

CHAPTER 9

Resilience and Open Education

None are so anxious as those who watch and wait.

—Charles Dickens

Introduction

In previous chapters the victory of the open approach has been considered, as well as the areas that now constitute the battle for open. Chapter 6 argued that the battle for narrative played a significant role in the larger battle, and that it was often dominated by simplistic demands for revolution and disruption. In this chapter, a framework for considering these tensions is proposed, and one which offers an alternative narrative for considering the changes that openness brings to education. Chapter 6 highlighted a paradox for many in the open education movement: how to emphasise the possibilities and potential that openness brings to education without resorting to calls for the wholesale overthrow of the education system itself, which many of those adopting the ‘open’ label deem necessary. The ‘education is broken’ stance demands that change occurs only once complete revolution has

taken place, and it forces people to take extreme positions for and against.

By offering an alternative narrative, the aim of this chapter is to demonstrate that this revolution approach is not the only way to consider changes in higher education. The framework suggested here is that of resilience, but its function is illustrative, to demonstrate that alternative narratives and conceptualisations are possible. Resilience offers a tool for considering both the current context and areas that need addressing if an individual or an institution is to meet the challenges of open education. It is adapted from the notion of resilience in ecology, and I proposed it as a possible model at the end of *The Digital Scholar* (2011). This chapter extends that work, and, as well as the practical approach for considering the impact of any particular open education approach, the use of resilience to offer a narrative for considering changes to the education system as a whole is proposed.

Resilience

The concept of resilience has been applied in many domains, but has its roots in Holling's (1973) study on the stability of ecological systems. The definition of resilience used was 'a measure of the persistence of systems and of their ability to absorb change and disturbance and still maintain the same relationships between populations or state variables.' Resilience has found favour as a way of considering climate change. Hopkins (2009) defined it as 'the capacity of a system to absorb disturbance and reorganise while undergoing change, so as to retain essentially the same function, structure, identity and feedbacks.' Walker et al. (2004) propose four aspects

of resilience, which will form the basis of the approach used in this chapter:

1. Latitude: the maximum amount a system can be changed before losing its ability to recover.
2. Resistance: the ease or difficulty of changing the system; how 'resistant' it is to being changed.
3. Precariousness: how close the current state of the system is to a limit or 'threshold'.
4. Panarchy: the influences of external forces at scales above and below. For example, external oppressive politics, invasions, market shifts or global climate change can trigger local surprises and regime shifts.

Using these factors, resilience provides a useful means of considering the response of scholars and institutions to the potential impact of open education. The emphasis in this consideration is on retaining function, not just 'resisting' change. Taleb (2012) has argued that the perspective should move beyond resilience and consider 'anti-fragility', stating, 'The antifragile is beyond the resilient or robust. The resilient resists shocks and stays the same; the antifragile gets better and better.' This is to equate resilience with resistance. Indeed, a high resistance is not necessarily a benefit to an ecosystem, as Holling observed; for example, some insect populations fluctuate wildly depending on environmental factors but prove to be resilient over time. Resilience requires adaptation and evolution to new environmental conditions but retains core identity. In ecosystems this means the species persists, although it may be adapted, and in organisational terms it means the core functions remain, although they may be realised in newer (and in Taleb's view, better) ways.

In terms of open education practice, resilience is about utilising the open approach where this is desirable but retaining the

underlying function and identity that the existing practices represent, if they are still deemed to be necessary. The practices themselves are not core to scholarship; rather, they are the methods through which core functions are realised, and these methods can and should change. The peer-review process in academic publishing, for example, is a method of ensuring quality, objectivity and reliability. But it may not be the only or the best way of realising this, as we have seen, and open education may allow different forms of it to be realised. A resilience perspective would seek to ensure these core functions were protected, and not just resist at the level of the method.

Although resilience can be seen at the individual level, it is perhaps best applied to the institutional level, which can be seen as a complex ecosystem in itself, comprised of a number of individuals, behaviours and tasks. The resilience approach will now be considered for a case study at the Open University.

In this approach, Walker's four aspects of resilience will be considered, and a score allocated against each aspect to provide an indicative measure of overall resilience. Each factor is given a subjective ranking of 1 to 10 (1 = low resilience, 10 = high resilience). A high score of more than 35 would indicate that it is probably not a particularly new challenge (or that the institution was exceptionally well adapted already), and a low score of less than 15 would indicate that the institution faces a considerable threat from this challenge, which it has not adapted to.

