P-LEARNING'S UNWELCOME LEGACY

L' EREDITÀ INDESIDERATA DEL P-LEARNING

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Abstract Formal teaching of adults has evolved in a context defined, initially, by the constraints of physical boundaries. Classroom walls directly entail timetables, norms and rules of behaviour, social segregation into organized groups and, notably, the course as a fundamental unit of instruction. Our adult education systems are well adapted to provide efficient and cost-effective teaching within those boundaries. Digitally embodied boundaries are far more fluid, open, permeable, scalable, metaphorical and fuzzy. This has helped to drive the increasing dominance of e-learning in intentional informal learning and yet methods that emerge from physical boundaries dominate institutional e-learning, though they are a poor fit with the media. This paper is an exploration of the implications of the removal of physical boundaries to online pedagogies, many of which challenge our most cherished educational foundations and assumptions.

KEY-WORDS Motivation, Boundaries, P-Learning, E-Learning, Networked Learning, Self-Directed Learning (SDL), Control, Constraints.

Sommario L'insegnamento formale degli adulti si è evoluto inizialmente in un contesto delimitato da confini fisici. I muri che separano le classi implicano di per sé orari, norme e regole di comportamento, divisioni sociali all'interno di gruppi organizzati e il corso resta l'unità fondamentale dell'istruzione. I nostri sistemi di formazione dell'adulto sono stati concepiti per dare un insegnamento efficiente ed economicamente vantaggioso all'interno proprio di questi confini. I confini impliciti del digitale, al contrario, sono molto più fluidi, aperti, permeabili, scalabili, metaforici e indistinguibili. Hanno indirizzato il crescente dominio dell'e-learning verso un apprendimento intenzionalmente informale, sebbene metodi, retaggio dei confini fisici, in realtà poco adeguati ai media utilizzati, prevalgono ancora nell'e-learning istituzionale. Questo articolo vuole essere un'esplorazione sulle implicazioni insite nella rimozione di tali confini fisici dalle pedagogie online, molte delle quali sfidano le fondamenta e i presupposti educativi a cui siamo in genere più affezionati.

PAROLE CHIAVE Motivazione, Confini, P-Learning, E-Learning, Apprendimento in rete, Apprendimento auto-diretto, Controllo, Vincoli.

INTRODUCTION

For adult learners with Internet access, the start and, often, the middle and end of most learning journeys typically occurs online, whether through Google Search, Wikipedia, YouTube, forums, shared URLs, email or even, occasionally, through formal teaching. It is not just the dominant but also the preferred means of learning for billions of learners. And yet innumerable studies suggest that, in formal adult education, notwithstanding the acknowledged benefits and convenience of e-learning, given the choice, most adult learners would prefer p-learning: to be taught in physical classrooms with face-to-face contact with teachers (e.g. Delaney, Johnson, Johnson, & Treslan, 2010; Raghavan, Braun, & Goh, 2014; Tichavsky, Hunt, Driscoll, & Jicha, 2015). This paper both explains this curious anomaly and suggests ways to close the gap.

Following conventional use, I will be using the terms 'e-learning' (learning with the support of networked technologies, such as the Web, mobile devices, email or real-time streaming) and 'p-learning' (learning physically collocated with others) throughout, but it is important to keep in mind that *learning,* however we conceive it, is neither electronic nor physically collocated. The main concern of this paper is with e-*teaching* and p-*teaching*. It is about the things that we, or others (intentionally or not) do to bring about learning, as much as the learning itself.

PHYSICAL AND OTHER BOUNDARIES

Boundaries are how we give and discover form in the world. They are the impermeable, semi-permeable or permeable lines we draw between one thing and another. They do not so much separate objects as define what they contain (Cilliers, 2001). Boundaries are human constructs through which we either understand or invent systems of interacting parts. As Holland (2012) shows, it is possible to look at any system in terms of boundaries and the signals that pass between them.

Though normally thought of in spatial terms (Jaynes, 2000) most boundaries are not spatial. The walls of the physical classroom are tangible, but equally clear boundaries of time typically separate the start and end of whatever goes on inside them, at the scale of the lesson, the course or the program. Inside the classroom further boundaries are set by norms and rules of behaviour, from attendance requirements to not using a cellphone. Selectively permeable organizational boundaries support management of large institutions, through a filtered flow of signals passing between them. Organizational, temporal, regulatory, and physical boundaries help to manage access to scarce resources. Boundaries of membership in classes both include and (importantly) exclude, with associated processes such as enrolment, roll calls and names that signify the perimeters of the group, socially, organizationally and temporally. Often, boundaries of age, ability, prior knowledge and qualifications determine much, from class constitution to pedagogy. Subject and discipline, sometimes within boundaries set by external associations, professional societies, and examination boards, often bound the content of lessons.

