

# Beyond Difference: Reconfiguring Education for the User-Led Age<sup>1</sup>

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## Introduction

In recent years, various observers have pointed to the shifting paradigms of cultural and societal participation and economic production in developed nations. These changes are facilitated (although, importantly, not solely driven) by the emergence of new, participatory technologies of information access, knowledge exchange, and content production, many of whom are associated with Internet and new media technologies. In an online context, such technologies are now frequently described as social software, social media, or Web2.0, but their impact is no longer confined to cyberspace as an environment that is somehow different and separate from 'real life': user-led content and knowledge production is increasingly impacting on media, economy, law, social practices, and democracy itself.

Education is a further key area for such changes, as educators stand to lose their privileged position as expert practitioners and theorists in a user-led environment. In many domains, the collaboratively compiled knowledge of users is now (or is at least *believed* to be) virtually on par with that of expert scholars (as indicated for example in *Nature's* recent comparison of scientific information in *Encyclopaedia Britannica* and the *Wikipedia*; see Giles 2005); similarly, peer-based advice and instruction as accessible through user-led environments is beginning to encroach on and replace formal training and education. In spite of their very different interests, groups such as the users sharing DIY project advice at *Instructables.com* (Bruns 2008: 157-8), the kitesurfers collaboratively designing improvements to their sporting equipment (von Hippel 2005), and the Pro-Am astronomers acting as an important support base for mainstream astronomy (Leadbeater and Miller 2004) each engage in highly effective informal learning and knowledge creation practices, for example. At the same time, however, there is a growing need for education to address and problematise the process and practice of user-led content creation itself, in order to help participants develop a more informed, self-reflexive, and critical perspective on their own practices as information seekers, users, and providers, and to enable a wider range of participants to engage successfully in user-led environments.

This process begins by developing a more thorough and systematic understanding of these user-led environments. In spite of the different objectives and objects of user-led

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<sup>1</sup> A different version of this article was published in my book *Blogs, Wikipedia, Second Life, and Beyond: From Production to Produsage* (New York: Peter Lang, 2008).

activities (from software design through knowledge management to creative collaboration), it is nonetheless possible to discern an increasingly sophisticated set of common principles which govern many such environments. Such principles provide both the point of departure for educational critiques of user-led content creation, and a framework for future reconfigurations of educational practices themselves as they pursue a more authentic, realistic approach to enabling learners to develop the capacities which they will require as participants in user-led environments. (Additionally, it is crucial also to recognise that educators and learners can no longer afford to ignore these participatory, user-led spaces: a software designer without the skills to participate in open source projects, a scholar without the capacity to contribute to a joint research management wiki, or a creative practitioner without the ability to engage in a collaborative creative online community are increasingly at risk of being left out of the core professional and intellectual networks in their disciplines.) In the process of investigating and describing the underlying principles of such environments, however, it also becomes increasingly obvious that it is no longer sufficient to describe participants in these collaborative endeavours simply as 'users'; instead, they act in a hybrid role of user *as well as* producer, or for short, as *producers* (Bruns 2008).

### **Beyond 'Users'**

International marketing and consumer relations watchdog *Trendwatching.com* recently identified a new 'Generation C' (for 'content', in the first place) as successor to X and Y (2005). While previous generational groupings had also been decried as the 'Generation We' – interested mainly in their own advance and pleasure in work and life, with scant regard for the common good or an equitable distribution of resources and knowledge –, Generation C is said to be distinctly different: most notably, it is the generation responsible for the development and popular success of open source software, legal and illegal music files sharing, creative content sites such as *YouTube* or *Flickr*, citizen journalism, social networks like *MySpace* and *Facebook*, and the massively multi-user knowledge management exercise, *Wikipedia*, amongst others. Indeed, one consequence of such efforts (as well as a necessary prerequisite for their sustainability) is that this Generation C exhibits a strong preference for the establishment of a knowledge commons over a proprietary hoarding of information, and (though not inherently anti-commercial) tends to support those corporations who work with users and are seen to be strong contributors to the common good rather than profiteering from it. (Notably, some such corporations and other organisations, from open source companies to the Wikimedia Foundation, have now emerged from Generation C's favourite environments.)