The Open University and MOOCs

In order to demonstrate the utility of the resilience model, one of the main developments we have seen in previous chapters will be considered – namely, MOOCs. The impact of these will be

considered for the UK Open University to provide an illustrative example.

As we have seen, there has been considerable hype and over-promise concerning MOOCs, but they represent a good example for analysis in terms of resilience for a number of reasons. Firstly, they are a new practice which could only practically have been realised in a digital, networked, open context. As we saw in the more detailed history of open education set out in the previous chapter, free, open education has been attempted before, but it was limited by physical and geographical constraints – only so many people could attend a lecture hall, and correspondence formats lacked interactive and mediated variety and appeal. By contrast, open online courses are available to everyone with an internet connection, and beyond certain server restrictions, it makes no difference if more students sign up. The second reason they make a good case study is that they propose both a threat and opportunity to standard education practice, at least in the eyes of many participants. They are not therefore a niche interest, limited to only a specific discipline, culture or geographical region. Thirdly, they are present in increasing numbers now, and while some may make predictions (both positive and negative) about their future growth, there are sufficient numbers and interest to examine them today. They are not based on a possible model of what might or could happen, but a functional one that is occurring now. Daniel (2013) suggests that although we have seen other ventures disappear, MOOCs are likely to persist and they ‘will have an important impact in two ways: improving teaching and encouraging institutions to develop distinctive missions.’ They are therefore an ideal case study for resilience.

For the Open University, MOOCs represent both a challenge and an opportunity. As a purely distance-education institution it

is arguably more vulnerable to their threat. If learners can study for free, the argument goes, then why would they pay for an education that isn't campus based?

In December 2012 the OU announced the launch of FutureLearn, a separate company founded by the OU, in consortium with a range of UK universities to provide MOOCs on a global platform. This represents a significant investment in terms of resources, finances and brand in MOOCs, which highlights their resonance with the OU's core functions.

Taking the four resilience perspectives offers a means and a lens for both assessing this risk and highlighting potential courses of action.

Latitude

The OU developed a model of distance learning based around primarily printed units and accompanying media (be it television programmes, audio cassettes or DVDs), supported by a tutor or associate lecturer. This is the Supported Open Learning (SOL) model, which Jones et al. (2009) summarise as being based on three key factors:

1. Distance or Open Learning
 - a. Learning 'in your own time'
 - b. Reading, undertaking set activities and assignments
 - c. Possibility but not compulsion to work with others
2. Resources
 - a. Printed course materials, assigned textbooks, audio and video cassettes, CD/DVD materials, home experiments, course and program websites (previously broadcast TV programs)

3. Systematic support

- a. An assigned course tutor, a regional network of centres, central library student and technical support
- b. Tutorials held within regions, day schools and online (e.g. languages, summer schools)

The advent of elearning in the late 1990s saw an adaptation of this model, but not a fundamental shift. Bell and Lane (1998) describe how the implementation of ICT into the existing distance-education model could be seen as combining the strengths of the traditional campus and distance modes. The OU introduced home computers in 1988 and implemented a large-scale elearning course in 1999 (Weller & Robinson, 2002). This demonstrates that its core SOL model has not been so rigid that it cannot adapt and that it is robust enough to survive new models of implementation. The OU, then, has a reasonable degree of latitude, in that it has a history of adapting its model to accommodate new technology and practices.

With MOOCs, the degree of latitude required is still uncertain. The current MOOC model is unsupported (or mainly peer supported) and free of cost to the students. This highlights a conflict with the OU's core SOL model, which posits human, tutor support as a core element, and which inevitably incurs a cost. As was set out in Chapter 5, the cost of this support is the most significant element in the lifetime of a course. Kop (2011) notes that learners in MOOCs:

have to be confident and competent in using the different tools in order to engage in meaningful interaction. It takes time for people to feel competent and comfortable to learn in an autonomous fashion, and there are critical literacies ... that are prerequisites for active learning in a changing and complex learning environment without the provision of too much organized guidance by facilitators.

For many of the learners that the OU traditionally engages with, developing these literacies through the supported model is a key function of the educational process. Furthermore, those who are challenged in their progress or capacity to attain these competencies have a variety of scaffolds and support services to draw upon at the OU. With MOOCs the options are largely limited to withdrawing from the course or seeking peer support.

Resistance

The OU is a large institution, with over 250,000 students and 11,000 employees. As such, it has been required to develop well-defined processes for dealing with scale, for example in assignment handling, tutor allocation and student support. Inevitably, large-scale systems are more difficult to adapt than small-scale ones, just as large companies are less adaptable than small, agile ones. The OU has developed a production model which was initially focused around print but has and continues to adapt to the different cost demands of elearning (Bates 1995).