All of these diverse boundaries in education stem, directly or indirectly, from solutions to *one* initial design problem: to teach as efficiently as possible in a context in which teachers, space and time are limited, rivalrous resources. Our educational systems were, and often still are, concerned with replicating doctrine, following what Freire (Freire, 1970) describes as the 'banking' model of education. The intent, at least in part, is to pass on to the next generation the creeds, laws, theories, practices and beliefs of the educators and/or institutions they represent. Modern education is meant to provide diverse knowledge, skills and values needed to productively participate in many communities, whether within a broad society or a narrow discipline, as concerned with nurturing a body of learners as transmitting a body of knowledge. But the scent of indoctrination still lingers.

BOUNDARIES IN P-LEARNING

Boundaries enable as much as they constrain. Walls and doors provide privacy, comfort, safety and trust, prevent cross-talk, distraction and interference, but determine class sizes. Technologies like enrolment limit the number of people present to a manageable number. We need timetables to ensure everyone is there to be taught. Many subjects cannot be taught in a single lesson, so we need rules of attendance, terms and semesters. Rules and norms of behaviour are required to prevent a drift into chaos when individuals are confined together, to make efficient use of the time, and to overcome the inevitably mixed interests and motivations of students.

Content boundaries – courses and lessons - emerge naturally out of the boundaries of classes, what teachers know, and the need for scheduling. Course length is almost always more determined by the timeframe into which it must fit than with the needs of the subject being taught. The complexities of timetabling mean that lessons are treated as uniform chunks or multiples of time, determined by organizational convenience rather than pedago-

gy. Universities and colleges allow for systematic division of labour, sharing of scarce resources like books or laboratories, economies of scale in construction, the creation of special-purpose teaching areas that would otherwise be too costly. Prior to the advent of modern information technologies, the most efficient form of organization for this was usually a hierarchy, with consequent imposition of patterns, rules and structures across many separate courses, the creation of programs, and a wide range of regulatory mechanisms that create new boundaries.

None of these boundaries is pedagogically neutral. Almost all are invented to solve problems within a specific set of physical constraints, many of which arose from the effects of other boundaries. Boundaries come before pedagogy. Pedagogies are not *determined* by boundaries, but boundaries delimit their context and structure and, as Brand (Brand, 1997) observes, the large and slow moving elements of a system affect the small and fast moving more than vice versa. The overall dynamic of all systems is that the contained are subordinate to the container.

Among the most far-reaching effects of educational boundaries is that teachers have to fill the fixed time allotted to them, and to direct the activities within that predefined period. Though homework and individual study (arguably distance learning's earliest form) can increase flexibility, p-learning pedagogies thus tend to be directive. Teachers are fundamentally the directors or guides of student activity, and the designers of those activities, within a predetermined timeframe.

In turn, many p-learning pedagogies are focused on ways to transfer a fixed body of knowledge, with classic chalk-and-talk lectures being among the most popular, if also among the least effective (Bligh, 1998). Lectures were once the only way to enable books to be heard by more people than would otherwise be able to read them, whether through scarcity or illiteracy. A large part of the reason for their continued survival is that so many fundamental boundaries were erected with them in mind – classrooms, furniture, lessons, assessments, textbooks, timetables, etc. – that they have become the path of least resistance. Teachers that do not wish to lecture face an uphill struggle in devising pedagogies to fit a system designed for the lecture. Whether lecturing or not, the physical, temporal, organizational and social boundaries of the classroom demand that teachers in physical spaces must maintain student attention and exercise leadership, if not fine-grained control, of everything that happens in the allotted space and timeslot. Within boundaries of institutional rules, norms and design, teachers are the designers, the orchestrators and the enablers of the complete learning experience for a set period of time because both they and their students are confined in a room for a lesson's duration.

THE COURSE'S PERNICIOUS EFFECTS ON MOTIVATION

Intrinsic motivation requires three things: autonomy support, relatedness support, and competence support (Deci & Ryan, 2008). Intrinsically motivated learners must feel in control, that there is some social value in the activity, and that they are achieving greater competence, overcoming challenges that they care about. Without all three elements, intrinsic motivation does not emerge.

