

This is the post-print version of a chapter In: Higher Education in the Digital Age. Moving Academia Online. Annika Zorn, Jeff Haywood, and Jean-Michel Glachant (Eds.). Cheltenham, UK, Northampton, MA, USA. Edward Elgar Publishing, 2018.

The published formatted version is available at: <https://www.e-elgar.com/shop/higher-education-in-the-digital-age>

Introduction

Annika Zorn, Jeff Haywood and Jean-Michel Glachant

THE MOVE ONLINE

In March 2012 the Encyclopædia Britannica, the oldest English language encyclopaedia, announced it would no longer print new editions. After almost two and a half centuries, printed volumes would no longer fill the bookshelf of a household or library. Instead the encyclopaedia had decided to focus exclusively on its online version ‘Encyclopædia Britannica Online’ (Encyclopædia Britannica, 2018) which it had been developing for some years.

Not only has the oldest English-language encyclopaedia moved fully online but other online reference works have been contesting its unquestioned role ever since. The Internet encyclopaedia Wikipedia, the “free encyclopedia that anyone can edit” (Wikipedia, 2017a), has rapidly become the new go-to source for information with hundreds of millions of unique visitors a month, and search engines like Google, with its knowledge graphs, are used by users worldwide to quickly access information, from “who Hannah Arendt was” to “what the European Union is”.

The world around us has been moving online in many other areas as well. Digital music streaming and downloading of music enjoy growing popularity – while CD sales are declining (Vincent, 2015); newspapers and companies are exploring all kinds of social media to connect with readers and consumers;¹ more than 160 million people living in the EU had an account on the social networking platform Facebook in 2017 (trend increasing) so as to stay in touch with friends and like-minded people (Statista, 2018); bookstores’ business is challenged by the online selling of electronic books. Whether leisure activities or work; whether news and information or communication with friends; whether contributions to public debates or the purchase of goods – the way we organize our lives today is done (and increasingly so over the past years) online: our social, economic and civil activities today have a non-negligible online component.

Old Hats?

The question is, how is this trend of ‘going online’ that has so substantially disrupted other sectors (Christensen, 1997) re-shaping the higher education sector, and may the trend even pose a threat to higher education institutions?

Certainly, a lot has already happened over the past years in the higher education sector: from offering massive open online courses (MOOCs – Kim, 2015) to digitizing libraries (Calhoun, 2014); from

¹ See for example the New York Times’ report from 2014 on the (urgent) need to develop a digital strategy (The New York Times, 2014) see also Picard (2009).

developing open educational resources (Wikipedia, 2017b) to online assessment and exams. Increasing numbers of academics use social media tools for their scholarly practices (Veletsianos, 2016; Carrigan, 2016; Mollett et al., 2017; Weller, 2011).

However, although some years have passed since The New York Times called 2012 the year of the MOOC (Pappano, 2012) and despite recent developments in the higher education sector, we argue that traditional higher education institutions are still far from grasping the full potential that online offers to the academy. Although a lot has already happened and a clear trend has emerged over these past years, open and online practices are not ubiquitous. Too many academics still consider online tools at best a well-meant toy, online initiatives by individual academics remain a rare plant in many university campuses. Often experiences of moving bits and pieces online remain disconnected and not well understood. And even if the use of online tools is regarded as important, for those looking favourably at what online practices offer to academia, the question remains as to how a large-scale 'move online' of higher education institutions can be achieved in practice.

The following chapters contribute to the debate about what 'moving online' offers in an academic context. So as to share insights in the many ways a move online is understood and organized, the book will look at experiences from a variety of academic contexts and institutions. In particular, the book aims to advance the discussion on moving higher education online by adopting a comprehensive and practical perspective:

- First, so far, we have mostly referred to online with regard to online education (e.g. online and blended courses, technology for teaching and learning, massive open online courses). While a focus on (online) education is important (see Chapters 1–6), in this book we propose to broaden the perspective to other academic practices (research and knowledge exchange) and how these have been moved online. The book argues indeed that only the deep integration of all academic practices will allow universities to fully grasp the potential of moving the academy online and thus staying at the forefront of knowledge creation and sharing in the future (see also Figure 0.1).
- Second, there is limited documented experience on how higher education can be moved online in practice, which addresses the full range of actions needed from the vision and strategy to the support of teachers, researchers, administrators and students. Discussing examples from different academic contexts will illustrate the many different opportunities an 'online-ization' offers to higher education institutions and ways to put it into practice.

The book will further discuss those factors that are assumed to have facilitated a move online in different institutions as to offer guidance to those interested in institutional change (from above or bottom-up). The book thus aims to nurture the debate about what the rationale for higher education institutions could be to incorporate a comprehensive digital agenda into their core strategy comprising all their academic activities, and second, how such a move online can be achieved.

NEW ACTORS IN THE KNOWLEDGE SECTOR?

While many areas of our life have moved online, we assume this move to have its most cutting effect on how knowledge societies are (and will be) organized. Briefly, this is about what the accepted practices of knowledge creation and sharing will be, and who are the legitimate actors in this field.

The cases of the Encyclopædia Britannica and its free online competitor Wikipedia are illustrative for some of the dynamics triggered by the onlineization of the knowledge societies: The simultaneous online provision of knowledge by a traditional and well-recognized actor on the one hand, and by a

new entrant that fundamentally challenges the way in which knowledge is created and made available, on the other.

- The Encyclopædia Britannica provides access to online articles for a fee. These articles are written and checked by world-leading (academic) experts, thus using traditional channels and practices of knowledge provision and quality control.
- In contrast, Wikipedia offers free access to its articles, created by a crowd of contributors from around the world in a form of open collaboration, without any (accredited) proof of their expertise in the field. This crowdsourcing of knowledge, for which Wikipedia is probably the most prominent example, has proven to be a powerful tool in the online world (Wikipedia, 2017c). Wikipedia is also opening-up the black box process through which the content of articles is checked in that articles can be traced back to previous versions and discussions on contentious information are accessible next to each article.

