The pastoral crowd: Exploring self-hosted crowdfunding using activity theory and social capital

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Abstract
As crowdfunding technologies mature, designers and practitioners are continuing to discover new paradigms for fund-raising activities. One such paradigm seeks to complement or replace third-party crowdfunding websites by embedding crowdfunding technologies directly into fund seekers’ personal websites. This promises more control and customisation for fund seekers yet also distances fund-seeking activities from the established crowds on websites such as Kickstarter and Indiegogo. Consequently, fund seekers adopting this paradigm must be capable of gathering and sustaining a suitable crowd that does not already exist in any one location. However, not all organisations are likely to possess the social resources to meet this challenge. Of those that do, little is known about how they might leverage these resources or the manner in which specific resources have an impact. Thus, the objective of this study is to explore the social resources that enable self-hosted crowdfunding activities. In particular, this research models these activities by leveraging 2 a priori theoretical lenses: activity theory and social capital theory. These are applied to analyse an extreme case of self-hosted crowdfunding, the funding of Star Citizen. Observations from this case are used to develop a propositional model that links different types of social capital with specific elements of self-hosted crowdfunding.

KEYWORDS
activity theory, crowdfunding, social capital theory, Star Citizen

1 | INTRODUCTION

In recent years, crowdfunding has emerged as a viable alternative to traditional sources of venture capital for entrepreneurial projects (Mollick, 2014). The popularity of crowdfunding has grown at an extraordinary rate, with an estimated $16.2 billion raised via crowdsourcing in 2014 (Massolution, 2015). Moreover, Crowdsourcing.org and the
World Bank have suggested that crowdfunding will exceed $300 billion in funding transactions by 2025 (cf Meyskens & Bird, 2015). The basic dynamic for crowdfunding platforms is to allow entrepreneurs or organisations to make “an open call, mostly through the Internet, for providing financial resources either in the form of a donation or in exchange for the future product or some form of reward” (Belleflamme, Lambert, & Schwienbacher, 2014, p. 7). This process allows capital-seeking agents (ie, initiators of crowdfunding projects) and a crowd of capital-giving agents (ie, investors, backers, supporters, or funders) (Haas, Blohm, & Leimeister, 2014) to come together in a resource-multiplying process of cocreation (Boeuf, Darveau, & Legoux, 2014).

Several different models are commonly adopted. In the donation model, investors receive no direct benefit (the assumption being they are donating to projects for prosocial reasons), while in the debt model, individuals lend money with the expectation of repayment, typically with interest (Meyskens & Bird, 2015; Mollick, 2014). The equity model allows investors to become shareholders in business endeavours in the hopes of receiving dividends or some other medium-to-long-term return on investment (Futko, 2014). Perhaps, the form of crowdfunding that has received most media coverage is the rewards-based model, in which backers pledge money in exchange for some finished product, special privilege, or other material benefit (Meyskens & Bird, 2015). This model allows entrepreneurs or organisations to treat funders as “early customers, allowing them access to the products produced by funded projects at an earlier date, better price, or with some other special benefit” (Mollick, 2014, p. 2). While loan-based crowdfunding boasts the highest level of investment, rewards-based crowdfunding has the largest number of online platforms and is the fastest growing form of crowdfunding (Massolution, 2014).

More recently, organisations and individuals have also begun to complement or bypass fund-raising on dedicated external crowdfunding websites by embedding plug-ins for rewards-based crowdfunding directly into their own personal websites (eg, IgnitionDeck and CrowdFundHQ). This promises more control and customisation for fund seekers; however, it also separates fund-seeking activities from existing crowds on established platforms such as Kickstarter and Indiegogo. Consequently, fund seekers adopting this paradigm must be capable of independently gathering and sustaining a suitable crowd, rather than appealing to one that is already awaiting calls for investment. This presents new theoretical challenges for crowdfunding research, particularly, given existing research in the space has been characterised as highly focused on a handful of third-party crowdfunding websites (Gleasure & Feller, 2016; Mollick, 2013). Hence, existing research is difficult to extrapolate to emerging self-hosted crowdfunding activities, as studies are positioned to investigate how established communities function, rather than how they were formed, who was involved, and how the interactions between actors evolved. Thus, the objective of this study is to explore the social resources that enable self-hosted crowdfunding activities. We begin by examining and synthesising 2 theoretical lenses capable of capturing complex social developments, namely, activity theory (AT) and social capital theory (SCT) (Sections 2 and 3). This is followed by the research methodology (Section 4), in which we describe a case study approach based on the crowdfunding of Star Citizen. We then describe key findings from this extreme case and use these findings to identify a set of theoretical propositions linking different types of social capital with specific elements of crowdfunding activities (Section 5). Finally, the paper concludes by discussing the implications for research and practice (Section 6).

## 2 | AT AND CROWDFUNDING

### 2.1 | AT: An overview

Activity theory originated in cultural-historical psychology, predominantly in the works of Vygotsky (1978) and Leont’ev (1978). Vygotsky’s work represented the first generation of AT. This version focused on the concept of artefact-mediated and object-oriented action, where action comprises a subject (the individual or individuals engaged in the activity), an object (the goal of the activity), and mediating artefacts and instruments. According to Vygotsky (1978), there is no direct linkage between an individual and their environment. Rather, the relationship between a
subject and an object is always mediated through a number of tools including signs, tools, and symbols. Vygotsky's work concentrated mainly on the individual level, rather than the collective dynamic activities (Engeström, 1987). Second-generation AT was inspired by Leont'ev (1978) who further developed Vygotsky's work by explicitly modelling collective object-oriented activities, differentiating them from composite individual-level "actions" and "operations." Actions are conscious and directed at specific goals, whereas operations are performed routinely and "the methods for accomplishing actions" (Leont'ev, 1978, p. 65). This distinction between activity, action, and operation became the foundation of Leont'ev's 3-level model of activity. However, his work has been criticised for failing to fully clarify how individual actions are transformed into shared, collective objects through interactions and relations with community members or indeed how division of labour impacts on individual actions in a communal activity (see Hardman, 2008).

The third-generation of AT was proposed by Engeström (1987). Engeström expanded upon Leont'ev's goal-oriented view of AT with an enhanced framework that identified a number of new components, not theorised in previous works, including rules, community, and division of labour (Engeström, 1987). By doing this, Engeström made explicit the various aspects of social structures and culture, alongside agential activities (Allen, Brown, Karanasios, & Norman, 2013). Rules comprise a set of conditions that help guide the activities and behaviours in the system. Community consists of the subjects involved in doing the work, while division of labour provides for the distribution of tasks, roles, and responsibilities among a community of workers (Engeström, 1987; Engeström, Miettinen, & Punamäki, 1999). This view treats the relationship between elements in an activity system as a "distribution of cognition," in which knowledge and work emerge from the interaction between components (Cole & Engeström, 1993).

Moreover, a collective activity system is propelled by a deeply communal motive, where that motive is rooted in the object of the activity (Engeström, 2000). Activity theory also views internal tensions and contradictions as driving forces of change in activity. Such contradictions express themselves as problems, breakdowns, clashes, or errors (Kuutti, 1996; Helle, 2000). Primary contradictions can be encountered within a component of the activity (eg, in the rules or object) while secondary contradictions are those that transpire between constituents of the activity (eg, between the community and the mediating artefacts and instruments) (cf Allen et al., 2013). Nonetheless, while contradictions can generate conflict and tensions, they also expose opportunities for change, expansion of work, and learning (Blackler, 2009; Engeström, 2000; Helle, 2000).

2.2 Crowdfunding as an activity

Activity theory has stimulated theoretical contemplation in a number of fields including education (eg, Hardman, 2008; Murphy & Rodríguez-Manzanares, 2008), human-computer interaction (eg, Bannon & Bødker, 1991; Mwanza, 2002), and information systems (eg, Allen et al., 2013), among others. Rückriem (2009, p9) argues the "global process of digitalising and digitalised mediation of every aspect of human practice and activity is the hardest challenge activity theory has ever met." Indeed, Engeström himself has suggested that the rise of social and peer production facilitated by Web 2.0 induces one to rethink the shape of activity systems (Engeström, 2008). Despite the added challenges, AT has been applied to collective development in open source software communities (eg, Hemetsberger & Reinhardt, 2009), the role of information systems in service cocreation (eg, Grace, Finnegan, & Butler, 2008), and collaborative development within virtual worlds (eg, Cahalane, Feller, & Finnegan, 2010; Diehl & Prins, 2008). More recently, Asmolov (2014) used AT as a framework for analysing crowdsourcing platforms in emergency situations.