Any description of a new 'generation' of participants in global knowledge creation is necessarily overgeneralised and flawed, of course; certainly, Generation C should not be understood as composed of participants of uniform age and socioeconomic background. It is instead a loose but significant grouping of participants who (on average, and perhaps

implicitly rather than explicitly) share a set of common aims and practices; Generation C is defined by shared attitudes and aptitudes rather than necessarily by a common demographic profile. Yet even correcting for such caveats and the inevitable boosterism found in semi-promotional sites such as *Trendwatching.com*, it is nonetheless evident that there does exist a broad and influential stream of information and knowledge users who no longer follow the existing rule books that had been developed during the mass media age with its one-to-many flows of information. *Time Magazine's* recent recognition of this coalition of active content creators and collaborators as 'Person of the Year 2006' (under the collective pronoun 'you', no less, suggesting an almost universal spread of this phenomenon throughout its readership; see Grossman, 2006) adds further support for a description of this movement as a significant new social force; it is particularly poignant that this recognition comes from a flagship publication of one of the largest 'traditional' mass media empires of the present day, TimeWarner.

Generation C's activities span a wide variety of social, economic, and intellectual domains. While perhaps most notable at a few key hotspots (such as open source, *Wikipedia*, the blogosphere, *Facebook* and *YouTube*) which are now well-recognised, the fundamental social, technological, legal, and organisational principles of such environments are in the process of being appropriated and mainstreamed across wide swathes of the World Wide Web under the moniker of 'Web2.0', and have found application (if not yet universal acceptance) in the context of virtually any form of human intellectual and creative endeavour accessible through the Web. Concomitantly, the permissive intellectual property frameworks which form an inalienable basis of such user-led, collaborative knowledge work have spread alongside the technological frameworks – open source or creative commons licences no longer find their application mainly in software development or creative work, but now govern information and knowledge as diverse as government records, satellite photographs, academic research, and legal contract forms.

Fundamental to the work of most such user-led content creation communities is a reconfiguration of traditional production/consumption models. Even recent models of knowledge production in late capitalism have maintained a relative disconnect between producers and consumers – in such models consumers were enabled to act as 'citizen-consumers' (Hartley 2004; CCi 2006) or expert 'prosumers' (Toffler 1971), whose preferences and feedback would inform the development of new consumption commodities, but they were still largely unable to participate directly in the production process. This applied even where production was concerned with the creation of essentially informational, intangible, digital goods, which unlike physical goods required no special production machinery or elaborate distribution systems. (Systems which are largely responsible for the producer / distributor / consumer trichotomy of the industrial and mass media age.) The relative impotence of letters to the editor in traditional newspapers, or even of discussion fora on newspaper Websites, when compared to the direct involvement of readers as reporters and commentators in fully-fledged citizen journalism projects, underlines this point, as does a comparison of the closed

editorial processes of *Britannica* and the open editing of *Wikipedia* or an investigation of the level of involvement in directing the future development of software packages which is afforded users of commercial as compared to open source software.

In each of these new alternatives to traditional content creation models, participants are no longer readers, audiences, users, or mere consumers – they have the ability to become active producers of content, and are often able to do so on an *ad hoc*, on-the-fly basis. They occupy a hybrid, user-*and*-producer position which can be described usefully as that of a *produser* (see Bruns 2006, 2007, 2008). The difference between user and produser models should not be underestimated – rather than representing only a quantitative increase in participation, it is a qualitative shift from mere interactive engagement with content and information, which does not in itself produce new or alter existing content to a significant extent, to what Tim Berners-Lee, the inventor of the World Wide Web, has called ‘intercreativity’ (1999). The process of produsage necessarily alters and extends available content, usually leaving a permanent trace of the changes made. (This is true even when produsers are unaware that they are acting as produsers rather than mere users – examples for such unconscious produsage models include *Last.fm*, where a myriad of personalised online ‘radio stations’ are produced from a correlation and comparison of users’ listening patterns on their iPods and PC media players, *Amazon*, where through the course of their browsing users produce new connections between related items which are then available to other visitors to the site, and even *Google*, where through the PageRank system the links made by content providers on the Web produce a new order of search results.)