These cases illustrate the divergent practices of two prominent knowledge actors to create and share knowledge online.

Certainly, the practice of Wikipedia to create and share knowledge has not been without criticism. The article 'Criticism of Wikipedia' (on the very same Wikipedia site) summarizes the main critique of Wikipedia, for example the reliability of the evidence given and the quality of its content, or its editorial practices (Wikipedia, 2017d).² Indeed, teaching staff in higher education institutions generally seem to be critical of the fact that there is no identifiable expert guaranteeing the veracity of the information, but rather an anonymous crowd to create articles (Bayliss, 2013).

Yet, the ongoing, and inconclusive discussion and evidence gathering to compare the quality (and legitimacy) of the two knowledge providers hints – if nothing else – at the possibility that we cannot take everything for granted. While the Encyclopædia Britannica has been long an uncontested source for reliable knowledge, its form of knowledge production and model of knowledge sharing is not the sole one used today. Despite the critique of Wikipedia and the cautious use of Wikipedia by faculty³ the source seems to be widely used by students as an academic source of information (see e.g. Chen, 2010).

Whatever the attitudes of different users to this disruptive entrant might be today, there are three possible scenarios one can imagine for the two knowledge actors' role in the future:

- The first possible scenario is that knowledge created through open collaboration and without acknowledged or accredited expertise in the field will never gain the same acceptance as traditional knowledge actors. The weaknesses of new entrants – or more precisely, the role of individual (accredited) experts and the rigorous methods used in higher education to create knowledge, will guarantee traditional players such as the Encyclopædia Britannica a privileged role in knowledge society as gatekeepers and safeguards of quality knowledge.
- Another possible scenario is that traditional actors will be marginalized as the need to constantly update and re-define knowledge is getting more and more important. This knowledge can be provided

² See also Greenstein and Zhu (2014).

³ Depending on the perception of colleagues' opinion of Wikipedia and its perceived quality as a repository of knowledge Wikipedia is used as source in higher education teaching (Meseguer-Artola et al., 2016). This suggests that as with many online practices (e.g. using Twitter as an academic), Wikipedia has not (yet) gained (mainstream) legitimacy within higher education, due to skepticism about the reliability and quality of content, but also as faculty fear a loss of reputation among colleagues.

at an acceptable quality in a quicker and cheaper format without a major issue of quality of content only through collaborative creation of knowledge. Knowledge that is created in open and collaborative processes, despite its weakness of being more vulnerable to misinformation (that might enter the knowledge production process and cannot be deciphered at the same pace) and article vandalism, will be the dominant socially accepted form and actors providing this knowledge creation and sharing will be the legitimate dominant actor in knowledge societies.

- Finally, it is possible that both types of knowledge actors co-exist simultaneously. They might serve different needs, at different times, of different fluid audiences, but might as well simply co-exist as two providers of knowledge where users, depending on situational circumstances, chose one form over the other. The co-existence of the two spheres would however ultimately imply that the typical methods of knowledge creation and sharing in each domain (that is one inside and one outside higher education) do not impact and influence each other in any relevant way.

It is an open question whether the model of creating and sharing knowledge for which Encyclopædia Britannica stands will be fully replaced one day by knowledge that is openly created by a crowd around the world. New entrants have already entered the market offering learners the opportunity to gain competences, knowledge and skills in a flexible format. Our guess is that recognized (and accredited) experts of knowledge and established processes of quality control of knowledge creation and provision – for both of which higher education institutions currently act as gatekeepers and safeguards – will continue to play a role. In contrast to other sectors and industries that have seen major players disappear during waves of digital disruption (Christensen and Eyring, 2011), higher education institutions enjoy particular attention by policy-makers as national safeguards of the quality of their country's advanced education, their research and their scientific heritage.

Yet, we assume for higher education institutions to fulfil their role as a leading player in the knowledge society and to stay at the forefront of (reliable and accredited) knowledge creation and sharing, they will also have to seize the opportunities offered by moving (also) online. They cannot afford to remain only with past practices if they wish to offer the best possible learning for all, trigger or contribute to critical public debates, and provide access to high-quality thinking and knowledge.

THE CORE BUSINESS OF HIGHER EDUCATION INSTITUTIONS

While there is no clear evidence (yet) as to whether other emerging disruptive actors will seriously challenge the present dominant role of universities, the opportunities online offers for creating and sharing knowledge substantially question current majority academic practices. Examples of this are the 'open peer review' that tries to overcome weaknesses or drawbacks of the current peer review practices; lecture capture techniques or public video recordings of excellent teachers that challenge bad teaching in a seminar, or open research designs that allow researchers to engage with a variety of stakeholders or citizens.

In addition to these emerging new academic practices, new practices of knowledge sharing and creation from outside the academy might spill over into the academy as well. The experience and willingness of any part of society to get involved in knowledge creation and sharing might even blur the boundaries between different practices within and outside higher education institutions to create and share knowledge, pushing the academy to question its own model of knowledge creation and sharing.

A discussion of the relevance of online tools, platforms and activities for higher education should not take place in a void: online is not a goal or benefit in itself but should be discussed within the wider frame of what higher education is doing now, or could be doing for the better. How can online tools, platforms and activities enhance academic practices, and thus manifest their role in today's knowledge societies? What do higher education institutions typically do? There are three set of activities most higher education institutions are engaged in:

- Education: First, the (higher) education of its students – a kind of transformative journey where students get acquainted with higher level thinking and competences for their careers and for certain professions, and for citizenship in a changing world;
- Research: Second, the creation of new or revised knowledge through research;
- Knowledge exchange: Thirdly, activities beyond the university, through research communication and engagement, as for example, engagement with industry and society in general, to transfer and exchange knowledge, or contributing to policy debates.