We also propose that AT is an appropriate theoretical lens for examining crowdfunding platforms for 3 key reasons. First, this study seeks to understand how networks of interpersonal relationships can be formed and sustained within and across different technological contexts, eg, face-to-face, social media, crowdfunding platforms, and personal websites. Doing so requires analysis of both social and technological factors, a demand to which AT lends itself (Allen et al., 2013). Second, the range of technologies and actors involved for self-hosted crowdfunding activities means that accounts seeking to examine individuals or artefacts in isolation may overlook important phenomena. Such a need to consider actions within their social and technological context resonates with AT, which
models individuals’ actions as community-embedded and artefactually mediated (Kaptelinin, Nardi, & Macaulay, 1999). Third, crowdfunding is ultimately goal oriented towards the appropriation of financial resources to support some commitment. This further harmonises with AT, in which the basic unit of analysis is an activity supporting the accomplishment of some goal (Engeström, 1987).

Thus, we use an Engeströmian activity system as a theoretical lens to represent self-hosted rewards-based crowdfunding activities. Viewed as such, the subject represents the entrepreneur or organisation-seeking funding to develop a specific object, eg, a product or service. A number of mediating artefacts and instruments are required to support this activity, eg, a personal website and social media such as Twitter, Reddit, and Facebook. The entrepreneur or organisation uses their personal website to accommodate donations, in exchange for which specific rewards or incentives are offered. This in turn enables the formation of a community of backers, ie, individuals who agree to invest money in the project. Interactions between the subject and community are dictated according to a division of labour, which typically describes a number of production and communication commitments. Coordination of the activity system further relies upon on a set of explicitly or implicitly provided rules. Examples of explicit rules include the near-ubiquitous tiered rewards model (in which higher levels of investment are rewarded with increasingly valuable rewards) as well as the difference between “flexible” funding (where pledged money changes hands regardless of whether a campaign reaches its target) and “all-or-nothing” funding (in which a campaign must meet or exceeds its fund-raising target by the time the campaign finishes for the investment to be finalised). Examples of implicit rules include consensus that fund seekers may offer only symbolic rewards for small investments (commonly $1) and that fund seekers should remain responsive to backers’ comments after a campaign has been successful.

3 | SCT AND CROWDFUNDING

3.1 | SCT: An overview

Social capital theory emerged from sociological and political discourse around the formation and survival of communities (Jacobs, 1965; Portes, 2014). More recently, it has also been applied to areas such as management, economics, and the design of IT (Nahapiet & Ghoshal, 1998; Yang, Lee, & Kurnia, 2009; 2014). In one of the first systematic analysis of SCT, Bourdieu (1986, p. 86) differentiated social capital from human, economic, and cultural capital. Instead, he defined it as “actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance and recognition.” This work was elaborated upon by Coleman (1988), who argued that just as the mobilisation of physical capital is enabled by human capital (ie, capabilities, skills, and effort), the mobilisation of human capital is enabled by social capital (ie, the exchange of obligations, expectations, and information between individuals, according to some established social norms) (Coleman, 1988). Thus, social capital is created by individuals who pursue their self-interests within networks of social relations, such as communities or organisations. Further, Coleman proposed that “social capital inheres in the structure of relations between actors and among actors. It is not lodged either in the actors themselves or in physical implements of production... It is defined by its function. It is not a single entity but a variety of different entities, with two elements in common: they all consist in some aspect of social structures, and they facilitate certain actions of actors - whether persons or corporate actors - within the structure” (Coleman, 1988, p. 598). Coleman’s definition is important because it reframes SCT as a community-level social economy (Adam & Roncevic, 2003; Yang et al., 2009). Moreover, this view of social capital positions it as a public good, in that its benefits are captured by all those involved in a social structure, not only by those invested in it (Torche & Valenzuela, 2011).

Coleman’s (1988) description of SCT centres upon 3 key components: social norms, information channels, and expectations and obligations. Social norms have no legal or official basis (and may even be in conflict with official laws); however, they “specify what actions are regarded by a set of persons as proper or correct, or improper and incorrect” (Coleman, 1990, p. 243), allowing them to capture the values and principles of the group. Information channels describe
the informational links between specific individuals in a social group. Such links are important, as it is the number, strength, and structure of horizontal interactions among individuals in a community (i.e., the "closure") that facilitates the materialisation of desirable norms and trust (Coleman, 1990). When sufficient closure exists, trust increases between actors, allowing them to exchange reciprocity-based expectations and obligations in a more robust and stable social economy (Gargiulo & Bernassi, 1999; Field, 2003).

Social capital theory has been used to explain a variety of prosocial behaviours that cannot be explained using human or financial capital alone (Coleman, 1990; Wasko & Faraj, 2005; Yang et al., 2009). Social capital theory has also been used to explain a range of complex online collaborative behaviours, e.g., knowledge sharing in virtual communities (Chiu, Hsu, & Wang, 2006) and open source software development (Chou & He, 2010). More recently, Zheng, Li, Wu, & Xu (2014) analysed entrepreneurs' crowdfunding success from an SCT perspective, concluding that social network ties, obligations to fund other entrepreneurs, and shared meaning between sponsors and entrepreneurs all have a significant impact on crowdfunding performance.

### 3.2 A model of crowdfunding activities and social capital

The combination of theoretical perspectives must ensure compatibility at the level of intellectual tradition and philosophical assumptions (Sarker, Xiao, & Beaulieu, 2013; Truex, Holmström, & Keil, 2006). Such compatibility is observed in the Engeströmian and Colemanian versions AT and SCT for several reasons. First, both perspectives assume that individuals are behaving in a mindful and goal-oriented fashion, meaning each models a product or service as the object of a crowdfunding activity. Second, while many theories jar with AT due to their focus on institutions or communities as their level of analysis (Engeström, 2000), Coleman's account of SCT grounds has the same "micro-macro" (cf. Hedström & Swedberg, 1996) individual-level grounding of concepts. Third, several areas of similarity are observed between the 2 perspectives, suggesting sufficient overlap to make the theories relatable, notably between social norms and rules, between information channels and instruments and mediating artefacts, and between obligations and expectations and division of labour. Social norms refer to the principles and values of the collective, which may or may not be manifested in the explicit and implicit rules of the activity system. This has been illustrated in research on loan-based crowdfunding, whereby different types of information disclosures have contrasting effects on different platforms with ostensibly similar rules (Feller, Gleasure, & Treacy, 2017). This is because the social norms of backers on those platforms differ at the level of principles and values, rather than at a feature or practice level. Obligations and expectations refer to the accumulated reciprocity-based currency that can be used to motivate tasks, while the division of labour captures the individuals to whom these tasks are allocated. This means that obligations and expectations are not limited to any particular crowdfunding campaign but may instead create reciprocity-based investment behaviours across campaigns (Koch & Siering, 2015; Zvilichovsky, Inbar, & Barzilay, 2013) as well as other social relationships outside of crowdfunding contexts (Agrawal, Catalini, & Goldfarb, 2015). Information channels refer to the informational connections between specific individuals, while instruments and mediating artefacts describe the tools by which these connections may take place. In a crowdfunding context, instruments and mediating artefacts are most likely to include a fund seeker's personal website and social media. Fund seekers and backers may have information channels that preexist or circumvent these tools, or they may have information channels that manifest across several. For example, social media, blogs, and other tools separate from crowdfunding platforms are often used to provide updates and generate word-of-mouth marketing that extends beyond the immediate backer network (Mollick, 2013). Indeed, many crowdfunding websites will contain "Tweet" and "Facebook" buttons that encourage users to circulate information to external communities (Colombo, Franzoni, & Rossi-Lamastra, 2014; Liao, Zhu, & Liao, 2015). Thus, each of these constructs from AT and SCT is both linked and distinct.