Schools and universities are designed as social spaces, in which learning is an explicitly valued social activity, relationships matter, and learning usually occurs with others. However, no two learners are alike in their needs, interests, prior knowledge and skills. Over a sequence of lessons, even for those with innate interest, there is almost certain to be much that is under-challenging, over-challenging, or simply occurring at the wrong time or pace to support learner needs for competence. Teachers must, as we have seen, exercise authority, inevitably reducing control for students. Even if a teacher seeks to liberate students, control is always *given* by that teacher (who may be institutionally constrained as to how much control may be given), and can always be taken back.

Because the boundaries of p-learning systematically reduce learner autonomy and over-challenge or bore some students, teachers tend to fall back on extrinsic motivation to sustain engagement. Thoughtful pedagogies can support *internally* regulated extrinsic motivation that is close to intrinsic in value (Ryan & Deci, 2000). More commonly, though, and almost inevitably at some point, teachers fall back on *externally* regulated extrinsic motivation, usually through reward and punishment. Often, this is required by institutional demands for attendance, grading, rules of behaviour, or simply the need to maintain order in a classroom. Unfortunately, a very large body of evidence shows that externally regulated extrinsic motivation is not just inferior to intrinsic motivation: it kills it (Deci, 1972; Kohn, 1999; Gneezy & Rustichini, 2000; Chao, Dehejia, Mukhopadhyay, & Visaria, 2015; Frey & Jegen, 2001; Ariely, Gneezy, Loewenstein, & Mazar, 2009). Worse, the effects are persistent. Once extrinsic motivation crowds it out, intrinsic motivation rarely ever returns.

Put simply, our educational systems are, structurally, deeply harmful to intrinsic motivation. The enormous elephant in the (physical) room is that there is little in life that is more intrinsically motivating than to learn (White, 1959; Deci & Moller, 2005) but p-learning systems have inadvertently system-

atized one of the very few things that will unfailingly take intrinsic motivation away. The power structures that evolved as a means to facilitate learning in a classroom have become a central motif of educational systems –at least until doctoral study - and their pedagogies.

For adult learners, the most powerful extrinsic motivation that occurs at or beyond the boundary of the institution is the threat or promise of accreditation. Credentials, and their lesser siblings, grades, have evolved over centuries to become a central tool of coercion which, though driving compliance, kills intrinsic motivation. One of the most poignant symptoms of this deep systemic failure is the prevalence of cheating. In the US, around two-thirds of college students admit to having cheated within the past year (McCabe, Butterfield, & Treviño, 2012). In China, 83% of college students admit to it (Ma, McCabe, & Liu, 2013). Intrinsically motivated people do not cheat when learning something that matters more to them than its accreditation.

A consequence of this use of punishment and reward is that, rather than being a signal of learning, accreditation becomes the *reason* for it (Kohn, 1999). Willingly or not, teachers consolidate their power and sap intrinsic motivation through grading. They must therefore use yet more pedagogical techniques and methods – mostly extrinsic to the task - to attempt to overcome the sagging motivation that follows. This vicious circle is the central problem that p-learning pedagogies must solve. Much of the skill of teaching is concerned with keeping students engaged in a context in which the structure of the system is disengaging.

BOUNDARIES IN E-LEARNING

There are many physical boundaries in e-learning – the capacities of networks, computers and screens, interface constraints, speed limits, formats, standards, domain names, etc. – and boundaries of attention persist, but the nature of these boundaries differs greatly from their physical cousins.

Virtual boundaries are often **algorithmic**. Computers can embed rules, structures and processes as easily as they can create distinct pages and sites. Algorithmic boundaries can be ephemeral: a Google Search page, for example, erects boundaries around a search term. The virtual environment is not only more flexible than its physical counterpart, but it can also dynamically shift according to needs. Virtual spaces can be frustrating for the same reasons: their hidden rules can make them confusing, disempowering and difficult to use. They can as easily be prescriptive as holistic, if not more so (Franklin, 1999). This it not, however, native to the medium: online boundaries themselves can always be changed. *Other* systems, such as educational systems, combine with those boundaries to make them opaque and controlling, rather than liberative and enabling.

Algorithmic boundaries can be **emergent** from within originally unbounded parts of systems, without intentional design. A boundary may occur, for example, through the reification of a discussion forum thread, or the growth of a set of wiki pages. Traces left by learners – shared work, tags, likes, comments, etc. – can become boundaries for those that follow. Social networks can reify sets of connections to form visible or otherwise tangible clusters. The flexibility of the online space that is at once an environment, a machine, and a medium, makes this the default for e-learning.