These three areas of activities⁴ (see also Figure 0.1) may inspire, interact and overlap with each other as terms such as research-based teaching (see a further elaboration of this approach by Fung, 2017), engaged research (Holliman and Warren, 2017), or real-life examples indicate. Online practices, as we will discuss in this book, allow for a deep integration and thus constant innovation of these three areas of academic practices. The many links that can be created through online practices also allow higher education to better respond to challenges they are confronted with today and to clearly define their role in today's knowledge societies.

⁴ We should note here however, that new higher education entrants often follow different modes of operation, for example, private and for-profit providers such as the University of Phoenix in the USA and BPP (part of the Apollo Group) in the UK. Most of what we shall discuss in this book is concerned with state-funded, traditional higher education institutions.



Source: idea by Annika Zorn, designed by Daniela Bernardo and Cristina Portillo González, 2018.

Figure 0.1 Online practices creating knowledge loops: The six anchors of moving online allowing for a deep integration of knowledge sharing and creation practices

CHALLENGES FOR (TRADITIONAL) HIGHER EDUCATION INSTITUTIONS

Higher education institutions today are exposed to new and different challenges compared to a few decades ago that concern all three set of activities: be it the increased student numbers in situations of tight state budgets (Barr and Turner, 2013); be it a bigger and more diverse student body; research designs that have to engage with society and policy-makers; the role higher education institutions are expected to take up for lifelong learning; international collaboration and competition with other universities; income generation in addition to state funding; right up to the question over funding models that relate the financing of academic institutions to the quality of their research; or, lately, to their teaching performance.

Probably, most consequential has been the shift, in Western economies, over the past decades from tertiary education for an elite to a post-compulsory education system that today can be considered massive. While higher education in post-war Europe only benefitted a small proportion of all citizens – less than 20 per cent of all 55–74-year-old people had attained tertiary education – the declared objective of the Europe 2020 strategy sets as a headline target that by 2020 “the proportion of 30–34 year-olds with tertiary educational attainment should be at least 40%” (Eurostat, 2017a, 2017b).⁵ In 2015, 38.7 per cent of the population in EU countries aged 30–34 had completed tertiary education, a number that has been already exceeded in many EU countries (Eurostat, 2017b). In the USA, Australia and Canada similar higher numbers participate in tertiary education in 2-year or 4-year

⁵ See also European Commission (2017c) and Eurostat (2017c).

colleges (OECD, 2017). In a situation of unchanged or declining government financial resources worldwide, universities have been struggling over the past decades to offer education to an ever-growing student body, and have had to work to find economies of scale or additional new funding streams, or have had to reduce services (EUA, 2011; Geiger, 2015).

Further, the image of the 'typical student' is getting more colourful and complex. The common-held view that students in North America and Europe are young adults taking first cycle (Bachelor) full-time degree courses over three to five years is questioned by data on today's learners accessing higher education institutions (Eurostat, 2017c; National Center for Education Statistics, 2015; Universities UK, 2015). Also, there is an interest by policy-makers in allowing learners from any age and any background to get access to higher education throughout life (lifelong learning).⁶ This has implications for the educational offers, as these learners typically have to combine other duties (work, family, care, etc.) with their learning activities, meaning that they cannot attend classes full-time on campus or even be able to attend scheduled classes on campus at all.

In addition, policy frameworks guide research. The quality and output of research institutions is monitored in order to allocate funding, and often the funding of research projects will be evaluated against a detailed dissemination or communication strategy and the evidence of research impact. The funding depends on the effort of researchers and their project managers to feed their results into expert panels, decision-making processes and the wider society (OECD, 2014; HEFCE, 2017; ARC, 2017). Importantly, the European Commission is pushing an agenda that rewards researchers for open science practices, including the link of funding to these open practices (European Union, 2017).

While providing the right state financial incentives to reward research excellence has been in place, or in the mind of policy-makers, for many years, recently, higher education policy in Europe is also giving the quality of teaching and the acquisition of specific competences more attention.⁷ In England in 2017 a new teaching excellence framework was introduced that makes a university's option to raise tuition fees for undergraduate teaching dependent on their teaching quality (Wikipedia, 2017e).⁸

Thus, universities today have to educate a larger student body and much more diverse groups of learners with different needs, expectations and backgrounds. There is today a more pronounced expectation that universities – in addition to a more holistic Humboldtian model of higher education – have to equip students and lifelong learners with key competences and skills “fostering the employability of graduates throughout their working lives” (EHEA, 2015). Finally, there are today different demands on research and a broader awareness within and outside academia that higher education institutions – as public institutions substantially financed by tax payers money⁹ – should contribute to European societies' most pressing problems though engaging with different actors, and the communication of research findings¹⁰ – encompassed by the term 'accountable academic'.

Throughout this book we argue that going online, in responding to some of these challenges and expectations, offers exciting and far-from-fully grasped opportunities to academics and academic institutions that are already being adopted by some teaching and research institutions. Importantly,

⁶ See the European Commission's policy in the field of adult learning (European Commission, 2017a), see also European Commission (2014).

⁷ See for example the Yerevan communiqué of the EHEA (2015).

⁸ See also the critical discussion of the framework by Murphy (2017).

⁹ See for example 'What is science communication? – the EU guide to science communication', published by the European Commission Directorate-General for Research and Innovation (European Commission, 2017b).

¹⁰ See also European Communities (2007, 2003).

in addition to these push factors there are a variety of pull factors moving higher education online. What are the emerging trends we can observe so far in moving higher education online?

