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Résumé de l'article

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Pointillist, Cyclical, and Overlapping: Multidimensional Facets of Time in Online Learning



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Abstract

A linear, sequential time conception based on in-person meetings and pedagogical activities is not enough for those who practice and hope to enhance contemporary education, particularly where online interactions are concerned. In this article, we propose a new model for understanding time in pedagogical contexts. Conceptual parts of the model will be employed as a “cultural technology” to help us relate to evolving phenomena, both physical and virtual. We label these constructs as *pointillist*, *cyclical*, and *overlapping* times.

Pointillist time and learning takes place in “dots” of actions that consist of small, discrete moments (e.g., tweeting). Producing, receiving, and sharing ideas in this context are separate points in each actor’s timeline. Cyclical time and learning emerges from intensive periods, which are highly visible in online forums. This construct reveals itself through interactions that often exist in multiple online environments. Overlapping time and learning involves various configurations of linear, pointillist, and cyclical layers, which are mainly evident through the simultaneous uses of social communication technologies.

Pointillist, cyclical, and overlapping time constructs enable new orientations for conceptualizing time in pedagogy. In this article we also introduce *de-*, *re-*, and *en-* modes of these pedagogies that connect with approaches to meet the needs of learners for individualization, personalization, and cyborgization.

Keywords: Open learning; online learning; pedagogy

Introduction

In dialogues mediated by information and communication technologies (ICTs), time often deviates from the distinct, clear structures normally perceived in the “real world.” Individuals may participate many times and in different ways. Messages, comments, questions, et cetera can arise in asynchronous communicative activities at any time, occurring after hours, days, and weeks, or, on occasion, immediately. Of course, these communications take place during a certain time scale, but it is neither accurate nor absolute. The messages may be viewed by different users repeatedly, and through this cycle, new meanings and content may come into light. Viewed from a temporal perspective, past events regain new life when examined (and reacted to) in different contexts. Often, online events exist in isolation, becoming real only within the flow of the network. This facilitates the creation of new virtual conceptualizations of time as it relates to social interactions.

We present two virtual extensions to the traditional, linear conceptualization of time that emerge within ICT-enabled learning systems: (1) *pointillist* (dot-like) time, revealing itself through discontinuous, separate acts that participants can return to; and (2) *cyclical* time, illustrated by clusters of events in which intensive interactions occur for a period of time, and then cyclically reemerge as bursts of activity in the same or different forums after a certain amount of time has passed. These modes are not necessarily exclusive of each other, but often overlap, creating a diverse ecology of time constructs within learning systems.

In this paper, we argue that linear time normally does not exist in online learning environments, but is instead supplemented or replaced by pointillist and cyclic temporal modes (Ihanainen, 2006). For facilitators of learning in online environments, it is important to recognize, understand, leverage, and construct new opportunities within any configuration of these conceptualizations. We expand on this heuristic framework and identify ways to maximize pedagogical performance based on these multidimensional understandings of time in online education.

Multidimensional Conceptualizations of Time in Learning

Temponormative Learning

When most people hear the word *pedagogy*, they are likely to think of it within what we label a *temponormative* framework. For those of us born before the 1990s, this is the framework we are most familiar with. It is a pedagogy that embraces linear time, Cartesian (linear) thinking, and continues to be the most prevalent framework within modern educational contexts. A linear conceptualization of time ensures that the learning process has a beginning and an end, with predictable (and measurable) waypoints between. The causal linearity of the temponormative frame allows the developmental procession of teaching and learning that is often best suited for transmitting explicit knowledge to learners. This mechanical process, for example, allows a group of learners to read a book progressively, chapter by chapter, and recite information and facts that may be measured and evaluat-

ed summarily. Temponormative knowledge is typically encoded in predefined curricula, transmitted through “banking” pedagogies (see Freire, 2000), and transmits just-in-case information and knowledge (e.g., memorization of the world’s capitals) that might be useful outside of the learning event’s timeline.

The ongoing development of online learning environments that allow non-linear communications (both synchronous and asynchronous), however, suggest that the continuing reign of the temponormative framework will become outmoded by the twenty-second century. The three post-temponormative alternatives we identify in this paper utilize ICTs to expand the temporal ecology of learning options beyond traditional, linear progression.