Changing such systems is possible, but it requires strategic direction and leadership and is not done quickly. Success depends on the degree of adaptation required. MOOCs appear to require many of the systems already in place; for example, the IT infrastructure for dealing with large student numbers, elearning content that is designed to be studied independently, methods for informal assessment, etc. The work done previously for OERs in OpenLearn specifically, and elearning in general, lays a foundation that means MOOCs are technically feasible. The broader issues – such as ensuring a good student experience when there is no tutor present and implementing methods of informal assessment (such as Mozilla badges) and how these relate to official

accreditation, raising issues for a large-scale institution with a global brand – are more difficult. In terms of resistance, then, the OU is well placed, in that it has adaptable infrastructure, but susceptible in that it arguably has greater potential for damage to its brand than a smaller institution.

It is the examination of this factor that reveals the OU's solution to MOOCs in FutureLearn most clearly. The OU has the infrastructure systems required to support large-scale, high-quality MOOCs, but not the small nimble approach required for more experimental versions. A solution that meets these strengths combines elements of both the expertise and scale of the existing organisation, with the agility required of a small start-up. FutureLearn therefore represents a model which most conveniently plays to the OU's strengths and renders resistance less of a consideration.

Precariousness

With 246,626 registered students in 2012 and a £252M reserve (Open University 2012), the OU is not in an immediately precarious state, although both of these figures may be negatively affected by changes in the student fee structure as set out below. MOOCs have arrived at a time of great upheaval in the UK higher education system, with the introduction of student fees. This is dealt with in more detail in the next section under panarchy, as it represents an external force.

It has necessitated wholesale change in the model used by the OU, both in terms of funding and course delivery. Student fees are associated with a qualification and not with individual modules, requiring a shift in the granularity of operation to this higher level. This has required the types of large, systemic institutional

changes mentioned above, which are possible but inevitably time consuming, often personally challenging and a drain on resources. Arguably, then, this external influence has forced changes that have meant less attention and resource could be allocated to MOOC experimentation than might have been possible in previous eras.

A sudden, and large-scale defection of learners to MOOCs away from formal study would be precarious for the OU; however, this does not appear to be imminent. Indeed, it could be argued that MOOCs and formal education are complementary to one another, as MOOCs lead to low-risk engagement from learners, a proportion of which is then realised as formal study. A range of strategic analyses of MOOCs have been conducted at the OU (e.g. Sharples et al. 2012), from a pedagogic, technical and commercial perspective, which suggest that precariousness is not a major factor at this particular time, although there is a possibility for MOOCs to have an impact upon core business in the future. FutureLearn is seen as a deliberate attempt to reduce any threat of precariousness by owning a strategic, political solution to MOOCs.

Panarchy

The influence of external forces is particularly relevant in this period, with a global financial crisis, an ongoing European crisis and changes in the higher education funding model in the UK. All of these factors may lead to a decline in the number of students entering and remaining in higher education programs. They probably also account for much of the interest in MOOCs, with open courses being proposed as a solution to the problem of costly higher education (e.g. Kamenetz 2010).

As mentioned, the changes in funding structure have necessitated large-scale institutional change at the OU, combined with a

need to increase student fees to compensate for the loss of state funding. This may well result in different student demographics (for example, a decline in leisure learners, but an increase in full-time students who find the OU a cheaper option than campus students), although it is too early in the process to assess these impacts.

MOOCs therefore enter the market at a time of great uncertainty, when panarchic effects are high for the OU (and all UK universities). This may account for the more cautious response from UK universities (Fazackerley 2012) compared with that in North America.

This analysis can be summarised in a subjective scoring, allocating a score of 1 (weak resilience) to 10 (strong resilience) for each of the four factors. A score of 20 or lower would indicate an overall susceptibility to this particular digital factor, but it will also highlight individual areas of weakness. For the Open University, such a scoring is set out in **Table 1**.

Resilience factor	Score	Comments
Latitude	8	Based on ability and history of adapting to technological change
Resistance	8	Large institution with established systems and high reputation risk, solution plays to strengths
Precariousness	7	Not immediate, but comes in time of change and has direct relevance to OU model
Panarchy	6	UK subject to considerable upheaval in higher education sector
Total	29	An area of concern, but resources and practices allow adaptation. Dealing with large-scale systems and the impact of UK sector changes are priorities for reinforcing resilience

Table 1: Resilience factors for MOOCs for the UK Open University.

The score of 29 indicates that MOOCs represent a challenge to the OU, but one which it is developing resilient practices to meet.