Some countries, and indeed some universities within individual countries, have moved well down the road to becoming online as a core part of their business and activities to respond to some of these challenges – or to embrace the opportunities offered by a move online. Some universities, for example, while not abandoning campus-based teaching, have brought technology into the core of this activity. Universities in the USA, UK, Netherlands and Australia have all been very active over the past ten years, with significant support from dedicated national agencies set up by governments or the universities themselves.¹¹ Open universities being dedicated to teaching students at a distance and from less educationally-advantaged backgrounds or opening higher education to migrants (e.g. Open University in the UK – see Chapter 1 – or the university for migrants in Germany: Kiron Open Higher Education founded in 2015) have had an influence on national progress towards less traditional forms of teaching and learning. For an increasing number of universities, teaching at a distance, often to students from other countries, has become a key part of their business and indeed vital for income generation. Other developed countries have been a little slower to embark on this journey (for fuller information see European Union, 2015), but are quickly catching up. Developing countries have also not been slow to grasp the opportunities of online education, often because they are addressing the urgent higher education needs of very large audiences, many of which are in rural locations. India, China and Brazil are three prominent examples (KPMG, 2017; EU SME Centre, 2014; Gottems, 2012).

Research too has adopted technology as a core part of its activity in all subject areas. Initially science and medicine, but now humanities and social sciences (ADHO, 2017; Spiro, 2014), use digital methods to capture (big and open) data, analyze it and promote the conclusions in publication and discussion. Arguably, research has led the way in universities in adoption of technology and this has been primarily due to the international nature of modern research where competition and collaboration are now standard ingredients. The modern digital library was first a digital research library with electronic journals, and gradually developed into a teaching and learning digital library too as e-books were added. The affordances of digital research have enabled greater participation in research by wider society, for example astronomy, textual conversion and analysis, ecology, and social attitudinal research, and in some fields citizen science is now a mainstream component of basic and applied research (Hand, 2010; BRC, 2017).

For a university to become effective in digital education and digital research, it must also change the way it conducts its administration. This will include a digital student record (that underpins the online learning environments and digital permissions to access courses and libraries); online methods for student admission, fee payments and academic tracking; research grant management, financial control and reporting; staff records and equipment inventories; and IT systems to keep everything available 24x7 and at the same time secure from malicious and accidental damage. As universities move towards having students ‘at a distance’, who may never visit the physical campus, and with researchers spread across the world, reliable digital systems become paramount (Educause, 2018).

The following chapters will share some concrete experiences of how academic practices can profit from moving online and how such a move online has been made work in practice. We will discuss examples to illustrate how going online enhances and transforms these academic practices. The ambition is to support a critical and carefully designed move online of higher education institutions,

¹¹ See for example the non-for-profit-company JISC (2017), as well as SURF (2017), and Educause (2017).

and by this, help in redefining the role of universities within today's knowledge society, in line with social expectations of a 21st-century higher education institution.

THE FOUR DIMENSIONS OF MOVING KNOWLEDGE SHARING AND CREATION ONLINE

To better capture the various opportunities of what a 'move online' might offer to higher education, we propose to distinguish four dimensions of moving online: accessible, open, communicative & collaborative, and timely. Different combinations of each dimension can be found in online academic practices.

Accessible

Though having very different origins and disposing of opposing business models, both the Encyclopædia Britannica and Wikipedia make information and knowledge accessible by putting it online. Whether from a desktop computer at home, a tablet at work, or a smartphone during a city holiday – simply by having information and knowledge online we can access it from anywhere, at any time when needed – given we have an adequate Internet connection, and in the case of commercial goods, a credit card at hand or a PayPal account. Although there are still great inequalities in access to the Internet, even in developed countries, these are decreasing steadily and access to information is arguably now more widely accessible, for both adults and children, than in the days when it was locked up in specialized textbooks.

In the past it was probably a printed encyclopaedia on a parent's bookshelf or in the school's library where one would have looked up information for a school essay. Many kids today start Googling for information as soon as they know (more or less) how to write.

Online access to information allows us to check-out the origins of the Ventotene Manifesto from a laptop at home, the definition of open-access publications from a desktop computer at work, and the location and history of a historical building from a smartphone, while looking at its beautiful proto-Renaissance façade.

Moving knowledge and information online thus gives easy access, with no constraints to where this knowledge is physically stored (a historical archive in Florence) or when and to what conditions this information can be accessed (e.g. a student needing a reference letter from a university professor to access documents in an archive during its opening hours). Online access is not limited to information but also includes a series of activities one can handle from anywhere at any time at one's convenience: from purchasing (and reading) a book, taking an online exam, or getting access to remote instruments or data.

Finally, formerly volatile or short-lived events where knowledge was shared or created can now be stored on the web and thus made durable and accessible. Recording a video lecture, or live streaming (and recording) a conference, and then storing it on user-generated content platforms, offers the opportunity to hold firm the verba volent and store the spoken word, whether during conferences, lectures, or debates or in the form of comments.

Moving online thus gives access to information and knowledge independently of where the information is stored, when it was created, or where and when the learner, policy-maker, student, faculty, expert or interested kid wants to access it, and it offers access to a series of activities which previously were strictly limited by time and place.

Open

Moving online further gives the opportunity to open formerly closed or black boxes. This may simply imply that knowledge is made available for free, as in the case of Wikipedia. Wikipedia offers encyclopaedic knowledge and information for free, which would not be the case when purchasing licensed digital content stored behind a paywall. In the academic world this has been most notably promoted by the open-access movement which aims at making (publicly-funded) research outputs (open-access articles or open-access data) free of any restrictions such as fees or user-rights. Open education also enables individuals to take courses, or even gain qualifications, online free of charge, for example with MOOCs (Kim, 2015) and the Open Education Resource University (OERu, 2017).

Further, and equally important, is the possibility of opening up the way in which knowledge is created or information is composed. Wikipedia is one of the most illustrative examples of opening-up the process through which an article is created and the discussion on contested information and concepts (see also discussion below): one can not only access the article itself, but also access the discussion surrounding the creation of that article. In the academy there has been, for some years, a debate around problems with the traditional peer-review process (The Economist, 2017; Rose and Boshoff, 2017). Proponents of the open-access movement have proposed to open the black box of peer reviews, by making reviews publicly available and some propose also to reveal the identity of the reviewers. This open peer review seeks to respond to some of the substantial downsides of the current peer-review practices (for a summary of the discussion see Veletsianos 2016: 21f).

