

Facebook for Professors: Academia.edu and the Converging Logics of Social Media and Academic Self-Branding

Brooke Erin Duffy
Cornell University
bduffy@cornell.edu

Jefferson Pooley
Muhlenberg College
pooley@muhlenberg.edu

Note: This manuscript represents a pre-peer-review version of the paper.

The San Francisco headquarters of Academia.edu are difficult to distinguish from any other Bay Area tech startup: the décor is understated but hip, with comfy lounge chairs, strands of white lights canopying the walls, and the requisite foosball table. Workers—overwhelmingly white, predominantly male, and often clad in jeans and sneakers—hash out ideas over boba tea, IPAs, and “free lunch” (an employee perk).¹ Richard Price, who founded the site in his twenties, even talks like a Silicon Valley disruptor: “I think any startup should be inspired by Gandhi’s quote, ‘Be the change you wish to see in the world’” (Job Portraits, 2015).²

But Academia.edu stands out from companies like Lyft or Luxe in telling ways. The typical startup presents itself as a business first. Academia.edu, by contrast, foregrounds its mission to “accelerate the world’s research” as a public-spirited champion for open access to scholarship. Indeed, some academics have hailed it as “a significant addition to the scholarly communication and academic information-seeking eco-structure” (Thelwall & Kousha, 2013, p. 721). Price, moreover, is not the typical, bootstrapping Silicon Valley entrepreneur working out of his parents’ garage. He started Academia.edu after completing a philosophy doctorate from Oxford, motivated—according to press accounts—by frustration with the “inefficiency in academic publishing” (Shema, 2012).

Price’s company, Academia.edu, provides a platform for scholars to share their research without the financial barrier of a paywall or the temporal lag of academic peer-review. The site bills itself as a social networking platform for researchers, and it’s been informally dubbed “Facebook for academics.” Our argument is that the analogy to Facebook and other mainstream social media is all-too-fitting: the careful impression management endemic to popular social networking sites is pervasive on Academia.edu, too. These overlapping practices derive, we argue, from a shared imperative: to brand the self. Like other cultural workers, academics are increasingly called on to “creat[e] a brand” (Meyers, 2012)

and “curate [a] digital identity” (Marshall, 2015). In the face of employment precarity, cultural workers—and to some extent the laboring public at large—feel compelled to present a distinctive and appealing front to audiences and would-be employers. Working in a university “sector” hitched (more and more) to market values, academics have come to experience similar pressures to promote themselves as brands. The widespread uptake of Academia.edu—the site boasts enormous engagement—surely reflects these self-branding imperatives. Our claim in this paper is stronger: Academia.edu’s marketing, its design and user-experience, and its venture-capital business model, taken together, serve to *amplify* the logic of self-branding among scholars. The site’s fixation on analytics, in particular, reinforces a culture of incessant self-monitoring—one already encouraged by university policies to measure quantifiable “impact.” If academics are experiencing a “metric tide” (Wildson et al., 2015) imposed from above, Academia.edu is prodding us to internalize its analytics mindset. Drawing on an analysis of the site’s design/features as well as press coverage and corporate communications, this article analyzes three overlapping facets of Academia.edu: (1) the site’s business model; (2) its platform affordances; and (3) its user experience. We argue that the company, like mainstream social networks, harnesses the content and immaterial labor of users under the guise of “sharing.” We conclude by identifying the stakes for academic life, when entrepreneurial and self-promotional demands brush up against the university’s knowledge-production ideals.

Self-Branding in the Social Media Age

Against the backdrop of advanced capitalism, as marketplace logics infiltrate nearly all realms of social life, individuals are encouraged to think of the *self* as a branded commodity. Production of the self-brand, as Hearn (2008) has argued, “involves creating a detachable, saleable image or narrative, which effectively circulates cultural meanings” that are drawn from mainstream media and culture industries (p. 198). It is true that the imperative to stage-manage an attractive front has a much longer history, as we have argued elsewhere (Author, 2010). The call for strategic impression-management—with the aim to win friends and influence people—was a notable feature, for example, of 1920s U.S. consumer culture. Yet discourses of self-branding have mushroomed over the last decade, in parallel with the rapid ascension of social media sites, which are especially propitious platforms for the curated self (e.g., Author, 2010; Banet-Weiser, 2012; Marwick, 2013).

Somewhat predictably, injunctions to brand the self are overlaid on ideals about employability, professionalism, and self-enterprise—or what business tycoon Tom Peters (1997) called, in his widely circulated *Fast Company* manifesto, the “The CEO of Me Inc.” But these directives are no longer the province of management gurus and marketing acolytes; in today’s hyper-competitive employment market, workers in such diverse fields as healthcare, religion, and education are encouraged to cultivate and maintain a personal brand. Even physicians are counseled to practice self-branding: “Staying unique, but approachable,” a consultant advised medical practitioners, “will help your business and your patients as well” (Smithson, 2012).

Discourses of brand-building and impression-management are especially pronounced within the media and creative industries. Though these career fields have long been marked by heightened barriers to entry and pronounced social stratifications, the unstable nature of creative work has intensified in recent years, a result in part of a global financial crisis that has led organizations to replace full-time employees with freelance, contract-based, and—increasingly—uncompensated workers (e.g., Gill, 2010; Gandini, 2016; Ross, 2010). In response to widespread precarity, independent workers are advised to be malleable and self-enterprising; they are encouraged to “behave like brands” (Blandford, 2009) and recognize that “life’s a pitch” (Gill, 2010). Status-enhancing, reputation-building activities take place in offline—and increasingly—online contexts as creative workers aim to cultivate a uniquely identifiable personal brand (Hearn, 2008; Hearn, 2010; Marwick, 2013). Developing a webpage, crafting social media profiles, and interacting with fans and clients across networks are understood as mandatory practices when, as a freelancer in Randle and Culkin’s (2009) study explained, “Finding the work is the job” (p. 101). Or, as a *Huffington Post* writer quipped, “You’re only as good as your last tweet” (Lauren, 2013).