Virtual boundaries are at least partially **illusory**, fuzzy, ill-defined, deceptive and permeable. Crossing them usually takes no more than a mouse click or gesture, functionally akin to teleportation in p-learning. We simultaneously inhabit multiple overlapping virtual spaces, with email notifications, instant messages, and similar intrusions vying for our attention even when it is focused on another task. Furthermore, the online learner always inhabits a physical space, with its own competing boundaries. Even in classroom-like webinars, students may be doing many other things, including talking with others. Such activities are not normally acceptable in physical classrooms. It is very rare for cellphones to be banned in online learning. Not only do teachers not need to control such occurrences: on the whole, they *cannot*. Virtual boundaries intersect physical space, especially through mobile devices, augmenting and changing it.

Virtual boundaries are, in principle, **non-rival**. The near-infinite number of perfect copies of digital media that can *in principle* be made make boundaries of economics and scarcity far more permeable and open. Algorithmic boundaries erected through digital rights management (DRM), paywalls, login restrictions, access controls, blockchains and other ways of introducing artificial scarcity are rife but, as Kelly (Kelly, 2016) notes, virtual artefacts want to be free. Once they have escaped their algorithmic boundaries, only legal boundaries and the bounded capacity of computers and networks restrict their spread. Ever greater amounts of virtual stuff, from Flickr Commons to Wikipedia to OERu, are made to be free, reusable, remixible, revisable, redistributable (Wiley, Bliss, & McEwen, 2014). Sharing strengthens rather than diminishes the resource, making its longevity and reach ever greater. This lack of scarcity can remove one of the key sources of institutional power.

Virtual boundaries are **temporally indistinct**. The tracks that we leave in online space often persist, in the traces of our conversations and mouse clicks, and they remain active participants in our later interactions. Cookies and browser histories provide

active prosthetic memories of past interactions. Discussions in blogs and forum posts can range from seconds to years. Pace is often emergent rather than designed, dictated by participants, not leaders, sporadic, and intermittent. Back channels in webinars, whether within the toolset or outside it, often occur at perceptibly different paces than presentations. Time is blurred.

Virtual boundaries are **metaphorical**: windows, fora, walls, pages, sites, threads, folders, files, desktops, friends, tags, and spaces, for instance. These are *just* metaphors. A Facebook Friend is only rarely actually a friend, a window looks neither out nor in. Like all metaphors (Hofstadter, 2001; Lakoff & Johnson, 1980), online metaphors both shape our thinking and are shaped by it. A course in Moodle or Blackboard (an interesting choice of metaphor) is not at all the same thing as a course in physical space: it is an algorithmically shaped illusion that embodies a particular subset of beliefs about the function, purpose and structure of teaching and educational institutions, including the (reified) roles of students, teachers, designers and administrators. The word 'course' itself is a metaphor, implying the traversal of a planned path. But, when that metaphor is set in silicon, it becomes something else, at once tangible and intangible. These metaphors are always transient and insubstantial, liable to reinterpretation and renegotiation. They are design decisions embodying beliefs and values, made for convenience rather than imposed by physics.

IMPLICATIONS FOR ONLINE PEDAGOGY

A central consequence of the fuzziness of online boundaries is that, online, the pedagogy is necessarily far more controlled by the learner. It is, though, very far from being a teacher-less space. Pedagogy is inevitably distributed: each different facet of virtual space, be it a Wikipedia page or tweet, embodies an implicit or explicit pedagogy. We are taught by vast crowds of teachers (Dron & Anderson 2014).

Even in the most formal of e-teaching, learners are in control. Online students read resources out of sequence, ignoring parts, supplementing them with alternatives (Haughey & Muirhead, 2005). For them, learning objects are more like voluntarily attended keynotes than scheduled lectures. Online, the teacher *cannot* control the process.

Learner control traverses many dimensions. Paulsen's theory of cooperative freedom (Paulsen, 2008) suggests that online learning can allow freedoms in six dimensions – place, time, pace, medium, access and content. Terry Anderson and I have extended this to incorporate further dimensions of delegation, technology, disclosure, relationship and pedagogy (Dron & Anderson, 2014). Students may learn at their own pace, and choose times that suit their cognitive needs rather than a classroom schedule. They may use multiple paths and resources, making it easier to be challenged at an appropriate level, and delegate control to others as and when they choose. They can engage with others through multiple channels that they may choose, often at once, often at different paces or times, often with time to reflect, often with persistence of interaction that lets former learners support later ones. They may choose what and how they disclose information to others. This combination of social relatedness, control and challenge makes intrinsic motivation the default for many online learners.