Adaptive Cycles

Walker and Salt (2006) apply resilience thinking to economic scenarios as well as ecological ones, for instance, as a model to consider the changing fortunes of a construction company or the nature of a town over time. Key to their model is the adaptive cycle, which Gunderson and Holling (2002) observed in ecological systems. This has four main phases: rapid growth, conservation, release and reorganization, as illustrated in **Figure 10**.

Rapid growth is the initial expansion (of a business or a population), conservation is when it maintains a steady state, release is a period of ‘creative destruction’, when it enters a new phase, and reorganisation is when it re-establishes itself in a new state.

For Walker and Salt, a system can have many different stable states, separated by thresholds. When a system crosses a threshold,

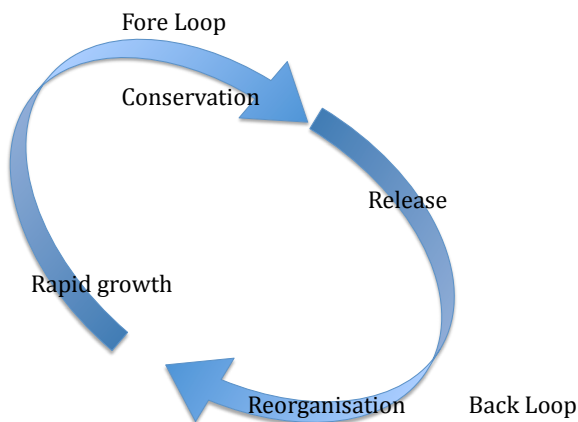


Figure 10: The adaptive cycle. [adapted from Walker & Salt 2006]

it enters a different state. Resilience then can be viewed as the distance from a threshold. Taking our example above, one way of interpreting the anxiety or hype around MOOCs is that they are proposed as a factor that could push universities into a different state (one where they cease to exist in some scenarios, or radically alter their business models). In this interpretation, one could argue that universities have successfully maintained the conservation phase for the past 200 years or so. Walker and Salt propose that an end to the conservation phase is inevitable and that ‘The longer the conservation phase persists the smaller the shock needed to end it.’

Rapid growth and conservation represent the ‘fore loop’ in the adaptive cycle, when a system is maturing, but it is inevitably followed by the back loop of release and reorganisation. Is open education the ‘small shock’ required to cross the transition for universities into the release phase?

As they suggest, it is important to look across scales, not at one level of granularity, so maybe the university, or ‘education’ is the wrong level to focus on. Higher education is a complex, multi-faceted offering, comprising teaching, research and social function. Rather than view it as one system, it is perhaps better viewed as a combination of smaller, interconnected ones. In this view, openness may well act as the release and reorganisation of a particular element within a university or the system as a whole. For example, publishing is one element of the overall academic system, and here the advent of open access could be seen to be pushing the existing system into release mode. This is a period where new models are developed, existing companies and roles are altered, and it enters a reorganisation phase. What will emerge then is a very different type of academic publishing system.

The battle for open could be conceived as the necessary perturbations that occur during this ‘back loop’. In Chapter 2, it was suggested that it is now a question of which type of openness one wanted, rather than simply open vs. closed. One way of thinking of this is to see it as a number of smaller resilience transitions occurring, where the common theme is an open approach as the cause of the shift. But the overall system (that of education) may still be resilient, in the same way that a number of smaller forest fires may occur but at a national level the forestry retains its resilience. This shift in granularity allows us to observe the significant changes that open education is creating without recourse to the wholesale ‘revolution’ or ‘disruption’ required by the mindset seen in Chapter 7.

Levels of OER Engagement

To illustrate how this approach offers an alternative narrative for open education, let us consider OERs and the different levels of engagement people have with them. Open education in general, and OERs specifically, form a basis from which many other practices benefit, but often practitioners in those areas are unaware of OERs explicitly. It is likely that these secondary and tertiary levels of OER awareness represent a far greater audience than the primary ‘OER-aware’ one, so one can view the sizes of these audiences like the metaphorical iceberg, with increasing size as one goes into these unseen areas. There are three possible areas of OER usage:

Primary OER usage – This group is ‘OER aware’, in that the term itself will have meaning for them; they are engaged with issues around open education; they are aware of open licences and they are often advocates for OERs. This group has often been the focus of OER funding, conferences and research, with the

focus on growing the ranks of this audience. An example would be a community college teacher who adopts and contributes to open textbooks.