Another example is the option of opening up the research process, as the research question, preliminary research findings or the data can be shared openly online. Interested audiences can visit information about a research project if it is shared online during its various stages, and the whole process can thus be opened up to anybody interested. Going further, it is now common practice in many fields to enable engagement of citizens with the research process itself through digital mechanisms (i.e. citizen science).

Finally, open also means to open previously restricted containers and boxes: online publications are not restricted by page limits of journals or books.

Putting knowledge creation and sharing online thus allows us to dismantle paywalls, to make knowledge available for free, to open-up the black boxes of academic practices (peer review, research design) and hence change the way knowledge is shared and created. Finally, 'knowledge containers' such as books or journals, previously limited by page numbers or word counts, can be opened up, and the content inside these containers can be linked to anything relevant with one click (interactive graphics, connected content and datasets, links).

Communicative and Collaborative

Moving practices to create and share knowledge online also offers all the advantages of social media tools to interact with a variety of people inside and outside the academy. Typically blog posts allow authors to receive (public) comments on their post. Similarly, sharing a research finding on Twitter will allow other users to give feedback or provide further information. Academic conferences make use of Twitter to engage with audiences that are not present in the conference room, or to set-up additional streams of communication in parallel with the panel debate. Social media tools thus allow communication about research findings, conference discussions, but also out-of-the-classroom learning activities to flow in multiple directions.

Further, the possibility for individual faculty to create communities that have similar interests or seek answers to similar questions allows for new communicative networks to emerge. Instead of being bound to the few colleagues working at the same institution, or those you would meet at occasional conferences and stay in touch with via email, online social networks allow one to get in touch with a broad set of experts from around the globe. Not only can you get in touch with experts and start a public conversation to which anybody can contribute, you can also create a network composed of people from a variety of institutions that might not typically meet at a conference and interact with each other.

Finally, putting the debates around topics in the (social media) public domain is not simply making discussions accessible or open for others to participate, it also gives the opportunity to tap into the expertise of this community, that is, crowdsourcing knowledge, for which Wikipedia is a well-known example. This collaboration describes a different model for knowledge creation that relies on multiple experts and other stakeholders, and the continuous construction of knowledge and information.

Putting knowledge creation and sharing online thus allows previously disconnected people to provide their feedback, thoughts and expertise, and potentially to enrich knowledge creation through collaborative work. Different, formerly passive knowledge and information recipients, are becoming co-creators of knowledge, potentially becoming members of communities of experts/learners and taking ownership of the knowledge created.

Timely

Putting knowledge online also offers the opportunity to make knowledge and information accessible instantaneously. As discussed above, accessibility means knowledge and information may be viewed at any time, yet, this does not necessarily imply that information and knowledge are being constantly updated and that the latest thinking on a topic is available. As knowledge and information are constantly changing, and there is a need get access to the latest debates, thinking and evidence in an area, timely access to information can make an important difference. An example is in evidence-based medicine where doctors use current research findings online to guide their decision-making (Masic at al., 2008; CEBM, 2017).

The possibility of collaborative knowledge generation (crowdsourcing) allows many more minds to work on a topic and possibly ensure that knowledge is updated at the same pace as it is needed. This is very different from traditional academic practices where it may take up to several years before a paper is finally published in a peer-reviewed journal. In some study fields, the approaches, methods and knowledge that students learn in their first year is outdated when these same students take their final exams. The possibility of making the discussion of a conference available online while it is happening, or to publish early research findings, allows access to information to be more accurate and timely.

Certainly, there are drawbacks as well, in that unreliable or deliberate misinformation enters the online world at the same pace. The drawbacks of putting knowledge online instantaneously (or at a much quicker pace) can, however, not be solved by refusing to put knowledge online but rather by enhancing the practices (and the actors representing these practices) through which the robustness of the knowledge may be rapidly checked.

Online is certainly not the answer to a variety of problems and tensions we encounter in the academic world. Knowledge that is made openly accessible online might well reproduce existing power relations, or, for example, radicalize opinions as online makes it easier to meet like-minded people and thus reinforce closed discourses of those holding radical views. Also, it might not necessarily be a good idea to replace all activities by an online counterpart: research suggests that many students prefer reading on paper instead of reading online, and there is some evidence that suggests that the visual hooks in a paper version are important for reading differently.¹²

Further, face-to-face interaction with instructors seems to be of crucial importance for certain kinds of learning (e.g. practical laboratory or clinical skills) and for some types of learners. Going online does not imply moving everything we are doing online, nor would it be good to do so. As Veletsianos (2016) points out, it will depend on the awareness of the potential tensions of online practices and a critical engagement of scholars with these to capture its major advantages.

In the rest of this book we will therefore look at the potential, but also the tensions and challenges, that will need to be addressed if online is to be used as a strategy to enhance learning, to enrich research or to contribute to a critical public discourse and decision-making. We will start by discussing recent dynamics of online teaching and learning, to then move on to other examples of how higher education has been moved online: online collaboration of faculty, research communication and examples of moving entire projects online comprising a broad set of academic practices as summarized in Figure 0.1.

In Chapter 1 ‘The transformation of distance learning at Open University: the need for a new pedagogy for online learning?’ Liz Marr argues that to fully exploit the potential of online education we will need to develop a dedicated online pedagogy that takes into account its differences to classroom teaching. Online education cannot solve miracles or compensate drawbacks of what is not working well in education without getting down to the root of the trouble. Badly designed courses that are simply put online, or low-quality MOOC lectures have been shown to leave the learner behind. Sharing the experience of the oldest distance education provider in the UK, Marr describes how the move from old distance teaching to 21st-century online teaching and learning calls for a different focus on and engagement with learners and the need to take the diverse context from which the learner gets access to the educational offer into account.