The corollary of that freedom, however, is that those that lack sufficient interest or time will often do nothing at all. A bored student in a classroom is a failed learner that must be rewarded or punished to succeed: the learner is *supposed* to be there to learn, whether they want to or not. A bored online student is simply not a learner at all.

In almost all complex systems, interesting things happen at boundaries: this is where creativity and evolution happens, whether at the edge of chaos (Kauffman, 1995) or in organizational system (Wenger, 1998). The fuzzier boundaries of e-learning open up greater opportunity to creatively connect concepts and patterns. E-learning can expand the adjacent possible. The non-rivalrous nature of virtual objects means that there are many more things to connect, many more paths to be taken, many more ways to learn. E-learning is inherently expansive rather than restrictive. The boundaries between subjects are transparent and permeable by default.

INSTITUTION-DIRECTED LEARNING

Despite the potential for freedom, boundaries in formal institutional e-learning tend to deliberately replicate the controlling pedagogies of p-learning. Learning management systems (LMSs), for instance, erect boundaries to entry, defined by login accounts and hierarchical roles (Dron & Anderson, 2014), artificially making virtual spaces at least as rivalrous as their physical counterparts. They are subdivided into courses, with clear boundaries of membership and access, normally with start dates and end dates, replicating an organizational form that was only needed to cater for the constraints of physical spaces. Those of us that designed the early LMSs created them to fit into our organizational context and to replicate existing teaching methods. We thus incorporated or replicated the technologies and boundaries of the existing organization. We even added new boundaries. For example, we built discussion forums to replicate tutorials and seminars but failed to allow discussion elsewhere,

such as when displaying content. This unfortunate pattern is common in most LMSs, even today, and most would be greatly improved by making every tool an opportunity for social interaction (Dron & Anderson, 2014).

These metaphorical and inaccurate replicas of physical classrooms inevitably spawn similar p-learning pedagogies. Whether the teacher is a sage on the stage or a guide on the side, students are guided towards a destination determined by the teacher and/or the educational system: learning outcomes and teacher-specified objectives remain the sine qua non of online courses as much as they do in physical classrooms. However, without the tight control afforded in classrooms, the chances of learner persistence are notably lessened.

Lacking physical boundaries to support pedagogies of control, and without the social pressures available to co-present teachers, assessment has become the central tool to sustain teacher authority and to attempt to enforce persistence. The threat or reward of grades and credentials allows teachers to assert control through assignments, tests, exams, and even through participation marks. The latter is worth dwelling on because it amply illustrates the misapplication of p-learning pedagogies and assumptions. Participation marks rarely relate to explicit learning outcomes: their purpose is usually just to force learners to do what the teacher demands. It is thus interesting to see what happens when that control is removed. In most pedagogical respects *apart* from accreditation, MOOCs (Massive Open Online Courses) tend to follow a pattern that closely resembles that of typical online teaching, tend to attract highly experienced learners, are often very mindfully designed, but had, in 2014, average completion rates of less than 7% (Jordan, 2014). Though other factors like lower levels of personal, social and financial investment almost certainly contribute to the low completion rates, this suggests that the pedagogies of physical classrooms very rarely work as their teachers intend without extrinsic motivation to drive them. Completion rates have risen slightly of late, currently standing at around 15%[1], but this coincides with growing acceptance of MOOC credentials by institutions and employers, so may again just signal extrinsic impetus.

Coercion is the wind in the sails of institutional e-learning as much as it is of p-learning. It is no surprise that institutional e-learning is less popular than institutional p-learning: p-learning pedagogies were never designed for that context, and their fit is poor.

NET-DIRECTED LEARNING

When contingent boundaries imitating those of p-learning are removed, the results are startling. Far from being a second-rate alternative, e-learning is arguably the dominant underpinning of intentional learning in the world, at least for those with Internet access and the skill to use it. Search engines are usually the first port of call on any learning journey, big or small, and the vast majority of queries are in search of knowledge. In online forums such as StackOverflow, Reddit or Slashdot, passionate learners engage in meaningful, self-directed learning dialogue because they are truly interested and want to learn, or are enthusiastic enough to share their knowledge, and to extend it through informed dialogue. Sites like Wikipedia, the Khan Academy or SkillShare are habitually used by hundreds of millions of learners, often contributed to by millions of people playing the role (intentionally or not) of teachers. Millions share tutorials on sites such as Instructables and MakeUseOf, or contribute to knowledge through shared designs and instructions on Thingiverse. YouTube is a vast source of learning, with billions of teachers (intentionally or not) sharing everything from how to fix your car, to appreciating literature, to learning Aikido, to playing the saxophone. Much of the activity in social media like Facebook or Twitter is concerned with sharing or discussing knowledge, and everyone is a potential teacher. Millions contribute to open source projects, the motivation for which, as Kelly (2016) observes, is overwhelmingly to learn and develop new skills. Increasingly, mobile phones enable us to learn what we need, where and when we need it, from where to find the best sushi, to the name of an actor in a movie. Teachers are no longer scarce.

