The Peeragogy Handbook(let)

2023

CONTENTS

1 Introduction and Motivation

WELCOME TO THE PEERAGOGY HANDBOOK

Welcome to the *Peeragogy Handbook*! We want to kick things off with a candid confession: we're not going to pretend that this book is perfect. In fact, it's not an ordinary book at all. The adventure starts when you get out your pen or pencil, or mouse and keyboard, and begin marking it up. It gets kicked into high gear when you join *Peeragogy in Action*. You'll find a lot of friendly support as you write, draw, or dance your own peeragogical adventure. But first, what is *peeragogy*?

Peeragogy is a flexible framework of techniques for peer learning and peer knowledge production. Whereas pedagogy deals with the transmission of knowledge from teachers to students, peeragogy is what people use to produce and apply knowledge together. The strength of peeragogy is its flexibility and scalability. The learning mind-set and strategies that we are uncovering in the Peeragogy project can be applied in classrooms, hackerspaces, organizations, wikis, and interconnected collaborations across an entire society.

The *Peeragogy Handbook* is a compendium of know how for any group of people who want to co-learn any subject together, when none of them is an expert in the particular subject matter – learning together without one traditional teacher, especially using the tools and knowledge available online. What we say in the *Handbook* draws extensively on our experiences working together on the *Handbook* – and our experiences in other collaborative projects that drew us here in the first place. The best way to learn about peeragogy is to do peeragogy, not just read about it.

A Peeragogy Interview

Paola Ricaurte Quijano: Hi! I'm Paola, I'm from Ecuador. I work at Tecnológico de Monterrey, a private university in Mexico City, and I love to learn with everybody!

    Dorotea Mar: Hello. I'm in Berlin now and I really like the peeragogical atmosphere of collaboration and I think we are really improving ways of collaboration and peer production, so that's why I'm here.

    Lisa Snow MacDonald: Hello. This is Lisa from Los Angeles. My background is media psychology and I'm interested in peeragogy as it relates to business.

    PRQ Well, peer learning. learning with peers, learning from peers and trying to make things together or make things happen together. I think that for me, the most important thing I've learned from this experience is that you can achieve more when you work together and set goals together.

    LSM I think peer learning and peer production are unstructured ways for people to come together to pool their relative strengths to achieve results that might not be achieved if they were working individually on their respective sections and then trying to assemble them.

    DM I'm still trying to find out. i thought the answer to this question was clear to me when I joined the Peeragogy Project and then I realized there is so much more to this. When we're learning together there are so many other processes happening and they are integral

processes of learning together. I think the answer is I'm still trying to find out.

   PRQ Yeah, I think Dorotea is right. I think that the process is the goal. And the emotional relationships that you build during the process are also important.

   LSM I think what peeragogy does is it allows us to recognize the value of those connections. A lot of other ways of working are more individualized. It goes back to a concept of $1 + 1 = 2$, which is very rational and very measured and is kind of a dominant way of thinking in our society today, whereas peer to peer learning and production recognize the value of those connections. You may not be able to measure it with a yardstick, but we understand that there is value in those connections. So it's basically acknowledging that when it comes to learning/collaborative environments if constructed the right way if working well it can be $1 + 1 = 3$ or $1 + 1 = 4$. That type of situation, which is really different from the way we're used to thinking about things. And I think that's really the value of what we're doing and the potential of what we could hopefully unlock.

   More specifically, what is peeragogy and/or what is the Peeragogy Project?

   PRQ This is a project that began spontaneously. We didn't have a plan at the beginning. We just talked about the things that concerned us the most. What do you need if you want to learn with others, how to learn better? what do you want to learn? Where do you want to learn? When do you want to learn? Basic questions that can be answered in many ways. We don't have a strict line. We have a map, maybe, but a map that can be walked through by many different paths. Paths that you choose can be related to the people you are working with. I think it's been a great experience for us. As Lisa said, we have been recognizing the talents and strengths of every person that has contributed to and participated in this project.

   LSM OK. I'll take my best shot with this. Going back to what I said earlier and building off what other people have said. Because we don't have a good mental construct of how this works, and measurement is difficult. We haven't learned how to measure these connections. I think what peeragogy and the Peeragogy Project can do is it can establish what people have said about focusing on the process. It can help people understand the process better. Because this lack of

structure can be uncomfortable for people. We need to understand when that discomfort is acceptable, so they don't revert and become counterproductive participants in the process. The map analogy that Paola just mentioned, is really good too. It's not about providing a direct path. If you're on a trip trying to get from LA to Chicago, there's many paths you can take. It's making sure you're monitoring your resources and you're taking care of things along the way. You can drift off-course. One plus one can equal zero if things don't work out well. So, what peeragogy and the Peeragogy Project can do is to provide some structure and framework around the unstructured way that things can be done. People trying to make sure their methods are constructive and beneficial now have some guidelines and things to watch out for.

DM For me peeragogy is really a great experience. I think the way we do things we are going beyond any collaborative project basically. We allow so much freedom/openness in the Project. Everyone is welcome, basically. Anyone can just jump in and propose something and this will somehow fit in. And this is quite amazing for me. Over the last year it will just be really creative. We don't really have any restrictions. People can join from anywhere in the world, like today I was cooking and that was OK. So I think that's really nice, the atmosphere, the relationships and the mutual respect we have for each other and appreciation. This is really important.

PRQ I think that when we began this we were thinking about a new pedagogy of learning with others, so that's what peeragogy is, a new way of seeing and collaborating and learning in open spaces and spaces that are not constrained by time or space. It's an open learning environment for people that are driven by selfmotivation of going somewhere with some others.

How do you do peeragogy?

LSM That's a good question. I've been thinking more about how you create a culture of peeragogy. It can tend to be a natural extension of the way in which people behave. If the culture/environment is created around a group of people they will tend to participate in that way. I'm not sure if you say I wanna do peeragogy I'm not sure how to respond to that actually. Except I'd want a loose structure, I'm not sure.

DM I think I do a lot of peeragogy and I'm very happy about it because I learn so much from my group and from myself in this group that I like to apply it to other projects that I'm in or things like coworking and coliving projects. Especially the principle of mutual respect that still remains after a very long time. And the way we relate to each other is really nice.

The main principle is mutual respect and openness, and the process. And in each detail, there is value that we believe in.

Let's say how we manage the Peeragogy Page or Community (See "How to Get Involved," later in this chapter.). These seem to be details, but they're actually really important. So if we pay attention to all these, every little thing matters, and this is how I do it. I try to be very mindful in all interactions.

PRQ I think peeragogy is more like a mindset. I think we have to change the way we interact with others and the way we understand the parameters of learning. For example, I'm a teacher and, of course, my teaching practice promotes collaborative, creative learning. So, I expect my students to take responsibility for their own learning by making decisions about most aspects of the learning process; to program their own learning goals. They need to learn to effectively employ the environments (like whiteboards), the activities, and the assessments. I'm trying to give my learners the tools to decide how, what, and why they want to learn. For me, it's been a very interesting experience. Learners often find it unfamiliar to make their own decisions about the process in a formal environment. At the beginning of the semester, students are given everything and usually just follow guidelines and criteria. I have been trying to change this dynamic. Students feel insecure, because they really do not know how or what they want to do. So, that process of making decisions together becomes very rich and very meaningful.

DM This, for us, was like a workshop so that we also learn how to be more peeragogical, and I think we're extending it to all the domains of our life. It's almost like we are coaching each other in being more collaborative. This is a very good thing for us, as well.

PRQ As Lisa said, we are developing this culture of collaboration in different environments and seeing each environment as an opportunity to learn together.

DM I think we're also spreading a culture of collaboration and that is a beautiful experience. This is an ongoing experience. We help others to experience this by interacting on project processes and outcomes.

The whole process of learning together was also a learning process. It helped us to create a culture of collaboration and we have transferred it to other groups we interact with.

LSM I think what Dorotea said is important, because we often don't have the right language and many words have double meanings. So when we look at the concept of a team, it can carry with it different meanings. One can be disjointed approach where everyone has specific, different roles or there are other concepts of team where everyone is integrated and working together. And yet a lot of times those differences aren't communicated directly when you're working with groups. So we're bringing to the surface things that are often implicit when they're working in groups and by pulling it to the surface we're raising awareness that people are making choices and there are these different choices in how we approach things.