Online learning indeed calls for a different focus on teaching and learning. The current debate on teaching quality opens a window of opportunity to discuss the limits of traditional teaching and learning approaches and develop innovative and transformative teaching and learning practice. Along these lines, the chapters of Peter Bryant (Chapter 2 ‘Making education better: implementing pedagogical change through technology in a modern institution’) and Ismael Peña-López (Chapter 3 ‘Translearning: unfolding educational institutions to scaffold lifelong networked learning’) emphasize the need for an in-depth understanding of new approaches to move beyond traditional forms of teaching and learning in allowing for networked learning, lifelong learning and sovereign learners.

Sharing another practical example Annika Zorn, Sissonen and Chiara Canestrini describe in Chapter 4 ‘How to design a 21st century online course M4629-ZORN_9781788970150_t.indd 16 06/09/2018 09:56 Introduction 17 that makes learning happen for all’ the creation of an online platform that developed its own online learning and teaching approach, avoiding the limits of traditional distance education as well as the main pitfalls of massive online courses such as low completion rates, teacher-centred approaches and low level learning.

¹² For a comprehensive overview see Walsh (2016).

Moving education online substantially challenges traditional practices of academic institutions and the academics working there. In Chapter 5 on 'Leading innovation: digital education in a traditional university' Jeff Haywood reviews theories of leadership for innovation in higher education, and then considers in more detail how the University of Edinburgh, as a traditional, comprehensive university with a 400-year history, has applied this thinking to place itself at the forefront of digital education. Haywood describes how the university worked to maintain excellence in teaching and learning as it introduced fully online courses, and discusses some of the challenges as well as the opportunities which this move to digital offered to the university.

Online education has not only allowed us to connect learners from across borders, but also allows faculty from different countries and institutions to develop innovative educational projects and to offer new models for knowledge creation and sharing. In Chapter 6 'CORE: bringing the economics curriculum online', Alvin Birdi describes how an international team developed a curriculum in economics, resulting in an openly accessible and flexible educational resource transforming the learning and teaching experience. The chapter starts to move beyond a perspective on online education, providing a glimpse at new forms of collaboration beyond national and institutional borders: the move of putting a curriculum online has allowed faculty, teachers and learners to innovate the way we want to teach and learn and how we want to engage with the wider society.

Online practices contain tensions not only for academic institutions but for the academics as well. Bonnie Stewart explores in Chapter 7 'Identity at the core: open and digital scholarly leadership' how identity and leadership operate differently in digital and media-based spaces than they do in conventional institutional structures. It outlines the prestige economy of open practice in comparison with that of the academic hierarchy, and frames how knowledge exchange and dissemination work in the open. It describes ways in which graduate students and early career researchers can build identities that will enable contribution to and leadership in their fields, in spite of increasing academic precariousness and declining hiring, and ways in which senior leaders can engage with digital tools and media to address the challenges and tensions of digital change.

Adding yet another piece to the picture of moving higher education online, the book then offers a perspective on institutional practices for sharing research results, giving a glance at how research communication is set-up at a higher education institution and a research institution (think tank). Chapter 8 'Sharing knowledge at a research university: experiences from London School of Economics' by Sierra Williams and Chris Gilson describes the research communication strategy and tools adopted at the London School of Economics to engage directly with wider public audiences rather than working through traditional mediators such as the press and advisory committees. The chapter also looks at the experiences of starting and growing a community of blogs in a higher education setting and reflects on the key challenges faced by institutions in effectively sharing academic knowledge today.

In Chapter 9, Giuseppe Porcaro looks at the research communication strategy of a research institution whose success depends heavily on its ability to communicate its research findings to a variety of stakeholders, decision-makers and the wider society. 'Effective online communication for policy advisors: experience from Bruegel think tank' looks at challenges and the methodologies to map and segment audiences in a think tank such as Bruegel, where the research output is aimed at influencing public policies. Porcaro describes how the think tank carefully plans the use of different tools, and combines online and offline elements, and how this strategy has to be constantly reviewed to allow for an effective communication.

The final case study discussed in Chapter 10 'Moving a higher education school online: Florence School of Regulation's all-around online-ization' describes the effort to comprehensively move all academic

practices of a project online. Annika Zorn, Daniela Bernardo and Chiara Canestrini describe how moving three academic practices online (education, research and research communication) allowed the School to become one of the leading academic thinking hubs on energy regulation and policy in the EU. The online-ization allowed for a constant circulation of academically robust and practically relevant knowledge among academics and practitioners working in the field.

Instead of giving a summary of the chapters, the concluding chapter seeks to point to some common features across the different experiences to move higher education online. It also will offer a selection of those factors emerging from the chapters, that are assumed to be most decisive for those willing to lead change in their institutions, or from outside.

In the epilogue Salla Sissonen introduces us to Anna, a 12 year old Finnish girl who will knock at higher education institutions' doors in less than ten years and her approach to learning, and, in consequence, her likely expectations at a 21st-century higher education institution.