There is little existing research linking social capital to specific crowdfunding activities, meaning there is limited value in formulating a priori propositions that narrow theorising to specific relationships. Instead, this study explores self-hosted crowdfunding activities based on the following 3 research questions:
RQ1: In the context of self-hosted crowdfunding activities, how do social norms associated with the accumulation and exploitation of social capital impact upon the (1) subject, (2) community, (3) object, (4) rules, (5) division of labour, and (6) instruments and mediating artefacts?

RQ2: In the context of self-hosted crowdfunding activities, how do information channels associated with the accumulation and exploitation of social capital impact upon the (1) subject, (2) community, (3) object, (4) rules, (5) division of labour, and (6) instruments and mediating artefacts?

RQ3: In the context of self-hosted crowdfunding activities, how do obligations and expectations associated with the accumulation and exploitation of social capital impact upon the (1) subject, (2) community, (3) object, (4) rules, (5) division of labour, and (6) instruments and mediating artefacts?

4 | METHOD

4.1 | Research approach

The integration of AT and SCT presents an approximation of self-hosted crowdfunding activities, rather than a refined and testable “strong” theory (cf Weick, 1995). In order to further develop and refine this approximation, this study adopts a case study approach to data gathering and theory development (Benbasat, Goldstein, & Mead, 1987; Eisenhardt, 1989). More specifically, because the subject matter for this study is dynamic, evolving, and highly contemporary, the case study focuses upon qualitative analysis of one extreme case, namely, the crowdfunding of Roberts Space Industries’ (RSI) Star Citizen. Building on Yin (2008), such a single-case design is suitable (1) because the Star Citizen case is “revelatory,” i.e., it represents a unique set of circumstances and (2) because the evolving nature of social capital lends itself to longitudinal study. Under such conditions, while the use of multiple cases would limit the depth of exploration for the landmark or “index” case expected to provide most empirical insights (Patton, 2005) (3) because the study is exploratory in nature. Single-case designs often bring the researchers closer to the empirical matter under investigation, allowing the data to “talk back” in a way that increases those researchers’ sensitivity to emerging variables and demands reinspection of preexisting biases (Flyvbjerg, 2006; Ragin, 1992).

The ability to leverage observations of this extreme case and develop a compelling strong theory requires an approach to data analysis that emphasises inductive/abductive reasoning. Thus, this study adopts the grounded theory-coding techniques proposed by Strauss and Corbin (1990). Grounded theory was introduced as a means of using data to inductively build theory, rather than test deductively formulated propositions and hypotheses (Glaser & Strauss, 1967). At the heart of the method is a desire for researchers to maintain an open mind and restrain from prematurely committing to any specific conceptual configuration (Charmaz, 2006; Dey, 1999; Urquhart, Lehmann, & Myers, 2010). Several aspects of the grounded theory approach remain a topic of ongoing discussion. Perhaps most fundamentally, scholars have criticised the amount of novel theories actually generated by the approach (Bryant, 2002; Clarke, 2005). This has led to a greater demand for abductive theorising in innovative grounded theory studies, requiring researchers relate findings to existing research to determine what their observations “are a case of” (eg, Charmaz, 2006; Timmermans & Tavory, 2012). Consensus has also emerged that grounded theory techniques can be legitimately applied in situations where approximate a priori theorizing acts as a “sensitizing device,” provided those techniques are applied in a way that is consistent with underlying assumptions (Birks, Fernandez, Levina, & Nasirin, 2013; Urquhart & Fernández, 2013).

There have also been concerns over the extent to which grounded theory methods can be harmonised with differing ontological positions and consequently the extent to which passive or active analysis techniques should be applied (Suddaby, 2006; Urquhart & Fernández, 2013). The consensus is that grounded theory methods are consistent with both realist and relativist worldviews, however, individual studies must demonstrate the necessary philosophical due diligence when applying them (Birks et al., 2013; Urquhart et al., 2010). The analysis performed in this
study does not adopt the grounded theory approach in its most absolute inductive form (Glaser, 1992) but rather assumes a pragmatic “Straussian” perspective (Strauss & Corbin, 1990) within a subjective postpositivist epistemology (Mingers, 2001). This means that inductive theory building looks to extend initial deductive theorising (ie, coding builds on predefined constructs and relationships from AT and SCT) while also seeking to identify novel constructs and relationships based on observations from the *Star Citizen* case. Further, the role of abduction is embraced, as emerging constructs and relationships are continuously related back to existing AT and SCT literature.

### 4.2 Selection of case

*Star Citizen* is a massively multiplayer space simulation video game under development for Windows and Linux-based PCs. The game combines first-person combat with player-to-player trading in an immersive and persistent online universe. *Star Citizen* emphasises realistic physics, in-game social collaboration between players, customisability, and long-term player influence on game development. Production is led by RSI (a subsidiary of Cloud Imperium Games). Chris Roberts, the founder, worked previously as a game designer and programmer for Origin Games, where he created the popular *Wing Commander* and *Freelancer* space simulation video games. He also worked as a film producer and directed a spin-off movie for *Wing Commander* in 1999.

Development of a prototype for *Star Citizen* began in 2011, though this development was not shared with the public until the accompanying RSI website was launched in September 2012. Despite little or no initial marketing from Chris Roberts, word spread virally and the site had attracted over 20,000 registered users a week after its official launch. Rather than running a fund-raising campaign on a dedicated external website, the company decided to use a WordPress plug-in called *Ignition Deck* to perform crowdfunding activities self-hosted on the RSI website. Within a few days, the high level of traffic and funding on the site was causing server difficulties, prompting RSI to host a parallel crowdfunding campaign on Kickstarter to add contingency (see Figure 1). A target was set on Kickstarter of $500,000, while a separate target of $1.5 million was set on the RSI site. By the time both crowdfunding campaigns were formally completed in November 2012, over $2.1 million had been raised on Kickstarter and another $4 million on the RSI site (Morris, 2014). Rewards-based crowdfunding has continued on the RSI site since that period, which reports over $110 million raised from 1.3 million backers as of March 2016.

The crowdfunding of *Star Citizen* is selected as a suitable extreme case for this study for 3 reasons. First, the reputation of *Star Citizen*’s founder, Chris Roberts, was prominent during crowdfunding activities, suggesting RSI felt social capital was an important strategic asset. Second, *Star Citizen* obtained more funding from than any other crowdfunding project on record at the time of writing, suggesting this strategy was successful. Third, although crowdfunding activities were primarily centred upon the RSI site, they also made use of Kickstarter. This allows comparisons to be made as regards the relationship between social capital and crowdfunding activities on each platform.
4.3 Data gathering and analysis

Exhaustive sampling was performed on Kickstarter, meaning all information on the campaign description page was examined as were each of the comments from the beginning of the campaign in October 2012 to the time of writing (\( N = 53,721 \)), each of the updates (\( N = 61 \)), and each of the comments made in response to updates (\( N = 2,771 \)). Exhaustive sampling was also performed on the main sections of the RSI website used to provide an overview for the Star Citizen project, eg, the home page, description of funding, announcements, and events. More detailed communication took place within a series of videos on the website. The information in these videos represented a significant jump in scale, both because of the number of videos (25 separate series, each containing between 1 and 72 videos) and the bidirectionality of communication (backers were free to comment on each video). As a result, these series of videos and commentary were sampled selectively based on 4 main themes, ie, general discussion (for which the “Monthly Reports” and “10 from the Chairman” series were sampled), community building (for which the “Around the Verse,” “Bugsmashers,” “The Wonderful World of Star Citizen,” “Fan Spotlight,” and “Game Changers” series were sampled), interest-based discussion (for which the “10 from the Producers,” “10 from the Designers,” “10 from the Writers,” and “10 from the Artists” series were sampled), and exclusive content (for which the “Jump Point” series was sampled).

The community forum on the RSI website was even greater in scale. This forum included over 180,000 discussion topics and 4.5 million comments as of August 2015. Thus, a less-structured “theoretical sampling” (Glaser & Strauss, 1967; Urquhart et al., 2010; Birks et al., 2013) approach was adopted. This meant the forum could be used to browse for emerging topics and issues, as well as look for instances that could support, refute, or refine ongoing theorising. Those data were supported by additional “theoretical slices” (Dey, 1999; Charmaz, 2006) of data from a range of complementary external sources, including Reddit, YouTube, Facebook, various digital news media, and personal blogs. These sources were not directly involved in fundraising activities yet were frequently referenced during discussion on the primary platforms. As a result, observations from these sources were used to add context to analysis (particularly regarding social capital).