Self-directed online learners choose what, how, where, and when they learn, picking from countless teachers. Without coercion, and being intrinsically motivated, they do so successfully. All they need to get started is a search engine, link or recommendation. Once they start to read, engage with others, or participate with a resource, they may delegate some control to the author, teacher, community, person, tool or team that created it, but the boundaries in such systems are flimsy, flexible and transparent. There is no passing and failing, no rigid plan, no judgement, and the rules of engagement are richly diverse. If systems fail to meet their needs then learners just switch to alternatives at low cost in time or effort. This is a fundamentally different process and dynamic from the control-based pedagogies of formal p-learning or its e-learning mimics. It is driven by demand rather than enforced supply.

While universal access remains a pressing issue, the Internet has become the biggest, most impactful distributed teacher the world has ever seen. Some have gone as far as to suggest

1 Retrieved from http://www.katyjordan.com/MOOCproject.html (accessed 15 June 2016).

that the Internet alone, or with minimal structure and guidance, can replace most of our institutional systems of teaching (Mitra, 2012). Though compelling, this is premature.

E-LEARNING LIMITATIONS

If we need to install a new toilet valve or solve a problem in programming, countless online teachers will teach us, how and when we need it. Algorithmic boundaries of virtual systems shift to meet our needs. Rich analytics, collaborative filters, and adaptive mechanisms make both analysis and prediction of our needs ever more accurate and effective. Through constant practice and the assistance of millions of others, strangers and friends, we are getting ever better at charting our personal learning courses.

The educational process is, however, about much more than piecemeal acquisition of skills. Deeper, more connected learning is at least as much about becoming part of a learning community, learning ways of thinking, ways of doing, ways of interacting. Though seldom explicit in formal curricula, much of education's value lies not in giving us skills but in changing us as human beings, deeply affecting attitudes and values. Education is a highly social process, whether or not social pedagogies are used to achieve it. Teachers (including authors of textbooks, designers of educational systems, other students, etc.) are not just telling us facts or helping us to acquire skills, they are modelling ways of being (Vaill, 1996). Equally, learning with others, physically or electronically, is deeply motivating: being part of a learning community is a crucial aspect not just of personal growth but of knowledge acquisition. We are not computers that store and retrieve information: all knowledge is connected, social, and filled with value.

Online, this deeply embedded social and cultural aspect of learning is less common. For much learning, our existing affinity networks may not suffice because we often have to step over boundaries into a different network to see the world differently. In p-learning, the effort of physical attendance contributes to the its significance. It is like the difference between streaming a video to watch alone and attending a show at a cinema: physical and social context matters. Moreover, the very diversity that is such a strength in the online world militates against the acquisition of cultural norms and patterns or, worse, encourages us to live in filter bubbles – boundaries - of our own making, reinforcing beliefs and values that may have unwanted cultural consequences (Pariser, 2011).

While virtual presence and simulation can have benefits when learning dangerous or expensive activities, costly resources like laboratories, design studios and workshops, intrinsically social spaces like theatres and gymnasia, and even physical libraries remain essential to some kinds of learning. Although there is no reason that these should be coupled to an institutional learning process, institutions already exist to provide them. There are also many activities such as dance, sport and so on that can *only* be done with co-present people. E-learning can play an important role, through video, automated analysis of movement, reflection, hints, stories, etc., but some activities are innately collocated. Furthermore, our learning must be applicable and relevant in real-life societies, in which we live with warm, breathing people. E-learning is only relevant insofar as it supports rather than replaces that.

Although much expertise can be codified, it is often not enough to simply know the path. It can demand encouragement and deep knowledge of the dangers or surprises from someone more familiar with the terrain. For all their flaws, our educational systems can be effective ways to enable learners to gain confidence, belief and assurance that the unknown need not be feared. Sometimes we need to delegate control to another in order to do what we wish (Dron, 2007). There is also much tacit knowledge that cannot be codified (Polanyi, 1966), that emerges through interaction and engagement with a community, especially with those that are experts in their fields. Educational institutions, online or otherwise, teach far more than what is explicitly taught.

