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2018

Bentley, C. M., Chib, A. & Poveda, S. (2018). A critical narrative approach to openness : the impact of open development on structural transformation. *Information Systems Journal*, 29(4), 787-810. <https://dx.doi.org/10.1111/isj.12226>

<https://hdl.handle.net/10356/149970>

<https://doi.org/10.1111/isj.12226>

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A critical narrative approach to openness: the impact of open development on structural transformation

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Abstract

Openness has become an important, all-encompassing term denoting activities facilitated by sharing, using, producing and re-distributing information and communication resources within digital information systems. We compare theoretical advancements, which emphasize processes and characteristics of openness, with the limitations of extant approaches that have largely focused on improvements to productivity and efficiency. Based on Foucault and Bruner's ideas, this paper contributes a new critical narrative approach to understanding openness explicitly focused on structural transformation and power. The analysis focuses on the case of open development, examining 20 key studies based primarily in developing countries. The critical narrative approach unpacked the production of power/knowledge across actors, intentions and outcomes of openness research and practice. We find that discursive formations are reliant on techno-centric and normative ideals of researchers, leading to narratives of hypothetical outcomes that exclude marginalized perspectives. We propose hermeneutic composability and contesting normative narratives of openness as analytical techniques for an integrated, mutually-constitutive conception of interactions between individuals, open artefacts and open social praxis.

Keywords

Bruner, capabilities, critical IS, Foucault, ICTD, power.

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1. Introduction

Openness in this article refers to socio-technical processes of producing and sharing information and communication resources through public and non-discriminatory information systems (IS). Open information systems are distinct from those of primarily manual, social and/or privately held and operated information systems. Thus, openness is an umbrella term that can be used to describe what makes open artefacts, such as open source software, open data, or open educational resources, both unique and comparable to each other (Pomerantz & Peek, 2016). Yet, openness refers to both the social and technical structures involved in the productive, distributive and consumptive activities that typically do not restrict who is involved or how such activities unfold by design (Smith & Seward, 2017). We depart from extant techno-centric framings of the processes and practices of openness. For us, openness also alludes to outcomes of social equality that emphasize rights, participation, and agency for marginalized sections of society. The aim of this paper is to formulate a strong theory of openness suitable for building greater reflexive awareness of social justice and understanding of power/knowledge interplays in open socio-technical processes.

Early work in the field focused on open artefacts as distinct types of information systems (IS) (Aksulu & Wade, 2010; Attard, Orlandi, Scerri, & Auer, 2015; Hossain & Kauranen, 2015). However, this research concentrated on socio-technical processes, typically focused on productivity and efficiency gains, with little emphasis on social inclusion. Investigations of openness primarily focused on business objectives, showing marginal improvements within existing societal structures (Benlian & Hess, 2010; Huang & Zhang, 2013; Mehra & Mookerjee, 2012). In contrast, certain scholars have argued that openness has the potential to permeate social, political and economic organizing; indeed, transform these embedded structures of society

(Benkler, 2006; Shirky, 2008). Other authors view openness as processes that facilitate more accessible, participatory, and collaborative uses of digital information systems (Reilly & Smith, 2013; Smith & Elder, 2010). However, much openness research fails to account for the outcomes, particularly in terms of structural transformation, or identifying, challenging and changing constraining social structures. A recent review questions the normative value of openness to transform unequal power relations, particularly for poor and marginalized people (Bentley & Chib, 2016). This study engages with current approaches, focusing on economic measures of productivity and efficiency, or on processes and characteristics of openness, because these could even be a source of exclusion and discrimination. We argue that a critical lens is warranted to improve current approaches to openness, which fail to consider the broader implications of openness across contexts and types of open IS.

Critical IS research draws on critical social theory to re-conceptualize intellectual practice in a historically situated and socially conscious manner (Howcroft & Trauth, 2004; Cecez-Kecmanovic, 2011; Myers & Klein, 2011). Critical social theory has generated critiques of functional, techno-centric and economic models of IS, in favor of embracing more ethical, emancipatory and equitable approaches (Stahl, 2008). Such theoretical lenses are better positioned to direct and inspire future research agendas of openness in IS centered on structural transformation, rather than mainly being constrained by technological and economic imperatives. Critical approaches also highlight important issues concerning power and inequality, which may either reinforce or challenge constraining social structures. Our first research question therefore inquires whether the proposed critical narrative approach addresses the limitations of current techno-centric and processes-based approaches to openness.

Power forms the central core of this investigation. Critical perspectives demand acknowledgement of asymmetrical positions and relations of actors involved in openness, and the influence of these unequal social structures to foster or constrain the spread of knowledge and influence. Beyond the artefacts and processes of openness, we critically inquire into the

meanings, engagements, and outcomes of openness as narratives that shed light on the re-production and re-distribution of power as a means of structural transformation.

The case of open development, a subset of the field of Information and Communications Technologies for Development (ICT4D), was chosen to examine issues of power and impact of openness initiatives for the marginalized. Open development is a field of research and practice that is ultimately concerned with whether openness facilitates, or hinders, positive social transformation processes, usually in developing countries. We apply a critical narrative approach inspired by Foucault's epistemological concerns to engage with the production of knowledge/power in selected open development literature. We analyze whether and how open development research is constrained in its way of thinking about openness, especially when interpreting two central discourses of development related to structural transformation: capabilities and accountability. Secondly, we adopted Bruner's narrative concepts to operationalize the Foucauldian perspective, comparing openness research and practice across time and place to discover ways in which researchers have been questioning and shaping dominant meanings of openness in IS.

This paper contributes a new critical narrative approach to ask the second research question, whether openness addresses structural transformation in terms of power re-distribution, namely greater capabilities and accountability.

2. Literature review

Trends in Openness research: From productivity to social praxis

Many definitions of *openness* have been proposed across social and technical sciences and the humanities. Pomerantz and Peek (2016) referred to "fifty shades of open" (n.p.) to highlight the multiplicity of meanings and criteria of openness in practice. Broadly, they argue that openness means: 1) free access to resources; 2) unbounded use potential; 3) lack of access or use

restrictions of open resources or processes; and 4) favored use of open resources when creating new ones (Pomerantz & Peek, 2016). Open source software, crowdsourcing, open knowledge communities, and networks of practice are popular topics (Aksulu & Wade, 2010; Deng & Joshi, 2016; Wasko, Faraj, & Teigland, 2004). Given the shifting definitional clarity, and multiple meanings, of openness, we provide here a linear trajectory of the IS view on openness.

Perspectives on openness have shifted gradually from an emphasis on productivity and efficiency to its characteristics, and most recently, to an examination of social praxis, or the processes of openness. This, we argue, is giving way to an emphasis on whether the potential of openness has translated into outcomes of social equity, in other words, whether societal transformation has been achieved in terms of rights, participation, and agency.

The early IS literature on openness focused on productivity and efficiency as markers of economic liberalism. Scholars focused on openness as it related to business contexts and objectives (Fitzgerald, 2006; Lundell, Lings, & Lindqvist, 2010; Oestreicher-Singer & Zalmanson, 2013; Schlagwein & Bjorn-Andersen, 2014). Discussions related to methods for controlling virtual organizations (Gallivan, 2001), the effects of open knowledge sharing networks on job-hopping (Huang & Zhang, 2013), the optimal amount of time programmers should participate in open source projects (Mehra & Mookerjee, 2012), and evaluations of open source technologies within the private sector (Benlian & Hess, 2010; Lundell *et al.*, 2010). Early attempts at definition, such as that by Chau and Tam (1997), referred to openness as inter-operability, industry collaboration, and networking capability from a technical standpoint. In these studies, the goals were not to understand the benefits of openness in terms of its transformative power on society, but to express this phenomenon in capitalist terms.

