

Knowledge as Infrastructure: The Economy of Private Ownership in Digital Academia

Cameron Cyprain
Business Administration
March, 2026

Faculty Adviser: Rachel Endo, Ph.D., SPHR

Essay completed in partial fulfillment of the requirements for graduation with Global Honors,
University of Washington, Tacoma

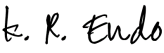
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Approved:

Signed by:

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Faculty Adviser

4/24/2026

Date

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Associate Vice Chancellor, IIGE

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I. Introduction

A single data center failure in Virginia on October 20, 2025 took the learning management platform Canvas offline across hundreds of institutions simultaneously. At the University of Washington Tacoma and campuses nationwide, many classes were cancelled as instructors and students lost access to course materials and assignments with no warning and no recourse. Dr. Corinne Cath-Speth, head of digital at human rights organization Article 19, warned that critical infrastructure cannot depend on a handful of companies and that diversification in cloud computing is urgently needed (Milmo & Wearden, 2025). This is not an isolated technical failure. It is a symptom of a structural condition in which the digital infrastructure sustaining academic life is owned, operated, and governed by private firms whose interests do not always align with those of the communities they serve.

This paper argues that academic knowledge production functions as a knowledge commons, and that the privatization of digital knowledge infrastructure (DKI) introduces governance failures that resemble Common-Pool Resource (CPR) dilemmas. A knowledge commons is a system of resources produced and managed collectively according to shared community rules. A CPR dilemma arises when shared resources are governed by parties whose incentives differ from those of the communities that depend on them. Applying the Institutional Analysis and Development (IAD) framework developed by Ostrom (2015), this paper examines the actors, rules, and incentive structures that shape how scholarly platforms operate, with particular attention to access, data governance, and student privacy. Supplementary context is drawn from interviews conducted with the Director of Digital Learning at the University of Washington Tacoma between November and December 2024.

This paper moves from theoretical grounding in CPR theory and the history of academic knowledge as a commons, through empirical analysis of publisher consolidation and LMS governance failures, to implications for cooperative reform. The goal throughout is to show that the current arrangement is not an inevitable outcome of technological progress but a failure of governance, and one that the academic community has both the standing and the means to address. To understand why this matters, it helps to first examine what defines a commons, how shared resources succeed or fail as institutions, and how those dynamics apply to academic knowledge systems.

II. Knowledge Commons & CPR Theory

Several decades of documentation reveal governance failures impacting modern digital knowledge infrastructure. To appreciate the immediacy of the situation, it's useful to briefly review what defines a commons, how they succeed or fail as institutions, and how those dynamics apply to academic knowledge systems. A common-pool resource is "a natural or man-made resource system that is sufficiently large as to make it costly (but not impossible) to exclude potential beneficiaries from obtaining benefits from its use" (Ostrom, 2015, p. 30). Classic examples include fisheries, groundwater, and shared pastures. Garrett Hardin argued that such resources succumb to overexploitation because self-interested individuals will always consume more than they need or that the source can sustain. Elinor Ostrom argued against this point of view, showing that communities are capable of governing shared resources effectively, without the pressure of distant governments or total privatization, assuming proper institutional conditions exist (Anderies & Janssen, 2013, p. 3).

Ostrom outlined these conditions as a set of design principles observed in “Design Principles Illustrated by Long-Enduring CPR Institutions” (2015, p. 90). Those most pertinent to digital knowledge infrastructure are:

1. **Clearly defined boundaries** governing who can access the resource and on what terms,
2. **Collective-choice arrangements** that allow those affected by the rules to participate in changing them,
3. **Monitoring by parties** accountable to the user community rather than to outside interests,
4. **Minimal recognition of rights** to organize, meaning that users’ ability to arrange their own governance institutions is not overridden by external authorities.

By understanding the components of digital knowledge infrastructure as institutional arrangements, we can recognize the tragedy of the knowledge commons as a failure of effective governance rather than an inevitable outcome of technological progress. These failures are partially and indirectly driven by the demand for secure, reliable, and high-quality digital services and tools. It is understandable that centers of learning outsource core operations to streamline administration, delivery, and tracking of educational content while reducing costs.