Where do you do peeragogy?

DM Everywhere I can. Even in the kitchen, cooking with a friend, I am doing peeragogy.

LSM I think you can do it just about anywhere. My interest though is as it relates to business. How different groups and departments work together.

PRQ I agree with Dorotea. I try to "peeragogy" everywhere. We should create a verb for that! I collaborate w/a group of human rights activists in Contingentemx (`http://contingentemx.net/`) and I also see my interactions there as a peeragogical practice. When you are in a family you should understand you are a team, and if you see every member as a valuable contributor to the common goals of that team, it works much better.

When do you do peeragogy?

DM I think I'm always practicing it. I really like that during the weekly hangouts we don't usually have rigid agendas. We just get creative and let ideas connect and flow. And whatever happens it's the right thing. We just work together and somehow the right things happen. I think we're always doing peeragogy when we pursue activities

and projects in open, collaborative ways without imposing too much structure or hierarchy.

PRQ I agree with Dorotea. The where and when questions are related. If you're thinking about where, you're thinking about when. So if "where" is everywhere, and "when" is always, I agree. Anywhere, everywhere, all the time. It's an ongoing process. If you believe in peeragogy as a way of doing things or making things happen, you cannot switch back and forth betweeen two different personas and say, "I'm not working with peeragogy now," or "I am applying peeragogy now."

LSM I'm familiar with the business world where there are distinct personalities. For example there are people who tend to be more collaborative just by nature, who tend to adapt and to prefer a peeragogical model. Other personalities are less so, and that's why what we're doing here is valuable. In practice, there's seldom a conscious recognition of these different styles of working. In a business environment, there are different motivators, different personalities tossed together, all united by a single goal. So understanding peeragogical vs. heirarchical practices, and raising the differences to the surface, could be very valuable in pursuing the goal of making people's lives better in the business environment.

DM To pick up on what Paola said about the process. Sometimes we like to imagine that Peeragogy is just that, a simple process, but then we realize that it's actually something more. It means more and more each time we refer to it. It's an evolving process, a continually evolving construct. The more we practice it, the better we understand it and the broader we view the entire landscape around it. What really matters is how we practice this process. Our learning and increasing understanding of what it really is are both part of the process itself. It is a notion that evolves through our exploration of it.

PRQ Yeah, I agree with Dorotea in the sense that it's a dynamic, ongoing process. It's very important to be aware of the metacognition involved. We are always reflecting on just what we are doing and how we are going about it. How do we want do this? What do we want? Why? Are we doing the right thing? It's a long process as we're always asking ourselves questions but that is just part of the learning process. As a result, we become increasingly aware of just

what should be promoted and what might be better left alone.

Who does peeragogy?

PRQ Of course, we consider ourselves to be a peeragogy team. Not everybody is familiar with our, let's say, strategies and beliefs. If we are thinking, feeling, creating ways to solve problems peeragogically, then this is a useful structure to apply to a variety of environments. It becomes difficult when others try to impose rules or define things without considering our ideas or input. Lisa was talking about organizations. Peeragological principles, applied to entrepreneurial environments/contexts could be highly effective in increasing the power of the given missions.

LSM I think a lot of people working in business environments are unaware of the peeragogical principles they use daily. I think we all are to some extent. Digital activities like surfing around social media, googling, or going into chatrooms can be a kind of peeragogy (of peer to peer to peer support): a way of solving a particular problem. I think everybody does it on different levels, but they may not be aware of it.

DM There are many collaborative projects that aim to do something similar to this, but, in a sense, focus on different aspects of the process, and maybe not on such an abstract level as we might.

Some people have natural peeragogical tendencies, and some people are less transparent in the way they do things. For me, peeragogy is really beneficial, especially for collaborative projects. Everybody works and learns differently, so if everyone became increasingly aware of how they and others work and learn, of how peergogy functions, and how it all fits into a bigger picture, many tasks would not only be more efficiently done, but also much more enjoyable. It's also beneficial if everyone focusses on a bigger picture instead of focussing only on their part of it, and if attention is drawn to all that could be done in a peeragogical way.

Why do you do peeragogy?

DM Because it feels really nice. It helps a lot with relating to others and evolving the relationships we share in projects and, well, basically everywhere. It's a very healthy way of doing things and it makes us feel good, makes others feel good. I think it's a good thing in general.

PRQ Why? Well, as said before, I believe in peeragogy. I believe it's a good way to learn. Maybe it's the best way. I think I wasn't aware of that before joining the group. I have always been a selflearner, I have been working mostly alone. After I began working with the group, I understood that you grow working with a group. You achieve things that you aren't able to achieve alone. I think there's a growing awareness of the value of collaboration in every setting and environment. There are more and more learning communities around the world where people are also learning that making decisions together and working together are the best way to be in this world! I think as we live through hard times, we increasingly need a sense that we are not alone and that we cannot solve problems alone.

LSM My interest in peeragogy goes back to an experience in business where I saw the potential benefits of peeragogy in an organization being stripped away as new executives (who didn't understand what they were stripping away) came in. I enjoy it, I see the benefits because I've experienced it and I've seen how corrosive other ways of thinking can be to the well being of both employees and corporations.

How did you join the Peeragogy project?

PRQ After taking Howard Rheingold's course on Mind Amplifiers in 2012 we were invited to join this group. There was no plan, just an open question of how to best learn with others.
That's how it began. We had lots of sessions and discussed a wide range of issues. The Peeragogy Handbook (`http://peeragogy.org`) was the product of that process. We've been working with the Handbook, releasing a new version every year and trying to figure out what might be the best way to go forward and what the future of our collaboration as a group/team might be.

LSM A couple friends of mine were involved in P2P learning. They were invited to a conference at UCI. Howard was at the event and they were familiar with him and his work. We ended up in an obscure classroom and he started talking about principles that were peeragogy related, while I don't know if it provided much value to my friends, it sounded a lot like what I saw in business and he mentioned the group. So after that, I met everyone here and it's been pretty random.

DM I think many paths led to my involvement. I have a lot of aca-

demic experience and was doing research on Open Science. I had al-
ways wanted to improve the way things work and somehow I wanted
to do it more creatively. I resonated a lot with the Peeragogy Project
on many levels, so somehow I just joined, I think it was serendipity
of some kind.

This interview was conducted on December 15th, 2014. The tran-
script was edited. You can watch the whole interview online at `http:
//is.gd/peeragogyworkbook_interviews`. (49 Minutes)

WHY WE'RE DOING THIS

> Participants must bring self-knowledge and no small mea-
> sure of honesty to the peer-learning project in order to
> accurately enunciate their motivations. If everyone in
> your peer learning project asks "What brings me here?"
> "How can I contribute?" and "How can I contribute
> more effectively?" things will really start percolating.
> Test this suggestion by asking these questions yourself
> and taking action on the answers!

Some of the primary motivators reported by participants in the
Peeragogy project include:

1. Acquisition of training or support in a topic or field;

2. Building relationships with interesting people;

3. Finding professional opportunities by networking;

4. Creating or bolstering personal connections;

5. More organized and rational thinking through dialog and de-
   bate [1];

6. Feedback about their own performance and understanding of
   the topic.

We've seen that different motivations can affect the vitality of the peeragogical process and the end result for the individual participant. And different participants definitely have different motivations, and the differences can be surprising: for instance, if you're motivated by social image, you may not be so interested in reciprocity, and vice versa [2]. Motivations come with associated risks. For example, one may be reluctant to mention business aspirations in a volunteer context for fear of seeming greedy or commercial. Whether or not potential peeragogues eventually decide to take on the risk depends on various factors. Actions that typify inappropriate behavior in one culture might represent desirable behavior in another. Motivations often come out of the closet through conflict; for example, when one learner feels offended or embarrassed by the actions of another.

When it comes to primary motivators, it seems some people are more motivated by the *process* and some people are motivated by the *end result*. A lot of the motivations mentioned in the list above are process-oriented. A process orientation is exemplified in the following quote:

> **Philip Spalding**: "The idea of visiting a garden together in a group to learn the names of flowers might have been the original intention for forming a Garden Group. The social aspect of having a day out might be goal of the people participating."

