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Daniel Curto-Millet
University of Gothenburg, daniel.curto-millet@ait.gu.se

Olgerta Tona
University of Gothenburg, olgerta.tona@ait.gu.se

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Short Paper

Daniel Curto-Millet
Swedish Center for Digital Innovation
Department of Applied IT
University of Gothenburg
41756 Gothenburg, Sweden
daniel.curto-millet@ait.gu.se

Olgerta Tona
Swedish Center for Digital Innovation
Department of Applied IT
University of Gothenburg
41756 Gothenburg, Sweden
olgerta.tona@ait.gu.se

Abstract

Autocratic governance structures are prevalent in open source projects. One key figure in such a structure is the project founder, often called 'Benevolent Dictator for Life.' These benevolent dictators typically engage in autocratic decision-making by virtue of having founded the project or holding gatekeeping roles. However, research has overlooked how autocratic governance is formed around the Benevolent Dictator for Life and the enduring appeal of this figure in open source projects. To this end, this study aims to explore the way autocratic structures in open source projects are sustained or changed and the roles that autocratic founders play in this process. Drawing upon the CARE theory, which theorises the relationship between personal data digitalization and human dignity, we propose a conceptual model that highlights the formation of autocratic structures and the distinct roles that founders can play during this process.

Keywords: human dignity, open source governance, autocratic governance, personal data digitalization

Introduction

Benevolent Dictator For Life (BDFL) is a common type of leader in open source communities (Ljungberg 2000; Schneider 2019; Sharma et al. 2022). These leaders are usually self-appointed (Schneider 2022), and are often the founders of the open source project they lead. They gradually develop a network of close collaborators, termed lieutenants, sharing the same vision: a vision that is key to ensuring that their projects can sustain growth and expansion over time (Kelty 2008). Such founders and their actions are also significant in project formation and in the open source movement as a whole, to the point of being idolized and almost revered like religious figures (Kelty 2008). These types of leaders typically operate a more extreme form of authoritarian governance model that we call *autocratic model*. This form gives one person control or inordinate influence over a project's legitimacy, decision-making, and values. As such, autocratic governance model becomes tightly linked to the personality of the project founder.

Previous research has noted that autocratic figures are often involved in the early stages of project development, including project formation (von Krogh and von Hippel 2003). However, the importance of such figures diminishes because, as projects grow, they adopt more decentralized forms of governance to face increased coordination complexity (O'Mahony and Ferraro 2007). *Coordination* is particularly important in open source as it defines "common sets of rules, guidelines, and activities that operationalize a specific authoritative structure" (Shaikh and Henfridsson 2017, p. 116). While research has emphasised

changing governance in open source, it has overlooked the active and dynamic role of founders during such changes. Indeed, such figures remain involved in coordinating the project and influencing its governance through controversies (see Shaikh and Henfridsson 2017). However, research has been mostly silent on how autocratic governance is formed around the BDFL and the enduring appeal of such figures in defining community values and contributor relationships. Without understanding the role of such key figures, it will be difficult to detail the coordination processes or grasp the dynamics of these open source communities.

Online leaders' participation is particularly important, with Pantelli (2016) arguing that their presence exerts influence on community members. Indeed, research suggests that leaders in online communities exert their influence through communication acts, primarily through online messages that hold affective and assertive elements. This communication is important to influence project work and coordination by shaping others' behaviour (Huffaker 2010). Leaders share thoughts, discuss and provide feedback to contributors' participation on mailing lists, forums, or platforms such as GitHub (Weng and Soh 2023); all of these represent personal views, knowledge, and assessment. In this way, leaders make use of personal data to project an image of oneself (Leidner and Tona 2021) to not only coordinate the work but also to seek and receive recognition from the online community (Dong and Götz 2021). At the same time, observing the digital interactions of the leader/founder, "developers learn about the project "culture," including its values for meaningful social interaction and collaboration, before being accepted by others" (Sharma et al. 2022, p. 170). Thus, the use of personal data by leaders to signal their values, preferences, and beliefs shapes the project's governance and influence the project's direction, coordination, and values. This short paper seeks to offer a conceptual framework that links founders' personal data and how they are enacted, with changes to a project's governance model. In this conceptual piece, we address the following: *How do founders influence governance models?* Our aim is to understand the way governance models are sustained or changed in open source projects, and the founder roles in such processes.