Educational institutions also play an important societal role as both guardians of culture and catalysts for change. Universities, in particular, are spaces that offer freedom to explore avenues that may have no obvious commercial or political value, but that matter for supporting the creation, preservation, modification and spread of socially useful values and knowledge. Other organizational forms can achieve this to a greater or lesser extent, from skunkworks to philanthropic support of artists, but only our institutions do so at scale and with less influence from partisan sponsors. Online crowd-funding is starting to erode this advantage, but it is haphazard and may never play such a significant societal role.

SHIFTING THE BOUNDARIES

Ideally, we should retain the benefits of our institutions but take advantage of the shifting boundaries of e-learning. I present a few of the ways that this is possible, before moving on to the notably separate question of accreditation.

Some studies suggest blended learning to be more effective than either p-learning or e-learning alone (Tamim, Bernard, Borokhovski, Abrami, & Schmid, 2011). It is especially helpful to allow students to explore a topic area, before engaging with others in a so-called flipped classroom (Stray-

er, 2007), but even the humble textbook supports an inherently blended approach, allowing diversity in pacing, pedagogy and learning paths. Though inherently more flexible, extrinsic motivation still drives most blended learning. The problem can be reduced by allowing students at least some control over how and on what criteria they are assessed (Knowles, 1975), and by removing grading during a course, only applying it (if required) at the end, but this can be hard to achieve thanks to surrounding systems, norms and regulations. The blurring of boundaries mean that it is possible to embed e-learning in real life situations, such as through mobile technologies, bringing the university to the world rather than vice versa. We need not so much flipped classrooms as *flipped institutions*, that offer services to learners, rather than controlling their paths and actions, and that offer accreditation divorced from learning (of which more below). Rather than adapting p-learning pedagogies to e-learning, we might better look at what physical institutions can add to the learning process that virtual systems cannot, and to treat p-learning as a support, rather than form-giver, for e-learning. Learners in such institutions may be more like members of clubs than students, using the services as and when needed, without fixed enrolments or imposed schedules.

Universities' mandate for expanding and disseminating knowledge combined with their relative neutrality and public funding make them well suited to act as significant knowledge sharing and knowledge forming nodes in online networks, as long as they make environments and tools available beyond the cohorts of students they teach. There are great benefits to their own students in participating in such networks, negating some of the disadvantages of the separation between learning and life institutional learning embodies. Boundaries between institutions may become more permeable, allowing each to learn from and participate in the knowledge shared by others. A bottom-up federation of universities, colleges and schools from across the world could participate in a distributed social network that might dwarf that of Facebook. Many protocols, standards and tools have been proposed and created to support such a federation, from simple aggregation mechanisms like RSS, Trackbacks and Webmention or authorization standards like Shibboleth, to full-blown interoperability standards like OpenSocial or the (now dormant) e-learning framework. As long as institutions are primarily funded as purveyors of courses and accreditation, the motivation for such fundamental change is weak: they do not need to cross such boundaries. However, as competing models of learning and credentialing gain momentum, as conventional education costs soar, and as learners take more and more control, the need for such change will become compelling.

Among the most effective ways to shift the boundaries imposed by p-learning is to exploit the capability of online learning to support small-chunked learning. We never speak of students dropping out of a Khan Academy tutorial. Learners may fail to complete one, but they can try again, when they are ready, or when they need it. To do this through p-learning implies high administrative overheads, scheduling problems, issues of insufficient or excess capacity, and complexities for students seeking a useful path as well as for teachers trying to manage the process. Fixed-length terms and lessons persist because, in p-learning, variation is hard to manage. Online, the algorithmic nature of boundaries and the reification of the process allow students to learn when they are ready, at their own pace, to seek assessment when ready, to try again and fail without major repercussions. There is no chance of being left behind if you are not in a race to begin with. The fact that learners may not know which small chunks they need and may not see the bigger picture is less of a problem than it seems, because some of those small chunks can provide guidance (not unlike course syllabi, but more flexible), as can teachers who, freed of scheduled classes, can mentor more easily. There are also many adaptive, analytics tools that can help to structure the process.

Learners that have not yet learned what they need to learn are not failures, and they are not dropouts. Dropping out only makes sense when we *force* people to drop in, which is an effect, not the purpose, of education. As human beings, we learn best when we want and/or need to learn it, not when we have been told we must. To support this, however, we need to think differently about both the process and the accreditation of learning.

ASSESSMENT AND ACCREDITATION BEYOND THE INSTITUTION

Fine-grained credits for self-paced, variably sized courses already compete with university degrees. Nano-Degrees from Udacity and Signature Tracks from Coursera offer small, targeted programs for developing specific industry-ready skills, as do increasingly popular bootcamps, that teach what learners need, when they need it. However, such programs continue to focus on credit for skills, and so, though learner control is greater, the tail continues to wag the dog.