Viewing DKI through the lens of the Institutional Analysis and Development (IAD) framework reveals opposing interests and a lack of collective-choice in relation to many academic platforms. It also helps to distinguish between different layers of decision and rule-making that shape academic labor and knowledge production. Establishing clear divisions of interest and responsibility is essential for maintaining the integrity of academic research and learning at both the individual and institutional levels. Slaughter and Rhoades (2004) assert, “Disinterestedness stresses that scientists should not have a stake in the outcome of their research. Intellectual property policies create an interest in outcomes by attaching monetary incentives to discovery” (p. 115).

The following illustrates how digital knowledge infrastructure can be analyzed using the IAD framework:

Modified Institutional Analysis and Development (IAD) Framework

Adapted from Ostrom (2011)

1. Resource System or Units – Public goods (knowledge), club goods (learning management system access), and common-pool resources (student data and digital privacy).

2. Actors – Universities, faculty, students, regulators, libraries, publishers, private equity firms, and platform vendors.

3. Rules-in-Use (Operational, Collective-Choice, Constitutional) – Procurement contracts, data governance policies, FERPA compliance, surveillance defaults, copyright transfer agreements, subscription contracts, paywalls, and tenure incentives.

a. Boundaries determine who has access to which platforms (strictly payment or institutionally based).

b. Choices define what libraries and scholars are required to do to gain and maintain access.

c. Aggregation rules shape how decisions are made, and the logic behind the used.

4. Action Situations – Publishing decisions, subscription negotiations, learning management system adoption, and vendor data usage practices.

5. Outcomes – Unequal access, reduced vendor flexibility, institutional budget strain, and the commodification of academic data.

6. Feedback Loops – Outcomes that reinforce publisher and platform dominance, further entrenching dependency and limiting institutional autonomy.

This analysis highlights how consolidation within DKI is sustained not only by market power but also by institutional regulations, rules, and incentives that constrain collective governance and user rights: “The bigger the distance [between users and providers], the less the practical knowledge from resource users is included in creating institutional arrangements” (Anderies & Janssen, 2013, p. 391–392). That distance, and its consequences, becomes clear

when tracing how academic knowledge systems were originally structured and how they changed.

III. Academic Knowledge Production as a Commons

The academic knowledge system was not always so reliant on commercial products. For most of the twentieth century, scholarly communication operated according to what Slaughter and Rhoades (2004) describe as a public good model, in which “Mertonian norms — such as communalism, universality, the free flow of knowledge, and organized skepticism — were associated with the public good model” (p. 10). Under this model, knowledge produced in universities circulated freely among researchers, was evaluated on its merits rather than its commercial potential, and remained distant from the financial interests of its producers. These norms were professional customs and the operational foundations of the academic commons, determining who could contribute to research, how contributions would be evaluated, and what researchers owed one another as members of a shared endeavor.

This arrangement faced pressures as the boundaries among and between universities, industry, and government became less clear. Etzkowitz and Leydesdorff (1995) mention this cycle as a triple helix of relations among the three sectors, arguing that such a configuration was “likely to be a key component of any national or multi-national innovation strategy in the late twentieth century” (p. 2). What had previously been separate institutions began to overlap. As Etzkowitz and Leydesdorff observed, “the various systems which previously could be considered as functionally differentiated, tend to be integrated at various levels of structure” (p. 3). Universities became sites of technology transfer and patent development. Federal research

funding increasingly favored applied work with commercial potential, and industry partnerships became a symbol of institutional value rather than a conflict of interest. The commons did not disappear, but the conditions under which it operated changed.

Slaughter and Rhoades use the term “academic capitalism” to describe the current order. Under the new conditions, corporations treat advanced knowledge as “a raw material that can be claimed through legal devices, owned, and marketed as a product or service” (2004, p. 7). Intellectual property rights extended this logic toward the university, with institutions claiming ownership over faculty and student work and licensing it back into the market. The effect on the commons was immediate: rather than preserving an intellectual commons to which all members had rights, intellectual property policies transformed the academic community into a mine (Slaughter and Rhoades, 2004, p. 114). A mine produces outputs for removal, not circulation. It concentrates ownership rather than distributing access. It’s not designed to replace what is used.

The platforms, software, and firmware that now support academic activity continue to operate within this political economy, and the same trends toward centralization that altered the academic publishing market and intellectual property rights impact the work of scholars and how their information is stored. The scale and speed of that centralization becomes evident when examining how ownership of academic infrastructure has consolidated in practice.