Drawing on the Claims, Affronts, Response, Equilibrium (CARE) theory, this paper proposes that the enactment of Personal Data Digitalization (PDD) in open source coordination processes by founders can either sustain current autocratic models or disrupt them by animating different founder roles. Founders have an important original role in defining a project's values and coordination processes. Their personal data (e.g., opinions) can leave a lasting imprint and influence, for example, on defining appropriate behaviour or who has merit. The CARE theory can guide us in linking the enactment of personal data, the central autocratic figure of the founder and its relation with contributors, and governance model change. We contribute to the literature of open source by proposing another way in which governance models change beyond growing project complexity (O'Mahony and Ferraro, 2007). Our paper concludes with an outlook for future work related to this tentative model.

Background

Open source governance is "the means of achieving the direction, control, and coordination of wholly or partially autonomous individuals and organizations on behalf of an [open source software] development project to which they jointly contribute" (Markus 2007, p. 152). The literature on open source governance has focused on two main streams. The first relates to an eco-systemic view that deals with overall governance of open source as a distinct way of developing software. This literature stream is primarily concerned with how open source endures as a differentiated mode of collaboration (Osterloh and Rota 2007). Such studies have highlighted threats to the open source model, such as free-riding (Mindel et al. 2018) or a dependence on platforms that reduce project costs (Krishnamurthy and Tripathi 2009).

The second stream looks at governance within specific projects. Given the open nature of such development and the lack of managerial prerogative in open source (von Hippel and von Krogh 2003), coordinating many individuals, some of whom may be unknown, is both crucial and challenging (Deng et al. 2016; Maruping et al. 2019). Such coordination is governed by models that define how the project is steered and controlled (Markus 2007). Many actors, including leaders with their leadership styles (Li et al. 2012; Oh et al. 2016), and reciprocal norms and practices (Sharma et al. 2022) participate in such steering. Governance and its institutionalisation define how contributions are coordinated and help resolve collective action dilemmas (Mindel et al. 2018; Ostrom 1987). As such, governance models have an important influence on the sustainability of open source projects (De Noni et al. 2011).

Although research has focused on elements and dimensions of governance models (Di Tullio and Staples 2014), leaders, leadership styles, and contributors are not disparate and independent from these models. They come together to form a governance model that defines a "shared basis of authority" (O'Mahony and Ferraro 2007, p. 1079). Such understanding of authority gives sense to how a project and community are governed and legitimises the adoption of a certain license, the authority of a leader, or the way work is distributed. In other words, a governance model will inform how coordination and collaboration take place in a project. For example, O'Mahony (2007) studies community-based governance models that differ from those models whose managerial and technical decisions depend more on firms' involvement. Instead, community-based governance will define decision structures that emphasise pluralism and representation.

There are multiple governance models in open source. For Shaikh and Henfridsson (2017), there are three distinct models distributed in a spectrum depending on where the authority for making decisions and defining the project lies: the community (collective), the sovereign individual (libertarian), or a kernel of leaders (centralised). Di Tullio and Staples (2014) also outline three different models: 'defined', 'open', and 'authoritative.' Their classification depends on more dimensions than Shaikh and Henfridssons' (2017), but each model's definition holds common ground. Indeed, the open community model resembles the libertarian one, situating decision-making informally within the community and relying on contributors to suggest and pursue project goals freely. On the opposite side of the libertarian-open governance model would sit the authoritarian model with goals and decision-making responsibilities held by a core group of managerial developers. Regardless of the model espoused in a particular project, open source developers engage thoughtfully in their governance structures (von Krogh et al. 2012; O'Mahony and Bechky 2008). Indeed, governance models evolve to match the changing values and coordination needs of projects (De Laat 2007; O'Mahony 2007).