The basic dichotomy between process and product can be a source of tension. Some people are OK with a process that is long and drawn out – because they're mostly there for the process itself anyway. Others will only tolerate with a slight delay as long as the important end result remains in sight. Without a clear understanding and a good balance between these different core motivators, there will be conflict.

People often come to a collaboration with their own motivation in mind (with more or less clarity from case to case). They don't always step back to realise that other people are coming from the point of view of another often very different motivation. It never hurts

to ask, especially when conflict rears up. Accordingly, especially for those readers who are interested in the *end results* and *applications* of peeragogy, and not yet steeped in the process, here's what we ask:

What are the problems you're grappling with? How do you think "peer learning" and "peer production" could help you? Would you be willing to share some of the techniques that you use, and to learn together with us?

Example: Cafes, schools, workshops

Suppose we wanted to make Peeragogy into a model that can be used in schools, libraries, and so forth, worldwide - and, in fact we do! How can we bring the basic Peeragogy motivations to bear, and make a resource, plan of action, and process that other people can connect with? In brief, how do we build peer learning into the curriculum, providing new insight from the safety of the existing structure?

One concrete way to implement these broad aims would be to make a peeragogy-oriented *development* project whose goal is to set up a system of internet cafes, schools, or workshops in places like China or Africa, where people could go to collaborate on work or to learn technical subjects. Students could learn on the job. It seems reasonable to think that investors could make a reasonable profit through "franchises," hardware sales, and so forth – and obviously making money is a motivation that most people can relate to.

In developing such a project, we would want to learn from other similar projects that already exist. For example, in Chicago, State Farm Insurance has created a space called the "Next Door Cafe" that runs community events. One of their offerings is free financial coaching, with the explicit agreement that the issues you discuss return to State Farm as market research.

> **State Farm Insurance**: "Free? Really. Yes, because we're experimenting. We want to learn what people really want. Then, we'll shoot those wants back to the Farm. We help you. You help us innovate. We're all smarter for it. We think it's a win-win."

Thus, Next Door Cafe forms part of a system to exploit the side-effects of interpersonal interactions to create a system that learns. A

peer learning example from the opposite side of the world started in a slum next to New Delhi where Sugata Mitra gave children a computer and they self organized into a learning community and taught themselves how to use the machine and much more.

> **Sugata Mitra**: "I think what we need to look at is we need to look at learning as the product of educational self-organization. If you allow the educational process to self-organize, then learning emerges. It's not about making learning happen. It's about letting it happen."

In 2014, we tried a similar experiment. We asked: Can we build a "Peeragogy Accelerator" for a half-dozen peer learning projects, each of which defines their own metrics for success, but who come together to offer support and guidance, using the *Peeragogy Handbook* as a resource? We tried that with several our own projects, and benefitted from the peer support. Several months later, we found the Accelerator format even more exciting when we ran a one-off series focusing on Sagarika Bhatta's research on adaptation to climate change in Nepal. Our sense is that peeragogy could be useful for building a global support network around just about any project. Peeragogy can support a culture of real engagement, rather than "clicktivism," and the direct exchange of critically-assessed effort rather than often-inefficient donations of cash [3].

2   Peeragogy in Practice

> Although a grounding in learning theory helps inform peer learning projects, Peeragogy, at its core, comes to life in applied practice. Even before convening a group for your peer learning project (discussed in Part IV), you will want to take a look over the patterns we have collected. You will likely return here many times as your project develops.

What is a pattern?

A pattern is anything that has a repeated effect. In the context of peeragogy, the practice is to repeat processes and interactions that advance the learning mission. Frequent occurrences that are not desirable are called anti-patterns!

> **Christopher Alexander**: "Each pattern describes a problem which occurs over and over again in our environment, and then describes the core of the solution to that problem, in a way that you can use this solution a million times over, without ever doing it the same way twice." [1]

Patterns provide a framework that can be applied to similar issues but may be metaphorically solved in different ways, sometimes in real world or face to face events and other times in digital space. Outside of Alexander's own work in architecture, one the first groups to adopt a design pattern way of thinking about things were computer programmers. Writing in the foreward to Richard P. Gabriel's *Patterns of Software*, Alexander emphasizes that the key question to ask about any design approach is: does it help us build better?

> **Christopher Alexander**: "What is the Chartres of programming? What task is at a high enough level to inspire people writing programs, to reach for the stars?" [2]

We think that Peeragogy stands a good chance of being a "killer app" for pattern-based design. Learning bridges physical and virtual worlds all the time. And, in fact, a *Network of Learning* was the 18th pattern that Christopher Alexander introduced in his book, *A Pattern Language*.

> **Christopher Alexander**: "Work in piecemeal ways to decentralize the process of learning and enrich it through contact with many places and people all over the city: workshops, teachers at home or walking through the city,

professionals willing to take on the young as helpers, older children teaching younger children, museums, youth groups travelling, scholarly seminars, industrial workshops, old people, and so on." [1]

Peeragogy can help to extend and enrich this network, and, as we shall see, patterns can be used by those involved to do ongoing "emergent" design, not only by building new structures, but by adapting and improving our catalog of patterns as we go. For consistency, and easy use, adaptation, and extension we present the patterns using the following template. The format is meant to be neutral and easy to work with – it's, intentionally, an outline that you might use to write a short abstract describing an active project.

Pattern template
Motivation for using this pattern.
Context of application.
Forces that operate within the context of application, each with a mnemonic glyph.
Problem the pattern addresses.
Solution to the problem.
Rationale for this solution.
Resolution of the forces, named in bold.
Example 1: How the pattern manifests in current Wikimedia projects.
Example 2: How the pattern could inform the design of a future university.
What's Next in the Peeragogy Project: How the pattern relates to our collective intention in the Peeragogy project

The "What's Next" section concretely links the patterns we discuss here to the Peeragogy project. It can be thought of as an annotation rather than part of the pattern itself. If you adapt the patterns for use in your own project, you're likely to have a different set of next steps. Although we think that these patterns can be generally useful, they aren't useful in the abstract, but rather, as a way for discussing what we actually do.

A peeragogy pattern language

By looking at how patterns combine in real and hypothetical use cases, you can start to identify a *pattern language* that can be used in your projects. We can get a simplified view of these connections with the following diagram. It's important to clarify that everyone doesn't do it the same way. Here, the *Roadmap* is given a central position, but some peer learning projects will forego making a specific, detailed plan; their plan is just to see what develops. You can see here how peeragogy patterns often break down further into individual micro-steps: we'll say more about that shortly.

You are encouraged to invent your own patterns and to connect them in new ways. You'll probably find quite a few that we didn't include in the catalog. Each project has a unique design, and it's own unique way in which things play out in practice. What we've put together here is a starter kit. The peeragogy patterns suggest a social way to do problem solving [3], but once you get used to the pattern concept you can use it to identify new problems no one has ever thought of before, and that's even more powerful!

The Peeragogy Pattern Language

We now present the pattern language which we at the Peeragogy project have been developing and using. We begin with a high-level overview in the form of a diagram illustrating how the different patterns relate to each other and one-sentence summaries of the patterns, then present the patterns in the format which we described earlier.

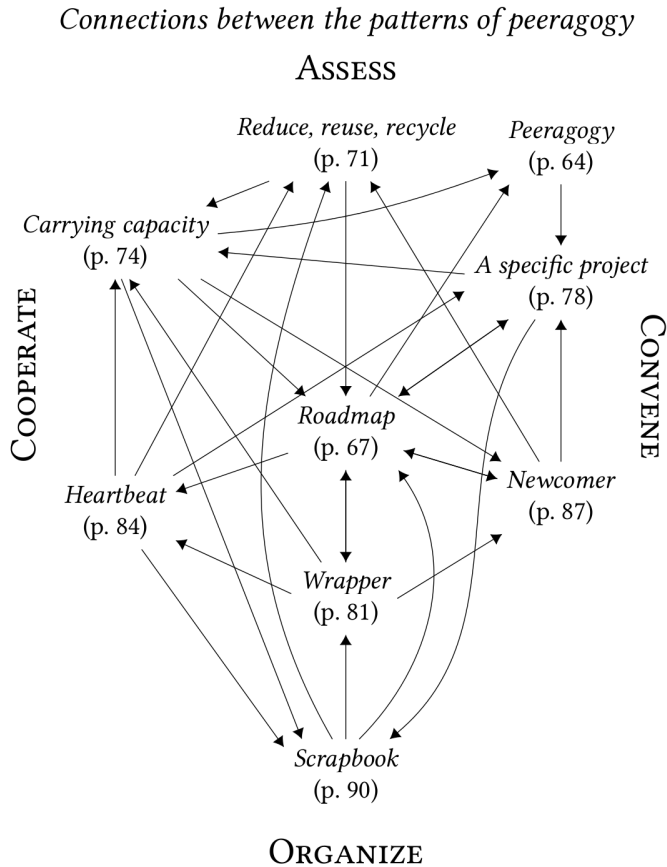*Connections between the patterns of peeragogy*

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Figure 6.2: Connections between the patterns of peeragogy. An arrow points from pattern **A** to pattern **B** if the text of the description of pattern **A** references pattern **B**. Labels at the borders of the figure correspond to the main sections of the *Peeragogy Handbook*.