REFERENCES

- ADHO – Alliance of Digital Humanities Organizations (2017), retrieved December 2017 from <http://adho.org/>.
- ARC – Australian Research Council (2017), 'Excellence in research for Australia', retrieved December 2017 from <http://www.arc.gov.au/excellence-research-australia>.
- Barr, A. and S.E. Turner (2013), 'Expanding enrollments and contracting state budgets: the effect of the Great Recession on higher education', *The Annals of the American Academy of Political and Social Science*, 650 (1), 168–193.
- Bayliss, G. (2013), 'Exploring the cautionary attitude toward Wikipedia in higher education: implications for higher education institutions', *New Review of Academic Librarianship*, 19 (1), 36–57.
- BRC – Biological Records Centre (2017), 'Citizen science', retrieved December 2017 from <https://www.brc.ac.uk/theme/citizen-science>.
- Calhoun, K. (2014), *Exploring Digital Libraries: Foundations, Practice, Prospects*, London: Facet Publishing.
- Carrigan, M. (2016), *Social Media for Academics*, London: Sage.
- CEBM – Centre for Evidence Based Medicine (2017), retrieved December 2017 from <http://www.cebm.net/>.
- Chen, H. (2010), 'The perspectives of higher education faculty on Wikipedia', *The Electronic Library*, 28 (3), 361–373.
- Christensen, C.M. (1997), *The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail* (1st edn), Boston, MA: Harvard Business School Press.
- Christensen, C.M. and H.J. Eyring (2011), *The Innovative University: Changing the DNA of Higher Education from the Inside Out*, San Francisco: Jossey-Bass.
- Educause (2018), 'Top 10 IT issues, technologies, and trends', retrieved February 2018 from <https://www.educause.edu/research-and-publications/research/top-10-it-issues-and-strategic-technologies>
- Educause (2017), retrieved December 2017 from www.educause.edu.
- EHEA – European Higher Education Area (2015), 'Yerevan communiqué', EHEA Ministerial Conference on 14–15 May 2015, retrieved December 2017 from http://media.ehea.info/file/2015_Yerevan/70/7/YerevanCommuniqueFinal_613707.pdf
- Encyclopedia Britannica (2018), retrieved February 2018 from <https://www.britannica.com/>
- European Commission (2017a), 'EU policy in the field of adult learning', retrieved December 2017 from http://ec.europa.eu/education/policy/adult-learning_en.
- European Commission (2017b), 'What is science communication? The EU guide to science communication', video published online by the European Commission Directorate-General for Research and Innovation, retrieved December 2017 from https://www.youtube.com/watch?time_continue=55&v=4E8rXg3Nv7U.

European Commission (2017c), 'Europe 2020 targets', table published online on 7 March 2017, retrieved December 2017 from http://ec.europa.eu/eurostat/documents/4411192/4411431/Europe_2020_Targets.pdf

European Commission (2014), 'Modernization of higher education in Europe: access, retention and employability', Eurydice Report, retrieved July 2018 from http://eacea.ec.europa.eu/education/eurydice/documents/thematic_reports/165EN.pdf

European Communities (2007), 'Improving knowledge transfer between research institutions and industry across Europe', Luxembourg: Office for Official Publications of the European Communities, retrieved in December 2017 from M4629-ZORN_9781788970150_t.indd 19 06/09/2018 09:56 20 Higher Education in the Digital Age http://ec.europa.eu/invest-in-research/pdf/download_en/knowledge_transfe_07.pdf.

European Communities (2003), 'The role of the universities in the Europe of knowledge', Communication published in Brussels on 5 February 2003, retrieved December 2017 from [http://aei.pitt.edu/63030/1/COM_\(2003\)_58_final.pdf](http://aei.pitt.edu/63030/1/COM_(2003)_58_final.pdf)

European Union (2017), 'Evaluation of research careers fully acknowledging Open Science practices: rewards, incentives and/or recognition for researchers practicing Open Science', European Commission, Directorate-General for Research and Innovation, written by the Working Group on Rewards under Open Science, July 2017, Luxembourg: Publications Office of the European Union. Retrieved July 2018 from https://ec.europa.eu/research/openscience/pdf/os_rewards_wgreport_final.pdf

European Union (2015), 'The changing pedagogical landscape: new ways of teaching and learning and their implications for higher education policy', Directorate-General for Education and Culture, European Commission, written by Jeff Haywood, Louise Connelly, Piet Henderikx, Martin Weller, Keith Williams, Luxembourg, Publications Office at the European Union. Retrieved July 2018 from <https://publications.europa.eu/en/publication-detail/-/publication/f43a8447-7948-11e5-86db-01aa75ed71a1>

EU SME Centre (2014), 'Online Education Market in China', report published online July 2014, retrieved December 2017 from <http://www.eusmecentre.org.cn/report/online-education-market-china>

EUA – European University Association (2011), 'Impact of the economic crisis on European universities', Report published online January 2011 and retrieved July 2018 from http://www.eua.be/Libraries/newsletter/Economic_monitoringJanuary2011final.pdf?sfvrsn=0

Eurostat (2017a), 'Statistics explained: Educational attainment statistics', retrieved November 2017 from http://ec.europa.eu/eurostat/statistics-explained/index.php/Educational_attainment_statistics

Eurostat (2017b), 'Statistics explained: Europe 2020 headline indicators', retrieved November 2017 from http://ec.europa.eu/eurostat/statistics-explained/index.php/Europe_2020_headline_indicators

Eurostat (2017c), 'Your key European statistics', retrieved November 2017 from <http://ec.europa.eu/eurostat/web/europe-2020-indicators/europe-2020-strategy/main-tables>

Fung, D. (2017), A Connected Curriculum for Higher Education, London: UCL Press.