In this paper, we are interested in conceptualising autocracy, an extreme version of authoritarian structures in open source. Under such autocratic governance, the legitimacy of a project, its decision-making, and its values are significantly influenced—if not controlled—by one person. Autocracy matters in open source, particularly in the early stages of project development in which leaders act as project managers (von Krogh and von Hippel 2003). Research has suggested that, as projects grow, they tend towards more distributed forms of governance (Izquierdo and Cabot 2020; O'Mahony and Ferraro 2007), yet autocratic leaders may maintain a strong position within an oligarchic regime (De Laat 2007). Indeed, much of the Internet's promise for democratic organising has often led to centralised governance (Schneider 2018), or what Schneider (2022) calls 'implicit feudalism' where the autocratic figure still has an important say in shaping a project's values.

Founders are one such important autocratic figure. Often called Benevolent Dictators for Life (BDFL), they remain common in open source communities (von Krogh and von Hippel 2003; Ljungberg 2000; Schneider 2022; Sharma et al. 2022). BDFLs are often self-appointed founders (Schneider 2022). Some such founders and their actions gain mythical proportions in open source, embodying the (desired) values of open source projects or even the movement itself. The clash between Free Software and open source, for example, was rampant with religious allegories of "saint," "holy wars", "reformation," and continuous hagiographic statements (see Kelty 2008, pp. 67–69). When such figures are so adulated, their voices and opinions have a large influence on how projects are coordinated and who helps coordinating them (e.g., trusted lieutenants). More importantly, even in projects that are decentralised, BDFLs such as Linus Torvalds—the founder of Linux—continue to exert significant influence on project decisions (Shaikh and Vaast 2016). For example, Torvalds's opinions are continuously (re-)used and referred to throughout the mailing list to evaluate, promote, or devalue certain propositions. In an email from the kernel mailing list, one of the respondents invoked Torvalds: "There is a point to be made though that if *Linus* has to do a complicated merge, the "patch" that caused the merge should probably be suspect in the first place..." (Shaikh and Vaast 2022, p. 12). The project and its coordination thus adapt to the autocratic figure.

We argue that a leader's comments, discussions, and interactions that take place across digital platforms not only facilitate the project coordination (Shaikh and Henfridsson 2017), but also contribute to the creation and reinforcement of a leader's digital self. Even more so in situations where face-to-face interactions are limited. This digital self represents the values, expertise, beliefs, and knowledge that a leader decides to share with contributors (Leidner and Tona, 2021). We are particularly interested in how such digital self can shape projects' governance models and we will use the CARE theory to explain this further.

A brief overview of the CARE theory

We turn to the Claims, Affronts, Response, Equilibrium (CARE) theory (Leidner and Tona 2021) to help identify the Personal Data Digitalization (PDD) enacted by founders that contribute to shaping governance models. Leidner and Tona (2021) defined PDD as socio-technical encounters that involve converting personal data into digital format for use and reuse by digital technologies to be further integrated into daily activities and decision-making processes. Here, personal data refers to various individuals' details such as demographics, daily activities, physical locations, communicative acts, opinions, knowledge, and expertise.

There are four forms of PDD. First, *knowing-self* allows individuals to gain deeper insights into their existence through their data. Second, *showing-self* describes the encounter wherein an individual shares data about the self through digital platforms, an action that is often driven by the need for recognition. Third, *knowing-others* entails use of digital technology that leverages others' personal data to be able to know more about them, with the knower being an individual, organization, or government. Finally, *showing-others* enables individuals or organisations to make visible aspects of an individual, such as their behaviour. In this paper, we will specifically focus on two of these PDDs: showing-self and knowing-others. We argue that showing-self enables leaders to construct their digital self, while knowing-others allows them to gain more insights into contributors, their work and expertise. We argue, that these PDDs facilitate the coordination process of a project by the leader.

At the same time, these PDDs are related to human dignity in that they can enable claims and engender affronts to one or more forms of human dignity: behavioral dignity, meritocratic dignity, and inherent dignity. More specifically, behavioral dignity is rooted in the idea that one deserves access to essential resources to live a virtuous life, with virtue being determined by family and society. Meritocratic dignity can be promoted by recognizing one's status and reputation. Conversely, inherent dignity is promoted when one is treated as a human, equal, given a voice, and treated with respect. (Leidner and Tona 2021). The CARE theory shows that when individuals perceive claims and affronts from the same PDD they experience intrapersonal dignity disequilibrium. On the other hand, when some individuals receive claims while others affronts from the same PDD, it is referred to as interpersonal disequilibrium. (Leidner and Tona 2021). We argue that concentrating the power of decision-making on one individual can be a challenge if contributors' voices are not heard, or their work is not recognized. It is important to understand how each of the PDDs enacted by founders can have implications for the dignity and well-being of participants and for the open source community at large. In the next section, we apply the CARE theory to an example to showcase how its concepts can help make sense of the influence of PDD enactments on governance models.