IV. The Privatization of the Academic Infrastructure

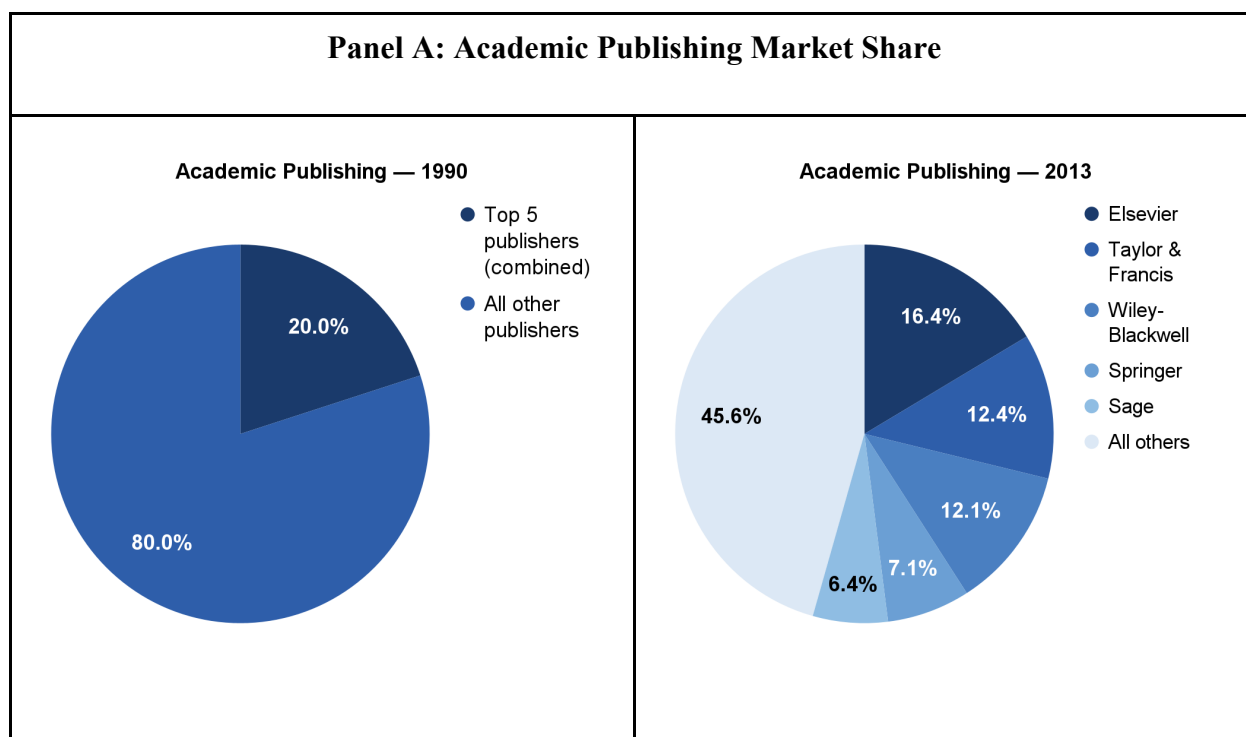
The consolidated ownership of online academic infrastructure creates a unique and brittle market scenario where publicly-funded research and education are overly reliant on external

administrative systems. Public institutions operate under budget constraints despite recent national funding increases, as recovery has been uneven following the 2008 recession. Twenty-two states still appropriate less funding per student than they did before the Great Recession, leaving many institutions with limited capacity to build or maintain independent infrastructure (State Higher Education Executive Officers Association, 2024).

Corporate directors are expected to act in the best interest of their corporations, which often means maximizing profits for shareholders. Legislators generally assume the public duty to act in the best interests of the general public. Academics have a duty to uphold quality standards in their teaching, studies, and research, though aside from the prestige and rewards due for their scholarly advancement, the incentives are of a different character than financial gain or political power. When appropriately funded and supported, the academic realm has the potential to provide individuals and organizations the opportunity to explore new ideas in a controlled environment that is not profit-motivated in the same way as a corporation, and is not subject to the potentially vast consequences that can result from poorly drafted or enforced policies. This operational freedom and autonomy is currently at risk due to outsize corporate stakes in the digital infrastructure used in the academic sector.