Recent studies of creative workers have documented the self-promotional strategies they deploy, including participation in virtual modes of network sociality, seemingly all hours of the day (Wittel, 2001; Gregg, 2011). Baym (2015), for instance, details the “relational labor” of musicians who “foster and sustain ongoing interaction” in order to build fan communities. Social media aspirants, likewise, work to build their followers and fans to comply with a social media economy that privileges indexes of “influence” (Author, 2014; see also, Gandini, 2016). Similar branding logics animate workers in other fields of creative or media work, including in the “glamour laborers” of the modeling world (Wissinger, 2015); artists and photographers who rely on crowdfunding (Davidson & Poor, 2015); and journalists increasingly socialized to practice strategies of entrepreneurialism (Cohen, 2015). Though these investigations cut across industries—music, art, journalism, and a cluster of “new media” professions—they identify similar trends for creative and cultural workers, all of whom must engage in labor that is *value-generating* but often *uncompensated*.

To the academic reader, these injunctions—to brand the self, to build one’s social capital as an investment in the future, to remain “visible,” and to validate one’s impact through quantifiable metrics—may seem jarringly familiar and, as we argue in the next section, *they are*. It is curious, then, that scholars have overlooked, until very recently, the striking similarities between cultural labor and academic work (Brienza, 2015; Gill, 2014; Luka et al, 2015). That recent attention to the parallels of academic and cultural-work, perhaps unsurprisingly, has come from scholars of the creative industries. Gill (2014), commenting on the neglect, pointed to “a marked reluctance [among academics] to examine our own labour processes, organisational governance and conditions of production,” related to precariousness, time pressure and surveillance (p. 12).

Changing Experience of Academic Life: Acceleration, Marketization, Quantification

In a 1997 *Social Text* essay on “The Last Good Job In America,” sociologist Stanley Aronowitz bemoaned the progressive decline of professoriate in the face of transformations roiling through the U.S. higher education system. As a full professor, Aronowitz acknowledged that he was among the lucky few to enjoy the privileges of tenure, a system developed in the mid-20th-century to provide scholars with long-term stability and the precious protection of academic freedom. But he compared faculty of his rank to “the spotted owl [which] is becoming an endangered species” (p. 104). With dwindling financial support for higher education, he expressed concern that the university system was shifting in profoundly troubling ways: curricula were undergoing a “vocationalization,” research projects were being wrought by the interests of corporate funders, the number of administrators was ballooning, and faculty layoffs were rampant.

Over the last two decades, the features Aronowitz highlighted have become more pervasive, compounded by the rise of for-profit universities and the venture-backed ed-tech industry (see, for instance, Readings, 1996; Ross, 2010; Schrecker, 2010; Dyer-Witheford, 2005; Gill, 2014; Watters, 2014). College and university administrators have also begun to think seriously about their own branding efforts (Wernick, 1991; Hearn, 2013; Einstein, 2015). To Banet-Weiser (2012), the branded university is a testament a shifting educational context where students are reconfigured as “consumers” and professors as “service providers” (p. 300).

The casualization of the academic workforce is another symptom of widespread budget cuts and a post-recession economy; a 2013 survey of U.S. colleges found that a staggering 70 percent of faculty were either part-time or non-tenure track. The U.K. has seen similar shifts unfurl in the wake of austerity politics (Gill, 2014). Media coverage of the precarious, itinerant nature of work in the academy has undoubtedly challenged long-held assumptions about the cushy career of the college professor; today’s Ph.Ds, the news reminds us, may be receiving welfare assistance (Kavoussi, 2012). Across many disciplines, the academic job market is fiercely competitive, and those fortunate enough to secure stable work face incessant demands on their time and attention (Carrigan, 2015). Writing in *The Guardian*, Nobel-prize winning particle physicist Peter Higgs (2013) (of Higgs boson acclaim) shared his belief that he would be un-hirable by today’s standards: “I don’t think I would be regarded as productive enough.” Indeed, amidst a larger audit culture, the contemporary university system demands output as “measurable deliverables” (Luka et al, 2015, p. 181). As Ross (2010) has observed, we are in the “formative stages of a model of production marked by quasi-convergence of the academy and the knowledge corporation” (p. 205). Connective technologies seem to amplify these trends by mandating workers across fields—including within the academy—remain ever-accessible as work and non-work time blur together, an experience Gregg (2011) labels “presence bleed.” Academics, the joke goes, have a lot of flexibility; they can work whatever 60 hours a week they choose.

Such changes in the cultures, economies and technologies of academic life provide an important backstory to understand the convergence of celebrity and

academy. While Hollywood celebrities—James Franco and Angelina Jolie—have become “professors,” academics are encouraged to wade into the celebrity culture as media intellectuals or, in the case of Silicon Alley entrepreneurs-cum-talking heads, “network intellectuals” (Turner & Larson, 2015). But academics of all stripes are encouraged to build their online personae and engage in personal branding—often by curating a social media presence (Author, in press; Banet-Weiser, 2013). Guidance for the digitally savvy, self-enterprising scholar is ubiquitous: An *Inside Higher Ed* feature (Connelly & Ghodsee, 2011), extolling the “value of self-promotion,” observed how social-networking sites “provide an easy way to get your articles and books listed on the web in large, searchable databases.” Mark Carrigan’s (2016) book-length treatment on “social media for academics” argues that the sites help scholars to categorize and promote their papers. This careerist advice—to engage popular social media—is increasingly paired with a second, related admonition: Be sure to post your work to *scholarly* social-networking sites like Academia.edu (“like Facebook, for academics”).

Social Media for Academics: Academia.edu

Price founded Academia.edu in 2008 and billed it as a social networking site for scholars—a professional analogue to its fast-growing neighbor to the south, Facebook. The new company’s most valuable asset, arguably, was its web address, academia.edu. The URL had been registered back in 1999, before 2001 regulations restricted the “.edu” designation to accredited higher-ed institutions. “[D]espite its misleading top level domain,” noted Kathleen Fitzpatrick (2015), head of scholarly communication at the Modern Language Association and a critic of the platform, “Academia.edu is not an educationally-affiliated organization, but a dot-com.” Like other prior domain filings, Academia.edu was grandfathered in, granting the startup a time-sealed patina of nonprofit credibility (Educause, n.d.).

A skeletal version of the site was launched the year before, after Price completed his Oxford doctorate. “What is academia.edu?” the homepage read. “A place where you can get an academic webpage.” The site’s core pitch was the personal page, though discipline-specific discussion forums and a homepage-trawling “paper tracker” were also touted (Academia.edu, 2007). In a fateful move, Academia.edu began encouraging its “members” to post their research to their “webpages.” In the months leading up to the platform’s splashy California re-launch, the site posted a lengthy “terms of use,” which placed the onus for copyright on its users. “You represent and warrant that ... the posting of your Content on or through Academia.edu Services does not violate the privacy rights, publicity rights, copyrights, contract rights, or any other rights of any person” (Academia.edu, 2008a). Disclaimers like this have furnished legal cover for the site’s growing dependence on user-uploaded scholarship.