Whatever specific environment these produsers operate in, then, their produsage can be seen to exhibit four fundamental aspects:

- Open Participation, Communal Evaluation – produsage proceeds from the assumption that, if sufficiently large and varied, an inclusive community, managing its own processes, can contribute more than a closed team of producers, however qualified it may be.
- Fluid Hierarchy, *Ad Hoc* Meritocracy – produsers participate as is appropriate to their personal skills, interests, and knowledges; leadership roles change as the produsage project proceeds.
- Unfinished Artefacts, Continuing Process – content artefacts in produsage projects are continually under development, and therefore always unfinished; their development follows evolutionary, iterative, palimpsestic paths.
- Common Property, Individual Rewards – to enable the collaborative produsage process, all contributors must necessarily permit community use, adaptation, and further development of their intellectual property (at least on a non-commercial basis); their reward for participation is the status capital they gain through participating.

*Mutatis mutandis*, these observations apply for the collaborative software development in open source as well as for the distributed knowledge management of the *Wikipedia*; they describe the participatory multi-threaded storytelling of massively multi-user online roleplaying games (MMPORGs) as well as the intercreative sharing of creative work in *Flickr*, *ccMixter*, and *YouTube*. (As the latter examples indicate, some such spaces can also be used simply for more traditional forms of content publication and distribution, of course; this does not undermine the produsage model, however, but rather points simply to the flexibility of some produsage spaces. Indeed, the ability to work with these spaces along traditional production models is likely to be what initially attracts users uninitiated into produsage, yet the growing realisation of what is possible beyond such older models may be what keeps them involved.)

Produsage, then, can be seen as the core user-led activity of Generation C. Originating in good part from open source and similar environments, it also has historical connections to pre-commercial models of scientific research and other ideals of open intellectual engagement in academia as well as the civil society beyond. Produsage fundamentally departs from the standard production models of traditional, mainstream media enterprises, which are built on a real or artificially imposed scarcity both of production materials and resources and of distribution systems and spaces: where, for example, the costs of physically compiling, printing, and distributing a major encyclopaedia did require the strict editorial selection of topics and an update frequency measured in years, a produser-driven, Web-based encyclopaedia project can both cover even esoteric or (in traditional eyes) fanciful topics in great detail, and provide instantaneously available updates as soon as new information comes to hand. (As a case in point, *Wikipedia*'s main advantage over *Britannica* is that it is faster and broader in its coverage, and that neither of these attributes are necessarily inversely related to the quality of its content.)

The effects of this shift are multiple: they include an explosion in the amount, breadth, and depth of available content on a wide variety of topics, from a growing number of sources; an increase in the number of perspectives available on any one topic, and subsequently also growing discussion, debate, and (in a number of cases) deliberation of and between these divergent views; an acceleration of (continuing) updates to the available information and knowledge on virtually any field of human endeavour; and the emergence of a wide variety of opportunities for users to become active produsers of such informational resources, by making their own contribution to these ongoing endeavours. These developments can be seen as a threat as much as they represent an opportunity – the opportunity for participants to have a more active voice in fields which are of interest and importance to them is balanced by the threat of losing direction in an ever-increasing maelstrom of thoughts, opinions, information, and knowledge available from a widening range of (more or less reputable) sources. Information overload combines with a growing uncertainty about the credentials and trustworthiness of individual contributors – but it should also be noted that the very communities of produsers which may be seen as generating such threats are also

increasingly deploying ever more sophisticated means of safely and reliably identifying quality contributions and contributors.

### **Towards User-Led Education: The C5C**

Assuming (on the basis of good and growing evidence; see also Benkler 2006; Jenkins 2006; Lessig 2004) that Generation C and its produsage-based forms of intellectual engagement constitute a significant paradigm shift in the late capitalist period, it is incumbent for tertiary education to engage with and address this shift. This must take place on two distinct but related levels: on the one hand, it is important that graduates leave university equipped for successful participation in produsage environments – requiring if not an entirely different, then at least a significantly altered set of literacies and capacities which enables them to avoid the threats while grasping the opportunities.

On the other hand, and in order to develop such capacities in an organic fashion, it is necessary that universities themselves explore ways to model the processes of produsage in their learning and teaching environments (and beyond). Traditional and rigid teacher/learner, staff/student, university/client dichotomies are counter-productive in the co-creative, collaborative process of produsage, which – as noted above – thrives on a fluid and heterarchical (rather than hierarchical) organisation of participants. Indeed, to the extent that a teacher/learner dichotomy still exists, it can be seen as a further example of the outdated scarcity-based production model described above: the dichotomy stems from a time when the information and knowledge available from teachers did indeed constitute a scarce resource, but (due in no small part to the emergence of the Internet as a major information source) that time has passed. (On this point also see Todd Richmond's work on viral university education, reported in Rheingold 2006.)