The academic publishing market illustrates how quickly consolidation can develop once distribution costs decrease due to technological advancements, as described by Larivière et al., (2015, p. 3) in the charts below. In natural and medical sciences, the top five publishers held just over 20% of all published output in 1973. That share rose to 30% by 1996 and crossed 50% by 2006. In the social sciences and humanities, the shift was even more dramatic, with the top five

publishers controlling under 10% of output in 1973 and more than 51% by 2013. As shown in Panel A, this consolidation increased sharply with the advent of digital publishing:

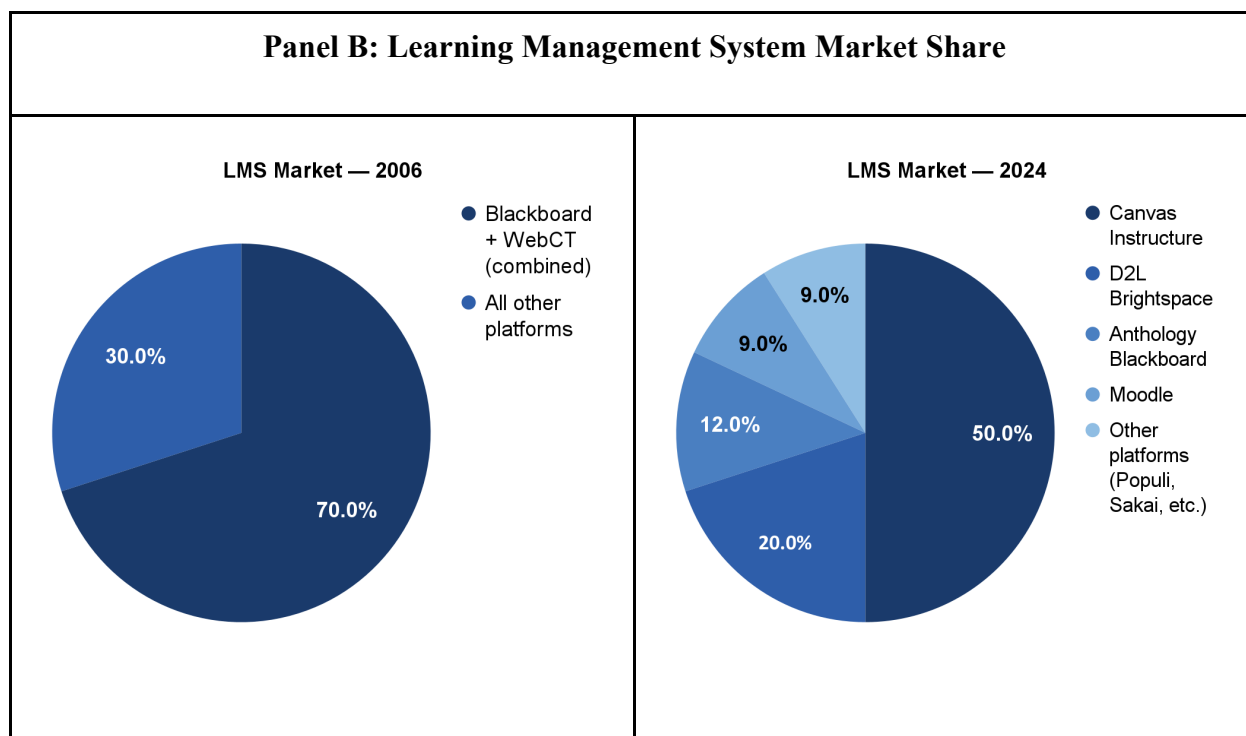


Note: Data from Larivière et al. (2015).

Academic journals are unusual goods: authors usually contribute their work without compensation, most peer reviewers provide quality control for free, and once a journal is hosted online, the expense of each additional subscription diminishes. As Larivière et al. lay out, “in a system where the marginal cost of goods reaches 0, their cost becomes arbitrary and depends merely on how badly they are needed” (2015, p. 12). Copyright transfer agreements reinforce this dynamic. When researchers submit work to commercial journals, they are typically required to sign over ownership of their work to the publisher as a condition of publication. The institution that funded the research, and often the public that funded the institution, must then pay to access it through subscription contracts that libraries have little power to negotiate. This

arrangement is not incidental to the consolidation described above. It is one of the legal mechanisms that sustains it. The result is profit margins that simulate those of industrial giants in other sectors. Reed-Elsevier's scientific division maintained margins above 30% over time, reaching 38.9% by 2013. Springer reached 35%, and Taylor & Francis 35.7% in the same period (Larivière et al., 2015, p. 10). Academic libraries, which contribute between 68% and 75% of journal publishing revenues, have little negotiating power because each journal is effectively irreplaceable (Larivière et al., 2015, p. 11).