By the fall of 2008, Price had secured the first round of funding from Spark Ventures, a London venture capital firm, and relocated to California (De Chant, 2008; Kincaid, 2008) The move coincided with Academia.edu’s relaunch in the image of Facebook, complete with a “Friend Finder” feature and prompts to invite contacts. The new site was built around a pair of distinguishing features: a

genealogical “tree” tracing scholars’ graduate-training and departmental lineages, alongside a reverse-chronological “news” ticker with status updates like “Colin Cunningham, Edinburgh University, added a photo and a research interest: Environmental Remediation.” The tree-branching “relationship map” was Price’s answer to Facebook’s social graph, and Academia.edu’s activity ticker was plainly indebted to Mark Zuckerberg’s “News Feed.” In a flurry of tech news articles pegged to the site’s relaunch, Price embraced the comparison. “The goal for Academia.edu is to provide a news feed for all the academic activities that are going on in your research area,” he told *Ars Technica* (De Chant, 2008). The problem with the “Facebook news feed”—Academia.edu’s opening, in other words—is that it “doesn’t provide a research-focused feed on the latest conferences, papers, people and blog posts” (De Chant, 2008; see also Kincaid, 2008). The startup’s press materials highlighted the site’s fast growth, with Zuckerbergian ambition: “The team hopes that Academia.edu will eventually list every academic in the world” (Academia.edu, 2008b).

In the wake of the social-media “pivot” and venture backing, the site’s membership skyrocketed. By 2010, Price’s company had secured another \$1.6 million from Spark, and was logging 600,000 unique visitors a month (Kincaid, 2010). Three years later Academia.edu had passed five million users, and claimed a million new users every three months. Price obtained a huge, \$11 million round of venture financing from Spark and prominent Silicon Valley VC firms like Khosla Ventures (Cutler, 2013a, 2013b). All the new cash enabled Price to go on a hiring spree, and acquire a competitor, Plasmyd, mainly for its index of 60 million academic papers (Cutler, 2013a). By then, the site’s focus had shifted to article-sharing, with Price boasting to the press that users were uploading 150,000 articles a month. “A core problem for researchers is how to build their brand,” said Price in an interview. “To make yourself established in a field, the core way you do that is to share your work” (Cutler, 2013b).

The philosopher-entrepreneur, six years from the site’s launch, had hit upon a winning strategy: academic self-branding, driven by article downloads. The company—which now advertises itself as a “platform for academics to share research papers”—claims more than 39 million members. The figure is startling, in part because Price’s own estimate pegs the number of scholars worldwide at 17 million—less than half of Academia.edu’s membership ranks (Price, 2011). The site attracts over 36 million unique visitors a month, placing it in the top 900 sites worldwide (Alexa.com, 2016). Most tellingly, Academia.edu claims to host 13.4 million academic papers, arguably the cornerstone of its campus-conquering strategy (Academia.edu, 2016a). The site’s explosive growth and social-media mimicry have led to the shuttering of all but one of its erstwhile competitors: the Berlin-based, venture-backed ResearchGate. Scholarverse, SciLink, Labmeeting, and Epernicus have joined Friendster and MySpace in the graveyard of expired social networks.

The Political Economy of Academic Social Networking

Academia.edu has followed the typical Silicon Valley startup model: scale first, revenue later. Though it has garnered income from job advertisements for years, and recently introduced a paid “Premium” membership, the company has remained largely (to borrow a Valley euphemism) pre-revenue.³ Price’s stated strategy, very successful on its own terms, has been to harness his venture funding to win new users, with the aim to lock in the network benefits that scale rewards. Here, again, the relevant analogue is Facebook, whose giant user base is its most valuable feature (and most costly exit penalty). Academia.edu’s free (and now “freemium”) membership model has helped to attract throngs of academics and all their uploads. And like mainstream social networks, the site’s users may soon become its product: Price has repeatedly hinted that he plans to charge “for-profit companies for access to data and insights on which research and researchers are gaining traction” (Cutler 2013a; see also Shema, 2012).

Like its mainstream siblings, Academia.edu relies on its users to produce the content that draws in and retains other users, many of whom presumably return the favor. The labor of posting, following, bookmarking and recommending—key site affordances that we catalog below—is of course uncompensated. That user/laborer conflation is as indispensable for Academia.edu as it is for Snapchat. The main difference is that Academia.edu appeals to *two* audiences: (1) authors, those academics who upload their papers, and (2) readers, the site’s users (academic or otherwise) who are hunting for free PDF downloads. The two user-types are overlapping, of course: Many of the scholars posting their articles are also downloading their peers’ work. But the distinction makes sense from Academia.edu’s perspective, or at least guides the site’s marketing strategy.

The main appeal issued to authors is *visibility*. Many articles are never cited, after all, and some others secure just a few readers (Remler, 2014). Citations, of course, are the coin of the academic realm: crucial for tenure, in-field status, and future discoverability. Getting read and cited is the key hinge in the academic reward system—the point at which self-interest and the advance of knowledge are said to converge. Scholars crave intellectual respect and influence for a range of venal and ennobling reasons, all of which are thwarted by paywalled obscurity. What Academia.edu promises is to boost scholars’ visibility—to generate (and count) the reader “hits” that make for future citations.

The site’s clean landing-page makes an explicit visibility pitch. “Join 39,175,436 Academics,” reads the banner—an auto-updating ticker that presumably triggers bandwagon anxiety akin to Facebook abstention (Academia.edu, 2016b). The two-sentence pitch begins with a variation on the site’s mission statement: “Academia is the easiest way to share papers with millions of people across the world for free.”⁴ The next line—which also appears verbatim in every alert email that members receive, preceded by a “P.S.”—is a direct appeal to the citation benefits of membership: “A study recently published in *PLOS ONE* found that papers uploaded to Academia receive a 69% boost in citation over 5 years.” The link takes would-be members to a peer-reviewed article in the respected open-access journal (Niyazov et al., 2016), which indeed reports significant citation boosts for

Academia.edu users. What's unstated on the Academia.edu homepage, and on the emails, is that Price and five other company employees are co-authors on the study (see Academia.edu, 2016a).