Pointillist Learning

When one sends a *tweet*¹ about what one feels or does, to tell others about an idea, or to let them know about an interesting Internet item (blog post, video, podcast etc.), an experiential time point for the readers of the tweet is produced. Online readers and followers can retweet that expression to others, producing a new time point. When one person follows the tweets of others, he or she jumps into their time points for a while. This kind of microblogging is pointillist both in a temporal sense and as an activity. Compatible with Bauman’s (2007) “pointillist” concept, the term may also be employed generally to depict the life of a modern and fragmented world. In this extension, we see pointillist time as a one-time reality among simultaneous others.

Elements for pointillist learning are masses of fragments and pieces as used, for example, within Twitter messaging. They transmit separately beginnings, middle-points, and endings of events in an order that may seem perceptibly vague. Among others things, they comprise experiences, opinions, perceptions, comments, and what-if scenarios.

Pointillist learning takes place in the middle of the timeline. Pointillist behavior and learning implies an ability to tolerate the insecure, uninterrupted, unanticipated and obvious absurdity of the “moment,” but at the same time it indicates a capacity to differentiate the essential from the unessential and to perceive the whole from fragments, almost as a fractal construction of personal experiences and understandings.

The spontaneous nature of pointillist learning has always been a natural part of everyday human activity.² While physical–social–virtual activity has become the one unique reality shared among most people within Western society, forces of globalization are gradually forming an expanded mindset (global awareness), which increases possibilities of a greater role for pointillist learning.

Cyclical Learning

In online forums, where participation (usually discussion) occurs within threads as a dialogical activity, learners experience both densification and diffusion of learning intensity. These kinds of forums are, for example, discussion areas inside closed platforms, open social media chatting and interaction hubs, commenting tools in blogs, et cetera. Based on our experiences in such forums, we have customarily been very passionate and eager to discuss, comment, ask about, and develop specific thematic units. However, after a period of time this intensity decreases and even ceases. Later on, the topic or an evolved form of it reappears on that same forum or a different one.

This activity can be called a cyclical performance. The idea of cyclical learning relates to “orient” approaches for repeating cycles of seasons (for example, see Briers, 2010), but here we examine cycles in a smaller and disordered online scale. Phases of intensive activity and calm alternate with each other, and together they construct a pulsating interaction within the environment. Because the pulse activity is usually connected with specific themes and content, it almost always is directed toward something. This does not mean that the activity is determined by explicit objectives, but instead by goal-seeking encounters (i.e., as “strange attractors” in the language of systems thinking) and processes with forum discussants.

Cyclical activity and learning is connected with the ability to observe intensive periods of online interaction and join them. New competencies emerge in the perception of pulses from emerging processes of thoughts, emotions, and understandings (among others). It is also very important in cyclical learning and activity to be aware of and understand the role of intervals. When participants take part in these cycles of processes, they develop individual perceptions of the artifact explored. Participants therefore develop a new competency, gaining the ability to perceive and acquire new knowledge within intensive peaks of learning.

Overlapping Learning

The three frameworks we have described do not necessarily exist exclusive of one another, but can coexist and overlap in simple or complex relationships (see Cynefin framework, 2011). Overlapping may occur as (1) fragments within fragmentary entities, or (2) waves within pulsating content processes. With regards to the former, for example, overlapping incorporates the ability to move from pointillist activities to cyclical learning and vice versa. The latter includes an ability to construct new insights, conceptualizations, and contextual applications for knowledge within pulsating waves of cyclical, pointillistic, and/or tempo-normative learning sets. Overlapping learning can take place through the overlapping uses of technologies. For example, in online education, microblogging (a pointillist activity) may be layered with intense activity within discussion forums (a cyclical activity).

Educators find that the management of learning in this layered framework requires a keen ability to cope with uncertainty and ambiguity in outcomes, which may be driven by the complex interactions between components of the system (such as “mashups” of online tools). For example, a forum discussion could serve as a launching point for sharing ideas

in microblog posts, which immediately draw new insights and reactions from actors outside of the learning group in the form of blog comments, Twitter responses, and so on. This new knowledge may be fed back into the forum discussion and/or additional microblog posts, igniting pulsating waves of new knowledge generation within the learning group, beyond the learning group, and in the spaces between. In such a scenario, learning happens in instances and waves, independent of a definable pedagogical time.

