Paragogy

Joseph Corneli[1] and Charles Jeffrey Danoff[2]

[1] Knowledge Media Institute, The Open University, Milton Keynes, UK,
j.a.corneli@open.ac.uk,
WWW home page: http://metameso.org/~joe

[2] Mr. Danoff's Teaching Laboratory, Winnetka, IL, USA,
danoff.charles@gmail.com,
WWW home page: http://mr.danoff.org

Abstract. Paragogy is a theory of peer learning: we endeavor to say how it works, and how it works best. This paper outlines paragogy's contemporary relevance and expounds its principles, showing their connections to other theories. We present an extended example of paragogy in practice, where we use it to evaluate our experiences working at the Peer 2 Peer University (P2PU).

Keywords: paragogy, peer learning, P2PU

1 Introduction

We use the term *paragogy* to characterize the critical study and practice of peer learning (literally, "para-" alongside, "-gogy" leading, here adapting the classical concept of *pedagogy* and the recent notion of *andragogy* [10] to a peer learning context). The fact that παραγωγή is a word in Greek meaning "production" shall not dissuade us from this new usage in English. Indeed, along with J. Philipp Schmidt, executive director at the Peer–2-Peer University (P2PU)[3], we believe that learning is frequently found at the heart of peer production processes [19]. In the case study that forms the heart of *this* work (Section 6), we will use paragogy to evaluate our experiences as course facilitators at P2PU.

Although peer learning has been the subject of various studies, it is typically given a secondary role, within a pedagogical framework. This rather staid definition, from a book that approaches peer learning from the perspective of cognitive psychology, illustrates our point [16]:

> *Peer learning is an educational practice in which students interact with other students to attain educational goals.*

Although this definition is not in itself unreasonable, we are fascinated by the growth and evolution of opportunities for learning outside of formal institutions. A recent article from Fast Company, an influential business magazine, gives an expanded view of peer learning:[4]

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[3] http://p2pu.org

[4] http://www.fastcompany.com/1746901/how-mint-execs-new-company-is-going-to-make-teachers-out-of-us-all

> *Just as more and more employees are expected to have basic multi-media skills – the ability to blog, for example, or to shoot images or videos on their smartphones – so will they be expected to have the basic ability to share knowledge with their peers.*

Thus, peer learning can of course take place between non-students, and it can concern productive, as well as educational, goals.

In addition to an increased emphasis on informal learning in the workplace, recent years have seen the rise of open, online spaces that serve the needs of learners via a commons-based approach. Here we cite Cormac Lawler's recent work on Wikiversity ([11], [12]). Lawler uses and advocates an *action research* approach, with thematic questions "What does it take to change a given system? [...] and how does the process of changing a system develop our knowledge about that system?" We have brought these questions to P2PU, and by extension to the education system that P2PU critiques ("The current model of higher education is broken..."[5]).

Our aim is to develop a set of "good practices" around peer learning, suitable for use by everyone involved (individual learners, organizers, administrators). A model is provided by two related works, one from Crowston *et al.* concerning "open source software success" [5] and the other from Resnick *et al.* on "starting new online communities" [17]. We will, however, have to wait for a future work to bring these contributions into one coherent frame with paragogy.

2 The challenge

A. T. Ariyaratne's essay on *Rural Self Help* [2], one of the foundational writings of the Sarvodaya Shramadana movement in Sri Lanka[6], begins:

> *Nobody needs to teach rural communities about "group effort" and "self-help". [...] The real question, therefore, is to examine what are the constraints that exist inhibiting the expression of their group effort and self-help qualities designed to improve food and nutrition levels, clothing, shelter, health, sanitation, education and cultural life?*

We approach peer learning in a similar spirit: it is something we all know how to do, but can't always do well. Intuitively, there are bound to be difficulties for a group of peers studying a subject together, outside a traditional classroom or without a teacher. Indeed, peer learning is different from other forms of group effort, the proverbial "barnraising" for example, in which the persons involved can be presumed to know how to build barns – or at least to know someone who knows, and stand ready to take orders. Typically, peers are not experts in learning, didactics, or in the subject they are studying, and are faced with multiple difficulties associated with putting together knowledge about the subject, assembling a suitable learning strategy, and communicating with one another.

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[5] `http://okcon.org/2011/programme/hacking-education-p2pu-a-case-study`
[6] `http://www.sarvodaya.org/about/philosophy/collected-works-vol-1`

3 What paragogy has to offer

We have five principles, with which we endeavor to both describe the phenomenon of effective peer learning, and to prescribe key aspects of its best practice.