The learning management system market follows similar trends, as seen in Panel B. In 2006, Blackboard and WebCT together held roughly 70% of the institutional market. By 2024, Canvas alone accounted for 50% of enrollments, with Anthology Blackboard and D2L Brightspace holding another 32% between them (Feldstein, 2018; Hill, 2025). A few of the available options are free or open-source to a degree, with Zotero fitting both qualifications, but most are some form of freeware with subscription options to unlock a broader range of functionalities. Most are the product of a for-profit entity that is itself owned by a large multinational corporation. This means that if any of these products fail to remain economically viable, the owning companies can dissolve them entirely and at will, barring any legal agreements to be made or enforced between them and centers of learning. Increasingly, they also have the ability to adjust prices and modify functionalities as they see fit, regardless of the needs and demands of their users.



Note: 2006 data (measured by institution count) from Feldstein (2018); 2024 data (measured by enrollment) from Hill (2025).

The risks associated with this distribution of control are real. Heavy use of services provided by Pearson and McGraw Hill for coursework and textbook access condition instructors and students to rely on enclosed ecosystems that do not allow for data transfer. Pricing leverage increases as competitors leave the market, leaving universities with shrinking options and growing subscription costs that libraries have little leverage to negotiate down (Larivière et al., 2015, p. 11). Access becomes conditional as subscription requirements exclude researchers and students at less-resourced institutions. Control over research practices shifts toward platform vendors when the tools used to organize, cite, and publish work are privately owned. The obscure collection of behavioral data of students and faculty, where LMS vendors and academic publishers monitor what they read, search, and submit, creates privacy risks that multiply when a single company controls multiple points of access along the academic workflow.

These risks are worsened by the invisibility of knowledge infrastructure maintenance: “Invisible work is a salient characteristic of knowledge infrastructures, because labor to document, organize, and manage scholarly information is essential for others to discover and exploit it” (Borgman, 2015, p. 34). A lack of intermutual coordination in privatized digital knowledge infrastructures go mostly unnoticed because the infrastructure continues to function until malfunctions are near impossible to ignore. By the time consolidation becomes obvious between infrastructures, dependency is deeply established. The learning management system market illustrates this dependency in concrete terms, and reveals how privatized infrastructure fails the communities it serves..

V. LMS Platforms as a Microcosm of Privatized Infrastructure

The conditions described earlier lead to scenarios that align neatly with her design principles for a sustainable commons, particularly at the institutional level. These include reduced transparency and accountability over shared data resources, and a loss of control among the resource-dependent communities.

The first condition concerns observers and those responsible for the resource. Ostrom’s first design principle requires that the boundaries of a CPR and the identities of authorized users be clearly defined. Her fourth principle requires that monitors be accountable to users, or be users themselves. Concerning LMSs, both conditions fail simultaneously. Dowell and Greenhalgh (2025) find that students are broadly unaware of what data Canvas collects, who has access to it, and how learning analytics inform institutional decisions about their academic

performance. FERPA, the federal law governing student educational records, offers limited protection in this context (Family Educational Rights and Privacy Act, 1974). Written before cloud-based platforms existed, it does not adequately address the behavioral and analytical data that LMS vendors routinely collect, leaving a significant gap between its protections and the realities of modern academic infrastructure (Parks, 2017). As they state, “big data collection in higher education typically deploys a mandatory participation method through LMSs, which opens up student vulnerability without consent” (p. 2).

The data commons are not bound by the academic community, but by terms of service and revised, usually as desired by the vendor. Private firms are the monitors. Instructure, the company that originally launched the LMS Canvas, tracks student and faculty behavior, collects analytical data, and reports back to institutions as it sees fit. The community is generally beholden to the monitor and not the other way around. This is by design, and what happens when shared governance resources are outsourced to profit-seeking intermediaries that are not obligated to the academic commons.