A shift from market-based understandings of openness to system characteristics was seen in the work of Benkler (2010), who stated that “the networked information economy and society promise a radical shift in power and capabilities from industrial, centralized forms to decentralized forms that counterbalance market dynamics more effectively with social dynamics” (p.77). A

foremost point in Benkler's (2010) position was that characteristics of technologies and standards enabled such widespread transformation at the societal level to occur. Similarly, Shirky (2008) posited that collaborative action no longer required centralized oversight or coordination. He argued that decentralized, collaborative networks work more efficiently than bureaucratic management structures. The systems view of open source software development was aggregated in a review of 524 articles by Aksulu and Wade (2010), who compiled significant evidence of the unique characteristics of open source IS. These include how contributors have a say in shaping the system; flexible (or unpredictable) lifespans; higher levels of community interactivity and diversity; strong feedback loops between core community developers and project implementers and users; and a greater range of people, product and process outputs. We note that the characteristics approach trended towards domain-based perspectives, in this case being limited to open source software.

More recently, Smith and Seward (2017) argued for, and encouraged, future theorizing of openness as social praxis. They stated that much of the open literature views openness as an artefact or as a type of institution, potentially leading to domain-based perspectives and siloed progress. Certainly, many of the added benefits of openness, such as the freedom to contribute, use and redistribute open artefacts are common across domains, such as open data, open governance or open educational resources. Yet, a broader understanding of openness in, and across, these IS domains is still lacking. Smith and Seward (2017) argued that there is much to be gained by viewing openness instead as social praxis, as it enables theorizing qualities that are unique to openness across the multiple domains of openness discussed in the literature. They defined openness as social praxis as consisting of one of three key open processes: open production, open distribution and open consumption. Open production includes practices of peer production and crowdsourcing, such as Wikipedia, and are characterized by non-discriminatory processes. Practices of sharing and republishing constitute open distribution practices such as open access journals available on non-proprietary platforms. Massive open online courses are an

example of open consumption, which includes practices to retain, re-use, revise and remix content characterized by a freedom to use. This categorization of open processes enables researchers to identify open practices, thus making it easier to understand when openness makes a difference. However, they do not impose any purpose for open processes which could lead to a host of outcomes. Such flexibility, we argue, does not reveal much about the influence of openness on structural transformation.

The characteristics and processes discourses suggest variously that openness supports structural change. First, these factors present a strong subversive force, enabled primarily by networked ICTs, that challenges the roles of traditional public and private institutions. Second, open processes are non-discriminatory by design, which afford more freedom and opportunity to reduce societal inequalities. Third, proponents give importance to the non-determinant, serendipitous qualities of openness that breed innovation through collectives and networks, unachievable by single minds and organizations alone. Openness, for better or for worse, has persisted as an alternative framework for social organizing and change using networked technologies. Consequently, openness has often been viewed normatively as positive, across a range of contexts and types of open processes (see Aksulu & Wade, 2010; Attard *et al.*, 2015; Hossain & Kauranen, 2015 for key reviews).

Simultaneously, a more critical socially-embedded view of openness emerged that challenged prevailing normative assumptions. Sahay and others (2009) advanced the notion of asymmetric integration as a political and institutional perspective that shapes authentic and effective support for an IS. This view acknowledges the unintended and contradictory outcomes of integrating new IS tools and techniques within extant institutional environments. Certain studies have turned up interesting accounts of the political nature of openness in various contexts (Beekhuyzen, Hellens, & Nielsen, 2015; Lang, Shang, & Vragov, 2015; Sahay, Monteiro, & Aanestad, 2009). Sahay *et al.* (2009) emphasized that although openness has enabled greater flexibility in the ways that technologies can be configured and adapted to suit different needs and

contexts, asymmetric integration “mirrors the existing, uneven distribution of power and resources among the stakeholders” (p.403). Thus, they acknowledge the flexible, non-determinant and unpredictable aspects of open social praxis, suggesting it is often constituted by the dominant meanings and practices that develop around an open process due to the power and position of stakeholders. Open social praxis would thus not merely arise as a result of network-based characteristics of technology.

We argue that, although there is the potential for many meanings and practices of openness to develop, it is often the political processes that determine how and why certain (unintended) practices take root. Evidence has emerged that openness may indeed exacerbate existing social inequalities. As an example, Wikipedia undoubtedly exemplifies significant productivity and efficiency gains achievable when knowledge is generated through peer-production and distributed for free. At the time of writing, Wikipedia attracted 374 million users, and had over 70 thousand active contributors who have produced greater than 41 million articles in 294 languages (Wikipedia, 2017). Some of these articles, famously shown by Giles (2005), have paralleled traditional encyclopedia articles for scientific accuracy. Yet, as Graham and Haarstad (2011) argue, Wikipedia presents a significant barrier for marginalized perspectives, as only one version of visible content gets displayed. This is problematic when only 0.4% of registered users actively contribute.¹ Furthermore, accounts of conflicts between lay participants and experts (König, 2013), and the significant gender gap within contributors (Hill & Shaw, 2013) suggest that Wikipedia is symptomatic of extant power structures. More broadly, questions remain regarding the consequences of openness in perpetuating established social and institutional hierarchies.

In summary, theories focused on processes and characteristics of openness have emphasized the potential for open information systems to foster more just and equitable

¹ Statistic calculated from figures in Wikipedia (2017)

distributions of information resources. Characteristics-based (as epitomized by Benkler, 2006) and processes-based approaches (Smith & Seward, 2017) have contributed to our understanding of openness, providing an essential blueprint that was formerly lacking in IS. However, extant approaches to openness have mainly focused on the benefits of openness for improving productivity and efficiency. Moreover, some scholars have contributed opposing views to openness theory, arguing that openness does not inherently change underlying power/knowledge asymmetries. Political accounts offer rich explanations, as they help to explain why the same open processes may appear to be both beneficial and subversive. However, these IS perspectives may not resolve our understanding of structural transformation as a social outcome of openness. Indeed, these accounts may perhaps limit our understanding of openness, when broader moral and ethical issues spanning research and practice are not factored into the discussion. Given these limitations, we focus on holistic power-related conceptualizations of openness to better understand the dynamics between open social praxis and structural transformation.

Reflexivity in conceptualizing openness: A critical narrative approach

This paper draws on critical theory to highlight holistic aspects of the relationship between discourses, structure and power within open information systems. We adopt Foucault's notion of *discours*, which centers on the production of power/knowledge for three reasons. First, Stahl (2008) argued that Foucault's ideas emphasized exposing "hidden influences on discourses, the power relations and the normalizing effects" (p.20). The main focus of openness in IS has led to the normative expression of openness in capitalist, technical, and procedural terms. Second, Foucault concentrates on the production of power and its rhizomatic relationship with knowledge, such that individuals are subjects intrinsically immersed in a matrix of power/knowledge (Cecez-Kecmanovic, 2011). Power is both a heterogeneous and propagative relation such that it circulates and flows throughout all individuals and societies (Foucault, 1980). Power can be

viewed as a binding force for social justice, which enables us to explore structural transformation. Third, Foucault's two key epistemological perspectives to building meaning (archaeology and genealogy) allow us to identify ways to step outside current discursive formations that hinder thinking and doing – primarily as these relate to reducing power concentration and social inequalities as a means to structural transformation.

Foucault's approach to understanding social reality was historically rooted, seeking to understand the chronology of events that took place in the past to discern patterns in the present (Gutting, 1990). Burrell (1988) presented a useful framing of Foucault's archaeology and genealogy approaches as looking for *The Same* and *The Different*. Looking for *The Same* implies examining social structures and the rules that govern practice. This perspective assumes that researchers can uncover accepted truths and subjectivities from within the current system. In contrast, looking for *The Different* implies negating the existence of any pre-existing social structures, and looking for singularity, or major shifts that indicate discontinuity and arbitrariness (Gutting, 1990). This perspective suggests that researchers and practitioners can become so blinded by their own subjectivities that they fail to see the injustices they perpetuate. Both perspectives offer insight into how power/knowledge is produced, because the former perspective uncovers how society currently functions, whereas the latter enables researchers to step outside of these constraints. Generating this kind of understanding may be critical for addressing issues surrounding structural transformation.