Each of these sources was analysed using the open, axial, and selective coding techniques proposed by Strauss and Corbin (1990). This coding began with a “line by line” exhaustive exploration (Bowen, 2006; Charmaz, 2006; Glaser & Strauss, 1967) into the sampled data. Open coding began by looking for novel categories as well as evidence of the constructs identified by AT (subject, community, object, rules, division of labour, and instruments/mediating artefacts) and the constructs identified by SCT (social norms, obligations and expectations, and information channels). Constant comparison of data (cf Birks et al., 2013) identified 7 additional theoretical categories in the form of (1) backer hierarchy, (2) shared cultural references, (3) exclusivity, (4) cross-community closure/social organisation, (5) historical closure/social organisation, (6) future closure/social organisation, and (7) emerging closure/social organisation.

Axial coding was performed to relate these emerging categories, identify subcategories, and define/redefine constructs. This comparison allowed one emerging category to be subsumed into an a priori AT construct (backer hierarchy was folded into community) and 2 emerging categories to be subsumed into an a priori SCT construct (shared cultural references and exclusivity were folded into social norms). The remaining 3 emerging categories (preexisting closure/social organisation, future closure/social organisation, and emerging closure/social organisation) were recognised as separate dimensions for SCT, demanding each SCT construct be redefined into 3 constructs (eg, social norms became preexisting social norms, proposed social norms, and emerging social norms). Axial coding further developed propositional relationships between social capital-related constructs and specific elements of crowdfunding activities.

Selective coding was performed to look for specific instances of dialogue that supported or undermined emerging propositional relationships. This involved continuously revisiting the data throughout the theorising process, resulting in a total of 311 selective codes from the RSI website, 230 selective codes from the Kickstarter campaign pages, and 95 codes from secondary sources.¹ Once analysis and theory building was completed, a single qualitative interview was performed with a Director at RSI who has responsibilities in the areas of web development, customer support,

¹Note that any quotes presented are unaltered. Hence, many contain grammatical and orthographical errors.
and business development. This interview acted to "vent" (cf Goetz & LeCompte, 1984) the final set of findings, as the interviewee confirmed they had observed similar patterns of behaviour to those described by each of the emerging propositions.

5 | FINDINGS

5.1 | The impact of preexisting social capital on crowdfunding activities

Preexisting social norms were found to impact on several elements of crowdfunding activities. Cloud Imperium Games were technically fundraising on behalf of RSI; however, it was Chris Roberts who acted as the subject of crowdfunding activities (see Figure 2). This allowed him to draw on personal experience to create the foundational preexisting social norms for the project by presenting himself first and foremost as a "PC gamer."

*I'm building a game and a universe that essentially is the game and the universe I would like to play. So it's for gamers like myself. I wouldn't say that I'm a social gamer, a gamer that plays Farmville. I mean, I like a sophisticated experience.*

This self-identification of Chris Roberts as a sophisticated gamer was continuously reflected by backers' discussion of Star Citizen. This appeared to lay a foundation of trust by allowing backers to personally relate to Roberts, eg, "You can actually see the Love CR has for SC in his eyes when he talks about it" and "I'm liking this guy more and more, every time I read/see him talk about gaming." It also allowed backers to relate a set of cultural norms to the project through a set of shared interests, eg, "You are a man after my own heart. HUGE Star Wars Fanboy myself" and "really enjoy the personal touches, like seeing your miniature collection or what book you're currently reading."

Preexisting social norms also served an exclusionary role that acted to increase closure at a community-level by distanc- ing casual gamers. Roberts further encouraged this community bounding by positioning the crowdfunding of Star Citizen as a call to action for PC gamers and space simulation enthusiasts, eg, "Let's put high-end PC gaming and Space Sims back on the map!" and "I'm really actually quite sad and angry about the situation right now where it sort of feels like PC games and PC gamers don't get any respect." This adversarial position with mainstream gaming was echoed by backers over the course of fundraising, who celebrated the project's success as a sign of collective validation, eg, "Boom! 42M. Take that EA!" "show the world our support and your funding," and "Kickstarter and RSI combined, people paid an average of $70! That is incredible and proves we WILL pay for what we believe in!" Several backers also sporadically repeated Roberts' crowdfunding tagline for Star Citizen that "I am a PC game" and "reports of my demise have been widely exaggerated."

A central component of these preexisting social norms was a collaborative antiestablishment ideology, which contributed to an assumed set of rules for fundraising activities that would prioritise game scope and community participation over profitability. One example of this was that all excessive funding would be matched by additional stretch goals to add new spaceships and increase the scale and ambition of the project. Roberts explained this in an interview, remarking

*We said, 'Give us more money and we'll give you a better digital ship in the [game's] universe.' That was kind of revolutionary, since before that it was 'We'll give you statue, or a bigger box, or dinner with development team.'... As a gamer, if I'm backing a game, I want something that improves the game, not sits off to the side.*

Roberts Space Industries further continued to leverage these preexisting social norms around collaboration and participation by asking backers for their suggested stretch goals as the project progressed, as well as polling them for preferred options. Yet these preexisting social norms also created some tension when new rewards were introduced that deviated from these assumed rules. Notable exceptions to this included a $5 additional reward that allowed
backers to take part in a vote on future production alternatives, leading some backers to complain of "pay to vote" exploitation and rescind their pledges. Other backers became critical when new rewards were introduced that appeared to offer in-game advantages over other players, eg, "Why would I want to skip game experience?" and "I want literally no bonuses over others... I hope this kind of method is a rarity in the way the community will be treated, and that parts of the game don't just get created to make money from this tremendously supportive community preemptively."

Proposition 1. Preexisting social norms contribute to crowdfunding activities by establishing the nature of the subject, community, and rules.

Preexisting information channels were also found to impact on crowdfunding activities. This manifested most powerfully in the self-organisation of the community prior to the official launch of the game on the RSI website. Roberts had publicly announced his intention to make a new space simulation under a forthcoming robberspaceindustries.com website. Word spread virally, particularly among users of a Reddit subforum (or "sub-Reddit") dedicated to Roberts’ previous game, Freelancer. The RSI site was not supposed to go live until September 10, 2012. However, over 6800 users had registered by September 5th and almost 23 000 by September 17th. The RSI site thanked this “vanguard of dedicated fans” for their enthusiasm and encouraged them to keep the momentum going by both pledging and “spreading the word.” Roberts Space Industries also rewarded users who registered for the site before the official launch of the game on October 10th with a “Golden Ticket” that confers a unique decal on their spaceship in the final game.

Preexisting information channels also influenced the choice of instruments and mediating artefacts for crowdfunding activities. Roberts Space Industries responded to users’ migration to the RSI website from Reddit and gaming-related news sites by posting updates and maintaining contact with users on these platforms after the RSI website had been launched. Roberts Space Industries sought to complement these channels with mainstream connectivity by adding profiles on October 5th on Twitter, Facebook, Tumblr, and Google+. Interestingly, this created some backlash when RSI tried to encourage participation through those media with the promise of exclusive content, suggesting limited overlap between preexisting information channels on those media, eg, “I get why you are doing it, but I don’t want any part of that other garbage. Don’t know why you would exclude those of us who have been here from start, why punish us?” and “I’ve missed out on many things just because I refuse to get facebook/twitter or such, very much dislike this kind of development.” Roberts Space Industries staff reassured backers by moving away from the idea of exclusive content and instead positioning these platforms as complementary media to handle recurring capacity issues from the site’s unexpectedly heavy traffic. These capacity issues were further
brought into focus once fundraising began, as a surge in interest on the first day (and over $450,000 in pledges) caused the RSI website to crash, delaying fundraising several days. Several backers voiced support at this point for parallel fundraising on Kickstarter. Concerns were voiced among a minority of backers on the RSI site regarding Kickstarter’s 5% fee and the dispersion of the community. However, following significant positive feedback from more casual community members on Facebook, a complementary Kickstarter campaign was launched to provide contingency, visibility, and familiar mechanics.

**Proposition 2.** Preexisting information channels contribute to crowdfunding activities by establishing the nature of the community and the instruments and mediating artefacts.