Secondary OER usage – This group may have some awareness of OERs or open licences, but they have a pragmatic approach to them. OERs are of secondary interest to their primary task, usually teaching. OERs (and openness in general) can be seen as the substratum which allows some of their practice to flourish, but they are not aware or interested in open education itself as a topic, rather their own subject is of prime interest, and therefore OERs are only of interest to the extent that they facilitate innovation or efficiency in this. An example of this group might be a ‘flipped learning’ teacher who uses Khan academy, TED talks and some OERs in their teaching.

Tertiary OER usage – this group will use OERs amongst a mix of other media and often not differentiate between them. Awareness of licences is low and not a priority. OERs are a ‘nice to have’ option but not essential, and users are often largely consuming rather than creating and sharing. An example would be a student studying at university who uses iTunes U materials to supplement their taught material.

David Wiley (2009) has talked of Dark Reuse – that is, whether reuse is happening in places we can’t observe (analogous to dark matter) or simply isn’t happening much at all. He poses the challenge to the OER movement about its aims:

If our goal is catalyzing and facilitating significant amounts of reuse and adaptation of materials, we seem to be failing. ...

If our goal is to create fantastically popular websites loaded with free content visited by millions of people

each month, who find great value in the content but never adapt or remix it, then we're doing fairly well.

By considering these three levels of OER engagement, it is possible to see how both elements of Wiley's goals are realisable. The main focus of OER initiatives has often been the primary OER usage group. Here OERs are created and there are OER advocacy missions. For example, Wild (2012) suggests three levels of engagement for HE staff that progress from piecemeal to strategic to embedded use of OER. The implicit assumption is that one should encourage progression through these levels; that is, the route to success for OERs is to increase the population of the primary OER group.

Whilst this is undoubtedly a good thing to do (assuming one believes in the benefits of OERs), it may not be the only approach. Another approach may be to increase penetration of OERs into the secondary and tertiary levels. Awareness of OER repositories was very low amongst this group, compared with resources such as the Khan Academy or TED. The focus on improving uptake for these groups is then to increase visibility, search engine optimisation and convenience of the resources themselves, without knowledge of open education. This might be realised through creating a trusted brand to compete with resources such as TED.

To apply the resilience model to this model of OER usage, it could be proposed that we have been through the rapid-growth stage for primary OER usage, and this has entered the conservation stage now. There is an accepted, stable community and approach. However, in order for OERs to reach the secondary users, it needs to enter a new phase of release. This is usually achieved through some period of creative destruction. One might argue that the impact of MOOCs on the OER community could be seen as such

a force, pushing them into a new state, or that a change in funding and direction is required to create such a change.

The useful perspective this offers is that it is not about wholesale change and debunking of a previous approach, but moving from one state to another. Such a view allows greater continuity between developments in education than the Silicon Valley narrative permits.

Conclusion

The resilience model in ecology offers a model for considering how adept a system is at absorbing change. It thus offers a useful model for analysing an institution's ability to adapt within an altered environment, while retaining its core functionality. It is not without its critics or difficulties, however. One should always exercise caution as to the extent an analogy with the natural world can be applied to sociological constructs such as education. Like disruption, it could also be seen to be advancing a neoliberal agenda, and one could certainly contest Walker and Salt's conclusion that the end of the conservation stage is always inevitable. It does, however, serve three purposes in the consideration of the battle for open. Firstly, it provides a framework for analysing any particular impact, as with the MOOCs example above; secondly, it offers a means of considering individual areas of impact within the larger system; and lastly, it suggests that other narratives apart from the dominant Silicon Valley one are possible.

Considering the first of these functions, the model can be used as a qualitative analysis tool to highlight areas of concern and to help set priorities. The scoring method set out in this chapter is one method of achieving this, but there are no correct scores; these will be subjective. The methodology was conducted with

a wider group of eight participants at the OU. Scores ranged from 23 to 32, but there was general consensus around the relevant issues and responses.

Applying the method for the same open education challenge (MOOCs) at a different university will reveal differences in factors such as preparedness, national contexts, student demographics, etc. Analysis of a different open education challenge, such as open access publishing, at the same university will highlight factors such as the degree of impact, the maturity of the challenge, area of impact, etc.

As a framework for analysing the impact of a particular change wrought by new technology, however, the metaphor provides a means of identifying strengths and weaknesses and articulating responses. It also provides a framework for considering the different aspects of openness as being connected into part of a larger whole while maintaining the integrity of that larger system. As Walker and Salt argue, 'There is a much higher likelihood of crossing a threshold into a new regime if you are unaware of its existence,' so an appreciation of the impact of open education may be the best method for maintaining resilience.