Structural transformation refers generally to societal change processes. In economics, the term has been used specifically to denote when societies adopt economic activities creating higher productivity (UN Habitat, 2016). In contrast, structuration theory views societal systems as social arrangements resulting from the dynamic interaction between structure and agency (Giddens 1984), which are visible through any stable rule, norm or practice within a given culture (Bourdieu, 1987). Thus, structural transformation refers to change processes that influence rules, norms or practices of a culture in a way that persists over time. We are interested in Giddens'

notion that the social system was actively constituted by the dynamic interaction between the structure and active individuals exhibiting agency, critical to the process of structural transformation.

Foucault's standpoint was different from a stream of structuralists who sought to create specific strategies to understand any social structure, regardless of its situated and historical context (Dreyfus & Rainbow, 1982). In other words, as opposed to scientific investigation concerned with representing social structures objectively, postmodern philosophers were interested in the ways in which researchers and institutional actors displayed significant power and position to sway rhetoric and intellectual practice. This discursive turn in philosophy and in social sciences suggests that the way in which researchers use language has a significant effect on theory, and ultimately how we view social structures. It also changes the relationship between theory and practice because it infers that researchers produce both knowledge and knowing. This implies examining both researchers and the researched as a basis for introspection and reflexivity. A good example demonstrating the value of this approach is Said's (1978), book about *Orientalism*, which argued that patronizing representations of the East were largely a product of Western imperial scholarship. Societies and cultures are represented by processes of the production of power/knowledge, with intellectuals mediating relationships between these. To uncover the role of researchers in the framing of knowledge about openness, we turn to the field of open development to interrogate our critical narrative approach to openness.

Open development: Applying the critical narrative approach to openness

Open development is an area of research and practice that often focuses explicitly on issues of social justice by the reduction of structural inequalities; however, with mixed and negative effects towards these aims. There has been a concomitant increase in research output focused on empirical analysis of open initiatives, ideal for our purposes. Examining the definition, the term *development* within open development is conceptually different from software or information

systems development within the IS field. Certainly, IS development often occurs within open development, yet *development* in this context carries different meaning. In this article, open development refers to an area of research and practice that investigates openness in human development processes and contexts. In 2008, the International Development Research Centre conducted the first mapping exercise to identify progress in the area (Smith *et al.*, 2008). Smith and Elder (2010, p. 66) then defined open development as characterized by:

- a) universal over restricted access to information, means of communication and ICT tools;
- b) universal over restricted participation in governance/informal & formal groups/institutions;
- c) collaborative over centralized production of cultural, economic, or other content.

Since then, openness has spread substantively within the human development sphere. Applications of openness have emerged within education (Ally & Samaka, 2013; Mtebe & Raisamo, 2014; Wright & Reju, 2012;), governance (Davies & Bawa, 2012; Van Der Windt, 2013) and health (Aminpour, Sadoughi, & Ahamdi, 2014; Rey-Moreno *et al.*, 2012; Sahay *et al.*, 2009) in lower-income countries. Open initiatives have become associated with human development initiatives, involving significant public and international development resources, and resulting in institutional policy reform and global partnerships (see for example World Bank (2011), ICDE (2017), IATI (2016), Open Government Partnership (2017), or OCSDnet (2017)). Openness is therefore also an important phenomenon for the international development system, as it shapes how powerful institutions share knowledge and resources.

There has been increasing debate and interest as to whether, or not, open initiatives are contributing positively to human development, whether it be to deliver services, change institutional structures, or to empower beneficiaries. Ambiguities surrounding how openness contributes to development have garnered criticism, primarily related to distributive justice. One critique suggests that development contexts require power-related interpretations of open development. Singh and Gurumurthy (2013) argued that there is the tendency to “overlook the ever-present dimension of [how] power manifest[s] in new forms of networked relationships. The

outward appearance of access, participation, and collaboration can mask less desirable social and political outcomes undermining equity and social justice” (p. 176). A second critique centers on who stands to gain from openness (Buskens, 2011; Gurstein, 2010). Open data discourses regularly assume that a trickle-down effect will occur once adequate infrastructure is in place (Brito, Costa, Garcia, & Meira, 2014; González, Garcia, Cortés, & Carpy, 2014). Gurstein (2010) argued that access to open data does not equate to effective use of open resources, and this continues to be a central challenge within open development. It appears that solutions to protect and empower marginalized perspectives in open development have not yet materialized.

There remain outstanding many conceptual avenues to pursue in this regard. Recent work has argued for the need to be more specific in terms of how openness supports development, and for whose benefit. Two main avenues, capability and accountability, have emerged.

Development as structural transformation: capability and accountability approaches

Our critical narrative approach aims to enhance how development discourses could be associated with open social praxis in a more holistic fashion. We highlight two key development discourses that scholars argue could be improved through openness (Gigler, Custer, Bailur, Dodds, & Asad, 2014; Reilly & Smith, 2013;): (a) capabilities, or discourses of development as freedom, which aligns with the technological frame of freedom modeled within open social praxis, and (b) accountability, which centers on the way that openness offers significant opportunity to change relationships between providers and beneficiaries of development.

Following the turn of the century, neoliberal approaches to development have dominated the political and practice agendas emanating from the most powerful institutions and governments across the globe (Hettne, 1995; McMichael, 2007). This has translated into widespread reductions in public spending along with the implementation of economic growth strategies, despite mounting evidence and criticism targeted at such approaches (Cornia, Jolly, & Stewart, 1987; McIlwaine, 2002; Simon, 2008). There has, however, been increasing acceptance in the international

development sphere that the poorest and most-marginalized sectors of society require greater empowerment and protection (United Nations, 2015).

To this effect, in his book *Development as Freedom*, Sen (2001) argued that development is “a process of expanding the real freedoms that people enjoy” (p.36), which “concentrates on the capabilities of people to do things - and the freedom to lead lives - that they have reason to value” (p.85). He provided evidence of the significant problems caused by pervasive societal inequalities, arguing that human well-being is a function of multiple social, cultural, economic and political dimensions, which are not determinant (Robeyns, 2003). Capabilities are then the central concept that reflect the ability of the individual to pursue her values, known as agency, which enables the individual to act towards the realization of her goals. Capabilities as an expression of freedom in development discourse was solidified by the United Nation’s 2002 Human Development Report (UNDP, 2002). However, capabilities could be increased or constrained by lack of agency, which is impacted by social structures and the resources available to the individual (Kleine, 2013; Robeyns, 2005; Sen, 2001). Hence, much of what is needed for a person to have the ability to exercise their rights may be out of their control.

In this case, the role of states and institutional actors to protect and empower individuals to experience freedom becomes a critical component. Accountability is expressly intended to mediate power asymmetries, as it is concerned with the conduct of actors, and their duty to be answerable for their actions (Coleman, 1985; Roberts & Scapens, 1985; Schedler, 1999). Accountability requires situated interpretation, as it is also shaped by the power and position of actors and institutions (Abrahams, 2008 Sinclair, 1995;). Accountability can take various forms, revolving around how and why actors have a duty to explain their actions, or to be responsive towards stakeholders, even if there are no formal obligations to do so (Koppell, 2005; Leat, 1988). Accountability has thus been viewed in a variety of ways in development discourse, such as systemic feedback (Gigler *et al.*, 2014), institutional policy and practice (Blagescu, Las Casas, & Lloyd, 2005), or as relationship dynamics (Ebrahim, 2007).