Preexisting obligations and expectations also significantly influenced the object of crowdfunding activities. This was partly because Star Citizen was conceptualised by backers with reference to Roberts’ previous games, in particular, Freelancer, Wing Commander, and Starlancer. More fundamentally, the intensity of crowd involvement prior to the launch of the project created expectations among backers regarding the scale and longevity of the game. Roberts Space Industries acknowledged these preexisting obligations and expectations and reinforced them with explicit long-term commitment to ongoing development of the game and the community. Some backers’ expectations extended beyond these explicit commitments, leading them to anticipate secondary developments within the Star Citizen universe in the future. This was reflected in a thread on the RSI forum asking “Is this Chris Robert’s Magnum Opus?” in which backers discussed such expectations, e.g., “I’m pretty sure he’ll just keep iterating on Star Citizen. Since it’s not subscription based, they’ll have to go with expansion packs of some sort, I think,” “I don’t really know if ‘Star Citizen 2’ will make much sense. They can just create a massive expansion and still call it SC since this universe is supposed to be expanding with the players,” and “I think Mr Roberts is the next George Lucas… would not be surprised if he made a movie as well for the game, not unlike Avatar.”

These speculations of secondary developments paralleled with preexisting obligations and expectations regarding the division of labour. Building on the surge of enthusiasm from the community that launched the project, RSI embraced the role of backers as collective marketers and producers. Many of these backers responded with enthusiasm to the opportunity to take part by assuming the traditional publisher’s responsibility of funding and marketing, e.g., “Everyone make sure you do a final push for backers, think about who you know that would like this game, and post it on their FB page!” and “if we can reach the previously impossible $5.5 million level, then the Bengal carrier will be playable in the finished game… Can we get there?” The internalisation of backers was reinforced by RSI’s distancing of the backer community from less-invested individuals, as typified by the following extract from a “Thank You” message on the RSI site.

> Our intention has always been to make Roberts Space Industries YOUR site. It’s not a public advertisement for the game; it’s a private community for those who are making the game happen. We want your input on what we’re doing and we want to share our plans with you; the occasional passer-by doesn’t concern us.

Such internalisation also encouraged the community to assume responsibilities of self-policing and managing the community’s external image. These varied from general calls for good behaviour and a “welcoming attitude” to more aggressive resistance towards ongoing perceived external threats, e.g., “Some people are really hoping that this fails so they can brag and tell everyone that space-sims are dead, that crowdfunding’s greatest success turned out to be the greatest failure of the generation, and that Chris Roberts is now the modern equivalent of a snake oil salesman.”

**Proposition 3.** Preexisting obligations and expectations contribute to crowdfunding activities by establishing the nature of the object and the division of labour.
The impact of proposed social capital on crowdfunding activities

Proposed obligations and expectations were found to impact on 3 elements of crowdfunding activities. This was most explicit for the object of these activities (the Star Citizen game), which was proposed as a “living, breathing universe” for which RSI would continue to add content every 1 to 2 weeks after its eventual launch (though there was no specification as to how long such updates should continue). As part of this “living entity,” RSI further offered backers the opportunity to imprint themselves on the in-game universe, e.g., “things that players do will have an effect on the universe and they’ll also be able to become part of the universe... that jump point get be named after that player. So that player becomes part of the history and lore of the universe.” Interestingly, the degree of enthusiasm for this “lore” differed considerably between backers, as this evoked a great deal of passion in some backers, while others were almost exclusively interested in details relating to gameplay. This early divergence provided early clues as to a division in the backer population between competitive player-versus-player (PvP) gaming enthusiasts and immersive story-driven player-versus-environment (PvE) gamers (sometimes referred to pejoratively as “carebears”).

Proposed obligations and expectations also impacted on the division of labour for the project. Roberts Space Industries promised not only to continue develop the game but also to share development updates and provide backers a weekly report. Further, RSI offered backers the opportunity to expand their participation beyond funding and marketing to actual universe design. For those backers most interested in the lore of the Star Citizen game, RSI encouraged the submission of short stories, fan fiction, and art. For those backers more interested in actual game mechanics, RSI encouraged the submission of game concepts and bug reports. Yet perhaps the most striking example of backers’ opportunities to take part in development was the invitation to design and submit spaceships to be added to the game, remarking that “if it passes the standards, then they can get sold in the ship dealers on certain planets and maybe the person that built that spaceship will be earning money from other players who think that spaceship’s cool and want to pay them for it.” Roberts Space Industries frequently used images and descriptions of specific spaceship designs to promote Star Citizen, suggesting they viewed such design tasks as a core feature of development. These proposed obligations and expectations also implicitly placed the requirement on RSI to create appropriate channels for these submissions, to evaluate their quality, and to provide recognition for the most deserving of submissions.

Proposition 4. Proposed obligations and expectations contribute to crowdfunding activities by reinforcing or amending the instruments and mediating artefacts and division of labour.

Proposed information channels were found to impact on 2 elements of crowdfunding activities. The first of these was the community, which was once more a force for both inclusion and exclusion. In terms of inclusion, RSI proposed greater closure between the company and the community of backers throughout development, for example, by promising backers “you’ll be part of a select club that has exclusive access to early gameplay and behind the scenes development updates.” In terms of exclusion, proposed information channels bypassed publishers, venture capitalists, and other professional investors, to maintain creative control for RSI and the community. Roberts summarised this in the introductory video on Kickstarter, remarking that “one of the things I like about crowdfunding is cutting out the politics and the noise of the publisher and dealing directly with the people that want to experience the game and make it.” Backers’ responded favourably to this exclusion, to the point that some were so passionate as to border on aggression, likening the success of the game to a “punch in the face for publishers.”

The second element of crowdfunding activities influenced by proposed information channels concerned the instruments and mediating artefacts. Roberts Space Industries were keen to house as many of the activities as possible on their own website, as Roberts felt that “This keeps the community together. They have all this energy. Typically, people get excited; then a campaign ends, and everyone goes off and it loses that momentum and sense of community.” To avoid this loss of momentum, RSI proposed to the backer community that the website “should be the first stop into the Star Citizen universe,” a place where they could receive information throughout development, take part by providing feedback and ideas, and discuss insights with other backers. Interestingly, while this was welcomed by the most passionate of backers, it created tensions among more casual members of the community, particularly those who
had backed on Kickstarter, eg, “Seems like every game I back on kickstarter insists on making me sign up for their forums. I honestly have no desire to hang out in the forums for the game. I really don’t” and “The RSI forum seems to contain much noise. So much that I often avoid it, sifting through 1000s of posts to find a gem is well a pain.” Others even complained as to the number of updates and communications being posted on Kickstarter, which they saw as “spam.”

**Proposition 5.** Proposed information channels contribute to crowdfunding activities by reinforcing or amending the community and instruments and mediating artefacts.

### 5.3 The impact of emerging social capital on crowdfunding activities

In addition to preexisting social norms or proposed social norms, emerging social norms also began to influence crowdfunding activities as they became more nuanced and embedded. The first element of crowdfunding activities impacted by these emerging social norms was the Star Citizen game itself, ie, the object. Early dialogue around proposed social norms had suggested some tension between PvP and PvE gamers. As the project progressed, these tensions became more pronounced, much to the weariness of many backers. Roberts suggested this would be resolved in the game by separating these populations of gamers. This would be implemented by creating “heavily policed” areas where player aggression would be punished by in-game environmental and incentivised collective player retaliation, as well as unregulated areas where aggression and piracy were fair game. However, not all backers were reassured by this approach, several of whom referenced ongoing unresolved tensions in Eve Online, an existing space simulation game. Player-versus-player-oriented gamers complained about the slow speed of that game, eg, “you spend 90% of the time playing the game spinning your ship, farming ISK, and dreaming about the awesome possibilities that can EVEntually transpire. Then you realize the game is Microsoft Excel with a fancy skin.” Conversely, PvE-oriented gamers complained about interference from unsolicited PvP conflict (commonly referred to as “grieving”), eg, “For me, the problem with EvE is more that it has become the playground of destructive jerks who get their jollies killing anyone who shows up in low sec” and “I stopped playing EVE because someone didn’t like my name and would just grief the [****] out of me... he would run multiple instances of the game and wait for me to re-spawn and attempt to leave docking and kill me.”