The second, overlapping target audience is the reader, whose path to the site runs through Google or the search giant's Scholar service. Here the pitch has everything to do with free access to copyrighted PDFs. Academia.edu, whose links to papers are among the top search results, offers costless downloads to scholars with limited institutional access, and to curious readers worldwide—who would otherwise need \$35 or more to obtain the papers from publishers' official sites. Academia.edu, in effect, plays off the usurious paywalls established by the scholarly publishing industry, dangling PDF access in exchange for membership. Even that small transaction cost—establishing an Academia.edu account—is obscured by the company. In our tests, following a link to a paper yielded a “GET PDF” button, prompting a request for an email address. Within seconds of submitting the address, an email (“Here's the file you requested”) arrived with the PDF attached. More surprising was the message's opening line—“Thank you for joining the Academia.edu community”—and its invitation to “complete your Academia.edu profile at any time.” Click the embedded link, and you are taken to a pre-populated profile page, which already includes tagged “research interests” (drawn, presumably, from the downloaded paper). The auto-generated profile page is dominated by the *PLOS One* pitch noted above.

And so Academia.edu has established a self-feeding circuit, using one audience (authors) to grow the other (readers), who in turn (if unintentionally) join the author ranks. With ever-larger membership numbers, the visibility stakes for scholars ratchet up too, leading to more user uploads—which are, of course, the Google-indexed PDFs that the company uses to draw in new members. The cycle, from Price's standpoint, is a virtuous one, helping to generate the network's torrid growth curve. In effect, Academia.edu has taken a pair of professorial pain points—attention/citation scarcity and closed-access barriers to research—and harnessed one to resolve the other, in an autopoietic coupling.

The company's tactics, including touting its own study as third-party validation and signing up unwitting PDF hunters, are aggressive and arguably deceptive. The site even suspends the members-only download restrictions on Google Scholar results, so that users who click on Scholar's right-side “[PDF] from Academia.edu” links receive a direct download. At the core of the site's growth strategy (and revenue plans) is its massive trove of articles and chapters—most of which are copyrighted. In that respect Academia.edu, and its rival ResearchGate, are peer-to-peer PDF-sharing repositories, akin to Napster circa 1994. Another way to say this is that Academia.edu is like Sci-Hub, but with venture backing (and a carefully written, liability-dodging “Copyright Policy”) (Academia.edu, 2016c).⁵ Given the site's brazen and unrelenting appeals for paper uploads, Academia.edu (and ResearchGate) would appear vulnerable to publisher lawsuits—like the one that Elsevier has doggedly pursued against Sci-Hub, the shadowy PDF-sharing repository (Schiermeier, 2015). In 2013, the Anglo-Dutch publishing giant issued a flurry of takedown notices to Academia.edu (Howard, 2013). In its notifications to the network's targeted members, Academia.edu flayed Elsevier: “Academia.edu is

committed to enabling a transition to a world where there is open access to scientific literature.” “Unfortunately,” the emails to users read, “Elsevier takes a different view, and is currently upping the ante in its opposition to academics sharing their own papers online.” In a remarkable act of corporate passive-aggression, the email noted that over 13,000 scholars had signed an anti-Elsevier petition, and linked to the protest site (Leonard, 2013). Elsevier soon backed down, with Price telling the press that “I think our members were cross to have their papers taken down” (Parr, 2014). Indeed, the big publishers’ desire to maintain scholars’ good will (or at least indifference), in the face of already tarnished reputations, is the likely reason that Elsevier, Wiley, Sage and the rest have not filed a *Viacom v. YouTube*-style suit against *Academia.edu*.

The main point is that the service, from a political economy perspective, is indistinguishable from other Silicon Valley social-networking startups. The most striking overlap is the hacky-sack-at-break work culture. On its hiring page, *Academia.edu* hypes perks that mimic its public-facing counterparts: stock options, free lunch, and expense accounts (*Academia.edu*, 2016d). In a commissioned “Job Portrait” posted to nearby startup *Medium*, Price and one of his software engineers describe the company’s mission-driven commitment to open access (Job Portraits, 2015). Employees like “Kate” casually relate how much they love their jobs: “I can’t think of anything I’d rather be doing with this day. A lot of this is because of the people. All of my best friends in San Francisco work here...”. The startup’s CTO adds, “We generate so many ideas at this company, it’s crazy... Everyone here is working at a founder’s pace.” The *Medium* post-cum-ad is illustrated by full-width images that defy parody: an iMac close-up with an open Slack window, t-shirted twenty-somethings with Lagunitas IPAs, an Instagram-worthy coffee-grounds pic, and a wall-taped print out (“ARGH!”) beneath a cropped article purchase button (“\$31.60”). There’s even a shot of a foosball leaderboard: “A dashboard near the kitchen shows real-time rankings for players, according to a ‘true skill’ algorithm coded up by the team.”

The revenue-indifferent sprint to scale, the dependence on user-generated content, the bootstrapping of new members off old ones—all of these describe Facebook circa 2006 or Peach today. The venture-capital backdrop is shared too, including the industry’s argot: Series A financing, angel investors, growth stage rounds, and on and on. This is a crucial fact: that Price and his team operate under the ferocious pressure to deliver returns 10, 100 or even 1000 times (the fabled “1000x”) the initial venture investments. A sizable measure of the global scholarly-communication infrastructure has been outsourced to a Silicon Valley startup.

Academia.edu: Affordances and Analytics

In terms of *Academia.edu*’s design and user experience, two themes stand out. The first is the manner by which the site mimics core social-media conventions, down to follower counts and activity notifications. Curated profiles with pics, a “News Feed” scrollable bulletin of followers’ uploads, a “Bookmark” analogue to the social-media heart button, and even incessant prompts to import contacts (“Get More Followers”)—all faithful echoes of the standard social-app feature set. The

second theme is the special and unmistakable emphasis that Academia.edu places on *analytics*. Though services like Twitter and LinkedIn supply analytics dashboards, Academia.edu's mania for user-facing engagement data—granular, charted, alert-triggering analytics—has no popular-service rival. The site is distinctive, too, for its overt surfacing of *algorithmic* ranking, with branded “PageRank” and “AuthorRank” measures on prominent display. The site comes off as an academic leaderboard.