These development concepts allow exploration of openness in open development, as they are specifically tailored to engage with questions about structural transformation. However, these produce a wide variety of meanings and purposes of capability and accountability that serve various agendas. As with many theories that gain widespread traction, a variety of approaches have emerged, fueling debates regarding the precision and operationalization of these concepts. Since Sen (2001) chose to leave the capability approach (CA) open to enable contextual sensitivity; other authors have proposed more specific operationalizations (Gigler, 2011; 2015; Johnstone, 2007; Kleine, 2010; 2013; Nussbaum, 2000; Oosterlaken; Zheng & Walsham, 2008). Situating open development within these discourses therefore requires sensitivity. In the next section, we argue that Bruner's approach to narratives, as a symbolic construction of open social praxis, presents an interesting way to integrate various discursive interactions.

3. Methodology

There is no established canon for drawing out power/knowledge, with researchers left to build on Foucault's ideas in various ways: "Foucault's genealogies do not offer methodological 'certainties'; they persistently evade classification, but they do encourage and inspire the making of new questions to interrogate the truths of our world" (Tamboukou, 1999, p. 215). We selected Bruner's (1991) narrative construction of reality to operationalize Foucault's theoretical contribution to the production of power/knowledge.

Bruner was interested in discerning patterns of the human and symbolic world when reality and human action are context and perspective dependent (Bruner, 1986). He argued that narratives are a key way to draw out symbolic systems and representations of reality. His notion is inherently about power/knowledge as he "[goes] back and forth between describing narrative mental 'powers' and the symbolic systems of narrative discourse that make the expression of these powers possible" (Bruner, 1991, p. 21). Narratives may facilitate introspection to see both

ourselves as researchers and our work as narrative, as well as the recursive relationship between these aspects. For instance, if openness is perceived as normatively good, then that is the narrative that researchers choose to project. The discursive turn implies posing reflexive questions, whereas narrative offers a means of expression. We are specifically interested in how researchers of openness examine power/knowledge, and how narrative may facilitate such an investigation.

Bruner offers ten narrative components, though the heart of his notion of narrative as a construction of reality is captured by the first four. First, *narrative diachronicity* means that all narrative is contained in a sequence of events. These events may be constructed through various representations of how events fit together, but their occurrence in time play a key role. Second, *particularity* refers to the notion that there are generic scripts that represent patterns we might expect to see. However, narrative gains meaning only when particularities are used to give details to events and actors. For example, $1+2=3$ is a mathematical story governed by its own abstract conventions. $H_2O = \text{water}$ reflects the same conventions rooted in the physical world. The temptation is to bring these conventions into other areas of our lives, such as $\text{money} + \text{love} = \text{happiness}$. In each of these instances, outcomes are governed by different particularities, but the generic script remains the same.

Third, *intentional state entailment* refers to the way in which actors act in a setting based on their own beliefs, values, interpretations and agency. Intentional states do not indicate causality or predictability of events, but serve as a key way of interpreting reasons why actors make specific choices. Fourth *hermeneutic composability* refers to the assumption that there are differences in the ways that narratives are expressed in text and the meanings of text. Bruner (1991) draws primarily on Vladimir Propp's idea that parts of narratives are *functions* of the narrative structure as a whole, yet the whole is dependent on reference to the parts. Thus, the constitutive construction of narrative in terms of inter-dependent functions and its composed whole represents a hermeneutic cycle: "a story can only be 'realized' when its parts and whole

can be made to live together” (Bruner, 1991, p. 8). This paper explores whether this theorization, drawing on key concepts from Foucault and Bruner’s perspectives, has application to openness in IS. Table 1 summarizes the key concepts that have been drawn from Foucault and Bruner’s perspectives, and that have been applied in our analysis.

Table 1 - Key concepts of Foucault and Bruner’s perspectives

The Same (Archaeological method)	<ul style="list-style-type: none"> - Uncover those rules which regulate and govern social practices, and which are unknown to the actors involved. - It is possible to achieve some partial distancing from these institutional bonds by a bracketing of ‘accepted truth’. - Act as an ‘excavator’, revealing depth and interiority.
The Different (Genealogical method)	<ul style="list-style-type: none"> - Record the singularity of surface events looking at the meaning of small details, minor shifts and subtle contours. - There are no fixed essences or underlying laws. There is discontinuity and arbitrariness. Since the world is as it appears, one seeks out ‘superficial secrets’. - Act as a recorder of accidents, chance and lies. Oppose the search for depth and interiority.
Narrative	<ul style="list-style-type: none"> - Narratives are accounts of events or patterns of events occurring over time. - Particularity means that there are tokens of events that may be emblematic of generic themes but that are particular in nature. - Actors within specific settings operate based on their intentional state. Intentional states focus on reasons why events occurred rather than the cause of actions. - Parts of a narrative serve as functions for the narrative structure as a whole. - Background knowledge influences both the author and readers’ interpretations of events. - Narratives gain intrigue when canonical scripts breach/violate pre-conceived notions. - Narratives need not refer to real events to be realistic. - Genres indicate properties of texts and ways of comprehending narratives. - Narratives gain traction when they breach norms. - Narratives incite greater context sensitivity and negotiation between readers and authors than other forms of text, such as scientific proofs. - Narratives accrue into (sometimes rigid) structures and traditions.

Source: Adapted from Burrell (1988) and Bruner (1991).

Selecting key narrative examples

In 2015 we chose to conduct a review of open development literature to understand the state of this nascent field. We applied a systematic procedure to search for articles using open development keywords in the SCOPUS database and in four ICT4D journals (Information

Technology and International Development, Information Technology and Development, Electronic Journal of Information Systems in Developing Countries and Journal of Community Informatics). Open development began to take shape in 2008, becoming increasingly popular by 2010. We limited the search to the years 2010-2015 for this reason (the literature review was conducted in the fall of 2015). The full procedure is outlined in Bentley and Chib (2016). Our search returned 269 articles, across a range of domains and disciplines of open development in Lower and Lower-Middle income countries (Bentley & Chib, 2016). From this analysis we began to understand common discourses within the field, and how peculiar or different they were from dominant themes identified above. We noted a lack of empirical evidence and a failure to include poor and marginalized populations in the bulk of this research. In order to better understand the circumstances under which openness actually leads to structural transformation, we chose to narrow down our search to include only empirical articles that highlighted issues of both knowledge and practice. A more targeted analysis of select literature to dig deeper into the field of open development was appropriate at this juncture given the increasing number of research articles published in this area.

In order to target empirical research amenable to comparative analysis, we focused on two key structural change outcomes, capability and accountability, as justified earlier. We conducted full-text searches of the 269 articles to select 20 articles engaging with capability and accountability concepts. The exercise was updated in 2017, for the purposes of this exercise, by cross-checking with leading IS journals, such as MIS Quarterly, Information Systems Journal and the Journal of the Association of Information Systems Research, accompanied by a search for articles citing our selection to determine whether there had been any continuity/discontinuity over time.

Our approach to discourse analysis stems from our theoretical framework (see Table 1). Essentially, we examined each selected paper by contemplating “the hidden influences on discourses, the power relations and the normalizing effects” (Stahl, 2008, p.20). For each article,

we also identified how and why Bruner's narrative concepts were being applied. Our analysis therefore emerged from comparing these insights, given our intention was to identify the most promising and damaging knowledge/power practices to challenge the status quo.

4. Findings

“The Same” open development narratives

In this section, we examine narrative structures to reveal how truth claims are constructed and regulated. We identify the constraints that frame open development thinking and acting as a means to reveal discursive formations. We applied discourse analysis to identify two key rules that regulate the conceptual environment of open development. The following two sections examine how these rules transpire as discursive formations in the research literature.