- Geiger, R. (2015), 'Impact of the financial crisis on higher education in the United States', *International Higher Education*, 59, 9–11, retrieved July 2018 from <https://ejournals.bc.edu/ojs/index.php/ihe/article/view/8486/7620>.
- Gottems, L. (2012), 'Online education rising in Brazil', *Intelligent HQ*, published online 15 April 2012, retrieved December 2017 from <https://www.intelligenthq.com/education/online-education-rising-in-brazil/>
- Greenstein, S. and F. Zhu (2014), 'Do experts or collective intelligence write with more bias? Evidence from Encyclopædia Britannica and Wikipedia', *Harvard Business School, Working Paper*, 15-023.
- Hand, E. (2010), 'Citizen science: people power', *Nature*, published online 4 August 2010, *Nature*, 466, 685–687, retrieved December 2017 from <http://www.nature.com/news/2010/100804/full/466685a.html>
- HEFCE – Higher Education Funding Council England (2017), 'The second M4629-ZORN_9781788970150_t.indd 20 06/09/2018 09:56 Introduction 21 research excellence framework', retrieved December 2017 from <http://www.hefce.ac.uk/rsrch/ref2021/>.
- Holliman, R. and C. Warren (2017), 'Supporting future scholars of engaged research', *Research for All*, 1(1) pp. 168–184.
- JISC (2017), retrieved December 2017 from www.jisc.ac.uk.
- Kim, P. (2015), *Massive Open Online Courses: The MOOC Revolution*, New York: Routledge.
- KPMG (2017), 'Online education in India: a study by KPMG in India and Google: 2021', published online May 2017, retrieved December 2017 from <https://assets.kpmg.com/content/dam/kpmg/in/pdf/2017/05/Online-Education-in-India-2021.pdf>
- Masic, I., Miokovic, M. and Muhamedagic, B. (2008), 'Evidence based medicine. New approaches and challenges', *Acta Inform. Med*, 16 (4), 219–225. Published online December 2008, retrieved July 2018 from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3789163/>, doi: 10.5455/aim.2008.16.219-225.
- Meseguer-Artola, A., J.L. Eduard Aibar, J. Minguillón, and M. Lerga (2016), 'Factors that influence the teaching use of Wikipedia in higher education', *Journal of the Association for Information Science and Technology*, 67 (5), 1224–1232.
- Mollett, A., C. Brumley, C. Gilson and S. Williams (2017), *Communicating Your Research With Social Media: A Practical Guide to Using Blogs, Podcasts, Data Visualisations and Video*, London: Sage.
- Murphy, E. (2017), 'Stop celebrating the TEF results – your hypocrisy is galling!', *The Times Higher Education*, published online on 23 June 2017, retrieved December 2017 from <https://www.timeshighereducation.com/blog/stop-celebrating-tef-results-your-hypocrisy-galling>
- National Center for Education Statistics (2015), 'Higher education general information survey: Table 303.40 – Total fall enrollment in degree-granting postsecondary institutions, by attendance status, sex, and age: Selected years, 1970 through 2025', published online by U.S. Department of Education,
- National Center for Education Statistics, *Higher Education General Information Survey in May 2015*, retrieved November 2017 from https://nces.ed.gov/programs/digest/d14/tables/dt14_303.40.asp
- OECD (2017), 'OECD Data: population with tertiary education', retrieved November 2017 from <https://data.oecd.org/eduatt/population-with-tertiaryeducation.htm>

OECD (2014), *Promoting Research Excellence: New Approaches to Funding*, Paris: OECD Publishing. Retrieved July 2018 from <http://www.oecd.org/sti/sci-tech/promoting-research-excellence.htm>

OERu – Open Education Resource University (2017), retrieved December 2017 from <https://oeru.org/oeru-partners/oer-foundation/>.

Pappano, L. (2012), 'The Year of the MOOC', *The New York Times*, published online on 2 November 2012, retrieved September 2017 from <http://www.nytimes.com/2012/11/04/education/edlife/massive-open-online-courses-are-multiplying-at-a-rapid-pace.html>

Picard, R.G. (2009), 'Blogs, tweets, social media, and the news business', *Nieman Reports*, published online on 16 September 2009, retrieved December 2017 from <http://niemanreports.org/articles/blogs-tweets-social-media-and-the-news-business/>

Rose, M.E. and W.H. Boshoff (2017), 'The peer-review system for academic papers is badly in need of repair', *The Conversation*, published online 26 February 2017, retrieved November 2017 from <https://theconversation.com/the-peer-review-system-for-academic-papers-is-badly-in-need-of-repair-72669>

Spiro, L. (2014), 'Defining digital social science', *dh + lib where the digital humanities and librarianship meet*, published online on 9 April 2014, retrieved December 2017 from <http://acrl.ala.org/dh/2014/04/09/defining-digital-social-sciences/>.

Statista (2018), 'Number of Facebook users in Western Europe from 2014 to 2018 (in millions)', Statista the Statistics Portal, retrieved February 2018 from <https://www.statista.com/statistics/283623/western-europe-number-of-facebook-users/>

SURF (2017), retrieved on December 2017 from www.surf.nl.

The Economist (2017), 'The problem with scientific publishing: And how to fix it', published online 30 March 2017, retrieved December 2017 from <https://www.economist.com/blogs/economist-explains/2017/03/economist-explains-23>

The New York Times (2014), 'Innovation', *The New York Times*, retrieved November 2017 from <https://www.scribd.com/doc/224332847/NYT-Innovation-Report-2014>

Universities UK (2015), 'Patterns and trends in UK higher education', available online at <http://www.universitiesuk.ac.uk/policy-and-analysis/reports/Documents/2015/patterns-and-trends-2015.pdf>

Veletsianos, G. (2016), *Social Media in Academia: Networked Scholars*, New York: Routledge.

Vincent, J. (2015), 'Digital music revenue overtakes CD sales for the first time globally. Subscriptions to streaming services like Spotify helped close the gap', *The Verge*, published online on 15 April 2015, retrieved December 2017 from <http://www.theverge.com/2015/4/15/8419567/digital-physical-music-sales-overtake-globally>

Walsh, G (2016), 'Screen and paper reading research: a literature review', *Australian Academic & Research Libraries*, 47 (3), 160–173.

Weller, Martin (2011), *The Digital Scholar: How Technology is Transforming Scholarly Practice*, London: Bloomsbury Publishing.

Wikipedia, (2017a), 'Wikipedia', Wikipedia article retrieved December 2017 from <https://en.wikipedia.org/wiki/Wikipedia>.

Wikipedia (2017b), 'Open educational resources', Wikipedia article retrieved December 2017 from https://en.wikipedia.org/wiki/Open_educational_resources#cite_note-4

Wikipedia (2017c), 'Crowdsourcing', Wikipedia article retrieved December 2017 from <https://en.wikipedia.org/wiki/Crowdsourcing>.

Wikipedia (2017d), 'Criticism of Wikipedia', Wikipedia article retrieved December 2017 from https://en.wikipedia.org/wiki/Criticism_of_Wikipedia.

Wikipedia (2017e), 'Teaching Excellence Framework', Wikipedia article retrieved December 2017 from https://en.wikipedia.org/wiki/Teaching_Excellence_Framework