Price's service does not disguise its borrowing of the standard social-media affordances. Signed-in users land on a reverse-chronological activity page openly referred to as “News Feed.” In place of status updates and shared BuzzFeed videos, the feed is populated by article-previews touched, in some formal way, by the user's ranks of “Followers” and “Follows”—those Academia.edu members who have opted to keep tabs on the user's activity (or vice versa). A paper might appear, for example, because a Follower “bookmarked” a paper—clicked, that is, on an article's “BOOKMARK” button, which serves as a read-it-later feature as well as an implicit “like” endorsement. Academia.edu has another, more explicit counterpart to the social-media heart, a recently introduced “RECOMMEND” button, which requires a would-be endorser to testify that she has read the paper and deems it a “worthwhile contribution to the literature.”

Another Academia.edu focal point is the profile page, which includes social-media staples like the profile-pic headshot, a pithy self-description field, and clickable Followers/Following counts. There are some professor-specific elements too, including a CV link, university affiliation, and research-interest tags. The site—in a faint trace of its otherwise-abandoned preoccupation with academic patrimony—even permits users to list “Advisors” and “Supervisors.” The profile, unsurprisingly, is dominated by a user-organized collection of “papers,” which are typically articles and chapters, but may also include conference presentations and syllabi.

The main way that Academia.edu diverges from its popular peers is in its pervasive and inescapable quantification. Both major sections of the site—the news feed and the profile page—are plastered with *numbers*, some of them algorithmically generated. The point, in the site's profusion of figures, is to quantify that gauziest of academic qualities: influence. So, for example, an academic's profile includes a “Total Views” tally—the higher the better—and, for some, a “top” percentile designation (e.g., “top 5%”), complete with trophy glyph.⁶ The profile page also features, in the choicest photo-adjacent real estate, a single-digit number. A popover explains that the figure is the member's “AuthorRank”—the service's algorithmically generated measure of overall influence. The AuthorRank moniker is a sly but unmistakable nod to Google's PageRank and Facebook's EdgeRank, the names attributed to the web economy's two most important algorithms. But the better analogy for AuthorRank is the Klout Score, the aggregate measure of social-media influence promoted by the nearby San Francisco startup. AuthorRank is Academia.edu's scholarly Klout Score: intellectual impact in digital relief.

The measure is a function of the site's other major algorithmic data point, PaperRank. This second, article-level metric is calculated according to the number of “recommendations” a paper receives, though with a recursive twist: those

recommendations are weighted by the AuthorRanks of the recommenders. What counts as a recommendation is not specified on Academia.edu's explanation page, though the services explains that a work's PaperRank is the square root of the sum of the endorsers' AuthorRanks—and that, in turn, a scholar's AuthorRank is the square root of her total PaperRank measures (Academia.edu, 2016e). In both cases, a higher Rank signals more influence. Richard Price's incessantly plugged *PLOS One* article on Academia.edu citation boosts (Niyazov et al., 2016), for example, has a strikingly high PaperRank of 3.2, which contributes to Price's comparatively impressive 1.8 AuthorRank.

The site's design encourages even more quantified self-monitoring with its stand-alone "Analytics" page, accessible by a prominent header tab. The page's clean and colorful layout resembles the backend, charts-and-figures dashboard of a professional audience-tracking service like Chartbeat or Google Analytics. Prominent tallies—of 30-day profile and paper views, and of 30-day "unique visitors"—appear alongside a color-coded line graph that tracks the same metrics as they zig-zag day by day. Granular "user activity" is recorded in a table, with time-stamped rows that log one-off article views by viewer geography, specific paper, and search engine. Users are periodically alerted by email to the paper views, with subject lines like "Five people searched for you earlier on Google..." The emails tease the data: "To see what countries they came from and what pages they viewed, follow the link below." Once a week, Academia.edu members also receive a pair of email newsletters, one tailored to their own engagement, and the other focused on their News Feed. The first touts "Your top paper" in the subject line, and includes the week's overall viewership totals. A handful of auto-generated "Highlights" (e.g., "Google Philippines was your biggest source of traffic for the week, bringing you 20 visits") are followed by an unobtrusive suggestion: "To get more page views," click on the "Upload Papers" button. The second newsletter lists the titles, abstracts, and links of "TOP PAPERS FROM YOUR NEWSFEED," presumably generated from total views and/or Bookmarks and Recommendations. The language employed by Academia.edu, on the Analytics page and in the emails, faithfully echoes the jargon of web-audience specialists: "30-day unique visitors," "traffic" and "page views."

Tellingly, most of the new, "Academia Premium" feature set is organized around enhanced analytics. Premium membership, which costs \$10 a month or \$100 a year, is "for people who want powerful extra features on Academia" (Academia.edu, 2016f).⁷ In addition to full-text search across the service's 13 million papers, premium members gain access to the profiles of "Bookmarkers," those users who formally Bookmark their works. Fine-grained analytics upgrades include the university affiliation of each visitor, and even the number of pages read per paper. An enhanced "Analytics" page includes a slew of new "Impact" data points: a member's percentile rank for each research field; the job titles (e.g., "Faculty Member" or "Graduate Student") of readers; total pages read; a ranked list of "Traffic Sources" (e.g., Google or "Direct"); a log of paper "mentions"; and even CV "activity." Users can generate a similar tabular spread tailored to each and every paper they have ever uploaded.

The pitch for the Premium account is plainly geared toward tenure-and-promotion audit culture: "Demonstrate the Impact of Your Work," reads one

promotional banner. The site's overarching design, as well as its business model, is hitched to the same quantitative logic. The unrelenting metrical bombardment, the email click-bait, the algorithmic ranking: all of it invites a graphs-and-figures academic mindset. That Chartbeat consciousness is, if anything, amplified by the site's self-feeding algorithmic loop: papers (and authors) with high viewer, bookmark, and recommendation tallies are rewarded with still-more visibility—and the chance to further grow those endorsement numbers. The resulting rich-get-richer dynamic mimics the self-reinforcing looping effects of social-media “Trending” charts (Gillespie, forthcoming). And like the algorithmic dynamics of Facebook's News Feed (Bucher, 2012), the visibility rewards (and invisibility punishments) of Academia.edu's filters offer a de-facto pedagogy in the art of getting noticed.