These differences in emerging social norms also impacted the community. One notable example concerned different attitudes to the level of player immersion, particularly as it related to the subcommunity of role players (RPers) backing the project. Some backers were concerned that the presence of RPers would affect the dynamics for interpersonal exchanges in game, as they would feel pressured by this subcommunity to take part in role-playing, eg, “Some Rp’ers take things to far and even actively try to limit other ppls game experience by calling xxxxxx breaks immersion!” and “I have role played and really enjoyed it, but that’s always been in a small group who ALL agree on there being roleplay, something that will be impossible to guarantee within SC.” Other backers’ expressed more fundamental concerns with this type of gamer being part of the Star Citizen universe and wished to distance themselves from this subcommunity, referring to them as “creepy,” “disturbing,” and “annoying” and suggesting they were trying to make Star Citizen a “life-replacement-program.” Separate divergences in emerging social norms were also evident after video demonstrations were broadcast that included gamers using “military-speak” to communicate with one another. These divergent norms likely existed before the project; however, the data suggest they only became relevant to crowdfunding activities once development of the game had progressed enough for backers to vividly conceptualise the migration of the community into the Star Citizen universe.

Emerging social norms further had an impact on the rules for crowdfunding activities. As the number of backers increased (over 965K as of August 2015), the capacity for individual backers to have creative input became increasingly difficult to implement. In some cases, this manifested minor frustration, eg, when questions were ignored or when the Fan Spotlight supplement excluded a particular backer’s short story. In other cases, it became more disruptive, most notably in the form of several recurring “trolls.” One individual from the Brazilian backer community
reportedly became hostile towards the overall project after a disagreement with other backers regarding the adoption of specific voice-over-IP software. These backers credited this disruptive individual with subsequently setting up several different accounts to spread negativity throughout the RSI forum and Star Citizen sub-Reddit, even escalating to the point he was accused of “inappropriately” harassing customer support. This perceived sabotage contributed to further polarised discussion regarding backers’ right to voice dissent and criticism. Some backers became increasingly intolerant of any dissent, eg, “I suggest a lot of us hound them back and vote up people who support Star Citizen and vote down those that are being obvious trolls about it.” Other backers (particularly those most active on Reddit) felt this censorship was unacceptable and contributing to a decline of the RSI community, eg, “Wow, a really long post telling anyone critical of Star Citizen to go to hell? Finally, the feeling of reading the official RSI forums without having to leave Reddit!” and “Right now it just seems Mods wait for a troll bait or flame bait post, rub their hands with glee and then tuck all the frustrated people they ban into their belts to show off to others.”

**Proposition 6.** Emerging social norms contribute to crowdfunding activities by refining or adjusting the nature of the object, community, and rules.

Emerging information channels were also found to impact on 2 elements of crowdfunding activities. The first of these was the instruments and mediating artefacts. This was primarily an issue when communication media were used outside of the RSI site to attract and include new backers, for example, when “ask me anything” question-and-answer sessions were conducted on Reddit. Despite weekly “10 for the Chairman” posts addressing backers’ questions on the RSI forum, some non-Reddit users felt these sessions were alienating them. There was also some resentment when Roberts promoted other game developers’ crowdfunding projects, eg, “I am up for backing Star Citizen with Chris’s dream as it matches my own wants, but I really am not interested in seeing advertisements for other games.” and “I can’t believe that this game... is piggybacking on star citizen for support.” Yet perhaps the strongest adverse reaction came when RSI staff from the “Around the Verse” video series posted content to Facebook, rather than the RSI website. Several backers became strongly critical of this decision, precipitating an uncharacteristically strong response from one member of RSI staff, eg,

You don’t have to be a Facebook member to watch a public video. It’s just a link like any other, to a web page like most others. I promise you can do it if you try hard and believe in yourself. And when it’s all over, you don’t have to tell anyone else it happened... nobody is forcing you to do anything... we don’t share your opinion on Facebook. So we’ll be posting content there and likely continuing to post content there.

Increasing tensions around these instruments and mediating artefacts demonstrate escalating difficulties faced by RSI as they sought to nurture an expanding set of backers: a set of backers with seemingly fewer overlapping information channels.

These increasing tensions paralleled with more the emergence of more modular and specialised information channels within the backer community on the RSI site. These specialised groups were formed according to a range of backgrounds and interests. Notable examples included groups for native speakers of specific languages, faith-based groups, groups dedicated to specific styles of gaming, and women-only groups. Some of these groups were positioned solely within the Star Citizen community; however, others were externally housed groups centred upon multiple different games. These niche emerging information channels did not appear subject to similar tensions; rather, they were perceived by other backers as a natural and legitimising evolution of the community. For example, when the “Addiction Gaming” group (a collection of highly competitive PvP enthusiasts) announced their arrival, comments included “It’s good to see Addiction in this game. I was so lost without seeing a guild like Addiction on this game” and “Good to see Addiction bringing moar cow bell to Star Citizen \m/.”

**Proposition 7.** Emerging information channels contribute to crowdfunding activities by refining or adjusting the community and instruments and mediating artefacts.

Finally, emerging obligations and expectations were found to impact on the division of labour for crowdfunding activities. The proposed division of labour had embraced the principles of collaboration and participation. However,
as the project progressed and increased in scale, RSI struggled to maintain community engagement while keeping on top of the development schedule. Several backers became increasingly frustrated with delays incurred by such engagement, particularly on external media such as Reddit and Facebook. Roberts acknowledged this by explaining

> Ultimately while we do heavily rely on feedback from you all, and that feedback does steer the project in a direction that's better for the game (thank you all for being so diligent in this responsibility) we need to make sure that it is minimally playable first... All we ask is just for a little more patience. Rest assured it'll be here soon.

However, while assimilating user feedback and an expanding feature list into game design was proving challenging, RSI were highly effective at assimilating backer feedback into other aspects of interaction. A range of blog posts and video series were introduced in the early stages of the project that addressed topics of widespread interest to the mainstream backer population. Within these series, some reference was made to more specialist interests, such as artwork, writing, and programming. Many backers expressed enthusiasm for these specialist interests, to which RSI responded with additional spin-off content, e.g., the topically broad questions-and-answers blog series “10 for the Chairman” was complemented by “10 for the producers,” “10 for the artists,” “10 for the designers,” and “10 for the writers.” Similarly, a recurring “Bugsmashers” segment within the “Around the verse” video series was allocated a separate, dedicated series. This transmission was received warmly by backers who felt it provided greater immersion in the project, e.g., “What makes me feel that I am part of the whole project and helps me connect with Star Citizen … is the ability to follow your videos” and “Bugsmashers is qualified for this important role: connecting fans to the reality of the development process, and ending in reassuring the community and persisting the PC passion!”

> Proposition 8. Emerging obligations and expectations contribute to crowdfunding activities by refining or adjusting the division of labour.

6 | DISCUSSION

This study presents (to the authors’ knowledge) the first academic study of self-hosted crowdfunding activities and the Star Citizen case. This brings to light a new phenomenon of interest for scholars of crowd behaviour. This phenomenon is significant, partly because the level of success achieved by Star Citizen speaks to its relevance and partly because the separation of crowd-related activities from third-party websites creates new theoretical challenges. Central to these challenges is explaining how project-specific crowds can be dynamically assembled into complex activity systems in the absence of the preexisting social and technical structures facilitated by third-party crowdfunding websites. With these challenges in mind, a preliminary synthesis of AT and SCT was performed to identify a set of relatable theoretical constructs that could be applied to self-hosted crowdfunding. Data from the Star Citizen case suggest a further decomposition of social capital-related theoretical constructs according to whether interpersonal organisation and social closure is preexisting, proposed, or emerging. This decomposition of social capital-related constructs is integrated into a refined propositional model (see Figure 3). Additionally, the final set of constructs is presented in Table 1 with candidate indicators derived from axial coding.

6.1 | Implications for research

The Engeströmian AT perspective provided a useful descriptive lens with which to view self-hosted crowdfunding activities. In addition to AT’s core descriptive constructs, there are several useful concepts bound into this perspective that add explanatory power, notably the idea of tensions and contractions (Engeström et al., 1999). These contradictions can be (1) primary contradictions within a single element of an activity (e.g., contradictory tools), (2) secondary contradictions between different elements (e.g., tools that contradict the division of labour), (3) tertiary contradictions between different interpretations of the same activity (e.g., contradictory motives), and (4) quaternary contradictions between different activities in a broader activity system (e.g., activities that promote competing motives) (Engeström, 1987). However, while the
focus of these contradictions becomes increasingly high level, each maintains the individual-centric worldview of AT, consistent with its origins as a framework for studying individuals’ consciousness (Leont’ev, 1978; Nardi, 1996).