It is beyond the scope of this article to sketch out this pedagogy in any detail – but it is possible here to outline the five pillars upon which it is founded (and which in turn are based on the fundamental characteristics of the new processes of produsage which are common to Generation C). What has already become obvious from the discussion above is that for effective and successful participation in produsage processes, Generation C graduates will require a set of capacities which, while not entirely new, nonetheless sets a number of new priorities. These graduate capacities can be summarised as collaborative, creative, critical, combinatory, and communicative capacities – or in short, as C5C (also see Cobcroft *et al.*, 2006).

- **Creative:** not to be misunderstood as pertaining purely to artistic creation in a narrow sense, creative capacities are crucial to Generation C. Produsage itself is fundamentally concerned with content (art, information, knowledge) creation; while the development of creative capacities in this broad sense has of course been an aim of education virtually throughout the ages, what is important for our present context is

a focus especially on the development of creative capacities which can be exercised successfully in the collaborative environments of produsage (as exemplified *inter alia* in the technological environments gathered under the Web2.0 banner). Crucial to *this* form of creative capacities, then, is particularly the ability to act as collaborative co-creator in flexible roles, or in short, as one amongst a number of creative *produsers* rather than as a self-sufficient creative *producer*. To the extent that the reasons for this are not yet already self-evident to contemporary learners, it may also be necessary to provide the motivations for engaging as active content creators in produsage environments. Such motivations are both economic (given the significant shifts brought about by the rise of produsage, the ability to participate in such environments is increasingly sought after by employers and governments), social (open collaborative content development in areas such as knowledge management, journalism, software development, research, and creative work can create high-quality but freely accessible resources which are of benefit to overall society), and individual (in the online environment, non-participation increasingly equates to invisibility, while sustained and constructive participation enables the accumulation of positive social capital and thus generates significant career opportunities).

- **Collaborative:** as noted above, collaborative engagement under variable, fluid, and heterarchical rather than hierarchical organisational structures and in shifting roles is fundamental to produsage processes. As societal as well as workplace processes move towards a greater embrace of produsage principles, collaborative capacities therefore become all the more crucial. In this context, it is as important to be able to collaborate effectively as it is to know when, where, and with whom to choose to collaborate, and under what circumstances not to do so. Further, collaborative capacities also require an advanced understanding of the consequences of collaboration – that is, of questions pertaining to intellectual property and other legal rights in a collaborative environment. (Additionally, of course, it is important also to develop the specific skills to collaborate within the major technological environments of produsage – such as blogs, wikis, or immersive 3D environments –, but such skills are subject to rapid change as the technologies themselves continue to change. It is by now well recognised that rather than to focus on building expert skills in using specific systems, teachers should ensure that students develop a life-long personal interest in updating their technological skills.)
- **Critical:** as a corollary to collaborative capacities, critical capacities are exercised in establishing the appropriate context for engagement in produsage processes. This requires a critical stance both towards potential collaborators and their work (in order to identify the most beneficial of all possible collaborations) and towards one's own creative and collaborative abilities and existing work portfolio (to gauge whether a

potential collaboration would constitute a good fit of styles, abilities, and experience). Additionally, a critical eye is also needed in identifying the appropriate venues and conditions for effective collaboration – and further, during the collaborative process itself, critical capacities are indispensable in the giving and receiving of constructive feedback on the ongoing collaborative process and the artefacts it produces. Finally, and just as importantly, critical capacities are also crucial to an engagement with the outcomes of produsage processes at times when one acts mainly as user rather than active contributor – only well-developed critical capacities enable users to discern whether a particular piece of information is to be trusted, to look beyond the surface to examine the sources for that information and the process of its produsage (such as, for example, the edit history of a *Wikipedia* entry), and to compare the relative merit of multiple perspectives on the same issue as they may be expressed in one or a number of related produsage artefacts. Such capacities were already highly important during the mass media age (but were frequently underexercised as a result of a sometimes misplaced trust in the quality of established media brands); however, the recent proliferation of media alternatives, to which produsage processes have contributed significantly, has further increased the central importance of a healthily critical stance towards all available information, whatever the source.