Figure 0.1: image

overview of problems and solutions in the pattern catalog

1. Peeragogy
How can we find solutions together? Get concrete about what the real problems are.

2. Roadmap
How can we get everyone on the same page? Build a plan that we keep updating as we go along.

3. Reduce, reuse, recycle
How can we avoid undue isolation? Use what's there and share what we make.

4. Carrying capacity
How can we avoid becoming overwhelmed? Clearly express when we're frustrated.

5. A specific project
How can we avoid becoming perplexed? Focus on concrete, doable tasks.

6. Wrapper
How can people stay in touch with the project? Maintain a summary of activities and any adjustments to the plan.

7. Heartbeat
How can we make the project "real" for participants? Keep up a regular, sustaining rhythm.

8. Newcomer
How can we make the project accessible to new people? Let's learn together with newcomers.

9. Scrapbook
How can we maintain focus as time goes by? Move things that are not of immediate use out of focus.

Peeragogy

1. Motivation This pattern is relevant to anyone who wants to do active learning together with others in a relatively non-hierarchical setting.

2. Context Collaborative projects like Wikipedia, StackExchange, and FLOSS represent an implicit challenge to the old "industrial" organization of work. This new way of working appears to promise something more resilient, more exciting, and more

humane. The rhetoric has been questioned [3,9]. In and across these "free", "open", post-modern organizations, individual participants are learning [7] – and that they collectively change the methods and infrastructure as they go. Because everyone in these projects primarily learns by putting in effort on a shared work-in-progress, participants are more in touch with an *equality of intelligence* than an *inequality of knowledge* [4:38, 119]. At the same time, they invoke a form of friendly competition, in which *the best craftmanship wins* [5:89].

3. Forces

   Threshold: inclusiveness and specificity are in tension. ⬤

   Trust: is only built through sharing and reciprocity. 🏃

4. Problem Even a highly successful project like Wikipedia is a work in progress that can be improved to *better* empower and engage people around the world, to develop *richer and more useful* educational content, and to disseminate it *more* effectively – and deploy it more creatively.[1] How to go about this is a difficult question, and we don't know the answers in advance. There are rigorous challenges facing smaller projects as well, and fewer resources to draw on. Many successful free software projects are not particularly collaborative – and the largest projects are edited only by a small minority of users [2,10]. Can we work smarter together?

5. Solution The act of asking "can we work smarter together?" puts learning front and center. Peeragogy takes that "center" and distributes it across a pool of heterogeneous relationships.

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[1]`http://paragogy.net/Scrapbook`

Indeed, peeragogy can be understood as an up-to-date revision of Alexander's Network of Learning [1:99]. It *decentralizes the process of learning and enriches it through contact with many places and people* in interconnected networks that may reach all over the world. Importantly, while people involved in a peeragogical process may be collaborating on A specific project, they don't have to be direct collaborators outside of the learning context or co-located in time or space. Just as theories and practices of pedagogy articulate the transmission of knowledge from teachers to students, peeragogy articulates the way peers produce and use knowledge together (Figure [fig:connections]).

6. Rationale The peeragogical approach particularly addresses the problems of small projects stuck in their individual silos, and large projects becoming overwhelmed by their own complexity. It does this by going the opposite route: explicating *what by definition is tacit* and employing *a continuous design process* [8:9–10]. As Howard Rheingold remarks in the foreword to the *Peeragogy Handbook*: "What made this work? Polycentric leadership is one key" [6:iii]. "Peer-led" shouldn't suggest that there are no leaders: rather, it means that multiple leaders act as peers.

7. Resolution Peeragogy helps people in different projects describe and solve real problems. If you share the problems that you're experiencing with others, there's a reasonable chance that someone may be able to help you solve them. Bringing a problem across the **threshold** of someone else's awareness helps achieve clarity. This process can guide individual action in ways that we wouldn't have seen on our own, and may lead to new forms of collective action we would never have imagined possible. People who gain experience comprehending problems together build **trust**. Making room for multiple right answers contributes further to resolving the tension between generality and specificity.

8. Example 1 Wikipedia and its sister sites Wiktionary, Wikiversity, etc. (collectively "Wikimedia") rely on user-generated con-

tent, peer produced software, and are managed, by and large, by a pool of users who choose to get involved with governance and other "meta" duties.[2] The Wikimedia Foundation maintains the servers and acts on behalf of this "global movement". They achieve something quite impressive: Wikipedia is the 7th most popular website in the world, but the Wikimedia Foundation has under 300 employees. For comparison, the 6th (Amazon) and 8th (QQ) most popular websites are run by companies with over 200K and 28K employees, respectively.[3,4,5,6]

Figure 0.2: *Observatory : Space Surveillance Telescope, New Mexico.*

9. Example 2 Although one of the strengths of Peeragogy is to distribute the workload, this does not mean that infrastructure is irrelevant. The students and researchers of the future university will need access to an Observatory and other scien-

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[2] https://wikimediafoundation.org/wiki/History_of_the_Wikimedia_Foundation

[3] https://en.wikipedia.org/wiki/Wikipedia

[4] https://en.wikipedia.org/wiki/Criticism_of_Wikipedia

[5] https://en.wikipedia.org/wiki/Special:RecentChanges

[6] https://en.wikipedia.org/wiki/Wikipedia:Recent_changes_patrol#Tools

tific apparatus if they are to reach *ad astra, per aspera* (Figure 1).[7]

10. What's Next in the Peeragogy Project We intend to revise and extend the *Patterns of Peeragogy* into a framework that can describe and scaffold the learning that happens inside and outside of institutions.