1. **Changing context as a decentered center.**
2. **Meta-learning as a font of knowledge.**
3. **Peers provide feedback that wouldn't be there otherwise.**
4. **Learning is distributed and nonlinear.**
5. **Realize the dream if you can, then wake up!**

Generally the ideas embodied in these principles are not unique to paragogy, indeed, we will try to ground each of them in previously existing literature, while showing their relevance to peer learning.

1. Changing context as a decentered center. In paragogy, we recognize that we are not merely teachers or learners, but are actually co-creating the learning context as a whole. The central role of environment is not unfamiliar in constructivist thinking about education ([23], p. 4):

> *Thinking of instruction as an environment gives emphasis to the 'place' or 'space' where learning occurs. At a minimum, a learning environment contains: (1) the learner; (2) a 'setting' or a 'space' wherein the learner acts, using tools and devices, collecting and interpreting information, interacting perhaps with others, etc.*

Again, in the paragogical view, the environment should not be taken as "given" but should instead be viewed as co-created by peers.

2. Meta-learning as a font of knowledge. Here we are concerned both with efforts to "learn how to learn", and efforts to learn how to support others in their learning efforts [20]. Further, while it is a good idea for any organization to learn its business well [13], learning about learning is especially vital for those in the learning business. In peer learning, that is all of us.

3. Peers provide feedback that wouldn't be there otherwise. Learners must not simply seek confirmation of what they already know, they must confront and make sense of difference as part of the learning experience. Clearly, differences pose challenges but these are worth grappling with. Firstly, for psychological reasons: in many domains feedback is only available from peers (but of course peer learning can be relevant in domains like rock climbing and computer programming, where automatic feedback does exist). Secondly, there are philosophical or political reasons to affirm difference. In a space like P2PU, which aims to provide "learning for everyone, by everyone, about almost anything", we can hardly avoid developing an "understanding of social relations without domination in which persons live together in relations of mediation among strangers" [24].

4. Learning is distributed and nonlinear. Learning does not go in a straight line [8]. In particular, involvement in co-creating the learning context becomes an important "strand" in the paragogical understanding of peer learning.

5. Realize the dream if you can, then wake up! Without clear goals, there will be be nothing to realize. Without critical thinking about goals (leading us to change them), learning is a mostly passive game. Paragogy calls for a strategy of "deliberate practice" [7].

4 Literature review

The paragogical principles were conceived by turning Knowles's principles of andragogy [10] on their edge. In succinct form, these principles are:

1. **That adult learners are self-directed.**
2. **That they bring a wealth of experience to the educational setting.**
3. **That they enter educational settings ready to learn.**
4. **That they are problem-centered in their learning.**
5. **That they are best motivated by internal factors.**

Blondy [4] points out both uses and challenges for each of the Knowles principles, focusing on how they work in online learning environments. For instance, with reference to the first principle, "*Cheren stated that while learners may express a desire to be self-directed in their learning, most lack the required understanding of learning necessary to be self-directed and thus need guidance and encouragement in the learning process.*"

While our principles can be read as a critique of andragogy, it is largely a matter of point of view: thus, unlike andragogy (which takes the view of the adult educator) or pedagogy (which again studies teachers teaching learners), and unlike heutagogy [9] (which focuses on self-directed learners), as we have seen above, paragogy focuses on cases in which learners are actively engaged in co-creating their learning environments. In formulating our first principle, we drew on Nishida's notion of *basho* ("shared context in motion"), which looks at the way a context constrains or supports different types of (inter-)actions, and simultaneously at the ways in which we can (re-)shape the contexts we find ourselves in [1]. Thus, instead of asking whether or not learners are self-directed, we would follow Bingham [3], and assert that self-directedness is only meaningful within a relational context (e.g. within a social field). So much for the first principle, others are subject to a similar re-thinking.

Paragogy is not the only framework that has been used to study peer learning. We'll mention Scardamalia's 12-point framework for Knowledge Building [18] and Mwanza's 8-step process coming from Activity Theory ([15], cf. [14]). Scardamalia's 12 "socio-cognitive and technological determinants of knowledge building" are framed by the idea of collective cognitive responsibility in the workplace. (Collective responsibility for creating a suitable learning context would be

another way to describe our first principle.) Scardamalia's more extensive framework will in general support a more detailed analysis, but may be less intuitive to work with. Mwanza's eight steps map a given situation to Engeström's activity triangle [6], and are used to generate design requirements. This method is less normative than either Scardamalia or the present work, but also less specific. As with the work on software and community-building best practices mentioned in the introduction, we must defer the task of fully comparing and contrasting these approaches with our own.