The academy's reliance on standardized indexes of “impact” is inherited from the 20th century, when the tenure system evolved to demand assessments of productivity through h-indexes, journal rankings, and citations (Burrows, 2012). Academia.edu is yet another tool for metrical tracking, but one that is resolutely public: Scholars, by maintaining a profile, broadcast their intellectual status, as measured by the site's array of quantified reputation proxies. The visibility of the site's metrics compel its users to tend to their online “brands”—promotional labor that requires time and energy. The effort to build “relationships”—and thereby ratchet up follower counts—is one index of such invisible labor. As José van Dijck (2013) has observed about popular social media, follower counts are self-reinforcing: “The more contacts you have and make, the more valuable you become, because more people think you are popular and hence want to connect with you” (p. 13).

All of this relationship work intersects with social norms about acceptable self-promotion. Within and beyond the academy, men are more likely than women to highlight their accomplishments, while members of disenfranchised groups are less prone to self-aggrandizement. The implication of these disparities, played out on sites like Academia.edu, is that the status rewards that accompany self-branding are likely to be unevenly distributed along patterned lines of difference. Take the analogous case of citing oneself: Drawing on a vast data set of academic papers, King et al. (2015) found that male scholars accounted for 85% of the self-citations in their sample. Academia.edu and other social networks have the potential to exacerbate these visibility gaps, especially since the site's self-feeding dynamics may act as a disparity multiplier.

Conclusion: “Promote or Perish”

In the fall of 2015, Richard Price's eight-year-old startup attracted a handful of high-profile critics. In her post “Academia, Not Edu,” the MLA's Kathleen Fitzpatrick (2015) called out the service's profit-seeking mission: the network does “not have as its primary goal helping academics communicate with one another, but is rather working to monetize that communication.” Everything “that's wrong with Facebook is wrong with Academia.edu,” she added. Seth Denbo (2015), Fitzpatrick's counterpart at the American Historical Association, Tweeted a similar point: “When

scholars use academia dot edu are they aware that they are providing their data to a for-profit venture capital backed company?" The media theorist Gary Hall (2015) weighed in too, writing that Academia.edu's member-academics are "labouring for it for free to help build its privately-owned for-profit platform by providing the aggregated input, data and attention value." These prominent scholars' public dissent, linked to a UK conference on the topic, earned coverage in *The Atlantic*, *Times Higher Education*, and *The Chronicle of Higher Education* (McKenna, 2015; Matthews, 2016; Wexler 2015).

Our analysis supports the critics, and extends their critique to the kinds of subjectivity that Academia.edu encourages. The logic of self-branding—of carefully curated self-promotion—is a fact of social media life, for everyday users and cultural workers alike. Academia.edu, and its science-oriented rival ResearchGate, are the scholarly analogues to Facebook, Instagram and the rest. The academic social-networking sites were launched with the same venture-funding model as their popular counterparts, and designed with many of their user-experience tropes too.

Both sites, and especially Academia.edu, wrap themselves in the banner of the open-access movement. The provision of quasi-legal access to copyrighted PDFs has indeed underwritten the site's staggering user growth. But Price's personal commitment- and the company's stated mission—are ultimately answerable to Academia.edu's venture-owners. The VC firms did not invest to support the open-access cause; their funding decisions, instead, were highly motivated bets that the site could generate returns measured in 10x multiples of the original investment. All that prospective value, moreover, is predicated on the ongoing donation of scholars' attention, engagement, and authorship—regardless of which paths to profitability the site auditions in the years ahead. As Hall (2015) warns, the open access movement is "in danger of being outflanked, if not rendered irrelevant" by the site.

The infrastructure of scholarly communication, especially in the social sciences, is already dominated by five profit-maximizing publishing giants (Larivière, Haustein, & Mongeon, 2015). The risk is that the higher education community will trade one set of revenue-hungry companies for another. And Academia.edu, ResearchGate, and other scholarly-communication companies backed by venture firms—including the innovative writing platform Authorea, data-sharing site Figshare, and the eponymous Altmetric—are not merely for-profit. They will all have their reckoning with the unique ferocity of VC profit expectations.

The university is already beset by market pressures and the imperative to demonstrate measurable impact. Scholars of every stripe, whatever their position or location, have experienced the market's impingement on their work lives. Enrollment-driven budgets, customer-service teaching, contingent labor contracts, mandatory performance assessments: these are familiar to many of us. We may also notice the more overt campus incursions: the patent-transfer office, the industry-partnered lab, or the on-site startup incubator. Less obvious, perhaps, is our own internalization of the audit-culture's values, one PaperRank at a time.

References

Author (2010)

Author (2014)

Author (2015)

Author (in press)

Academia.edu (2016a, July 10). About Academia.edu. Retrieved from <https://www.academia.edu/about>

Academia.edu (2016b, July 10). Academia.edu. Retrieved from <https://www.academia.edu/>

Academia.edu (2016c, July 10). Copyright policy. Retrieved from <https://www.academia.edu/copyright>

Academia.edu (2016d, July 10). We're hiring. Retrieved from <https://www.academia.edu/hiring>

Academia.edu (2016e, July 10). What are AuthorRank and PaperRank? Retrieved from <http://support.academia.edu/customer/en/portal/articles/2201342-what-are-authorr-rank-and-paperr-rank->

Academia.edu (2016f, July 10). Academia Premium. Retrieved from <https://www.academia.edu/premium>

Academia.edu (2008a, July 16). Terms of use. Retrieved from <https://web.archive.org/web/20080716050241/http://www.academia.edu/terms>

Academia.edu (2008b, December 8). Academia.edu provides a 'tree' of academics around the world. Retrieved from <http://newsbreaks.infotoday.com/Digest/Academicedu-Provides-a-Tree-of-Academics-Around-the-World-51839.asp>

Academia.edu (2007, May 20). What is academia.edu? Retrieved from <https://web.archive.org/web/20070520184043/http://www.academia.edu/>

Aitkenhead, D. (2013, December 6). Peter Higgs: I wouldn't be productive enough for today's academic system. *The Guardian*. Retrieved from: <https://www.theguardian.com/science/2013/dec/06/peter-higgs-boson-academic-system>

Alexa Internet, Inc. (2016, July 10). How popular is academia.edu? Retrieved from <http://www.alexacom/siteinfo/academia.edu>

Aronowitz, S. (1997). The last good job in America. *Social Text*, (51), 93-108.

Banet-Weiser, S. (2012). *Authentic™: The politics of ambivalence in a brand culture*. New York, NY: NYU Press.

Banet-Weiser, S. (2013). Rate your knowledge: The branded university. 2013) *The Routledge Companion to Advertising and Promotional Culture*, Abingdon and New York: Routledge, 298-312.