The contribution of hypothetical outcomes to generic open development scripts

In the selected 20 articles, open development narratives, regardless of the type of openness involved, draw readers into narratives of significant promise. Openness was often hoped to deliver new opportunities, namely to “facilitate greater [government] transparency, catalyze citizen participation, and change relations between citizens and government” (B. Raman, 2012a, n.p.); “increase the transparency of decision-making as well as the accountability of those tasked with implementing processes that serve the interest of society” (van Schalkwyk, Willmers, & McNaughton, 2015, p. 1); “provide public access to educational data that is accessible to civil society, NGOs, local community members, and government bodies at all levels, thereby building more accountability into the education system” (Iyengar *et al.*, 2016, p. 1); “provide new opportunities for humanitarian responders to enhance their response to crisis situations” (Meesters & Van de Walle, 2013, p. 149); and “enable transit agencies and operators to engage the power of the software developer community and citizenry more generally to create new forms

of information services about public transportation” (Eros, Mehndiratta, & Zegras, 2014, p. 3). These opportunities, involving a plethora of actors and institutions, were hoped to yield substantial structural change.

A striking finding, however, given that we sought articles engaging with empirical capability and accountability outcomes of open initiatives in developing countries, was that the articles rarely discussed their contributions in such terms. Our initial intent was to analyze exemplars of research to understand whether and how openness contributed to the identified outcomes. However, we realized that there were few references to capability or accountability. Our critique of this pattern focuses on the use of these terms to invoke generic ideas about hypothetical open development outcomes. Foucault’s ideas help us to view the reasons for this tendency within current academic disciplines whilst Bruner’s notion of particularity helps us to see why invoking capabilities and accountability references perpetuate this tendency.

Over half of the twenty articles referenced capability or accountability explicitly up to five times. These references were used to position the importance of the research contribution, yet provided little detail regarding capability or accountability outcomes. Rangaswamy and Nair (2011) mentioned that poor and marginalized people often lack capabilities to take advantage of ICTs. Their ethnography of small and medium enterprises in an Indian slum conceptualizes ICT entrepreneurs, who offered repair and Internet services, as the empowerment of poor and marginalized people, typically represented in the literature as lacking capabilities and access to ICT. Yet, it is not clear whether such service provision corresponds to the expansion of capabilities for this group. Likewise, the majority of the literature mentioning accountability does so incontestably, as though there is some accountable state or individual that can be objectively determined. Common references to *government accountability* (Murillo, 2015; e.g. N. V. Raman, 2012b; Sadoway & Shekhar, 2014), or *transparency and accountability* (Canares, 2014; Michener, 2015; e.g. van Schalkwyk *et al.*, 2015) impel readers to draw on their own tacit understandings of accountability to make judgements, without providing much theoretical

grounding or analytical cues for how to identify accountability within the studies. We view this pattern as a tendency for authors to construct hypothetical outcomes, providing an idealized structure within which their narratives are contained.

Nonetheless, a few studies showed promising improvements on this tendency due to their engagement with theory. Grounding outcomes in robust theoretical perspectives on capability and accountability provided a more realistic framing for openness. For instance, Hatakka and Lagsten's (2012) study explored how developing country students at a Swedish university benefitted from Internet resources. They argued that some students would choose to use Internet resources, whilst others would not. Expanding capabilities implies increasing the students' choices, identifying conversion factors that outlined a range of pathways to capability outcomes in personal, educational and professional areas. This was the only study to apply a rigorous capabilities approach framework; most other studies did not engage with structural issues framing capabilities.

Whilst there were some rich examples, the general lack of theorization and engagement with hypothetical outcomes leads us to conclude that wider capability and accountability discourses emanating from the development sphere are largely being uncritically inserted into open development research. Granted, the intentions of the authors were not concentrated on evaluating the contributions of openness to structural transformation. We argue that the way in which these hypotheticals are merely being implanted, becoming part of the overarching open development discourse through their mere presence and repetition confounds the structural transformation potential of openness.

Open development narratives within constrained techno-centric boundaries

A small group of articles stood out for presenting positive accounts of open development initiatives incontrovertibly. Truth construction patterns relating to the researchers' philosophical and scientific grounding are revealed by examining the ordering of events (narrative diachronicity).

The introduction of open artefacts shows a linear conceptualization of progress, enabling the authors to conclude that openness led to positive outcomes in their studies. This discursive formation, highlighted in three examples below, demonstrates that openness has been reorganized to suit techno-centric preoccupations within constrained scientific boundaries.

First, Tom-Aba *et al.* (2015) focused on the Ebola disease outbreak management in Nigeria, with little reference to how the initiative was housed within the national health infrastructure. They created an Open Data Kit (ODK) application and implemented a technical intervention to monitor Ebola treatment activities. Using the ODK contributed positively to traceability, which enhanced accountability towards patients and public health. However, the authors do not reflect on openness beyond its application within the experimental initiative, other than the free-to-use and customizable qualities. For instance, many of the data collectors “were residents of the Nigeria Field Epidemiology and Laboratory Training Programme” (Tom-Aba *et al.*, 2015, p.7), more likely to be engaged and punctual volunteers. The narrative does not address particularities relating to the broader healthcare context, such as how to gain political will to implement the initiative, or the implications of implementation in only a few Nigerian regions. This approach confines the context to provide a straightforward pathway of events beginning with the introduction of the ODK tool, culminating in significant improvements in disease outbreak management.

Second, Ansal and Yildirim (2010) reported that participating in open source developer communities increased innovation capabilities of Turkish software developers. Here, the assumption is that when Turkish developers become innovative, Turkish companies become more competitive in the software industry, which are outlined as positive outcomes. Restricting the study to focus on those who were already benefitting (the implicated developers and companies), creates a linear narrative: “FLOSS [free/libre open source software] offers unique opportunities for improving the innovation capacity of local software producers” (Ansal & Yildirim, 2010, p. 4). However, since Turkey’s software industry is embedded within the global software

capitalist industry, they do not address the structural inequalities that limit Turkey as a nation, nor the poor and marginalized people within the country who lack agency to become software developers. Limiting thinking of openness in this manner does not tackle core issues related to structural inequalities.

A final constraint relates to the specific contributions of openness. Rangaswamy and Nair (2011) argued that “socio-business processes by which digital hardware, software and related skills are procured, learnt and disbursed via informal and peer-to-peer networking, training and servicing... ensure that ICTs are affordable, accessible, usable and serviceable to populations marginal to mainstream and global ICT markets” (p.164). Here, the assumption is that greater access to ICT leads to the expansion of capabilities, so that ICT access is investigated as the main proxy. Similarly, Van der Boor’s (2014) study argued that *platform openness* expanded capabilities of the poor because of an observed increase in innovation. In essence, both articles focus on openness as contributing to the creation and delivery of more appropriate mobile and financial services. However, a capability approach perspective would focus on a deeper analysis of capabilities, agency and choice to reach structural change conclusions.

The above narratives are constrained in different ways, according to their context, population studied, or the contribution made, yet demonstrate positive views regarding openness. They do not oppose existing structures and work together to reinforce a techno-centric framing of openness. Whilst these authors did not intend to engage with structural transformation, their choice of methods serve to reinforce particularly positive views of openness. This positive frame of openness has remained stable over time, and acts as a way of reinforcing technological ideals regardless of other themes such as reduced inequalities.

“The Different” open development narratives

We identify two *Different* discursive practices at play that have interrogated key assumptions of openness in open development. First, we focus on narratives providing multiple story-lines from

different (non-discriminant) perspectives outlining accounts of striving towards open ideals, and coming up against systemic constraints. Second, we emphasize narratives that contest dominant framings of openness. We argue the mixed and contradictory effects discussed indicate future avenues linking openness to structural change.

Building constructive responses through hermeneutic composability

In Bruner's notion of hermeneutic composability, narrative is constituted by a plot that contains the actors and events that take place. This means that open development narratives are recursively influenced by context, and by discursive practices that shape and disrupt the events that take place. We argue that hermeneutic composability presents a compelling way to view how researchers are building alternative meanings of openness. Namely, the authors draw on the meanings of what the *whole* open development story is about in order to change the reading of events. Their purpose is to identify how openness contributes in a way that completes the desired open development story. We selected five key examples that best reflect this seemingly arbitrary, yet important, shift when conceptualizing openness holistically.