The second condition concerns the rulemakers and changers. Ostrom’s third design principle explains how most individuals affected by operational rules must be able to participate in any revision process. Her seventh principle holds that the rights of users to form their own arrangements should not be infringed by external authorities. LMS governance violates both conditions. Turnbull, Chugh, and Luck (2022) find that most universities rely on generic institutional IT policy rather than LMS-specific governance protocols, which means the operational rules of the platform are effectively set by vendor contracts as opposed to the

academic community and institutional administrators. Students and faculty endure the consequences of these rules and have few ways to reliably challenge them. Long-term contracts exacerbate this problem. For example, when an institution commits to a multi-year Canvas agreement, it gives up its right to build alternative arrangements for the duration of that contract. Turnbull et al.'s recommendation that LMS policy be platform-neutral and adaptable to unforeseen circumstances is, in Ostrom's terms, a way to restore Principle 7, which is the community's right to govern itself rather than being governed by commercial interests.

Together, these two conditions show that the LMS is not only a tool that poses privacy concerns. It is a governance arrangement that concentrates power, monitoring authority, and control over shared resources in the hands of a private infrastructure provider. The communities that are closest to the consequences of failed platform governance, including students, faculty, and academic librarians, are the furthest from the decision-making process.

These are not hypothetical risks. Anthology Inc., the parent company of the Blackboard LMS and Anthology Ally, a digital accessibility platform, filed for Chapter 11 bankruptcy on September 29, 2025. This followed an accumulation of over \$1 billion in debt through a growth-by-acquisition strategy (Hill, 2025). Annual debt consumed 41% of total revenues, while revenue itself fell by \$80 million over the previous two years (Saul, 2025). Blackboard continues to operate under new private equity ownership, while Anthology's student information and lifecycle engagement systems are being transferred to Ellucian and Encoura, respectively. For institutions mid-contract with Anthology products, the bankruptcy produced exactly the scenario that long-term vendor dependency makes difficult to escape: a period of uncertainty about

product direction, data continuity, and support obligations, with little practical ability to seek alternatives on short notice. The October 2025 AWS outage, described in the introduction, demonstrated exactly this vulnerability at scale. AWS claimed the failure stemmed from its US-East-1 data center in Virginia, with experts describing the domino effects as enormous (Associated Press, 2025).

Both cases reinforce Ostrom's framework predictions: when monitoring authority and control are held by parties with little accountability to the user community, the commons is exposed to failures that the community itself has an impaired ability to prevent. The outage also prompted regulatory scrutiny in the United Kingdom, where the House of Commons treasury committee wrote to the economic secretary to the Treasury questioning why Amazon had not yet been designated a critical third party to the financial services sector, a status that would subject the company to formal regulatory oversight (Milmo & Wearden, 2025). That this question was raised only after a major outage, rather than before, reflects the reactive nature of governance frameworks relative to the pace of platform consolidation. Understanding why that is so difficult to change requires looking at the incentive structures that keep institutions locked into these arrangements.

VI. Cooperation, Defection, and Sustainability

When platform administrators prioritize finances over community, the parties that rely on the infrastructure lose effective ways to regulate or replace those administrators and cooperation becomes difficult. On self-interested actors, Axelrod (2006) explained both why this happens and what is needed to make improvements.

Axelrod argues that, under certain conditions, cooperation can occur between actors without central authority. Regarding the shadow of the future: “what makes it possible for cooperation to emerge is the fact that the players might meet again... the future can therefore cast a shadow back upon the present” (2006, p. 20). When actors expect to interact, defection becomes undesirable because retaliation is a more tempting option. Lopsided relationships weaken that constraint. In the academic publishing market, the shadow of the future is unbalanced. Publishers and platform vendors operate across many institutions at the same time and can handle the loss of any one contract. Universities negotiate individually, risk high transition costs, and may not be able to leverage their powers to leave. The repeated game that Axelrod’s model requires does not exist on the institutional side.

The result is a vicious cycle. Publishers raise their prices on goods and services because institutions cannot leave or lack other viable options. Institutions renew contracts because alternatives are too demanding on time and finances to build. Vendors expand data collection because governance frameworks have not kept up. Each renewal without renegotiation makes the dependency more difficult to escape. Axelrod presents four elements needed for effective cooperation: “avoidance of unnecessary conflict, provocability, forgiveness, and clarity of behavior” (2006, p. 49). Currently, the academic community satisfies none of these. Institutions take on price increases and lack a coordinated way to resist.