11. References

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[7]`https://en.wikipedia.org/wiki/Wikipedia:Requests_for_comment`

```
edu/fcrw/sites/fcrw/images/Schmidt_Education_
FreeCulture_25Oct2009.pdf
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h) Till Schümmer, Joerg M Haake, and Wolfgang Stark. 2014. Beyond rational design patterns. *Proceedings of the 19th european conference on pattern languages of programs*, ACM, 13 pp.

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j) Aaron Swartz. 2006. Who Writes Wikipedia? Retrieved from `http://www.aaronsw.com/weblog/whowriteswikipe`

12. Notes

Roadmap

1. Motivation This pattern shows how your group can define the scope of their project and make a realistic plan to address it. This pattern provides the backbone of our pattern language. It can be used to find a shared goal.

2. Context Peeragogy has both distributed and centralized aspects. The discussants or contributors who collaborate on a project have different points of view and heterogeneous priorities, but they come together in conversations and joint activities.

3. Forces

 Variety: people have different goals and interests in mind. ⚞

 Clarity: some goals may be quite specific, and some rather vague. ↘✳

> **Coherence**: only some of these goals will be well-aligned. ⛹

4. Problem In order to collaborate, people need a way to share current, though incomplete, understanding of the space they are working in, and to nurture relationships with one another and the other elements of this space. At the outset, there may not even be a coherent vision for a project – but a only loose collection of motivations and sentiments. Once the project is up and running, people are likely to pull in different directions.

5. Solution Building a guide to the goals, activities, experiments and working methods can help Newcomers and old-timers alike understand their relationship with the project. It may combine features of a manifesto, a syllabus, and an issue tracker. It may be a design pattern or a pattern language [3]. The distinguishing qualities of a project Roadmap are that it should be adaptive to circumstances, and that it should ultimately get us from *here* to *there*. By this same token, any given version of the roadmap is seen as fallible. In lieu of widespread participation, the project's Wrapper should attempt to synthesize an accurate roadmap that is informed by participants' behavior, and should help moderate in case of conflict. Nevertheless, full consensus is not necessary: different goals, with different *heres* and *theres*, can be pursued separately, while maintaining communication.

6. Rationale The group evolves from a less-sophisticated to a more-sophisticated manner of operating by using the roadmap. Using the roadmap builds a collective awareness of how things are working in practice. In the Peeragogy project our initial roadmap was a "crowdsourced" outline of the first edition of the *Peeragogy Handbook*. Later, it took the form of a schedule of meetings following a regular Heartbeat, supplemented by a list of upcoming deadlines. Most recently, our roadmap is expressed in the emergent objectives collected at the end of

current paper. We have seen that a list of nice-to-have features created in a top-down fashion is comparatively unlikely to go anywhere! A backlog of tasks and a realistic plan for accomplishing them are vastly different things. An adaptive roadmap is an antidote to Tunnel Vision [1].

7. Resolution An emergent roadmap is rooted in real problems and justifiable solutions-in-progress in all their **variety** and communicates both resolution and follow-through. The process of meshing varied issues with one another requires thought and discussion, and this encourages **clarity**. The test of **coherence** is that contributed goals and ideas should be actionable. The ultimate quality-control test is if it worked, i.e., did it come to pass that the task(s) the roadmap was created to achieve ended up being achieved? If all of the issues that the roadmap outlines are not resolved, the roadmap itself should be revised. Without a roadmap, we would never know.

8. Example 1 The *Help* link present on every Wikipedia page could be seen as a localized Roadmap for individual user engagement: it tells users what they can do with the site, and gives instructions on how to do it.[1] someone who knows what they're doing, there are around 30 pages listing articles with various kinds of problems, for example articles tagged with style issues, or "orphaned" articles (i.e., articles with no links from other pages in the encyclopedia).[2,3,4] In 2010-2011, Wikimedia developed a strategic plan drawing on community input [2]. In 2015, a two-week Community Consultation was carried out; synthesis resulted in "a direction that will guide the decisions for the organization."[5] Community-organized WikiProjects often invite and guide involvement on A specific project.

9. Example 2 In a future university run in a peer produced manner, a fancy President's Residence presumably wouldn't be needed. Leadership would be carried out in a more collaborative and distributed fashion. However, depending on just how distributed things are, it may turn out to be useful for project facilitators to gather at a University Hall. Whereas there is strength in

numbers, there is leverage in organization. This is what the Roadmap provides.
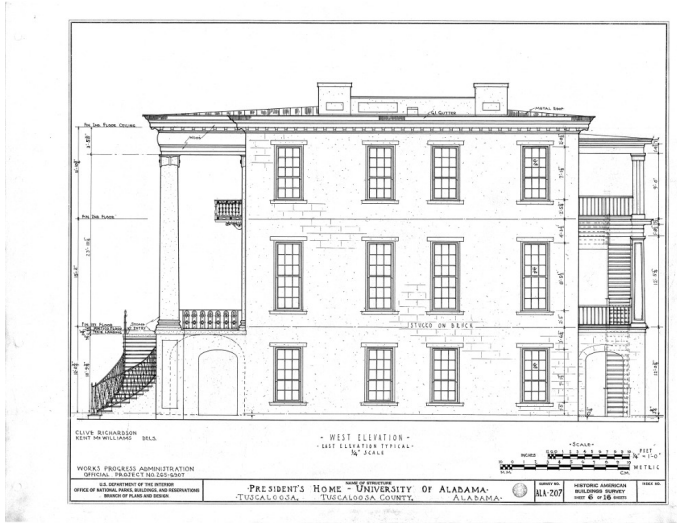
President's Residence, University of Alabama.

10. What's Next in the Peeragogy Project If it becomes clear that something needs to change about the project, that is a clue that we might need to revise our patterns or record a new one. We can use the names of the patterns to tag our upcoming tasks.

11. References

   a) David M. Dikel, David Kane, and James R. Wilson. 2001. *Software architecture: Organizational principles and patterns.* Pearson Education.

   b) Eugene Eric Kim and others. 2011. *Wikimedia Strategic Plan: A collaborative vision for the movement through 2015.* Wikimedia Foundation.

   c) Christian Kohls. 2010. The structure of patterns. *Proceedings of the 17th Conference on Pattern Languages of Programs,* ACM, 12.

Reduce, reuse, recycle

1. Context

   In a peer production context, you are simultaneously "making stuff" and building on the work of others. You don't have to do everything yourself! The library of resources you can draw on is vast – but it is useful only if you can make sense of it.

2. Forces

   > **Derivative**: you don't have to do everything your-self! 🎭
   >
   > **Sensemaking**: resources are useful only when you can make sense of them. 🥾

3. Problem

   People are often very attached to their own projects and priorities and don't have a sense of how their initiatives can benefit from connection and relationship. Many projects die be- cause the cost of Reinventing the Wheel [c2] is too high. Solution "Steal like an artist," and make it possible for other people to build on your work too (Figure 6.3). In the Peeragogy project, we have written very little new software, and have in- stead used off-the-shelf and hosted solutions suited to the task at hand (including: Drupal, Google+, Google Hangouts, Google Docs, Wordpress, pandoc, XeLaTeX, Authorea, and Github). Early on we agreed to release our Peeragogy Handbook under the terms of the Creative Commons Public Domain Dedication (CC0), the legal instrument that grants the greatest possible leeway to down- stream users. This has allowed us and others to repurpose and im- prove its contents in other settings, including the current paper. In short, follow the steps indicated by the keywords in the pat- tern's title: Reduce the panoply of interesting interrelated ideas and methods to a functional core (e.g. writing a book). Reuse whatever resources are relevant to this aim, factoring in "things I was going to have to do anyway"

from everyone involved. Recycle what you've created in new
connections and relationships.

4. Rationale

Clearly we are not the first people to notice the problems with
wheel-reinvention, including "missing opportunities, repeat-
ing common mistakes, and working harder than we need to."
As a guest in one of our hangouts, Willow Brugh, of Geeks
without Bounds and the MIT Media Lab, remarked that peo-
ple often think that they need to build a community, and so
fail to recognize that they are already part of a community.

5. Resolution

Peeragogy per se is not new, and it's not something we can
bottle and sell. It appears in avocational, academic, and in-
dustrial contexts. We can, however, learn how to be more ca-
pable peeragogues with practice. Reweaving old material into
new designs and new material into existing frameworks, we
build deeper understanding. The project's Roadmap develops
by mak- ing sense of existing resources – including worries and
concerns. This boosts our collective Carrying capacity.

6. Example 1

Users are encouraged to recycle existing works that are compat-
ible with the Wikimedia-wide CC-By-SA license, and the mis-
sion of the respective sites (e.g. books on Wikibooks or Wik-
isource, dictionary entries on Wiktionary, encyclopedic writ-
ing on Wikipedia, etc.). Subprojects have existed purely to
help repurpose other existing works in this way. On the down-
stream side, DBPedia is an important resource for the seman-
tic web, built by collating data from Wikipedia's "infoboxes".
Researchers have been able to Reduce, reuse, recycle in other
ways, e.g. by devel- oping tools for building learning paths
through Wikipedia con- tent, or that show heatmaps of edit-
ing activity. However, these research projects do not always
result in a tool that is accessible to day-to-day users.

7. Example 2

The knowledge resources and collaboration tools currently available online are what make a low-cost, high-quality, formally-accredited future university conceivable. However, the available resources are not always as organized as they would need to be for educative purposes, so peeragogues can usefully put effort into Reduce, reuse, recycle'ing available resources into a functioning university Library.

Carrying Capacity

1. Context

One of the important maxims from the world of FLOSS is: "Given enough eyeballs, all bugs are shallow" [6, p. 30]. A partial converse is also true. There's only so much any one person can do with limited resources and a limited amount of time. Furthermore, in a peeragogy context, it is often im- possible to delegate work to others. Lines of responsibility are not always clear, and people can easily get burnt out. Our concern is not simply "inclusion" but rather to help ev- eryone involved fulfil their potential. This will not happen for someone who takes on too much, or someone who takes on too little.