5   Implementing paragogy

How to implement the principles? In this paper we will incorporate a strategy used in the US Army's training programmes: the *After Action Review* (AAR) [21]. As the name indicates, the AAR is used to review training exercises. It is important to note that while one person typically plays the role of evaluator in such a review (and despite the fact that military personnel are differently ranked), the review itself happens among peers, and examines the operations of the unit as a whole. The four steps in an AAR are:

1. Review what was supposed to happen (training plans).
2. Establish what happened.
3. Determine what was right or wrong with what happened.
4. Determine how the task should be done differently the next time.

The stated purpose of the AAR is to "identify strengths and shortcomings in unit planning, preparation, and execution, and guide leaders to accept responsibility for shortcomings and produce a fix." We note here the similarity of the AAR to the action research cycle [11].

6   A case study in paragogical evaluation

The paragogy principles provide guidelines on best practices for building successful peer learning experiences. In this section we will apply these principles to evaluate the lessons learned from our work at P2PU as facilitators in 2010–2011. For each of the principles we run through the steps of an After Action Review to look at how well the principle was implemented.

6.1   Changing context as a decentered center: mapping system dynamics and semantics

Review what was supposed to happen. We both organized multiple courses where participants were supposed to interact and learn about the subject matter: Collaborative Lesson Planning Fall 2010 and Winter 2011 (co-organized with Dr. Majorie King); DIY Math; Math for Game Designers; Open Governance and Learning (co-organized with Marisa Ponti); and, in Spring 2011, Shaping P2PU[7], which was an "intervention" based on a preliminary version of this section.

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[7] http://new.p2pu.org/en/groups/p2pu-the-course/

Establish what happened. Due to critically low participation, the mathematics courses did not run to completion. Participation in Collaborative Lesson Planning and in Open Governance and Learning was minimal, but sufficient for a conversation to be sustained for the entire 6 week session. The theory of paragogy was born in an effort to understand how to produce successful courses. Finally, as of the time of this writing, 32 people have signed up for Shaping P2PU, but so far participation has been very low.

Determine what was right or wrong with what happened. In the more active courses, there were nice examples of learning by course participants.[8] Low participation was common across P2PU, as illustrated by Dan Diebolt's graphical analysis, which showed that participation within courses was uneven and falling.[9]

Determine how the task should be done differently the next time. Our best experiences as course organizers happened when we were committed to working through the material ourselves. Combining this with gently prompting peers to follow through on their commitments could go a long way towards keeping engagement at a reasonable level – but this only works when commitments are somewhat clear in the first place. The case of Shaping P2PU shows that organizer commitment is not enough. In this case, we feel that further clarification about the aims and intentions of those who are already highly involved in shaping the organization would improve things.

Looking at this another way, the P2PU ecology contains an implicit rubric for learning and engagement: from the time a member signs up for a course, to its completion, peers go through a cycle.[10] As we understand this cycle better, it should be possible to evaluate it for quality. Then P2PU could implement more formal check points throughout the cycle, requiring participants to specify, reaffirm, or adapt their commitments in relationship to judgments about quality.

6.2 Metalearning is a font of knowledge: transparency, accountability, and tone

Review what was supposed to happen. Support for community members was offered as a P2PU course (Course Design Orientation), in mailing lists, via weekly phone calls, in a Q&A issue tracker, and via other informal channels. Participants in courses were presumed to be ready and willing to contribute in a useful fashion.

Establish what happened. Core members do hold themselves accountable, but this behavior is not necessarily transferred or communicated to new members, for whom accountability is low. Course participants frequently disappeared.

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[8] E.g. `http://open-governance-and-learning.posterous.com/`

[9] `http://bit.ly/1qPChA`, `http://bit.ly/kH89OP`

[10] See `https://wiki.mozilla.org/Drumbeat/SoW-engagement-ladder`

Determine what was right or wrong with what happened. Core members are doing a lot of work, and the project is moving forward, with grant funding, incorporation, and several new staff positions. Apart from contractual agreements within the nonprofit, community members have little or no accountability to one another. Governance follows a "rough consensus" model (after David Clark's "We reject: kings, presidents and voting. We believe in: rough consensus and running code."[11]). As implemented at P2PU, the rough consensus model has its strengths, in particular, it helps avoid tyrannies of the minority in the mailing lists. However, there are a number of ways in which rough consensus seems incomplete.

Determine how the task should be done differently the next time. It is typical for online communities to have strictly enforced community norms. It would be helpful to have a concise discussion of these available, together with up to date information on "best practices" for organizers and participants. The current Course Design Handbook provides one starting point, but it falls short of being a complete guide to P2PU.[12] This sort of resource would be particularly useful for newcomers and people who cannot attend the community telephone calls.