To undermine accreditation's central role as a tool of control, assessment and teaching must be decoupled. Many existing mechanisms in our institutions allow for such decoupling, such as challenge for credit processes, in which students learn independently and simply take the assessment for a course, or accreditation of prior experience and

learning, or prior learning and assessment and recognition, in which students typically provide structured portfolios of evidence of having met an agreed set of outcomes. Such mechanisms allow transition from teacher-led p-learning to a wide range of blends, in which boundaries are largely determined by learners. Learners seeking such accreditation may construct evidence from not just smaller pieces, but also from selected parts of larger pieces, breaking the boundaries of time and topic that constrain much institutional teaching and pedagogies. Institutions might evolve to support the development of such portfolios or other proofs of competence, rather than just teaching courses. Competency-based programs at an increasing number of universities, and a shift to more problem-based and inquiry-based models of learning, herald this trend. E-learning makes such methods affordable. Learning may be sought not just across institutions but far beyond them: the boundaries are at most algorithmic or embodied in regulations, all of which can be far more easily changed than the walls and timetables that bore them in the first place. In such a context, physical and virtual institutions may be seen more as places to connect networks of learners and communities of practice (Wenger, 1998) than as places to teach curricula. Teachers may exercise the skills and methods they always have, if they wish. But they do not need to require obligatory attendance, and lessons may be mixed and mashed according to student, rather than institutional, needs.

Beyond relatively conventional forms of institutional certification, technologies to support accreditation already exist to certify rather than bound or drive learning. Open badges, the TinCan protocol (xAPI), LinkedIn endorsements, StackExchange Karma, and Caliper each provide more or less reliable means to record and, more or less effectively, to certify competence organically as an integral outcome of the learning process rather than as its driver. They make it easy to provide micro-credentials that do not rely on students having to follow teacher-led courses of institutionally bounded lengths, albeit that there is a risk that these may, as much as grades, become a reason for, rather than a product of, learning. The web of trust that gives universities and colleges their authority is increasingly found in distributed networks that can provide direct and indirect evidence of competence. Existing tools like e-portfolios and social media profiles provide the means to present direct evidence of competence that do not rely on ties with objectives-driven courses: employers already look at such evidence when judging candidates for jobs. In the near future and, already, for companies such as Google or Penguin that have rejected formal accreditation as a filter, such authority can reliably be asserted by the network, in which institutions and their qualifications play a lesser role.

CONCLUSION

P-learning is a highly evolved practice, well adapted to the constraints of physical spaces but not to those of e-learning. Using p-learning pedagogies for e-learning ultimately makes no more sense than trying to build cars like horses. We seldom question whether courses, for example, are a good idea: we simply try to build better courses. We need to question whether courses still make sense. Sometimes they will. Often, they will not.

Though much of what is distinctive about teaching remains important in e-learning, from caring to mentorship to didactic skill, the one huge and central change to teaching, freed of its p-learning constraints, is that it should no longer be seen as a process of coercion. There is no need for teachers to *make* their students do things. They may encourage them, persuade them, even cajole them, and they will certainly provide support and guidance. But they should not be required to provide pedagogies to force compliance, nor that are based on an assumption of unwilling learners that must stay in one place at and for a fixed time. Those that learn will be doing so because they want and/or need to learn. As all teachers know, it is a pleasure to teach such learners. To a large extent this is what teaching should already be concerned with: by removing the contingencies of formal p-learning, the shifting boundaries of e-learning support self-motivated learning.

The shift in the balance of control, that e-learning inevitably brings, challenges our most deeply embedded p-learning practices of teaching and assessment. Courses, credentials, classes, terms and disciplines are the result of constraint, not of pedagogical necessity, and the manifest success of e-learning when such boundaries are removed highlights their flaws. If our adult education systems are to continue to serve a useful role, we must rediscover the value that remains when such boundaries dissolve. Universities, have long been and should remain generators or knowledge, not just replicators of it. Educational institutions, virtual or physical, can be places to examine and challenge the value, ethical and aesthetic, of what we know, to be centres for debate and development, places to develop and sustain culture. Freed from the need to provide controlled courses, they may still be great centres for learning, sharing knowledge and, above all, providing learning communities and a learning commons, virtual or otherwise. The future of the university may well be bright, as long as we understand and cherish its role beyond that of passing on and accrediting knowledge. E-learning does not so much undermine as accentuate that value.

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