Baym, N. K. (2015). Connect with your audience! The relational labor of connection. *The communication review*, 18(1), 14-22.

Blandford, K. (2009, August 18). Independent workers should 'behave like brands'. *Design Week*. Retrieved from <https://www.designweek.co.uk/independent-workers-should-behave-like-brands/comment-page-1/>

Brienza, C. (2016). Degrees of (self-)exploitation: Learning to labour in the neoliberal university. *Journal of Historical Sociology*, 29(1), 92-111.

Bucher, T. (2012). Want to be on the top? Algorithmic power and the threat of invisibility on Facebook. *New Media & Society*, 14: 1164-1180.

Burrows, R. (2012). Living with the h-index? Metric assemblages in the contemporary academy. *The Sociological Review*, 60(2), 355-372.

Carrigan, M. (2016). *Social media for academics*. Thousand Oaks, CA: Sage.

Carrigan, M. (2015, April 7). Life in the accelerated academy: Anxiety thrives, demands intensify and metrics hold the tangled web together. *LSE Impact of the Social Sciences Blog*. Retrieved from <http://blogs.lse.ac.uk/impactofsocialsciences/2015/04/07/life-in-the-accelerated-academy-carrigan/>

Cohen, N. S. (2015). Entrepreneurial journalism and the precarious state of media work. *South Atlantic Quarterly*, 114(3), 513-533.

Connelly, R., & Ghodsee, K. (2011, July 18). The value of self-promotion. *Inside Higher Ed*. Retrieved from https://www.insidehighered.com/advice/2011/07/18/essay_on_importance_of_self_promotion_for_young_faculty_members

Cutler, K-M. (2013a, October 23). Academia.edu crosses 5M users and acquires Plasmyd, a search engine for research papers. *TechCrunch*. Retrieved from <https://techcrunch.com/2013/05/06/academia-edu-raw-data/>

Cutler, K-M. (2013b, September 26). Academia.edu, the social networking platform for researchers, raises \$11.1 million. *TechCrunch*. Retrieved from <https://techcrunch.com/2013/09/26/academia-edu-2/>

Denbo, S. [Seth_Denbo] (2015, October 19). When scholars use academia dot edu are they aware that they are providing their data to a for-profit venture capital backed company? [Tweet]. Retrieved from https://twitter.com/seth_denbo/status/656115853595774976

De Chant, T. (2008, September 18). Academia.edu traces scholarly family tree, Facebook style. *Ars Technica*. Retrieved from <http://arstechnica.com/uncategorized/2008/09/academia-edu-traces-academic-family-tree-facebook-style/>

Dyer-Witheford, N. (2005). Cognitive capitalism and the contested campus. *European Journal of Higher Education*,(2), Accessed, 15.

Educause (n.d.). .edu policy. Retrieved from <http://net.educause.edu/edudomain/eligibility.asp>

Einstein, M. (2015). Nothing for money and your work for free: Internships and the marketing of higher education. *tripleC: Communication, Capitalism & Critique*, 13(2), 471-485.

Fitzpatrick, K. (2015, October 26). Academia, not edu. *Planned Obsolescence*. Retrieved from <http://www.plannedobsolescence.net/academia-not-edu/>

Gandini, A. (2015). Digital work: Self-branding and social capital in the freelance knowledge economy. *Marketing Theory*, 1470593115607942.

Gillespie, T. (forthcoming). #trendingistrending: When algorithms become culture. In Seyfert, R. & Roberge, J. (Eds.), *Algorithmic cultures: Essays on meaning, performance and new technologies*. New York: Routledge.

Gill, R. (2010). Life is a pitch: Managing the self in new media work. In M. Deuze (Ed.), *Managing media work* (pp. 249–262). London, UK: Sage.

Gill, R. (2014). Academics, cultural workers and critical labour studies. *Journal of Cultural Economy*, 7(1), 12-30.

Gregg, M. (2011). *Work's intimacy*. Cambridge, UK: Polity Press.

Hall, G. (2015, October 18). Does Academia.edu mean open access is becoming irrelevant? *Media Gifts*. Retrieved from <http://www.garyhall.info/journal/2015/10/18/does-academiaedu-mean-open-access-is-becoming-irrelevant.html>

Hearn, A. (2008). Meat, mask, burden: Probing the contours of the branded self. *Journal of Consumer Culture*, 8, 197–217.

Hearn, A. (2010). Structuring feeling: Web 2.0, online ranking and rating, and the digital 'reputation economy'. *Ephemera: theory & politics in organisation*, 10(3/4), 421-438.

Hearn, A. (2010). Through the looking glass: The promotional university, 2.0. In M. Aronczyk and D. Powers (Eds). *Blowing up the Brand* (pp. 195-217).

Higgs, P. (2013, December 6). I wouldn't be productive enough for today's academic system. *The Guardian*. Retrieved from <https://www.theguardian.com/science/2013/dec/06/peter-higgs-boson-academic-system>

Howard, J. (2013, December 6). Posting your latest article? You might have to take it down. *The Chronicle of Higher Education*. Retrieved from <http://chronicle.com/blogs/wiredcampus/posting-your-latest-article-you-might-have-to-take-it-down/48865>

Job Portraits (2015, January 2). Academia.edu is reimagining research. *Medium*. Retrieved from <https://medium.com/job-portraits/academia-edu-is-reimagining-research-93e3ab1a3c95#.xldnmjtxz>

Larivière, V., Haustein, S., & Mongeon, P. (2015). The oligopoly of academic publishers in the digital era. *PLOS One*, 10(6), e0127502.

Luka, M. E., Harvey, A., Hogan, M., Shepherd, T., & Zeffiro, A. (2015). Scholarship as cultural production in the neoliberal university: Working within and against 'deliverables'. *Studies in Social Justice*, 9(2), 176-196.

Kavoussi, B. (2012, May 7). Number of PhD recipients using food stamps surged during recession: Report. *Huffington Post*, Retrieved from: http://www.huffingtonpost.com/entry/food-stamps-phd-recipients-2007-2010_n_1495353

Kincaid, J. (2010, April 28). Academia.edu raises \$1.6 million to help researchers connect with each other. *TechCrunch*. Retrieved from <https://techcrunch.com/2010/04/28/academia-edu-raises-1-6-million-to-help-researchers-connect-with-each-other/>

Kincaid, J. (2008, September 16). Academia.edu: A Geni for researchers. *TechCrunch*. Retrieved from <https://techcrunch.com/2008/09/16/academiaedu-a-geni-for-researchers/>

King, M. M., Bergstrom, C. T., Correll, S. J., Jacquet, J., & West, J. D. (2016). Men set their own cites high: Gender and self-citation across fields and over time. *arXiv preprint arXiv:1607.00376*.

