

ADAPTING GLOBAL POLICIES TO LOCAL CONTEXTS: DATA STEWARDS AND THE INTEGRATION OF OPEN SCIENCE IN HIGHER EDUCATION

Auriane Marmier

FORS
Switzerland
Auriane.marmier@fors.unil.ch
ORCID: 0000-0003-1488-3433

Stefan Stepanovic

UNIL
Switzerland
Stefan.stepanovic@unil.ch
ORCID: 0000-0002-4124-6643

Abstract – The increasing complexity and volume of research data have elevated the role of data stewards (DSs) in academia over the past decade. Positioned at the intersection of institutional compliance and researchers' practical needs, DSs navigate challenges in aligning global data governance norms with local academic practices. This paper employs an autoethnographic approach to explore four cases illustrating the multifaceted responsibilities of DSs. The findings reveal DSs as mediators within a “buffer zone,” balancing institutional mandates for compliance and open science against researchers' operational realities. Insights emphasize the need for flexible policies, strategic integration of DSs in policymaking and recognizing DSs' roles as vital to research innovation and data governance.

Keywords – Data steward, open science, academic freedom, buffer zone, autoethnography.

I. CONTEXT

Over the past decade, the apparition of the name data stewards has evolved significantly within the academic landscape. The exponential growth of research data, often referred to as “big data,” has necessitated the development of robust data management practices. This growth has been particularly pronounced in fields such as genomics, astronomy, and social sciences, where large datasets are generated and analyzed [1]. The need for effective data management has led to the establishment of the role of data stewards (DSs), who are tasked with overseeing the lifecycle of research data, from collection and storage to sharing and preservation [2], [3], [4]. Not only driven by the increasing volume and complexity of research data, the concept of data stewardship has also emerged as a response for researchers to comply with stringent data protection regulations, aiming to ensure proper data management practices, facilitate data sharing, and support researchers in navigating regulatory requirements [3], [5]. Regulatory

frameworks such as the General Data Protection Regulation (GDPR) in Europe have significantly shaped the role and responsibilities of data stewards. The GDPR mandates stringent data protection measures, requiring institutions to appoint data stewards to ensure compliance with these regulations (European Commission, 2019). Data stewards play a crucial role in implementing data protection policies, conducting data audits, and ensuring that researchers adhere to legal and ethical standards [5]. The push for open science and data sharing has been another major driver of the development of data stewardship. Open science initiatives advocate for the transparency and accessibility of research data, promoting FAIR practices that make data findable, accessible, interoperable, and reusable [6]. These principles have set a standard for research data management, encouraging institutions to adopt data stewardship practices that facilitate data sharing and collaboration across disciplines and borders. Thus, data stewards function as operational intermediaries, ensuring the alignment of quotidian data management practices with institutionally mandated data governance programs [7], and, these programs are frequently shaped by, and responsive to, evolving global policies.

One under-researched area in which the practical implications of adapting global norms to local behaviors have been explored is data stewardship in research institutions. According to [8], data stewards, who are disciplinary specialists responsible for managing research data, play a key role in the highly competitive global research landscape. Universities increasingly require robust data management strategies in order to excel in international rankings or secure international funding [9]. In light of this, a growing body of literature is beginning to explore the different data management models that have been implemented in academic institutions [10]. Among others, [10] describe and analyze distinct data stewardship programs at Purdue University (United States), Delft Technical University (Netherlands), and Aalto University (Finland).



Common to such studies is the lack of an empirical grounding in the lived experiences of concerned parties as they focus on comprehending the larger effects. In doing so, they often overlook the practical implications when global policies clash with or translate into concrete behavioral changes at the local level. This paucity of research on the DSs lived experiences, limits our understanding of the practical realities and challenges they faced. However, the environment in which DS operates is often complex and multifaceted, involving interactions with various stakeholders, including researchers, administrators, and IT personnel [2]. Therefore, understanding the environment in which DSs operate is crucial for several reasons. First, it can inform about the development of more effective data stewardship policies and practices that are tailored to the specific needs and challenges of different academic contexts [1]. Second, it can provide insights into the support and resources required by DSs to perform their roles effectively. Finally, it can contribute to the broader discourse on data management and open science by highlighting the practical realities of implementing data policies in academic institutions. Understanding the DS environment may allow for better alignment of researchers' needs with external imperatives such as open science, funders, or regulatory requirements.

II. AIMS AND METHODOLOGY

With this paper, we seek to explore the situations faced by a data steward who has to reconcile global ideals for research data management with the specific realities of academic institutions. To do so, this paper adopts an autoethnographic approach. This method systematically analyzes personal experiences to provide insights into broader cultural, social, or institutional phenomena [11], [12]. This autoethnography examines four lived experiences of a DS steward. The first case highlights the tension between institutional data storage requirements and the contractual obligations of researchers reusing sensitive secondary data. The second case illustrates the challenges of preserving decades of research data when a principal investigator suddenly passes away, exposing rigid institutional policies that hinder proactive data management. The third situation pinpoints the challenges researchers face in balancing compliance with data protection laws and the practicalities of using accessible yet insecure survey software. Finally, the fourth case underscores the administrative and practical challenges posed by requiring Data Management Plans (DMPs) to access institutional data storage.

III. DISCUSSION

In the first case, the researchers' decision to prioritize trust and adherence to their data provider's terms and conditions over university policies highlights the need for more flexible RDM solutions that address unique, real-world constraints. The second case, where the eventual solution relied on finding a successor to take responsibility, highlights the importance of flexible policies and contingency planning for the long-term management of

valuable research material. Despite recommendations to move to a compliant solution, the third case highlights that research deadline pressures and user preferences often make it difficult to adopt more secure alternatives, leaving compliance and data security uncertain. While intended to promote compliance and data stewardship, the fourth case shows that rigid policies and limited flexibility often burden researchers and data stewards, highlighting the need for streamlined processes and tailored solutions to bridge institutional requirements with researchers' realities.

While each case provides interesting findings, the four cases collectively highlight the multifaceted role of a data steward in navigating the complexities of academic research. The findings underline the role of the DS as a mediator. Throughout the experience, the DS appears to operate in two interrelated environments, each with its own objectives and pressures. On one side is academic bureaucracy, driven by the need to implement data protection laws, comply with institutional policies and promote open science initiatives. On the other is the reality of the researcher, which is primarily concerned with advancing knowledge and conducting research. Thus, between the demands of institutional policy and the dynamic nature of research activities, the DS appears to be in a 'buffer zone' trying to balance the competing interests of institutional compliance and the practical needs of researchers. Its role is not only to assist researchers with practical issues such as data storage and security, but also to ensure that researchers comply with legal, institutional and international requirements in a dual environment where requirements rarely apply to academic research. This unique position requires data stewards to enforce compliance with data protection regulations while fostering an environment that supports academic freedom and innovation.

The findings discussed in our paper highlight several implications, including critical aspects of the evolving role of data stewards within academic institutions, particularly as they navigate the tension between global data management standards and local research realities. At an institutional and policy level, implications include the need for flexibility in policies, alignment with global standards and local needs, and the involvement of DSs in strategic decision-making. From a researcher-focused perspective, our findings suggest that researchers should be empowered through training and awareness-raising, and that DS should be better equipped to provide robust support for the dual pressures researchers face - advancing their scientific goals while complying with institutional, legal and ethical requirements - and not just help with technical issues. Our findings also have operational implications for the role of DS. While expanding the scope of data stewardship seems essential, allocating appropriate resources and developing data stewardship as a clear career path seems equally important.



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