First, despite recent theoretical progress, there remains a tendency for research narratives to be situated in the contexts of openness, without engaging deeply in the meanings and purposes of openness. An open context could be an open artefact such as an open platform delivering mobile phone services (van der Boor, Oliveira, & Veloso, 2014), a public access computing facility (Hoque & Sorwar, 2015), or an open source developer community (Ansal & Yildirim, 2010). Within this framing, open contexts have clear boundaries. For instance, there is a discrete number of tele-center users or tech-entrepreneurs in a specific community. Choices and actions of actors are easier to discuss when it is clear who is involved. Thus, narratives may focus on specific reasons and outcomes that occurred within that context. For instance, implementing a nationwide open source policy was supposed to have a democratizing and empowering effect for South Africans, but the policy had not been implemented; thus, Handlykken (2012) sought to uncover

the reasons by interviewing experts involved. Essentially, the government did not stipulate for the use of open source software within government or by its contractors, simultaneously passing intellectual property legislation that conflicted with the open source policy. Hence, Handlykken (2012) supports an asymmetric integration framing of openness and concludes that “the politics of implementation and participation of communities matter” (n.p.). By focusing on the telling of events within that context or initiative, such narratives can offer logical accounts of how and why actors behave in a certain manner within open contexts. However, the meanings and purposes of openness are often implicit. When viewed as narrative, particularities center on what makes the open context distinct, and why these contexts can produce greater/weaker capability and accountability returns.

Secondly, in contrast to openness as a context, practice perspectives focus on outlining particularities that occur during the unfolding of events, within which many problems and contradictions arise. For instance, Williams, Marcello and Klopp (2013) assumed that creating and sharing transportation data might have widespread use in Kenya due to the intrinsic (and economic) value of the information. Yet, practicing open distribution revealed that it was much more important to support local community actors to benefit from this data. Having open data, or openness as a context, was not the main issue. The authors of practice narratives distinguish themselves because they are often quite critical about the dominant meanings and practices of openness. They do not exclude actors, by focusing only on people and institutions who are directly involved, yet they emphasize actors who may have significant influence.

Third, Canares’ (2014) research of the Philippines’ open government data initiative questioned whether the policy was meant to improve explanatory accountability of government or responsive accountability towards citizens. By following the sequence of events from the government’s perspective, one sees a clear success since “the compliance process created horizontal and vertical linkages among data suppliers, compliance monitors, and data uploaders” (Canares, 2014, p. 93), resulting in timely sharing of government information. Yet, Canares’

juxtaposition of the *demand side*, against the *supply side* of information-sharing changed the focus of the development story to be about responsiveness towards citizens. He constructed a narrative surrounding the multiple actors involved in public life, and those who *should* be involved if accountability towards citizens is what is important. Discussing the intentional states of the range of actors, and how they are influenced by different ideas, objectives and capabilities enabled Canares to view openness holistically, such that he could propose constructive improvements to meet citizens' needs through open government data.

Hermeneutic composability can also be used to completely reframe our thinking. A more recent article by Canares, Marcial and Narca (2015) built on their original findings, by focusing on *demand side* actors. They trained civil society organization (CSO) to engage with open government data, and encountered much success with their experiential learning strategies. For instance, one CSO participant identified large sums of money that had been budgeted by government but had not been spent. Despite "the end-goal [of the training] was to create a position paper and a data narrative that would convince local government units to proactively use disaster risk reduction funds ... via education and preparedness," the training did not sway the local government to respond to the CSO's requests (Canares *et al.*, 2015, p. 12). Hermeneutic composability trains our thinking to work backwards to improve on this situation. If the whole story is about responsiveness towards citizens, then the training may have focused on more than understanding how to use open government data. Narratives may help to identify issues earlier because hermeneutic composability encourages researchers to include those actors that can fulfill government responsiveness. This requires constructing a narrative that weaves associations between the actors and the knowledge/power interests within open social praxis.

Hermeneutic composability also facilitates constructing discursive formations unique to the actors and problems at hand. Vidolov's (2014) study explored volunteer peer production networks contributing to disaster response. He considered two distinct groups of actors, those of traditional humanitarian aid organizations, and volunteer peer producers. Vidolov shifted the

meaning of the whole story by questioning whether effective collaboration should center on the volunteer peer production process, or on more accountable disaster response. Volunteers tended to draw on ideals related to “open-source ideology, flexible structure and hierarchy, collaborative workflow, altruistic nature, desire to cultivate and disseminate technical skills, enthusiasm for partnership” (Vidolov, 2014, p. 125). In contrast, the organizational workers were informed by their own ideals, such as centralized production, rigid working patterns, and a need for reliable information. Although openness has afforded new ways of sharing and producing information to respond to disasters, both sets of actors started to change because of interacting with each other. Here, open social praxis becomes a hybrid of the two types of working patterns, in order to construct the events that lead to the desired disaster response outcomes. This section demonstrates the value of conceptualizing links between openness and structural change holistically through hermeneutic composability

Contesting normative narratives of openness

We now focus on three articles that investigated openness in urban services in India. Through narratives of conflict and resistance, the authors argued convincingly that dominant meanings of openness are founded on false assumptions in the Indian context. We refer to these struggles as *contesting narratives* because they give shape to alternative meanings of openness that contest dominant framings. Part of the reason why these narratives have emerged stems from the power/knowledge of development practitioners who view expanding capabilities and increasing accountability as ingrained features of their discursive practices. However, we argue that these contesting narratives represent a tipping point in motivating researchers and practitioners in the field to investigate more situated and critical IS theory-building on openness.

All three selected articles that best represent contesting narratives discuss the 2005 Right to Information Act (RTI Act) of the Government of India. Whereas many open distribution models share information publicly on websites or through datasets, the process is different in India. In

India information is requested through public office, with a complaint system for inadequate responses. The RTI Act set out clear criteria for how all citizens were to gain access to government information, and established performance standards and sanctions for government officials. B. Raman (2012a) and N.V. Raman (2012b) argued that this is a form of open data, because government information is publicly shared when appropriate.

However, several conflicts surfaced, and B. Raman (2012a) argued that the simplified processes and procedures outlining how information is shared publicly are inadequate. The researchers began monitoring the use of public data to improve urban services, like the provision of public toilets, pedestrian walkways and land records management. In one example, researchers called, visited and then wrote letters to get bus route information, with few or diversionary responses (N. V. Raman, 2012b). Finally, one government official stated that the reluctance to share information was due to power conflicts over where bus stops should be placed. In another case, the legal status of land records held by different government institutions had been contested for decades by the marginalized Dalit (formerly Untouchables) caste (B. Raman, 2012a). Following the RTI legislation, when conflicts began to arise, the government legalized certain land records that privileged members of the more powerful castes. Since only legal documents hold up in courts of law, the potential for the Dalit group to contest its land rights significantly decreased. The strength of these narratives relates to how certain reflections upon the politics of local governance revealed that sharing and consuming government information is often located within struggles between different economic and social classes. These struggles manifest in the complexity of government-citizen relations, and the institutional norms and practices within government.