2. Problem

How can we help prevent those people who are in- volved with the project from overpromising or overcommitting, and subsequently crashing and burning? First, let's be clear that are lots of ways things can go wrong. Simplistic expectations – like assuming that others will do the work for you [9] – can under- mine your ability to correctly gauge your own strengths, weak- nesses, and commitments. Without careful, critical engagement, you might not even notice when there's a problem. Where one person has trouble letting go, others may have trouble speaking up. Pressure builds when communication isn't going well. Solution Symptoms of burnout are a sign that it's time to re- visit the group's Roadmap and your own individual

plan. Are these realistic? Frustration with other people is a good time to ask questions and let others answer. Do they see things the same way you do? Your goals may be aligned, even if your methods and motivations differ. If you have a "buddy" they can provide a real- ity check. Maybe things are not that hard after all – and maybe they don't need to be done right now. Generalizing from this: the project can promote an open dialog by creating opportunities for people to share their worries and generate an emergent plan for addressing them [8]. Use the project Scrapbook to make note of obstacles. For example, if you'd like to pass a baton, you'll need someone there who can take it. Maybe you can't find that person right away, but you can bring up the concern and get it onto the project's Roadmap. The situation is always changing, but if we continue to create suitable checkpoints and benchmarks, then we can take steps to take care of an issue that's getting bogged down.

3. Rationale

   Think of the project as an ecosystem populated by acts of participation. As we get to know more about ourselves and each other, we know what sorts of things we can expect, and we are able to work together more sustainably [4]. We can regulate our individual stress levels and improve collective outcomes by discussing concerns openly.

4. Resolution

   Guiding and rebalancing behaviour in a social con- text may begin by simply speaking up about a concern. What we learn in this process is consistent with inclusivity [1], but goes further, as participants are invited to be candid about what works well for them and what does not. As we share concerns and are met with care and practical support, our actions begin to align better with expectations (often as a result of forming more realistic expectations). When we have the opportunity to express and rethink our concerns, we can become more clear about the com- mitments we're prepared to make. As we become aware

of the problems others are facing, we often find places where we our- selves have something to learn.

5. Example 1

   Wikipedia aims to emphasize a neutral point of view, but its users are not neutral. Wikipedia is relevant to things that matter to us. It helps inform us regarding our necessary purposes – and we are invited to "speak up" by making edits on pages that matter to us. However, coverage and participation are not neutral in another sense. More information on Wikipedia deals with Europe than all of the locations outside of Europe [3]. A recent solicitation for donations to the Wikimedia Foundation says "Wikipedia has over 450 million readers. Less than 1% give." As we remarked in the Peeragogy pattern, most of the actual work is contibuted by a small percentage of users as well. Furthermore, the technology limits what can be said; [3] remark on "the structural inability of the platform itself to incorporate fundamental epistemological diversity." Finally, the overall population of edi- tors is an important concern for the Wikimedia Foundation: the total number of active editors has been falling since 2007.

6. Example 2

   A separate Ladies Hall seems entirely archaic. Progressive thinkers have for some time subscribed to the view that "there shall be no women in case there be not men, nor men in case there be not women" [5, Chapter 1.LII]. However, in light of the extreme gender imbalance in free software, and still striking imbalance at Wikipedia [2, 7], it will be important to do whatever it takes to make women and girls welcome, not least because this is a significant factor in boosting our Carrying capacity.

A specific project

1. Context

   We often find ourselves confronted with what seems to be a difficult, complex, or even insurmountable problem. It won't go

away, but a workable solution doesn't present itself, either. If there is a candidate solution, it's also clear there are not enough resources for it to be feasible. In the face of serious difficulties we often find ourselves wringing our hands, or preaching to the choir about things they already know. It is harder to make actionable plans and follow them through to bring about concrete change.

2. Problem

We are often blinded by our own prejudices and preferences. Considerable energy goes into pondering, discussing, exploring and feeling stuck. Meanwhile there may be a strong urge to make more concrete progress, and time is passing by. In a group setting, when the forward-movers ultimately try to act, those who are more wrapped up in the experience of pondering and exploring may attempt to shut them down, if they feel that they are being left behind. Inaction may seem like the only safe choice, but it has risks too.

3. Solution

One of the best ways to start to make concrete progress on a hard problem is to ask a specific question. For- mulating a question helps your thinking become more concrete. Sometimes you'll see that a solution was within your grasp all along, and you don't actually need to ask the question to anyone anymore. In the case of a truly difficult problem, one question won't be enough, but you can repeat the process: turning something that is too large or too ephemeral to tackle directly into a collection of smaller, specific, manageable tasks that you can learn something from. Maintain an overall project Roadmap to keep track of how the smaller pieces relate to the bigger picture. If you have a fairly specific idea about what you want to do, but you're finding it difficult to get it done, don't just ask for advice: recruit material help (cf. Carrying capacity).

4. Rationale

We've seen time and again that asking specific ques- tions is a recipe for getting concrete, and that getting concrete is necessary for bringing about change. Asking for help (which is what happens when you vocalize a question) is one of the best ways to gain coherence. Making yourself understood can go a long way toward resolving deeper difficulties. Resolution Where you may have felt stuck or realized you were going in circles, getting specific allows forward progress. The struggle between consensus and action is resolved in a tangi- ble project that combines action with dialog. Learning something new is a strong sign that things are working. Real change starts out "bite-sized."

5. Example 1

   One of the best ways to jump in, get to know other Wikipedia users, and start working on a focused todo list is to join (or start) A specific project. Within Wikipedia, these are known as "WikiProjects.", The Wikimedia Foundation also runs public projects, including the Wikipedia Education Program and the GLAM Wiki (for Galleries, Libraries, Archives, and Museums)., The latter maintains a list of case studies that describes specific projects undertaken by cultural organizations and Wikimedia.

6. Example 2

   Dormitories could be seen as an "optional extra," since studying from where you live is often an option already. However, rented or cooperatively-owned living/working spaces may frequently be an asset for A specific project.

Wrapper

1. Motivation This pattern suggests to find at least one person to fill an important role managing the project's public interface, and keeping participants up to date about activities.

2. Context You are part of an active, long-running, and possibly quite complex project with more than a handful of partici-

pants. How do you manage? (If you have a project with many aspects, people won't need to know the details of everything...)

3. Forces

   Interface: the project shows people how they can use it.

   Familiarity: the leader/follower dichotomy is easy to understand.

   Equity: peeragogy aims for fairness.

4. Problem In an active project, it can be effectively impossible to stay up to date with all of the details. Not everyone will be able to attend every meeting (see Heartbeat) or read every email. Project participants can easily get lost and drift away. The experience can be much more difficult for Newcomers: joining an existing project can feel like trying to climb aboard a rapidly moving vehicle. Information overload is not the only concern: there is also a problem with missing information. If key skills are not shared, they can quickly become bottlenecks (see Carrying capacity).

Design for a Peeragogy project dashboard (sketch by Amanda Lyons, prototype by Fabrizio Terzi).

5. Solution Someone involved with the project should regularly create a wrap-up summary, distinct from other project communications, that makes current activities comprehensible to people who may not have been following all of the details. In addition, project members should keep other informative resources like the landing page, Roadmap, and documentation up to date. Check empirically to see if they really show interested parties how they can get involved. Building on the idea of a "project dashboard," we can guide potential contributors to live help; we can then see what questions they ask.[1] Wrapper is both a role, and, sometimes, an artifact. Our *Handbook*'s cover literally wraps up its contents; the collaboratively written chat notes from our weekly Hangouts give a collaboratively-written overview of what was discussed in the meeting. Meetings themselves can be structured to give people a chance to sum up what they've accomplished during the week, as well as any problems they are running into. Between meetings, each participant is advised to maintain some sort of "learning log" in the form of a personal Scrapbook, so that outstanding concerns are surfaced and available to discuss.