- **Combinatory:** produsage is fundamentally based on an approach which deconstructs larger overall tasks into a more granular set of distributed problems, and therefore in the first place generates a series of individual, incomplete artefacts which require further assembly before becoming usable and useful as a whole. As a result, information and knowledge as generated through produsage processes is itself distributed and inherently incomplete. To effectively participate in and benefit from the knowledge space generated by the collective intelligence (Lévy 1997) of produsage communities, therefore, those engaging in and with produsage and its artefacts require enhanced capacities to combine, disassemble, and recombine these specific artefacts in their pursuit of personal understanding. Beyond the pursuit of knowledge itself, combinatory capacities are also required for active participation in produsage processes: produsage in many contexts also proceeds from the reappropriation, reuse, and remixing of existing content in new combinations which themselves create new meaning and new understandings of knowledge. Learners must therefore develop the capacities to identify and harness individual chunks of existing information which may be constructively employed in this fashion, as well as the capacities to undertake such recombination and redistribution of information and knowledge through the shared collaborative environments of produsage projects.
- **Communicative:** inasmuch as communication underpins every social and communal human endeavour, it is necessarily already implicitly embedded in the other

capacities outlined here. However, in addition to overall, generic communicative capacities it is particularly important to develop an explicit focus on effective and successful communication between participants within the collaborative environments of produsage – this addresses for example the communication of ideas generated in exercising one's own critical capacities (that is, an ability to be *constructively* critical), as well as communication between participants *about* collaborative, creative, and combinatory processes (what could be described in other words as metacollaboration). Such communicative capacities are not necessarily a natural outcome of general communicative development, but may need to be fostered specifically in order to enable graduates to act effectively and successfully as members of Generation C. (Once again, while this might also require the development of a more in-depth understanding of communicative processes within specific produsage environments, it is important not to focus all too specifically on current communications technologies employed by produsage communities, as these are subject to change.)

### **Towards Generation C Education?**

As noted at the outset, the idea of 'Generation C' is necessarily a blunt tool – an overgeneralisation which (like other 'generation' constructs previously) nonetheless contains and condenses some very important observations about the gradual paradigm shift from production to produsage. The fundamental characteristics of produsage as they have been described here, at any rate, are likely to remain intact for the foreseeable future; they are related not to short-term changes in tools and technologies but to a long-term shift towards networked organisational and communicational structures which is by now very well recognised as heralding the emergence a networked information economy (Benkler 2006), a network society (Castells 2000), or a convergence culture (Jenkins 2006). Inevitably the extent and speed of this paradigm shift must remain unknown at this point, but early indications certainly point to fundamental changes in the information, knowledge, and creative industries, which (as is by now well established – see e.g. Howkins 2001) themselves account for very significant components of the economy in most developed nations. But the implications here are not simply economic in nature, as the concept of the knowledge industries inextricably weaves together economic development and knowledge advances: Generation C and its producers are just as crucial in opening up new environments for the development of ideas as they are in creating the potential for new economic activity (also cf. Benkler 2005, whose concept of commons-based peer production is closely related to, but remains more grounded in conventional production processes than what we have described here as produsage).

Beyond 'content', then, the rise of Generation C also points to a number of other consequences, as *Trendwatching.com* notes: 'Creativity, Casual Collapse, Control, and

Celebrity' (2005, n.pag.). Of these, creativity and control are perhaps the most obvious in our present context: they confirm the central role of creativity (understood broadly) to the produsage process, and conversely the need to strike a balance between collaboration in produsage projects on the one hand, and the need to control one's own rights to intellectual property on the other hand. These observations also further highlight the importance of critically controlling the who, where, when, and how of one's involvement in collaborative processes.

By comparison, celebrity may be less relevant to the present discussion, other than to note again that the social capital stemming from recognition for one's contributions to the produsage process (at least amongst peers, and perhaps also on a wider stage) can be a significant motivation for participation in produsage, and must be identified as such – indeed, peer and public (rather than merely teacher) recognition for constructive contributions to collaborative processes can also be usefully employed in education as an important motivating factor.