Reducing that asymmetry means building infrastructure that the academic community owns and governs itself. There are already several established and developing models. The

Public Library of Science, founded in 2001, is a nonprofit publisher of free peer-reviewed research (PLOS, 2025). arXiv, maintained by Cornell University, has offered open access to STEM information since 1991 (arXiv, 2025). Moodle is a free and open-source (FOSS) learning management system used by institutions worldwide. It is governed by a network of partner organizations, not a single corporate owner (Moodle, 2025).

It is worth acknowledging that commercial platforms persist in part because institutions have chosen them for legitimate reasons. Canvas and its competitors generally offer reliable infrastructure, dedicated support, and continuous development that many universities may struggle to replicate independently given current funding constraints. Consolidation is not simply imposed on the academic community, as it reflects real tradeoffs that administrators face. The problem is not that commercial platforms exist, but that the governance arrangements surrounding them tend to leave the communities most affected by their failures with limited ability to participate in the decisions that shape them. Reliability and accountability are not necessarily in conflict, and the cooperative models discussed here suggest that institutions may be able to pursue both

What these examples show is that authority remains in the hands of those who depend on the resource. As Ostrom might say, the community defines the boundaries, monitors answer to users, and appropriators keep the right to change rules. Axelrod may refer to the shadow of the future, having been restored since the relationship between infrastructure and user is governed by shared interests rather than a contract written by the vendor.

Cooperative infrastructure has its own set of challenges. Open-source projects require ethical and reliable labor pools to maintain, and that labor is often invisible and underpaid. Funding models that depend on grants face the same budget risks that drive institutions toward the same consolidated platforms as these thesis documents. Sustainability is not one problem but several, as research applying Ostrom's framework to open-source commons finds, and solving one does not solve the others (Curto-Millet & Corsín Jiménez, 2022). The R Project for Statistical Computing, WorldCat, and Open Library each handle these issues in their own way, utilizing a mix of volunteer labor, institutional support, and endowments. None have fully solved the problem, but they show that these problems can be managed. What remains is to consider what further work is needed to build on these models and address the gaps this paper cannot fully resolve.

VII. Implications for Future Research

There are rich opportunities for future research. Despite decades of recorded governance failures, there is little comprehensive guidance that offers a broad strategy to transition. Budget pressures and vendor dependency in higher education and other sectors must be addressed at a systemic level. More researchers should examine how institutions select vendors and stress the importance of multi-level input, from students to chancellors/presidents and university governing boards. The conditions that potentially lead to vendor lock-in should be closely considered.

The integration of AI tools into existing platforms offers a recent and local example of how vendor decisions can bypass the multi-stakeholder input that effective governance requires. Interviews conducted for this paper, including those with the Director of Digital Learning at the

University of Washington Tacoma between November 24 and December 11, 2024, found that OpenAI was integrated into Canvas without prior input from most employees or students. UW did, however, publish its AI Guidelines, a “document that sets expectations for safe, fair, and transparent use across teaching, research, and administration” (Afzal, 2025). While the guidelines represent an institutional attempt to establish accountability for AI use, they were published after OpenAI had already been integrated into Canvas, illustrating a pattern where governance responses follow deployment rather than informing it. This sequencing is itself a governance failure consistent with the CPR dilemmas described throughout this paper. The University of Washington’s in-house AI platform, AI Purple, also highlights difficulties that come with self-hosted options despite a \$10 million private investment. The launch was undermined due to budget shortfalls (Collins, 2026a), and it appears that AI Purple was developed to acknowledge the popularity of large language models (LLMs) and chatbots rather than as a long-term platform solution for students, faculty, and staff. Future researchers should look into what governance structures would make AI tools in academic settings more accountable to the communities they serve, particularly with respect to ethical use, student privacy, and transparency in how automated systems inform academic decisions.