6. Rationale According to the theory proposed by Yochai Benkler, for free/open "commons-based" projects to work, it is important for participants to be able to contribute small pieces, and for the project to have a way to stitch those pieces together [1]. The Wrapper helps perform this integrative stitching function. If you value participation, you may have to do some serious work to facilitate access to process.

7. Resolution Well-maintained records chronicle the project's history; up-to-date documentation makes the project more robust; a coherent look-and-feel offers an accessible **interface** to the outside world. Regularly circulated summaries can help to engage or re-engage members of a project, and can give an emotional boost to peeragogues who see their contributions

and concerns mentioned, giving less engaged participants the
familiar experience of "following" someone else's updates. Peo-
ple will judge from experience whether the project strives for
equity or strives to maintain hidden power differentials.

8. Example 1 There are many data streams around the Wikimedia
   project. They comprise an elaborate Wrapper function for the
   project, with components that range from Today's Featured Ar-
   ticle, which appears on the front page of Wikipedia, to formal
   annual reports from the nonprofit.[2],[3]

   ```
   In the Peeragogy project we maintain a wrap at
   https://github.com/Peeragogy/PeeragogyMonthlyWrap.
   ```

   The biggest journey begins with a single step.

9. Example 2 In-person meetings are just as relevant for contem-
   porary humans as they were a century ago, even though we have
   learned more about how to assemble on the fly [2]. Getting to-
   gether for conventions, dance parties, and commencement cer-
   emonies could comprise an important part of the future uni-
   versity's Wrapper function, even if these events do not always
   take place in one specific Assembly Hall.

10. What's Next in the Peeragogy Project

11. References

    a) Y. Benkler. 2002. Coase's Penguin, or Linux and the Na-
       ture of the Firm. *Yale Law Journal* 112: 369.

    b) Howard Rheingold. 2007. *Smart mobs: The next social rev-
       olution.* Basic books.

Heartbeat

1. Motivation This pattern can help project participants stay in
   touch, and stay motivated.

2. Context A number of people have a shared interest, and have connected with each other about it. However, they are not going to spend 24 hours a day, 7 days a week working together, either because they are busy with other things, or because working separately on some tasks is vastly more efficient.

3. Forces

   Differentiation: the time we spend together isn't all equally meaningful. ♟

   Entropy: something needs to hold the project together, or it will fall apart. ⛰

4. Problem How will the effort be sustained and coordinated sufficiently? How do we know this an active collaboration, and not just a bunch of people milling about? Is there a *there, there?*

5. Solution People seem to naturally gravitate to something with a pulse. *Once a day* (stand-ups), *once a week* (meetings), or *once a year* (conferences, festivals) are common variants. When the project is populated by more than just a few people, it's likely that there will be several Heartbeats, building a sophisticated polyrhythm. A well-running project will feel "like an improvisational jazz ensemble" [1]. Much as the band director may gesture to specific players to invite them to solo or sync up, a project facilitator may craft individual emails to ask someone to lead an activity or invite them to re-engage. Two common rhythm components are weekly synchronous meetings with an open agenda, combined with *ad hoc* meetings for focused work on A specific project. The precise details will depend on the degree of integration required by the group.

6. Rationale The project's heartbeat is what sustains it. Just as *people matter more than code* [2], so does the life of the working

group matter more than mechanics of the work structure. Indeed, there is an quick way to do a reality check and find the project's strongest pulse: the activities that sustain a healthy project should sustain us, too (cf. Carrying capacity).

7. Resolution Noticing when a new Heartbeat is beginning to emerge is a way to be aware of the shifting priorities in the group, and contributes to further **differentiation**. This may ultimately be a good source of new patterns. On the other hand, if a specific activity is no longer sustaining the project, stop doing it, much as you would move an out-of-date pattern to the Scrapbook in order to make room for other concerns. The power of the Heartbeat is that the project can be as focused and intensive as it needs to be, working against **entropy** in the ways that start to be required as time goes by.

8. Example 1 The yearly in-person gathering, Wikimania, is the most visible example of a Heartbeat for the Wikimedia movement.[1] may run additional in-person get-togethers.[2] Also of note is the twice-yearly call for proposals for individual engagement grants.[3] other shorter cycles. Each day a highly-vetted Featured Article appears on the front page of Wikipedia, and is circulated to a special-purpose mailing list.[4,5,6] articles for deletion lasts at least seven days.[7]

University Farm: al-Biruni University, Kapisa province, Afghanistan.

9. Example 2 Although it may sound quaint, some variant of the University Farm could help to physically sustain peeragogues, while putting the project's Heartbeat in tune with that of the seasons. In the current distributed mode, we tend our window boxes and allotment gardens. New developments should unfold in a *logical order growing out of the needs of the community* [3].

10. Next Steps

11. References

    a) David M. Dikel, David Kane, and James R. Wilson. 2001. *Software architecture: Organizational principles and patterns.* Pearson Education.

    b) Linus Torvalds and Steven Vaughan-Nichols. 2011. Linus Torvalds's Lessons on Software Development Management. *Input Output.* Retrieved from `http://web.archive.org/web/20131021211847/http://h30565.www3.hp.com/t5/Feature-Articles/Linus-Torvalds-s-Lessons-on-Software-Development-Management/ba-p/440`

    c) Booker T Washington. 1901. *Up from slavery.* Doubleday & Company, Inc.

Newcomer

1. Motivation This pattern can help project participants be aware of the issues faced by newcomers, and cultivate a "beginner's mind" themselves.

2. Context When there's learning happening, it's because there is someone who is new to a topic, or to something about the topic.

3. Forces

> **Individuation**: each person learning optimally is what's best for the community. 🪂

> **Mutuality**: our individuality does not isolate us from one another, but draws us together. 🛶

4. Problem Newcomers can feel overwhelmed by the amount of things to learn. They often don't know where to start. They may have a bunch of ideas that the old-timers have never considered – or they may think they have new ideas, which are actually a different take on an old idea; see Reduce, reuse, recycle. People who are new to the project can tell you what makes their participation difficult. Since you're learning as you go as well, you can ask yourself the same question: what aspects of this encounter are difficult for me?

5. Solution Instead of thinking of newcomers as "them", and trying to provide solutions, we focus on newcomers as "us" – which makes the search for solutions that much more urgent. We permit ourselves to ask naive questions. We entertain vague ideas. We add concreteness by trying A specific project. We may then genuinely turn to others for help. We aim to foster a culture in which the focus for everyone is on addressing our own learning challenges rather than on "providing" solutions for others [1]. When you begin a new project, try to systematically take notes and gather data to analyze and reflect upon later; leave artifacts for other future newcomers to use and build upon in their own research. In practice this may be a lot to ask for someone just joining a group, but over time we may have many ways to structure our collective engagement so that it leads to research cycles based on the "action research" steps *reflect*, *plan*, *act*, and *observe*. Note that there is a parallel with the four facets *assess*, *convene*, *organize*, *cooperate* from Figure [fig:connections].

The history of the action research approach, with particular emphasis on educational applications, is surveyed in [5]. One method for doing the reflection/assessment step is presented in the Scrapbook pattern. Be flexible: networked attention (even more so than rigid cycles [3]) leads to new ways of knowing and expanded access to knowledge-production [7,8].

6. Rationale A newcomer's confusion about how best to get involved or what the point of all this actually is may be due to a lack of structure in the project Roadmap. Sharing vulnerability and confusion gives us a chance to learn.

7. Resolution An awareness of the difficulties that newcomers face can help us be more compassionate to ourselves and others. We strengthen the community by supporting all participants' **individuation**. We have a better chance of making the project useful for others if we're clear about how it is useful to *us*. By welcoming newcomers, we enhance the sense of **mutuality** with people who have never encountered the project before, and learn together with them. The facts start to become useful when we understand how people perceive them [4].

8. Example 1 Wikipedia Newcomers can make use of resources that include a "Teahouse" where questions are welcomed, a platform extension that changes the user interface for new editors, and lots of documentation.[1],[2],[3] exceptional newcomers may be given special recognition.[4] interest to the Wikimedia Foundation.[5] However, "Nearly all editors begin with a burst of activity, then quickly tail off" [6]. The degree to which those editors who are retained strive to maintain a "beginner's mind" is less clear. As regards learning their way around the community, there is quantitative support [6] for the claim that "novice users learn the rules and conventions for contributing both through observation and direct coaching from more knowledgeable others" [2].

Science Hall: Aspatria Agricultural College, Aspatria, Cumberland, UK