Leonard, G. (2013). [Screenshot of Academia.edu email notification]. *Imgur*. Retrieved from <http://m.imgur.com/oLI5n9w>

Marshall, K. (2015, January 5). How to curate your digital identity as an academic. *The Chronicle of Higher Education*. Retrieved from: <http://chronicle.com/article/How-to-Curate-Your-Digital/151001/>

Marwick, A. (2013). *Status update: Celebrity, publicity, and self-branding in web 2.0*. New Haven, CT: Yale University Press.

Matthews, D. (2015, April 7). Do academic social networks share academics' interests? *Times Higher Education*. Retrieved from <https://www.timeshighereducation.com/features/do-academic-social-networks-share-academics-interests>

McKenna, L. (2015, December 17). The convoluted profits of academic publishing. *The Atlantic*. Retrieved from <http://www.theatlantic.com/education/archive/2015/12/the-convoluted-profits-of-academic-publishing/421047/>

Morton, I. (2011, August 29). Falser words were never spoken. *The New York Times*. Retrieved from <http://www.nytimes.com/2011/08/30/opinion/falser-words-were-never-spoken.html>

Myers

Neff, G. (2012). *Venture labor: Work and the burden of risk in innovative industries*. Cambridge, MA: MIT Press.

Niyazov, Y., Vogel, C., Price, R., Ben Lund, Judd, D., Akil, A., et al. (2016). Open access meets discoverability: Citations to articles posted to Academia.edu. *PLOS One*, 11(2), e0148257.

Parr, C. (2014, June 12). Sharing is a way of life for millions on Academia.edu. *Times Higher Education*. Retrieved from <https://www.timeshighereducation.com/news/sharing-is-a-way-of-life-for-millions-on-academiaedu/2013839.article>

Peters, T. (1997, August 31). The brand called you. *Fast Company*. Retrieved from <http://www.fastcompany.com/28905/brand-called-you>

Price, R. (2011, November 15). The number of academics and graduate students in the world. Retrieved from <http://www.richardprice.io/post/12855561694/the-number-of-academics-and-graduate-students-in>

Randle, K., & Culkin, N. (2009). Getting in and getting on in Hollywood: Freelance careers in an uncertain industry. *Creative Labour, Palgrave, London*, 93-115.

Readings, B. (1996). *The university in ruins*. Cambridge, MA: Harvard University Press.

Remler, D. (2014, April 23). Are 90% of academic papers really never cited? Reviewing the literature on academic citations. *LSE Impact of Social Sciences Blog*. Retrieved from <http://blogs.lse.ac.uk/impactofsocialsciences/2014/04/23/academic-papers-citation-rates-remler/>

Ross, A. (201-p). *Nice work if you can get it: Life and labor in precarious times*. New York, NY: NYU Press.

Schiermeier, Q. (2015, December 4). Pirate research-paper sites play hide-and-seek with publishers. *Nature*. Retrieved from <http://www.nature.com/news/pirate-research-paper-sites-play-hide-and-seek-with-publishers-1.18876>

Schrecker, E. (2010). *The lost soul of higher education: Corporatization, the assault on academic freedom, and the fall of the American university*. New York, NY: New Press.

Shema, H. (2012, October 31). Interview with Richard Price, Academia.edu CEO. *Information Culture*. Retrieved from <http://blogs.scientificamerican.com/information-culture/interview-with-richard-price-academia-edu-ceo/>

Smithson, E. (2012, August 31). Personal branding in medicine: Private practices. *Branding Magazine*. Retrieved from <http://www.brandingmagazine.com/2015/08/31/personal-branding-in-medicine-private-practices/>

Thelwall, M., & Kousha, K. (2014). Academia.edu: Social network or academic network?. *Journal of the Association for Information Science and Technology*, 65(4), 721-731.

Turner, F., & Larson, C. (2015). Network celebrity: Entrepreneurship and the new public intellectuals. *Public Culture*, 27(1), 53-84.

Watters, A. (2014). *The monsters of education technology*. Seattle, WA: Amazon.

Wernick, A. (1991). Promotional culture. In *Ideology and Power in the Age of Lenin in Ruins* (pp. 260-281). Macmillan Education UK.

Wexler, E. (2015, December 2). As Academia.edu grows, some scholars voice concerns. *Chronicle of Higher Education*. Retrieved from <http://chronicle.com/article/As-Academiaedu-Grows-Some/234414>

Wilsdon, J., Allen, L., Belfiore, E., Campbell, P., Curry, S., Hill, S., ... Johnson, B. (2015). *The Metric Tide: Report of the Independent Review of the Role of Metrics in Research Assessment and Management*. London, UK: HEFCE.

Wittel, A. (2001). Toward a network sociality. *Theory, culture & society*, 18(6), 51-76.

van Dijck, J. (2013). *The culture of connectivity: A critical history of social media*. Oxford, UK: Oxford University Press.

¹ Of the twenty employees listed on the “our team” page, only three are female; and three are non-white (Academia.edu, 2016d).

² Although this quote is often attributed to Gandhi, there is no support that Gandhi ever uttered these words. See Morton, “Falsar Words Were Never Spoken.”

³ The site is also experimenting with banner advertisements.

⁴ The company, on this landing page and in its copyright statements throughout the site, now calls itself “Academia,” without the “.edu”—though elsewhere the full, web-friendly moniker has been retained.

⁵ The site’s Copyright Policy states that Academia.edu “respects the intellectual property rights of others and expects its users to do the same,” but then proceeds to distance itself from liability or

policing of any kind (Academia.edu, 2016e). Academia.edu, like YouTube and other popular sites with user-uploaded content, relies on complaints from copyright owners.

⁶ The percentile is based on total paper-views over the preceding 30 days.

⁷ The upgrade pitch includes an explanation for the new Premium membership layer. “The mission of Academia is to put every academic paper on the internet, available for free, and to enhance discussion and collaboration around papers. In order for us to achieve this mission,” the prominently placed paragraph reads, “we have to develop a sustainable business model” (Academia.edu, 2016f).