Table 1

Characteristics of Temponormative, Pointillist, Cyclical, and Overlapping Learning

	Temponormative	Pointillist	Cyclical	Overlapping
Pedagogy	Traditional	De-	Re-	En-
Systems analogy	Cartesian, linear	Moments	Pulsating	Chaordic
Knowledge produced	Explicit	Personal (explicit and tacit)	Personal and social	Personal and social
Learning happens through...	Direction	Serendipity	Evolution of dialogue	Intersection of direction, serendipity, and evolution
Predefined learning outcomes	Yes	No	Sometimes	No
Teleogenic?	No	No	Yes	Yes
Examples	Lectures, readings	Microblogging	Online forums	Mashups, MOOCs

Note. In online contexts for learning and education, activities and behaviors are embedded within the four identified time modes: temponormative, pointillist, cyclical, and overlapping. For teaching and learning, it is important to recognize them and how they interplay in educational settings and practices.

Implications: De-, Re-, and En-Pedagogy

The pointillist, cyclical, and overlapping extensions operating beyond temporally normative conceptualizations of pedagogical time allow us to revisit and recontextualize our traditional views of pedagogy. We label these de-, re-, and en-pedagogies.

A pointillist activity requires the learner to have spatial and temporal independence in the different contexts of (virtual) responses and events. This capacity also creates sensitivity to hectic communication processes and fragmented content items. Within these situations of cognitive uncertainty and obscurity, the question of emotional certainty and trust emerges for the learner.

Pointillist learning is, on one hand, learning in separatenesses (separate interactions and content items), and, on the other hand, it is emergent, forming a gestalt of separatenesses based on the learner's personal interests. Pointillist learning is also tacit, but can acutely and situationally become explicit, only to change again into a tacit form. The pointillist emergent gestalt has both an unexpected and intuitive character: It takes place on its own.

Pointillist learning pays attention to culture and activity, and Twitter emerges as a powerful example of this. The attention space or horizon maintains the individual's attunement to learning, producing her own reciprocal or separate awarenesses. Learning is facilitated by this state of attunement and the attention-producing activity.

When pointillist learning is examined from a pedagogical point of view, it presents itself as an anti- or *de-pedagogy*. This means that pointillist learning cannot be taught—it just happens! And because it happens so frequently, it is one of the most natural forms of learning for humans (Cobo & Moravec, 2011). Based on this argument, we label pointillist pedagogy (if there is such a thing) as de-pedagogy, in which continuous—both interrupting and restarting—pointillist presence is essential. It does not emerge from any planned or consciously intended activity, which may also include pointillist learning. Pointillist pedagogy is the pedagogy of serendipity.

The greatest challenge de-pedagogy presents to educators is that we must trust that valuable and significant learning is actually taking place. For pedagogical activity, de-pedagogy means that as facilitators of learning, we have to give up our role as teachers and start working as colearners and peers within our own pointillist environments.

De-pedagogy can also be viewed from a perspective of individualization (Dorninger, 2008; Ray, 2005) that is different from personalization. Individualization in the context of de-pedagogy means that single investments, such as tweets, messages, blog entries, articles, or other (multimedia) content, are appreciated and learners are encouraged to produce and use them individually (Bruns, 2008; “produce” in Producersage, n.d.). In this sense, de-pedagogy is an expression of pedagogical individualization.

The serendipitous nature of pointillist de-pedagogy becomes especially visible in the context of Twitter as the service limits communications to 140 characters or less. Users who

have embedded themselves in the communication style of the 140-character limit feel the empowerment and impact of de-pedagogy, although the experience cannot be explained explicitly with rational and causal terms. Of course, de-pedagogy is also present in real-life interactions, but its power is more apparent when real life realms are actively connected with the virtual in real time.

Pointillist de-pedagogy may also trigger *re-pedagogy*. Often times, people wish to continue their explorations and re-understandings of pointillist events and contextualize the knowledge to better suit their own needs and interests. This activity often takes place in online discussion forums, which make ongoing communication and collaboration possible.

In cyclical activity, the same themes and topics arise in discussion and other activities semi-regularly on either the same online forum or on different ones, where the topic is recontextualized. In other words, the topic may be examined in new or different environments. The cyclically repeating activity creates a reinforcement of its concepts and includes concepts that are closely connected with it. In cyclical activities, learners develop the capability to apply knowledge, competencies, and skills in new interactive contexts.