It is the idea of 'casual collapse', however, that must be of greatest concern for the educational context. A casual collapse of established hierarchies and institutions is the typical outcome of a paradigm shift – and produsage- and Generation C-driven casual collapses can already be observed in *Encyclopaedia Britannica's* rear-guard battle with *Wikipedia*, the news industry's struggle with citizen journalism, and the software industry's gradual transition towards open source-based business models. Journalism, for example, for the most part still refuses to come to terms with a changed mediasphere in which information is already available to audiences, and where the role of the journalist shifts from that of a gatekeeper of information to one of gatewatcher (Bruns 2005), guiding users through the available wealth of information to the most important and insightful sources.

Educational systems, too, are under increasing threat from a Generation C whose produsage activities can no longer be contained through the artificial scarcity imposed by traditional production and accreditation processes. On the one hand, access to scholarly sources and academic debate is now more than ever before available at the touch of a button, from outside the system; on the other hand, participants on the outside of traditional institutions (some of them academics frustrated by the internal machinations of the ivory towers and their commercial partners) are increasingly seen to collaborate to produce and publish quality information and knowledge resources of their own. Traditional teacher/learner apprenticeship-style education may no longer have a future: tertiary education's competitive advantages now lie squarely in its ability to provide a strong combination of systematic overviews and deep knowledge of specific disciplines, and in its ability to provide a targeted course of study aimed at developing those C5C capacities which are crucial to successful participation in produsage environments. Similar to the situation in journalism, educators must learn to become guides through a wealth of always already available information, rather than hanging on in any way to long-outdated notions of the teacher as controlling what information and knowledge students do or do not encounter. Indeed, tertiary education overall must work

to understand this shift in order to avoid entering into a process of casual collapse; it must engage in produsage itself rather than subscribing to ever more outdated models of knowledge production. Happily (encouraged by drives towards constructionist learning and authentic assessment), some such changes have been in train for some time (and to some extent predate and prefigure the rise of produsage as a major trend), but a complete adoption of this mindset throughout tertiary institutions has yet to be achieved.

Finally, however, an even larger challenge may yet lie ahead for educational institutions. As the experience in other sectors of the knowledge economy has shown, producers are rarely content with working as contributors of content, information, and knowledge into conventionally structured knowledge industries; rather, in areas as diverse as software development, journalism, encyclopaedic publishing, and creative practice (and well beyond, though as yet less visibly so) their collaborative efforts have led to the development of structures which are parallel to and in competition with the traditional leaders of these industry sectors. It is likely that in the education sector, too, growing trends towards produsage will lead to experimentation with the establishment of entirely produsage-based educational institutions. While for now, absent official accreditation, such projects may still appear esoteric and fanciful, the establishment of the '*Wikiversity*' as an official project of the Wikimedia Foundation (also in association with the *Wikibooks* project for the collaborative authoring of textbooks) could be seen as a portent of future developments (*Wikiversity* 2007).

Responding to such developments, educational institutions may be as ill-advised to rely on their official status and brand recognition as *Encyclopaedia Britannica* was in its dismissal of *Wikipedia* as a temporary fad unable to compete with its centuries-old brand. Further, experience from other sectors appears to indicate that a defensive campaign aimed at undermining the new model's credibility is likely to backfire; instead, institutions would be better advised to develop proactive strategies aimed at embracing the creative potential inherent in producer communities. While it is far too early to describe in detail the shape that such an embrace could take, it is possible to imagine a more permeable, flexible academic environment which builds the capacities of learners entering produsage communities, and provides authentication and accreditation for the content and participants emerging from produsage environments. While the suggestion here cannot be to leave behind traditional scholarly and educational practices in academia altogether, in pursuit of new models which have not yet been proven to provide a qualitative improvement of outputs for the academic system, there is strong potential for a combination of traditional and new approaches which would place less emphasis on the in-house development of skills, capacities, and knowledges, or the in-house production of new research outcomes (kept increasingly out of public circulation as institutions pursue opportunities to commercialise their intellectual property), and which would instead shift its attention more to providing the service of quality assurance for both internal *and* external content creation activities, in the process profiting from the growth of publicly available knowledge and communally held intellectual property which such activities generate. That shift from production to service, in fact, is entirely

consistent with similar transitions occurring in many other industry sectors affected by the rise of produsage. It is a change from which academia might gain a great deal of new insights.

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