Applying the CARE theory: An illustration with the Linux Kernel

In the context of open source, various digital platforms enable the visibility of founders and contributors. For instance, GitHub allows contributors to expose their earned badges and highlight their achievements and favourite open source projects[1] to help them receive recognition for their work and establish a good reputation for themselves. Meanwhile, founders can use public mailing lists to publish announcements (e.g., new releases), foster communication and collaboration among contributors, review codes submitted by contributors, and provide feedback, as well as create a sense of belonging around the open source project. We will exemplify some of the PDDs through one of the controversial events in the Linux community related to Linus Torvalds concerning the project's version control system. Torvalds is the founder and the lead developer of the Linux kernel, an open source project. Often referred to as a "benevolent dictator for life" (Ågerfalk et al. 2015; Schneider 2022), he serves as the final decision-maker for the Linux kernel development process while being very open to working collaboratively with the developer community. The controversy surrounding the version control system that unfolded in the public Linux kernel mailing list (Shaikh and Henfridsson 2017) brought attention to how this public email list was utilized. Contributors subscribed to this email group to discuss the project development (Shaikh and Vaast 2022). More specifically, contributors would develop their codes and submit their lines of code

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[1] https://github.blog/2022-06-09-introducing-achievements-recognizing-the-many-stages-of-a-developers-coding-journey/

for review to this public mailing list. Through publicly sharing their codes, they made their names and email addresses available, as well as their level of expertise and knowledge, implicitly demonstrated in their codes. Ultimately Torvalds, who oversaw the coding process, had the final say over each line of code. All interactions between Torvalds and the contributors and among the contributors themselves were public and archived.

Several news outlets brought attention to Torvalds because some of the feedback he gave when reviewing others' contributions contained insulting language.[2] This behaviour was also observed among some elite developers of Linux kernel, resulting in a pattern of abusive language. Reports indicate that several contributors, particularly women, experienced public humiliation and suffered from the established work hierarchy and abusive behaviour. Some even left the community as a result. We analyze in particular one article published in New Yorker and use its examples to illustrate our point.

Founder-enacted PDDs	Claims to Dignity	Affronts to Dignity	Illustrative Examples derived from the news story
Showing-self	Founders: • Visibility and voice • Autonomy and free will Contributors: • Recognition of their contribution by founder	Founders: • Having their autonomy constrained (e.g., autocratic position contested) Contributors: • Treated as an object and unequal • No recognition of their contributions • Cut off resources to live virtues life	Linus Torvalds demonstrated his authority and control over Linux-kernel projects by utilizing public emails to assert his autonomy, visibility, and voice (i.e., *claim to inherent dignity)*. Contributors could receive feedback and recognition for their contributions (i.e., *claim to meritocratic dignity*). However, when their code was deemed flawed, they faced humiliation and were treated as objects (i.e., *affront to inherent dignity)*. Torvalds' language in the emails contained insulting remarks like "Please just kill yourself now. The world will be a better place". Under these circumstances, other contributors quit, having no longer access to resources (i.e., *affront to behavioural dignity*), as illustrated by a quote in the article: "*Over time, many women programmers leave the community. "Women throw in the towel first," she told me. "They say, 'Why do I need to put up with this?'"*
Knowing-others	Founders: • Have access to knowledge for coordination purposes Contributors: • Access right to become a lieutenant. • Recognition of their work by founder • Voice, visibility	Founders: • Having one's autonomy constrained manipulated Contributors: • Being treated as an object	"*Torvalds, though, retains final say over each precious line of code, just as he did when he first started working on the system as a graduate student at the University of Helsinki*". As part of the coordination process, Torvalds oversaw the coding process by enacting knowing-others to gain an in-depth understanding of the skills and expertise of project contributors (i.e., *claim to behavioural dignity*). This allowed him to effectively manage the project and sustain a network of contributors. By having access to necessary resources, he was able to ensure proper work coordination, giving voice to certain contributors (i.e., *claim to inherent dignity*). He appreciated good work (i.e., *claims to meritocratic dignity of contributors*) but at times was abusive (*affronts to inherent dignity of contributors)*. As Torvalds was knowing-