This individual-centrism is problematic when studying phenomena such as crowdfunding that are characterised by collective intelligence and emergent structures (Howe, 2006; Surowiecki, 2004). Hence, the addition of a less individual-centric causal mechanism (in this case, social capital) was necessary to explain why activities were evolving over time. For example, while rules captured what the various actors did, the addition of social norms pushed for a deeper analysis of who those actors were and what they wanted. This allowed changes in explicit or implicit rules to be related to changes in the makeup of the community. In the case of Star Citizen, this meant an initial tightly knit group of backers presented social norms that reinforced their solidarity, leading to rules for interaction that encouraged collective ownership and discouraged dissent. Later, as the community became more diverse, the resulting changes to the social economy created mismatches in social norms, resulting in modular and discordant rules for interaction that subdivided the population into more sustainable networks. The addition of social capital also served to explain why an increasingly diverse community resulted in continuous tension between backers discussing the project on different platforms. While mediating instruments and artefacts described this tension on related platforms, the addition of information channels pushed for analysis of the underlying interpersonal connectivity. It was analysis of this interpersonal connectivity that explains the difficulties presented by a growing number of backers, and these difficulties explain the changing attitudes towards specific platforms. Other changes rippled throughout the project, eg, the subject was forced to assume new characteristics to remain effective (Roberts became decreasingly pivotal and delegated an increasing proportion of communication, coordination, and development tasks to specialised staff), the division of labour became more nuanced, and the object grew exponentially in scale as the Star Citizen universe was expanded to capture feedback and satisfy backers’ demands. Activity theory provided a rich descriptive lens for these observations; however, it was SCT that provided the explanatory grounding.

These types of cascading community-level changes are common to peer production, and this is not the first study to suggest third-generation AT may struggle to causally explain the “mycorrhizae activities” involved (Engeström, 2008;
Engeström et al., 1999). Third-generation AT treats activity systems as well-bounded structured units, despite the fact that, with participatory practices, the boundaries and structures seem to disappear and processes become instantaneous, multidirectional, and frequently reciprocal (Engeström et al., 1999). We therefore advance the development of fourth-generation AT by identifying and characterising the limitation at the heart of this struggle, specifically the lack of attention AT pays to ongoing macro-level and macro-micro social influences. In this study, we integrated AT with SCT to address this shortcoming, so illustrating how activities may evolve under the weight of decreasingly heterogeneous and increasingly modular online communities. This integration of AT and SCT presented 3 key insights of particular value, drawn from the Star Citizen case.

The first insight was that preexisting social capital was found to play a key role in enabling self-hosted crowdfunding activities. In many senses, the crowd that laid the foundation for the Star Citizen project was already formed before the project began. These individuals had used external media such as Reddit and GameSpot.com to self-organise, based on their shared interest in games such as Freelancer and Wing Commander. Preexisting social organisation created a set of social norms, information channels, and obligations and expectations that were easily migrated onto the RSI website (so easily, a large crowd had already migrated before RSI staff had intended the website to go live). This allowed the project to achieve a significant critical mass, a task that typically represents one of the

<table>
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<tr>
<th>TABLE 1 Sample empirical indicators for emerging constructs</th>
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<tbody>
<tr>
<td>Preexisting social norms</td>
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<tr>
<td>• Actors identify related values</td>
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<tr>
<td>• Actors identify past experiences with relatable activities</td>
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<tr>
<td>• Actors identify past experiences with relatable desired outcomes</td>
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Emerging social norms

| Preexisting information channels |
| • Actors discuss interpersonal relationships relevant to the project |
| • Actors discuss person-to-group relationships relevant to the project |
| • Actors discuss person-to-group relationships relevant to the project |

Proposed information channels

| Preexisting obligations and expectations |
| • Actors evaluate the effectiveness of previous relatable activities |
| • Actors evaluate the impact of previous relatable outcomes |
| • Actors evaluate the extent to which inferences can be drawn from previous activities and outcomes |

Proposed obligations and expectations

| Emerging obligations and expectations |
| • Actors discuss the project’s desired impact |
| • Actors discuss the project’s desired outcomes |
| • Actors discuss the project’s desired activities |

Emerging obligations and expectations

| Preexisting social norms |
| • Actors identify related values for subsets of the assembled collective |
| • Actors identify related activities for subsets of the assembled collective |
| • Actors identify related desired outcomes for subsets of the assembled collective |

| Emerging social norms |
| • Actors identify related values for subsets of the assembled collective |
| • Actors identify relatable activities for subsets of the assembled collective |
| • Actors identify relatable desired outcomes for subsets of the assembled collective |

| Preexisting information channels |
| • Actors discuss interpersonal relationships relevant to the project |
| • Actors discuss person-to-group relationships relevant to the project |
| • Actors discuss person-to-group relationships relevant to the project |

Proposed information channels

| Preexisting obligations and expectations |
| • Actors evaluate the effectiveness of previous relatable activities |
| • Actors evaluate the impact of previous relatable outcomes |
| • Actors evaluate the extent to which inferences can be drawn from previous activities and outcomes |

Proposed obligations and expectations

| Emerging obligations and expectations |
| • Actors discuss the project’s desired impact for subsets of the assembled collective |
| • Actors discuss the project’s desired outcomes for subsets of the assembled collective |
| • Actors discuss the project’s desired activities for subsets of the assembled collective |
largest challenges for any crowdfunding initiative (Belleflamme et al., 2014; Bretschneider, Knaub, & Wieck, 2014). Thus, the fundraising of Star Citizen was "pastoral" for 2 reasons. First, because it took place outside of the established crowdfunding communities on third-party websites. Second, because Chris Roberts was able to act as a trusted figurehead around, which a large crowd of backers could gather.

The second insight was that proposed social capital was also found to play an important role for these activities. Just as a crowd of backers for Star Citizen existed before the project was launched, so too the future of the crowd appeared to represent an important concern. This makes sense, given that social capital is conceptualised as a social economy. An economy with an uncertain future would devalue the accumulation of social norms, information channels, and obligations and expectations and so make the system less appealing for those willing to invest tangible resources, such as time, effort, and money. This resonates with other contexts in which social capital has been observed to impact on the long-term collective management of shared resources. For example, Pretty (2003) noted the formation of long-term local resource management groups encouraged individuals to invest in collective activities for the protection of natural resources. The sustainability of those groups increased individuals' confidence that their accumulated trust and reciprocity would not fall away once regulations were changed. Another example concerns firms' ability to translate social capital into intellectual capital. Nahapiet and Ghoshal (1998) note that individuals' willingness to share knowledge depends on some anticipated return of value, even if they are uncertain what that value may be. Long-term relationships create a longer window for those uncertain returns to manifest. Roberts Space Industries alleviated concerns about the long-term future of the economy by communicating an explicit intention to continuously update the game after its launch. Many passionate backers took this to imply Chris Roberts' subsequent projects that would also take place within the Star Citizen universe, further stabilising the long-term future of the social economy (though Roberts made no such explicit promise).

The third insight was that emerging social capital also played a key role, largely due to decreasing homogeneity in the crowd. One reason for this decreasing homogeneity had to do with scale. As resources and media coverage increased, more impressive demonstrations of the game were made possible. These demonstrations reduced uncertainty and so afforded more transactional investment by gamers, as well as investment by peripheral groups with compartmentalised interests. A second reason was that clearer demonstrations realised hidden diversity in core backers, in whom assumed homogeneities were challenged. The relationship between group homogeneity and social capital has been discussed at length by scholars of political science and immigration (cf Portes, 2014). Decreasing group homogeneity has many practical and positive effects, as flawed assumptions are challenged and areas of inflated confidence are identified, eg, market bubbles (Levine et al., 2014; Surowiecki, 2004). However, despite these benefits, many groups respond to the increasing heterogeneity created by immigration by "hunkering down" into smaller, less diverse subgroups where trust is reserved for a handful of interpersonal relationships (cf Putnam, 2007). In this case, this was best exemplified in the different attitudes towards role-playing, which only became salient once the nature of likely in-game interaction became lucid. These changes created a perceived diversity in social norms, information channels, and obligations and expectations, demanding subcommunities were formed to maintain sustainable economies of social capital. As a result, the crowd became decreasingly united and increasingly modular, even adversarial at times.