The recontextualization of learning through conceptual reinforcements and innovative applications of knowledge in new and different interactions means that individuals, groups, and networks are able to build up the knowledge and capabilities produced in previous cycles. New learning takes place in these cyclical renewals.

We therefore describe cyclical pedagogy as re-pedagogy. It builds and supports frameworks in which previously learned knowledge and competencies may be reconstructed to be used in new situations and contexts. The cyclical pedagogy is re-pedagogy, in which something is done again, but in a different way (recontextualized). The substance of re-pedagogy is not new, but it is not old or the same either; it is a mode of learning that provides for the evolution of knowledge.

Re-pedagogy is synonymous with educational personalization.³ The core activity in personalization is multilateral interaction and negotiation, in which shared experiences, knowledge, and orientations are made explicit for participants. This pedagogical personalization is always a joint and equal process, not an external “marketing” endeavor to produce desired behaviors for the benefit of a single party.⁴

Pointillist and cyclical activities as experienced in life and learning overlap each other. We describe them as coexisting within layer-like membranes of time and behaviors. The overlapping activity has the capability to attend to and orient participants flexibly in complex events and contexts. It has the capacity for simultaneous temponormative, pointillist, and cyclical modes and outcomes.

Overlapping learning is knowledge-building of everything/anything, everywhere/anywhere, and at all times/anytime. In other words, overlapping learning is boundless in its scope and capabilities. When examined from a pedagogical point of view, it can be seen as

pedagogy of encoding. We understand and recognize the pointillist de-pedagogy and cyclical re-pedagogy mainly in virtual realms. The overlapping phenomena we have described in this article can only be experienced in authentic virtual realities. It is possible to collect the phenomena via mashups and other tools into understandable entities for purposive applications (for example, to familiarize oneself with explicit knowledge about a certain element, development, or research project). They may be purposefully encoded with ICTs. We therefore label overlapping education *en-pedagogy*.

In online education, en-pedagogy transforms technology into virtual teachers' activities through the use of mashups (which we define as combining web tools in creative ways). What was formerly perceived as chaos or noise is instead presented and made available for understanding in new and resourceful ways.

Parallel with de-pedagogy/individualization and re-pedagogy/personalization, we regard en-pedagogy as *pedagogy of cyborgization*. This does not mean the creation of human-technology hybrids, but rather recognizes the "normal," already ubiquitous use of mobile ICTs by humans. Cyborgization is an educational activity incorporating overlapping linear, pointillist, and cyclical content and behavior for the learners' everyday learning and studying through ICTs. Access to mobile technologies becomes so fluid that they represent extensions of the human body (hence we use the term cyborgization).

Table 2

Summary of Implications of Pointillist, Cyclical, and Overlapping Learning for Pedagogy

	De-pedagogy	Re-pedagogy	En-pedagogy
Learning status	Exists in itself	Exists in meeting	Exists in encodings
Educational orientation	Trust in individual productivity	Organized interaction in forums	Organized through "mashups"
Educational specification/emphasis	Individualization	Personalization	Cyborgization

Typical classroom learning has instilled in most educators a strong tradition of temporally normative orientation. In de-, re-, and en-pedagogical contexts, educators should view classes as malleable places and gatherings of people that resemble studios and workshops more than classrooms.

Pathways for Maximizing Pedagogical Performance: Examples

The pointillist and serendipitous de-pedagogy is impossible to describe with concrete examples, unless we speak about individual experiences. As Sugata Mitra illustrates in his talk, *The Child-Driven Education* (TED, 2010), this question emerges through the shared

tales of tacit learning experiences. The “holes in the wall” (computers) in his research correlate (in the beginning) to pointillist learning moments for children, and later these moments can evolve into self-organized conversations and learning activities. The re- and en-pedagogies instead may be illustrated by certain activities and cases.

The idea of re-pedagogy is illustrated through an example John Francis (in TED, 2008) shared in his TED talk.⁵ Mr. Francis remained silent (did not speak) for 17 years. During his silence, he still found opportunities for teaching. When he taught without words, he used a unique sign and body language. Students then recoded his messages themselves and interpreted their own individual meanings. Through this experience, Mr. Francis reports that his students sometimes understood the content better than he himself had intended to teach. Re-pedagogy is the perfect description for Mr. Francis’ case. In the real-life situation—which often is a cyclical process—there are various content items within communications, multimedia, traditional documents, and so on. The participants in the situation then reproduce the content in a unique way that meets their own needs and purposes.