[2]https://www.newyorker.com/science/elements/after-years-of-abusive-e-mails-the-creator-of-linux-steps-aside

			others, one might argue that he adapted his own behaviour according to the knowledge he had of his open source community and the expectations it placed on him. Thereby having his autonomy constrained (i.e., *affront to inherent dignity*).
Table 1: Illustration of various dignity claims and affronts experienced by founders and contributors in the Linux kernel mailing lists			

Towards a conceptual framework

Drawing on the literature of open source and the CARE theory, we propose that the enactment of PDDs by founders in open source coordination processes can either sustain current autocratic models or disrupt, leading the founder to take different roles in the project governance (see Figure 1). The coordination process facilitated by PDDs influences the relationship between the project's founder and contributors, as the founder's influence will unfold through the interplay of showing-self and knowing-others. Founders use digital platforms such as forums and public mailing lists during the coordination process to share their values, expertise, opinions, knowledge, and feedback with the contributors. Doing so, they also signal norms and values that should be shared among the contributor community. In this way, showing-self enables claims to dignity, such as establishing a strong voice in determining the "shared basis of authority" (O'Mahony and Ferraro 2007). On the other hand, contributors will tend to internalize those norms and values and regulate their behaviour while in need for self-identity and recognition for their work (Leidner and Tona 2021). Furthermore, founders, by knowing the expertise and knowledge of the project contributors (as they unfold in public mails and digital platforms), will be able to provide guidance to those who are new to the project and prioritize contributions to seek the best outcome. When both founders and contributors experience claims from showing-self and knowing-others, the founder's significant role in setting the rules and norms for the project's coordination process will strengthen (see Table 1). Founders gain visibility, and their legitimacy as *BDFL* is maintained, which sustains the current autocratic governance model.
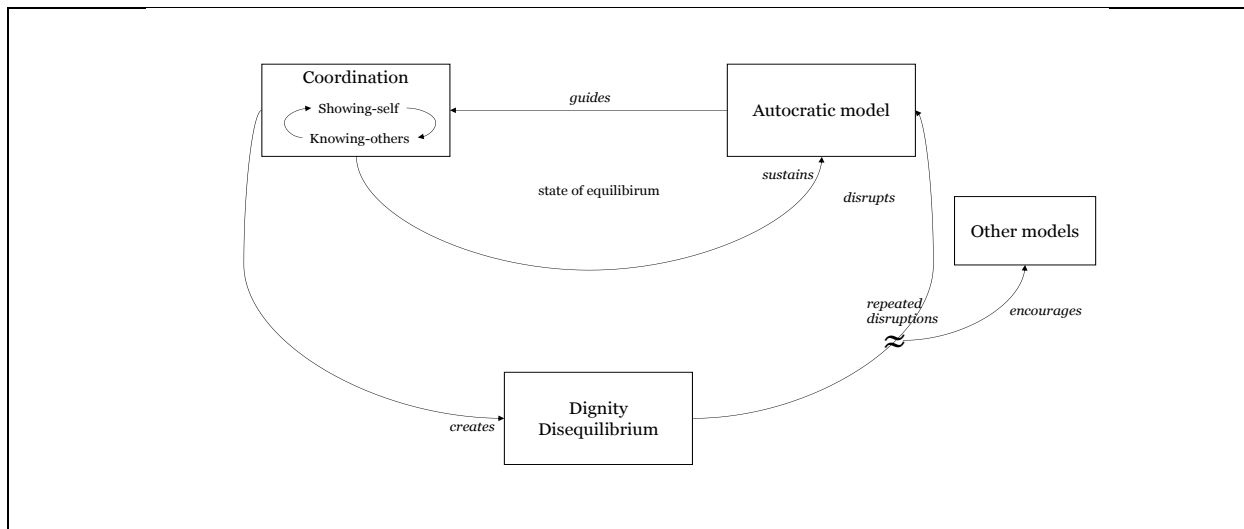