In contrast, the prevailing rhetoric had been that openness affords local governments a means to drastically improve urban services, by strengthening accountability through information-sharing. However, the actors' continual need to request, monitor and question information and the associated government institutions called this assumption into question: "the issue faced by

the poor is not only about access to data, but also to do with who is seeing the information on their land and how they are likely to mobilize it and the shrinking of the political spaces for contesting visible information” (B. Raman, 2012a n.p). In India, civil society actors integrated resistance into notions of openness as they came to realize how little public officials could be trusted. Upon reading N.V. Raman (2012b), Gurstein (2012 n.p.) saw this contesting narrative within other groups involved in the Open Government Partnership: “what I began to understand was... [Open Government Data] OGD was not a neutral output to be reconfigured, managed, analyzed and displayed. Rather, OGD was an artefact in itself to be analyzed, accredited, authenticated and ultimately something to be created as an output of a significant process requiring legal support, technical and forensic skill, persistence and ultimately courage.” Whilst IS researchers have tended to view open artefacts as neutral, contesting the narrative created a discursive formation of openness based on a new realm of conflict and resistance that had not been perceived within the technocratic frame.

Breaking with canonical scripts surrounding open artefacts can sometimes make such findings seem surprising. However, these frames are quite familiar to development practitioners. For this group, mobilizing poor and marginalized people to claim their rights is a recognized genesis of power/knowledge (Friedmann, 1992). Participation by the marginalized to account for deficiencies of open social praxis is crucial to development practice. An insightful illustration of this is Sadoway and Swain’s (2014) comparison of state-led versus citizen-driven smart city initiatives. They describe Transparent Chennai’s “distinct method of operations... [as] a nominal approach or process that sees the residents as 'smart' rather than simply as digital inputs, tools or platforms (or seeing the ICT tools as 'smartest')” (n.p.). Hence, amongst these civil society practitioners, participation is driving the production of power/knowledge. What we emphasize is that they do not focus entirely on citizens’ access to open data, simultaneously developing several face-to-face and online strategies to encourage participation. By doing so, they demonstrated that enabling participants to contribute actively to power/knowledge generation significantly enriched

the open process, especially when compared to an alternative top-down initiative. Indeed, while freedom to participate in open social praxis has always been a feature of openness, scholar-practitioners argue that what is needed is to show discursively that open initiatives are compatible with notions of development as freedom. When practitioners seek to reconcile these facets of practice, they, too, adopt sanctioned strategies that serve their power/knowledge interests. Thus, although contesting narratives have served to reframe openness, they have also helped to reinforce complementary power/knowledge dimensions.

5. Discussion and conclusion

The main contribution of this article is to develop an alternative view of openness, based on Foucault' and Bruners' critical perspectives, which question reality and our making of it. Our critical narrative approach enables an understanding of openness as inherently power-related, and subject to both granular and holistic interpretation. We illustrated our argument by highlighting three main tensions within IS literature: 1) the potential for openness to radically change social and economic structures; 2) a relative lack in IS research to engage with structural transformation claims; and 3) the limitations of political and practice-based IS accounts when framing discourses on openness. We investigated the case of open development, an area of research and practice specifically concerned with using openness to protect and empower poor and marginalized people. We sought to learn from this field as to whether and how openness was contributing to structural change, by focusing on capability and accountability outcomes, which represent the systemic freedoms and protections individuals and communities possess. We consider multiple open development narratives that have proliferated, rather than any single narrative at play, via a constant making and shaping. Our use of critical narrative, then, is not to explain openness or open development definitively, but rather seeks to discuss open development discourses. This

allows us to illustrate the value of narrative concepts that provide adequate flexibility for understanding openness holistically.

Conceptualizing links between openness and structural change holistically through hermeneutic composability

Smith and Seward (2017) proposed that conceptualizing openness as social praxis improves on technological determinant approaches, because openness is contingent on the specific context within which it arises. However, the three open processes presented lead us to presume that the process begins first with an act of open sharing, open consumption, or open production, and praxis emerges from this nexus of change. Moreover, at any given time, there are likely to be multiple discursive formations within open social praxis. It is vital to acknowledge how heterogeneous groups of actors pursue various discursive aims, sometimes with competing or conflicting intentional states. Open social praxis enables this diversity. Yet, our analysis shows that many authors tended to construct constrained narratives emphasizing linear progress for a select and limited group of actors, or in a confined context.

In contrast, we have drawn on Bruner's notion of hermeneutic composability to recognize the power/knowledge and structural change interplay in a mutually constitutive way. This provides a holistic conceptualization of openness. Hermeneutic composability enables forward thinking, but also facilitates working backwards to address inequalities and to redistribute benefits within discursive struggles. In terms of forward thinking, it enables actors to integrate complementary discourses into open social praxis, such as Hatakka and Lagsten's (2012) incorporation of the capability approach to understand the use of Internet resources across a range of students. Second, in terms of working backwards, hermeneutic composability inspires creative thought such that it encourages researchers to start from the desired structural transformation sought, and to construct a narrative that plausibly fulfills it.

The role of narratives in weaving associations between openness, actors, intentions and structural transformation

Our critical narrative approach builds on Foucault's perspectives, emphasizing power/knowledge in a narrative construction of reality. Two key insights can be drawn from our analysis. First, understanding structures of *The Same* narratives exposed those discourses which characterized why particular regimes of truth have been generated within the field of open development. By drawing out these truth practices through narrative analysis, IS researchers may gain greater consciousness about the potential limitations and constraints of their thinking. Second, the process of searching for *The Different* narratives offered a more practical means of weaving associations between actors, intentions and structural change. It enabled us to search for narratives that focused on missing voices, and alternative meanings of openness within open development. Sometimes, as indicated by the contesting narratives, all that is needed is to draw these out so that actors can observe and address them within their own power/knowledge practices. This can facilitate the inclusion of actors and a refocusing on different methods to pursue structural transformation. Narratives facilitate weaving associations between actors, intentions and structural change because they enable openness to be imagined in terms of the change that is sought, and from there, the actors and events that may hinder or facilitate this. In this sense, significant structural change requires building discursive formations that address those who are systemically disadvantaged, which has not been an integral part of prior notions of openness.

The critical narrative approach to openness versus prior conceptualizations in IS

Our critical narrative approach to understanding openness provides three specific improvements in relation to prior conceptualizations of openness. First, it provides a unique conceptual toolbox for understanding key characteristics of openness, such as the heterogeneity of actors, intentions and structural transformation. Second, it challenges the techno-centric locus of change, and

adopts a more integrated, mutually constitutive conception of the interactions between individuals, open artefacts and open social praxis. Third, it provides a more holistic explanation of whether and how openness has (or not) affected structural transformation.

Our approach takes the complex, disperse, and discontinuous nature of openness as our theoretical foundation. It draws on insights from Foucault and Bruner's unique, impossible to pin down, ways of viewing reality. This forces us to abandon thinking about openness in a straightforward, logical, continuous manner that many information systems developers and engineers may favor. Our conceptual tools enhance visualizing the abstract landscape, and can help us to interpret and reimagine actors and perceptible structural change within open social praxis. Taken together in either an integrative or a discrete way, critical narratives of openness provide important avenues to analyze interactions, tendencies, opportunities and neglect within *open* discursive formations.

As outlined above, prior conceptualizations in IS are not immune to discursive formations that perpetuate social and political inequalities. The proliferation of practices- and process-based thinking of openness across many domains and institutions is inherently connected to social, economic and political interests. Our critical narrative approach emphasizes discursive formations that challenge, oppose and actively reduce social inequalities. It does so by flipping the script, examining and questioning contradictory elements in favor of providing greater clarity on the inadequacies of research practice, as well as on the discursive mechanisms that facilitate structural transformation. One aspect we were not able to address in our analysis relates to the provenance of ideas, and how these are related to the identities and power/knowledge of the scholars contributing them. We suggested our approach can be used by scholars to engage in critically reflexive research practice. Yet, it may also be valuable to understand how and why the tendencies identified in our paper are reflective of wider academic power imbalances, as Said (1978) has done.