Organizing labor for cooperative infrastructures is also worth looking into. This thesis provides open-source and nonprofit platforms as viable examples, but acknowledges that sustaining them requires ongoing labor that is often underfunded. One model to be explored is an organized work-study or apprenticeship program: university students could gain relevant experience by contributing to the platforms they use regularly. This would also instill a sense of personal investment and obligation, providing institutions a cost-effective and purpose-aligned

labor option. Research into the design and outcomes of such programs would address gaps this thesis identifies but cannot fully draw out. Institutional budget proposals can strengthen arguments for self-hosted infrastructure by explicitly linking centralized cost savings and revenue retention to long-term operational autonomy. By demonstrating that self-hosted solutions reduce recurring third-party fees and align financial incentives with mission-driven goals, proposals can frame infrastructure investment as a strategic necessity for fiscal sustainability rather than a discretionary expense. This approach allows institutions to justify capital expenditures by showing how self-hosting enhances transparency, accountability, and the ability to redirect resources toward emerging academic priorities without reliance on external vendors.

The exploitation of the academic commons is a consequence of capitalistic pressures (Slaughter & Rhoades, 2004), and governance failures follow predictable patterns regardless of the resource (Ostrom, 2015). These challenges are not unique to higher education. Public schools, libraries, and civic institutions face similar risks. Future researchers should examine whether the framework developed here applies to other public institutions, and whether cooperative infrastructure models from higher education could serve as templates for broader access and equitable use.

VIII. Conclusion

The consolidated ownership of digital knowledge infrastructure produces a brittle and patterned governance arrangement. Publicly funded research and education have become overly reliant on external administrative systems whose operators appear to answer to more

shareholders rather than to the academic communities they serve. This is a market as well as a failure of the commons, as framed by Ostrom (2015). Centralized control over shared resources and rule-making authority threaten conditions that sustain healthy cooperation and management.

Axelrod's cooperation theory explains sustainable governance's dependence on expectations of the future, where all relevant parties expect to interact again, making short-term defection costly in the long run. These conditions are not suitable within modern academia and the platforms that sustain the enterprise. Lengthy procurement cycles, data lock-in, and a lack of portable standards reduce institutional leverage, and give vendors little incentive to act in the interest of their users. This will likely lead to a gradual defection spiral, causing service degradation, unrestrained data collection, and increased access costs. The analysis presented here mostly draws from the North American higher education context, and its suggestions may not fully apply to institutions operating under different funding structures or regulatory frameworks. Future work incorporating broader stakeholder perspectives would also strengthen the empirical foundation of the claims made.

As students, faculty, and researchers continue to funnel into a closed, vertically integrated education stack, less of the value generated by academic work will return to the public. Systematic failures will persist until they are so dire that all "players" – academia, government, and industry – scramble toward a mutually acceptable resolution. Privatization tends toward opacity, and "the invisibility of the work required to keep all the components [of the knowledge commons] interacting smoothly is a defining characteristic of infrastructure. The invisibility of this labor also highlights the tensions between stakeholders" (Borgman, 2015, p. 228).

Absolute paths toward more sustainable governance may not be practical, as “neither the state nor the market has been uniformly successful in solving common-pool resource problems” (Ostrom, 2015, p. i). Open-access publishing, cooperative platform development, and exchangeable data standards are all viable and functioning alternatives to the current arrangement. The academic community, despite its current challenges, has the resources and expertise to continue development on self-hosted and shared systems. What must follow is more than organizational will. The academic community has an obligation to the students, researchers, and faculty whose data, access, and autonomy depend on how this infrastructure is governed and maintained. Treating that obligation as secondary to cost efficiency or administrative convenience is itself a governance failure, and one that platform contracts cannot always resolve.

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Appendix A: Interview Summary

Interviews were conducted with a Director of Digital Learning at the University of Washington Tacoma across four sessions between November and December 2024. Sessions took place in person on November 24, December 1, December 10, and December 11, 2024.

Interviews were informal and conversational in nature. No formal protocol was used and the research was exempt from human subjects review by the Global Honors Program

Topics discussed included the AWS outage of October 2025 and its impact on campus operations, the implications of Anthology Inc.'s Chapter 11 bankruptcy filing for institutions mid-contract with Blackboard products, the integration of third-party AI tools into Canvas without institutional consultation, UW's status as a Microsoft campus and the resulting friction with Google-integrated workflows, and the University of Washington's development of its AI platform, Purple.

Key observations from the interviewee are cited in Section VII of this thesis.