Figure 1: A conceptual framework of shaping governance model in open source projects

However, if contributors experience affronts to their dignity, whereas founders experience claims, a state of interpersonal disequilibrium will arise (see Table 2). In such a case, the conditions are ripe for a disruption to the autocratic model to happen, particularly if the disruption is repeated. After a delay, we would expect contributors to respond by seeking alternative authoritative structures that might possibly do without the founder (e.g., a possible fork). During such disequilibria, the founders' legitimacy might become questioned, possibly to the extent that they turn into symbolic figureheads without any clout to steer the

project or influence community values. This lack of legitimacy would negatively influence the founder's previously effective coordination. Founders then become *lame ducks*, losing their authority and their capacity to act as project coordinators. However, if the challenge to existing structures, governance, and practices by contributors results in no substantial changes, the founders may maintain their control *de facto*. In such a scenario, founders may turn into *tyrants*, probably no longer concerned with the well-being of their fellow project members.

	(Dis)equilibrium	**Autocratic model**
Founders coordinating open source projects through PDDs	Both founders and contributors experience claims to dignity (a state of equilibrium)	**Sustained** *BDFL*
	Interpersonal disequilibrium: Founders experience claims but contributors experience affronts	**Disrupted** *Lame duck* when effective disruption by contributors. *Tyrant* when ineffective disruption by contributors
	Intrapersonal disequilibrium: Founders experience both claims and affronts	**Disrupted** *Delegator* when effective disruption by founder
Table 2: Autocratic model changes through PDDs		

In the third scenario, founders may experience an intrapersonal disequilibrium as they might receive both claims and affront enabled by PDDs. In such a case, the founders will put into question the project's steering (e.g., community values or project goal) and coordination. In seeking to address their concerns, the founder's role might diversify and become more decentralized. That would potentially mean delegation of responsibility and shared decision making — morphing the founder's role into that of a delegator.

Whether and what role the founder keeps in those new authoritative models, which may be multiple in any open source project (Shaikh and Henfridsson 2017), depends on whether it is either the founder or the contributors that experience the disequilibria. A persistent state of disequilibrium will push founders and contributors to concentrate their efforts on seeking alternative forms of authoritative models for more favourable results.

Conclusion and Future Work

Founders are common figures in open source projects (Ljungberg 2000; Schneider 2022), but their role has often been overlooked. Key research has suggested that larger projects tend to create more sophisticated governance structures in time (O'Mahony and Ferraro 2007), yet even in those structures, founders remain present and influential. Indeed, Torvalds still maintains an important role in coordinating the Linux kernel (see Shaikh and Henfridsson (2017)), despite a momentary leave to reflect on his leadership after a heated community upheaval (Shoot 2018). In this sense, autocratic figures can remain present, with their roles morphing over time and creating hybrid governance roles that co-habit together. The purpose of this paper was to theorise the dynamic role of founders and their influence on the governance models of open source projects. Specifically, we aimed to examine their role in either sustaining or disrupting autocratic models within these projects. To this end, we blended the existing literature about open source governance and the CARE theory to propose a tentative conceptual framework. This framework contributes to the literature by proposing an alternative way in which governance models change and founder involvement morphs and persists.

In future work, we will refine the model by drawing on the literature on leadership in addition to that of open source governance. We also want to consider the PDDs enacted by project contributors, not just by founders, to obtain a wider understanding of the coordination process. We plan to study our theoretical proposition that links personal data digitalisation and dignity (dis)equilibria to governance models empirically by situating them within historical controversies, a common research process in open source (Curto-Millet and Shaikh 2017). Through a case study, we will deploy the CARE theory as a lens, to carefully analyse the digital traces of both founders and contributors not only in the public mailing lists but also

across various platforms and tools in relation to a particular open source project. We will investigate the type of data being shared during the coordination process, norms, and values communicated through PDDs. These will include the forms of dignity promoted or threatened, individual responses to affronts to dignity, conditions under which certain forms of disequilibrium are prevalent, and key events that will be helpful in explaining the changing roles of autocratic figures.

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