In particular, openness as social praxis is limited in a fundamental way when one considers structural transformation. Openness as social praxis takes a neutral view when it comes to the structural aspects of IS. It does not adequately question historically situated ideals and beliefs promoted by proponents with techno-centric or overly positive views. Technological factors are important for enabling open social praxis, yet they do not integrate other critical political elements of technology, such as how social structures and competing interests affect the context and use of open environments, as well as the technological infrastructure itself over time. Our critical narrative approach considers both the empowering and disempowering effects of openness, as well as the intentional states of actors in shaping open information systems theory and practice. Our approach goes beyond surface level activities that examine open practices, towards incorporating more political, unintentional consequences of open discourses. Likewise, we encourage taking a more critical stance towards the role of technology in openness, which enables the inclusion of actors in open processes who may be systematically disadvantaged by digital infrastructures.

Moreover, our critical narrative approach facilitates creative and constructive explanations for both practices and outcomes of openness to emerge. Our illustrations of The Different narratives of open development demonstrated that to understand whether or how openness influences structural change required challenging dominant meanings and purposes of openness in context. Conflicts emerged especially when examining the perspectives of the poorest and most marginalized people, and how they were disadvantaged and/or empowered due to open social praxis. In this way, our approach fundamentally incorporates power in the analysis. Although openness as social praxis recognizes contextual contingencies, it focuses attention on *what* open practices are more than *how* and *why* they come to be. Our critical narrative approach emphasizes where open practices come from, and their effects in both positive and negative power/knowledge formations.

Our analysis suggests two potential implications for practice, which policy-makers engaged in open initiatives might find useful. First, practitioners can apply narrative concepts to analyze the state of play of an initiative. For instance, they might consider the intentions of a wide range of actors, how their own background knowledge influences their reading of events, determine how practices align with generic scripts, or target practices that break with norms and traditions. Moreover, analyzing practices according to the *Same* and *Different* perspectives using narrative concepts is a flexible, improvisational way to foreground power and structural change in open initiatives. Second, our approach implies practitioners and policy-makers need to be able to adapt to improvisations as well. For example, we argue that focusing first on implementing a specific open process, or narrowly driving towards a particular development outcome is limiting. We contend that multiple critical narratives may take shape, and that enabling actors to participate may be an effective way to foster lasting structural transformation.

There have been notable developments in this area that were released after the time of writing in 2017. For instance, Berdou (2017) published an important critique of open development in poor communities, noting that participants of a community mapping initiative in Kenya regarded bureaucratic forms of accountability “as equally, if not more desirable than the bottom-up forms of decision making favored in peer production” (p.28). In contrast, van Schalkwyk *et al.* (2017) presented a range of empirical case studies to progress a more contextually informed view of open data in developing contexts. Van Schalkwyck and Verhulst (2017) observed that negative anti-data narratives have emerged, but that such narratives are as naïve and simplistic as overly positive narratives. They argue for more nuanced and balanced approaches to openness, which resonates with our position.

IS researchers should find our critical narrative approach a fruitful pathway that complements alternative approaches to openness. There is no doubt that openness is a powerful discourse that can change structural elements of society. The main issue is whether it will incrementally influence existing structures based on productivity and efficiency, or whether and

how it will fundamentally transform structures of society beneficially and equitably. Further research can explore specific political, economic or social structures, and the critical narratives surrounding openness associated with them.

Acknowledgements

This research was conducted as part of the Strengthening Information Society Research Capacity Building Alliance (SIRCA) III program and is funded by the International Development Research Centre (IDRC) of Canada.

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Appendix 1 – Interpretation of the main narrative within selected articles

Ansal & Yildirim (2010)	<i>Participating in open source software developer communities improves software innovation capability</i>
van der Boor <i>et al.</i> (2014);	<i>Users in developing countries innovate more and more effectively when technological platforms are open.</i>
Rangaswamy & Nair (2011)	<i>The success of ICT small enterprises emergent in Indian slums transforms our view of the poor from passive consumers towards innovative producers of ICT services</i>
Hoque & Sorwar (2015).	<i>Telecentres can improve information access for rural Bangladesh citizens, and citizens view them positively.</i>
Handlykken (2012)	<i>The adoption of a FLOSS policy in South Africa was supposed to have a democratizing and empowering effect on the country, but the policy has not been implemented in practice.</i>
Hatakka & Lagsten (2012)	<i>Sen's capability approach enables a better understanding of how students use Internet resources, and it becomes possible to understand the effect of this use in terms of its development outcome.</i>

Eros et al. (2014)	<i>A transportation data standard was implemented in Mexico City, and some aspects of it needed to be adapted to fit public transportation practice there. There are still more ways the standard can be used to improve policy and practice.</i>
Tom-Aba et al. (2015)	<i>An open data kit tool was created and used to standardize Ebola virus management, and it significantly improved contact tracing accountability, key to mitigating an outbreak.</i>
Iyengar et al. (2015).	<i>The use of an open source education administration system had mixed success because various actors needed to use it for different reasons, and they all lacked sufficient training. Breaks with techno-determinism, but still maintains the genre focus because it still places technological functionalities in the foreground and the people aspects as a resultant finding.</i>
Williams et al. (2013)	<i>Transportation data in Kenya is expensive and tightly controlled by state and bilateral donor actors. Researchers attempted to create their own transportation data, and to share it openly. They soon realized that they, too, needed to learn how to share and support local actors to use data. Having the data is not the main issue.</i>
Meesters & Van de Walle (2013)	<i>Volunteer information production offers new opportunities. Evaluating the impact of these opportunities by examining the use of information by organizations, showed that information products were of high quality, but not embedded in organizational routines. Thus, they did not have a high impact on organizational performance even if the information products were of a high quality.</i>
Sadoway & Shekhar (2014)	<i>Smart cities initiatives promote commercialization and consumption of ICT tools and infrastructure. Smart citizenship focuses instead on citizen-driven problem-solving, and is more equipped to tackle injustices and inequalities in a participatory fashion.</i>
Ohemeng & Ofosu-Adarkwa (2015)	<i>Open government data represents a potential opportunity to shift citizen-driven initiatives, over and above state or market driven ones. It also represents an opportunity for greater citizen participation and engagement. Ghana Open Data Initiative, however, only focuses on supplying data, and does not understand how to support knowledge sharing between citizens and government.</i>
N. V. Raman (2012);	<i>Open government data is supposed to facilitate greater transparency, catalyze citizen participation, and change relations between citizens and government. How and who constructs government information has been overlooked, and OGD has turned into a way to reorganize land records in non-contestable terms.</i>
B. Raman (2012);	<i>Open data is supposed to make governments more transparent and accountable to citizens, and to empower citizens, thus changing citizen/government relations. A commitment to sharing information transparently, does not mean that it exists, that local politicians will not try actively to block sharing information, or that information will be correct. Information provided did not help with holding the government to account.</i>
Chattapadhyay (2014);	<i>Data sharers and users exist in an ecosystem. All users of a system should access and use a system in a way that benefits them. Intermediaries are actors that may facilitate between users and sharers. However, there is not a strong community or interaction between actors, and there is a lack of intermediaries in India.</i>
Murillo (2015);	<i>ICTs have played a role in changing public administration systems, and can be used to reduce corruption and increase transparency. Governments in Latin America are not sharing information related to corruption areas, and there is too much of a lack of education,</i>

	<i>media reach, ICT illiteracy and illiteracy in general populations anyway.</i>
Canares (2014)	<i>The Philippine government required local government to post financial information publicly, but this only affected government practice. It did not affect how civil society actors and citizens interacted with government information.</i>
van Schalkwyk et al. (2015)	<i>Open data can potentially improve the governance of universities through improved decision-making and analysis. However, government data was unusable. Intermediaries played key roles in increasing the accessibility and usability of government data.</i>
Vidolov (2014)	<i>Volunteer information producers and organizational workers are different types of actors that are driven by different sets of values, beliefs and objectives. For them to work together effectively to reduce disaster risk and management, they tend to 'reconfigure' and 'fuse' their working practices.</i>