent at change along one or two value parameters, a radical circle's intent is interacting with lead users, inducing massive change along many parameters rather than at the most a few parameters, and transforming the industry's paradigm (Füller et al., 2008). Even when many of its visionary innovations were turned over to development in teams or extensions of its innermost core, the circle in the Angry Birds case always remains smaller than a crowd or community, with never more than 20 individuals. Volunteers following and interpreting a radical vision were often more motivated than were the paid employees: the volunteers had fewer social and cultural barriers (R. Verganti & Shani, 2016; von Krogh et al., 2012). New recruits quite freely joined, earlier ones move aside, as in artistic movements (Farrell, 2003) or in rock bands.

Both a limitation of this study and a call for further research include that this paper does not provide indications on how to design a successful video game on par with Angry Birds.[2] Other calls for further research include the following: does a radical circle need a

dominant vision and regime of established firms to challenge, or can a radical circle succeed in 'changing the world' from scratch? To what extent might a radical circle in a large organization (such as HP) and a startup (such as Rovio) relate to each other in one or another coevolutionary or ecosystemic way (Adner, 2017)? Is the difference between a radical circle and an innovation team always clear (the Angry Birds design team led by Tuomo Lehtinen was partly self-formed)? To what extent can a radical circle transform market and social behaviours in a deliberate direction 'by design' (see Bijker & Law, 1994; Brown, 2008; Callon, 1991; Geels, 2004; Hargadon & Douglas, 2001; Latour, 1987) compared to the emergent processes at play (Dalpiaz et al., 2016; Djelic & Ainamo, 2005)?

We hope future scholars may take up the challenge of addressing these questions and thereby enhance our knowledge of the enabling abilities of innovation teams versus radical circles versus innovation communities.

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ENDNOTES

[1] We thank Marja Kuutti for pointing out that 'there are no rules' was taken from the film *Fight Club* (a fact corroborated by other informants).

[2] The authors would like to thank Timo Ahopelto of Lifeline Ventures (personal communication) and Supercell's Timur Haussila and Touko Tahkokallio (interviews) for this insight.

DATA AVAILABILITY STATEMENT

Note on data: Interview notes as a rule are in Finnish, with the few exceptions to the rule involving presence of non-Finns at the occasion of the data collection. For more information, please contact corresponding author.

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