6.3 Peers provide feedback that wouldn't be there otherwise: dealing with problems in a respectful way

Review what was supposed to happen. Discussions about P2PU happen in the community mailing list and other places mentioned above. Bug reports are supposed to go into the Lighthouse tracker.[13]

Establish what happened. Discussions about P2PU happen in many places (e.g. in courses). Even within the mailing list, it can be difficult to keep track of the full range of ideas circulating at any given time. There has been some talk about using the Lighthouse tracker for organizational matters, but this hasn't taken off. Earlier experiments, like using a shared spreadsheet to keep track of organization-level tasks, appear to have been undersubscribed.

Determine what was right or wrong with what happened. Apart from development work, it can be hard to tell what's happening around P2PU. Presumably participants who have identified critical and unsolvable problems simply leave. The Q&A tracker and mailing list both provide ways to build factual knowledge, but seem less effective for building *strategic* knowledge.

Determine how the task should be done differently the next time. In a traditional university, there are typically a lot of ways to resolve problems without dropping out. P2PU's new "Help Desk" could, indeed, help with this issue – if people use

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[11] Cf. `http://www.wired.com/wired/archive/3.10/ietf_pr.html`,

[12] `http://wiki.p2pu.org/w/page/27905271/Course-Design-Handbook`

[13] `http://p2pu.lighthouseapp.com/dashboard`

it.[14] The Help Desk and Q&A tracker will also function as a light-weight way to build certain kinds of organizational knowledge. However, there could be more clarity about how to contribute to the process of "shaping P2PU".

One fairly straightforward thought would be to add support for site-wide content tags. Site-wide tags would allow people who are not interested in "meta-discussions" to easily ignore them, whereas a space like Shaping P2PU could aggregate and build upon the already-ongoing platform-level discussions that have arisen in other groups. Tags would provide other learning-specific benefits, including the ability to give and receive light-weight feedback about contributions, and to build a portfolio showing the impact of one's work. This would, in turn, foster a culture of accountability.

6.4 Learning is distributed and nonlinear: design considerations

Review what was supposed to happen. People are supposed to choose and assemble suitable learning resources (blogs, OER, etc.) for their courses, in which everyone is supposed to learn something.

Establish what happened. This is essentially what happened, but it is hard to measure when and whether knowledge was gained.

Determine what was right or wrong with what happened. The organization is striving to handle the complexity of life online, for example, by integrating RSS feeds into the site to allow learners to transparently draw in work that they are doing elsewhere. This system is explicitly in an experimental "beta" stage, and quality control has a somewhat precarious meaning in a beta or "eternal beta"; on the other hand, this makes life interesting.

Determine how the task should be done differently the next time. In terms of measuring learning, P2PU would have to work hard to use anything but "participation" as a proxy value. In terms of broader issues of quality control, one serious thought is for P2PU core members (including staff) to use the platform to organize their activities – entirely in the open.

6.5 Realize the dream if you can, then wake up: high level roadmap

Review what was supposed to happen. At one time, the high-level vision was arguably a Declaration of Independence from Formal Education.[15] But arguably each participant has their own vision.[16]

Establish what happened. P2PU recently had its first board meeting, but, so far, documentation about the organization's vision and roadmap have not been presented to or affirmed by the user community (nor has the user community presented any stipulations to the organization).

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[14] http://new.p2pu.org/en/groups/p2pu-help-desk/

[15] http://www.youtube.com/watch?v=t8wxUbU1W_0#t=12m11s

[16] http://www.youtube.com/watch?v=t8wxUbU1W_0#t=13m12s

Determine what was right or wrong with what happened. P2PU has made considerable progress (e.g. in the form of successful grant applications), but without more transparency about these efforts, the ability of non-core members to learn from organizational successes is limited. This, of course, limits the ability of volunteers to contribute to further successes of this sort, and may, to some extent, limit the ability of volunteers to "strike off on their own" to pursue alternative development goals.

Determine how the task should be done differently the next time. It is our firm belief that P2PU should work on a public roadmap that leads from now up to the point where the vision is achieved. Both vision and roadmap should be revised as appropriate.

7   Conclusion

Reflecting on education-relevant potential of new media, Martin Weller writes: "*It is [...] no easy task to adopt a decentralised model, since it will require massive procedural, economic and professional change in higher education*" [22]. We would argue that what's new here is not simply a disruptive force in the traditional educational landscape: there is also a compelling chance to understand learning better. We hope that further developments in paragogy can contribute to this process in a practical way.

We close with a quote from Young [24] that sums up our current sentiments, and points to a possible wider role for paragogy:

> *If institutional change is possible at all, it must begin from intervening in the contradictions and tensions of existing society. No telos of the final society exists, moreover; society understood as a moving and contradictory process implies that change for the better is always possible and always necessary.*

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