In addition to these insights, we acknowledge that several other complementary theories may also be useful to add explanatory power to the descriptive potential of AT, eg, impression management (Leary & Kowalski, 1990; Elsbach & Sutton, 1992), punctuated equilibrium (Gersick, 1991; Sabherwal, Hirscheim, & Goles, 2001), and social exchange theory (Emerson, 1962; Wayne, Shore, & Liden, 1997), to name a few. We thus call for further research that continues to integrate and extend such complementary theories to deepen the cumulative knowledge base and provide further foundation for fourth-generation AT.

6.2 Implications for practice

The practical implications of this study are fourfold. First, this study demonstrates the importance of conceptualising self-hosted crowdfunding as an activity. If a sustainable crowd is to be engaged and managed, then it is vital to understand where that crowd has come from and where members believe it to be going in the future. One reason that the
Star Citizen project was successful is because it was able to act as a multiplier of an existing crowd by positioning itself as that crowd's long-term home.

Second, this study demonstrates the role of social capital in self-hosted crowdfunding activities. The activity-based view is informative because it helps to understand how a social economy can be assimilated into a project. However, for this economy to be sustainable, the nature of the currency for this social economy (the social capital) must also be understood, such that the project can deal with various challenges arising at different stages of its lifecycle.

Third, this study illustrates for practitioners the decreasing homogeneity of backers as a project evolves. Over the course of the Star Citizen project, this decreasing homogeneity created contradicting demands that frequently threatened to alienate different individuals or groups. The most effective strategy for alleviating this challenge appeared to be one of modularisation. Backers were encouraged to form subgroups and in-game design created scenarios where interaction between conflicting groups was minimal. Practitioners seeking to adopt self-hosted crowdfunding initiatives in the future must also consider how decreasing homogeneity may be managed and the extent to which modularisation strategies may be applied.

Fourth, the study demonstrates the scale sensitivity of long-term crowd-participation models. The Star Citizen case suggests a significant proportion of backers were investing (at least partly) because they wished to take part in a project that would otherwise lie outside their individual reach. Roberts Space Industries embraced this by offering backers the opportunity to make creative contributions. However, this became increasingly feasible as the project became more successful. Thus, they were placed in the paradoxical position of becoming more successful and less capable of meeting backers’ expectations. This issue of unanticipated success in crowdfunding leading to issues of capacity is not new (eg, Mollick, 2014; Mollick & Kuppuswamy, 2014). However, previous observations have largely concerned supply chain management and the physical production of goods, rather than the production of digital (seemingly scale-insensitive) products. Observations from this study show that this issue can transcend physical production issues, particularly where backers are encouraged to take personal ownership over the project.

7 | CONCLUSION

This study explores the subject of self-hosted crowdfunding activities, as opposed to activities centred upon third-party crowdfunding websites. A case study of Star Citizen is performed, which is framed as an index or “revelatory” case of self-hosted crowdfunding. Findings support the usefulness of AT as a means of understanding various aspects of the complex and dynamic activities involved. Findings further suggest social capital plays a significant role, both as an initial enabler of crowd engagement, as well as a mechanism by which communities organically self-organise into increasingly modular subcommunities as the scale and focus of activities changes over time. We conclude by proposing the integration of social capital as part of the move towards fourth-generation AT; the aim of which is to explain phenomena such as crowdfunding that are characterised by collective intelligence and emergent structures.

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Surowiecki, J. (2004). The wisdom of crowds: Why the many are smarter than the few and how collective wisdom shapes business, economies, societies, and nations. New York, USA: Doubleday.


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How to cite this article: Gleasure R, Morgan L. The pastoral crowd: Exploring self-hosted crowdfunding using activity theory and social capital. Info Systems J. 2017;0:1–27. https://doi.org/10.1111/isj.12143

APPENDIX A

REWARDS-BASED CROWDFUNDING AS AN ENGESTRÖMIAN ACTIVITY

In rewards-based crowdfunding, the subject, typically an entrepreneur or organisation, seeks funds from the crowd to develop a specific object, typically some product or service. A number of mediating artefacts and instruments are required to support this activity. At the heart of the activity is traditionally some external crowdfunding website, used to manage investment and link fund seekers with the backer community (eg, Kickstarter). Other online tools may also be used; however, their purpose is ostensibly to promote and coordinate activities, rather than facilitate them directly (eg, Twitter, Facebook, and an individual or organisation’s personal website). In this traditional configuration, fund seekers are motivated to use external crowdfunding websites because it provides them with an effective and organised way to solicit and collect financial support from numerous people in a distributed network (Gerber, Hui, & Kuo, 2012). Self-hosted crowdfunding activities change the nature of the individual or organisation’s personal website, as these become
core investment handling tools. They further change the nature of the external crowdfunding website, which becomes less central or possibly excluded. In either case, the entrepreneur or organisation sets up a suggested donation amount, which comes attached with a certain reward or incentive. This in turn enables the formation of a community of backers, ie, individuals who agree to invest money in the project. Interactions between the subject and community are dictated by the former according to a division of labour, which typically describes a number of production and communication commitments. Coordination of the activity system further relies upon on a set of explicitly or implicitly provided rules. Examples of explicit rules include the near-ubiquitous tiered-rewards model (in which higher levels of investment are rewarded with increasingly valuable rewards) as well as the difference between “flexible” funding (where pledged money changes hands regardless of whether a campaign reaches its target) and “all-or-nothing” funding (in which a campaign must meet or exceeds its fund-raising target by the time the campaign finishes for the investment to be finalised). Examples of implicit rules include consensus that fund seekers may cater to small reward-less investments (commonly $1) to capture more casual community support for a project and that fund seekers should remain responsive to backers’ comments after a campaign has been successful. Finally, the desired outcome(s) will be a successfully funded project, the timely delivery of rewards, and in some cases, a sense of shared ownership over the product or service produced (Belleflamme et al., 2014, Frydrych, Bock, Kinder, & Koeck, 2014; Gerber et al., 2012).

APPENDIX B

VIDEO SERIES SAMPLED, TIMELINES, AND NUMBER OF COMMENTS

<table>
<thead>
<tr>
<th>Focus</th>
<th>Series title</th>
<th>Num. Videos</th>
<th>Timeline</th>
<th>Num. Comments</th>
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<td>General</td>
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<td>17</td>
<td>Feb 14-June 15</td>
<td>3403</td>
</tr>
<tr>
<td></td>
<td>10 from the Chairman</td>
<td>59</td>
<td>Dec 14-Aug 15</td>
<td>6615</td>
</tr>
<tr>
<td>Community building</td>
<td>Around the verse</td>
<td>52</td>
<td>Nov 14-Jun 15</td>
<td>7502</td>
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<tr>
<td></td>
<td>Bugsmashers</td>
<td>6</td>
<td>May 15-Jul 15</td>
<td>527</td>
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<tr>
<td></td>
<td>The wonderful world of Star Citizen</td>
<td>1</td>
<td>Feb 15</td>
<td>310</td>
</tr>
<tr>
<td></td>
<td>Fan Spotlight</td>
<td>1</td>
<td>Apr 14</td>
<td>54</td>
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<td>Game changers</td>
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<td>58</td>
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<tr>
<td>Interest-based</td>
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<td>Dec 14-May 15</td>
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<td>10 from the artists</td>
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<td>Apr 15</td>
<td>114</td>
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<tr>
<td>Exclusive</td>
<td>Jump point</td>
<td>21</td>
<td>Jun 13-Jul 15</td>
<td>709</td>
</tr>
</tbody>
</table>

APPENDIX C

FREQUENCY OF COMMENTS ON RSI COMMUNICATIONS

Kickstarter updates
"Monthly Reports" video series on the Roberts Space Industries site

"10 from the Chairman" video series on the Roberts Space Industries site

"Around the Verse" video series on the Roberts Space Industries site
"Bugsmashers" video series on the Roberts Space Industries site

"10 from the ..." video series on the Roberts Space Industries site
“Jump Point” video series on the Roberts Space Industries site