The pedagogical activity in re-pedagogy is the evolving reproduction of the knowledge itself and can also be labeled *situated* or *personalized knowledge and competencies*. For re-pedagogy, teachers must trust in people within the situational moment. Their task is to try to arrange environments and places for learners to interact and collaborate. Re-pedagogy is a pedagogy that facilitates or curates ideas and experiences (Siemens, 2007).

Re-pedagogy is visible in activities that happen in simulational learning and replaces the just-in- case learning of the temponormative paradigm (that is, rote memorization) with “what if?” virtual, pointillist, and de-pedagogical opportunities. This approach allows serendipitous learning that can provide solutions to past and present problems. In either pointillist or cyclical forms, simulational learning also permits preactive, foresight-generative thinking that allows students to consider and act upon solutions to problems that do not yet exist. It is plausible to consider the genre of online simulations as an example of re-pedagogy.

Chaordic learning is an en-pedagogy, attending to the chaordic systems of overlapping cyclical, pointillist, and temponormative learning.⁶ Chaordic environments balance chaos (elements that cannot be controlled) and order (such as temponormative pedagogies) within a system (Amidon, 2003), and “mold chaos and order for their design serendipities” (Harkins & Moravec, 2011, p. 132). Examples of chaordic learning include videoconferencing with remote experts (pointillist) to overlap a series of lectures (temponormative) or mashups of learning environments with ambient computing. The learning facilitator, however, needs to focus on the interaction between the various elements because they can lead to learning outcomes that may deviate from what he or she formerly planned. A chaordic approach can maximize the horizontality of relationships between facilitators and learners and engage all actors in the construction of new knowledge. As Moravec (2006) postulates, intelligent applications of information and communication technologies may be best leveraged to facilitate such chaordic learning. As artificial intelligence technologies improve, we can expect the ecology of chaordic learning options to expand and diversify. We believe

massive open online courses (MOOCs), originally organized by Steven Downes and George Siemens (Downes, 2008; Mackness, 2010), are examples of en-pedagogy.

Apart from exploring new pathways for maximizing pedagogical performance, educators need to rethink assessment and evaluation in non-temponormative education. De-pedagogies produce outcomes that may be unexpected and not quantitatively measurable through legacy regimes. Likewise, the cyclical nature of re-pedagogies builds personal knowledge and competencies that cannot be measured directly. Finally, the chaordic nature of learning in en-pedagogical systems cannot be controlled. Rather, as Allee (2003) suggests, chaordic systems need to be attended to, not managed. The challenge for educators is therefore to broaden the scope of expected outcomes in an environment that may seem ambiguous or uncertain. Educators need to ensure that these systems have strong teleogenic (goal-seeking) attributes.

Summary

As stated above, we argue that temponormative time normally does not exist in online learning environments, but is instead supplemented or replaced by pointillist and cyclic temporal modes. Together these form an overlapping mode of time. We provided an expansion of this heuristic framework with pathways for maximizing pedagogical performance based on these multidimensional understandings of time in online education. Recognition of this framework with expanded temporal characteristics, however, calls on us to develop new, purposive approaches that embrace and maximize the best configurations of de-, re-, and en-pedagogies. So in lieu of a conclusion, we leave educators—particularly online educators—with a challenge: Afforded the post-temponormative enabling of online environments, how can we best leverage these opportunities of pedagogical time to facilitate multidimensional learning and meaningful new knowledge production?

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Endnotes

1 A tweet is a post on the Twitter network (see <http://www.twitter.com>), which limits messages to 140 characters or less.

2 For a detailed discussion of the relationship between formal, non-formal, informal, and serendipitous learning, see Cobo and Moravec, 2011.

3 For a discussion of educational personalization, see Leadbeater, 2004, 2005.

4 In the private, for-profit sector, “personalization” often refers to activities that collect information about customer behavior and desires, and then produce “personalized” goods to sell to those same people. For our approach in learning, context personalization is given a different meaning to enable the joint meeting and interaction of participants to create something new.

5 TED is a technology, entertainment, and design conference series. The talks are available to download for free at (<http://www.ted.com>).

6 The term chaordia was coined by Dee Hock, and was originally applied in the area of management theory during his tenure as CEO of VISA International. For more information, see Hock & VISA International (1999).

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