9. Example 2 It will often be pragmatic to connect Newcomers with employment directly, so that the future university may see a closer coupling of science and industry than would be found in the old Science Hall. Inspiration can be drawn the London-based freelancing cooperative Founders&Coders, which is able to offer intensive training in web development at no cost to successful applicants, on the basis that some trainees will choose to join the cooperative as paying members later on.[6]

10. What's Next in the Peeragogy Project More detailed guides can show Newcomers how they can contribute and what to expect when they do. We should have different guides for different "user stories". We can start by listing some of the things we're currently learning about.

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Scrapbook

1. Motivation This pattern describes a way to make the project meaningful.

2. Context We have been working together for a while now. We have maintained and revised our pattern catalog, and we are

achieving some of the "What's Next" steps associated with some of the patterns.

3. Forces

> **Attention**: due to limited energy, we need to ask: where should we set the focus? 🔥

> **Interest**: new experiences catch our attention.

> **Meaning**: shared history makes things meaningful. Ⓜ

4. Problem Not all of the ideas we've come up with have proved workable. Not all of the patterns we've noticed remain equally relevant. In particular, some patterns no longer lead to concrete next steps.

5. Solution In order to maintain focus, is important to "tune" and "prune" the things we give our attention to. We can connect this understanding to any actions undertaken in the project by asking questions like these:

> (1) Review what was supposed to happen. (2) Establish what is happening/happened. (3) Determine what's right and wrong with what we are doing/have done. (4) What did we learn or change? (5) What else should we change going forward? [9], after [10].

Other review processes have been formalized, including the design review in architecture and the postmortem in theater and other teamwork settings [7,8]. The review process may benefit

from having an experienced facilitator on board [6]. As current priorities become clearer, we decide where to focus. Anything that isn't receiving active attention should be moved to a Scrapbook. This may encompass:

- *Retired patterns* that are tabled or completed (no more next steps);
- *Proto-patterns* made of problems, issues, and concerns;
- *A back-catalog* of publications, reports, or other artifacts.

In the Peeragogy project, alongside our patterns we initially maintained a collection of antipatterns (like 'Magical thinking') but the next steps coming from these seemed particularly convoluted and abstract. So, we archived them.[1] problems – without known solutions – right up front in the Introduction to the *Peeragogy Handbook* [9]. Other proto-patterns include 'Onboarding' and 'Don't quit your day job', which arose in our review of this paper (see "Emergent roadmap", below). Our back-catalog includes academic papers [14] and a thesis [5]. Everyone can maintain their own personal Scrapbook as along with a communal one. Furthermore, you don't need to limit yourself to *your own* creativity: include interesting ideas from other sources (see Reduce, reuse, recycle). In some cases a designated Wrapper may have to do further work to elicit and organize contributions.

6. Rationale We want to keep attention focused on the most relevant issues. If a pattern, task, or concern does not lead to concrete "next steps" at the moment, sufficient time for reflection may offer a better understanding, and it may prove useful and actionable in a different context.

7. Resolution Judicious use of the Scrapbook can help focus project participants' attention on current concerns, without losing grasp of items of interest. The currently active pattern catalog is leaner and more action-oriented as a result. If the Roadmap shows where we're going, it is the Scrapbook that shows most

clearly where we've been, and collects the observations that are most **meaningful** to us.

8. Example 1 The history of the Wikimedia Foundation, and of Wikipedia, are maintained as wiki pages.[2],[3] Wikipedia details outstanding issues, in the form of critiques.[4] available to help facilitate the process of vetting proposed fine-grained changes to articles.[5],[6] typically discussed at the Village Pump, and there are mechanisms in place for settling disputes.[^7^],[7]

Park: Christ's Pieces, Cambridge, UK

9. Example 2 Just as a university campus grows and changes over time, future peeragogues will be drawn to new problems and patterns. They will trace new paths and build new emergent structures (Figure [christs-pieces]).

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3   Facilitating Peer Learning

SO YOU'VE DECIDED TO TRY PEER LEARNING ...

Gigi Johnson

So you've decided you to try peer learning? Great! Maybe you've already found a few people who will support you in this effort. Congratulations! It's time now to focus your thinking. How will you convene others to form a suitable group? How will you de- sign a learner experience which will make your project thrive? In this chapter, we suggest a variety of questions that will help you to make your project more concrete for potential new members. There are no good or bad answers - it depends on the nature of your project and the context. Trying to answer the questions is not something you do just once. At various stages of the project, even after it's over, some or all of those questions will aquire new meanings - and probably new answers.

Fabrizio Terzi: "There is a force of attraction that al- lows aggregation into groups based on the degree of personal interest; the ability to enhance and improve the share of each participant; the expectation of suc- cess and potential benefit."

Group identity

Note that there are many groups that may not need to be "con- vened", since they already exist. There is a good story from A. T. Ariyaratne in his collected works in which he does "convene" a natural group (a village) - but in any case, keep in mind at the outset that the degree of group-consciousness that is necessary for peer learning to take place

is not fixed. In this section, we suppose you are just at the point of kicking off a project. What steps should you take? We suggest you take a moment to ponder the following questions first - and revisit them afterward, as a way to identify best practices for the next effort.

There will be a quiz

Those taking the initiative should ask themselves the traditional Who, What, Where, When, Why, and How. (Simon Sinek suggests to begin with Why, and we touched on Who, above!). In doing so, preliminary assumptions for design and structure are established. However, in peer learning it is particularly important to maintain a healthy degree of openness, so that future group members can also form their answers on those questions. In particular, this suggests that the design and structure of the project (and the group) may change over time. Here, we riff on the traditional 5W's+H with six clusters of questions to help you focus your thinking about the project and amplify its positive outcomes.

Expectations for participants

1. Who: Roles and flux

    • What are some of the roles that people are likely to fall into

(e.g. Newcomer, Wrapper, Lurker, Aggregator, etc.)?

    • How likely is it that participants will stick with the project?

If you expect many participants to leave, how will this effect the group and the outcome?

    • Do you envision new people joining the group as time goes

by? If so, what features are you designing that will support their integration into an existing flow?

- Will the project work if people dip in and out? If so, what

features support that? If not, how will people stay focused?

What: Nature of the project

- What skills are required? What skills are you trying to

build?

- What kinds of change will participants undergo? Will they

be heading into new ground? Changing their minds about something? Learning about learning?

- What social objective, or "product" if any, is the project aim-

ing to achieve?

- What's the 'hook?' Unless you are working with an existing

group, or re-using an existing modality, consistent partici- pation may not be a given.

When: Time management

- What do you expect the group to do, from the moment it

convenes, to the end of its life-span, to create the specific outcome that will exist at the conclusion of its last meeting? [2] Note that what people ACTUALLY do may be different from what you envision at the outset, so you may want to revisit this question (and your answer) again as the project progresses.

- Keeping in mind that at least one period of is inertia is very

likely [2], what event(s) do you anticipate happening in the group that will bring things back together, set a new direc- tion, or generally get things on track? More generally, what kinds of contingencies does your group face? How does it interface to the "outside world"?

- What pre-existing narratives or workflows could you copy

in your group?

- How much of a time commitment do you expect from par-

ticipants? Is this kind of commitment realistic for members of your group?

- What, if anything, can you do to make participation "easy"

in the sense that it happens in the natural flow of life for group members?

- Does everyone need to participate equally? How might

non-equal participation play out for participants down the line?

Where: Journey vs Destination

- What structures will support participants in their journey

to the end result(s) you (or they) have envisioned? What content can you use to flesh out this structure?

- Where can the structure "flex" to accommodate unknown

developments or needs as participants learn, discover, and progress?

Why: Tool/platform choice

- What tools are particularly suited to this group? Con-

sider such features as learning styles and experiences, ge- ographical diversity, the need for centralization (or de- centralization), cultural expectations related to group work, sharing, and emerging leadership.

- Is there an inherent draw to this project for a given pop-

ulation, or are you as facilitator going to have to work at keeping people involved? How might your answer influ- ence your choice of tools? Is the reward for completion the learning itself, or something more tangible?

- In choosing tools, how do you prioritize such values and

objectives as easy entry, diverse uses, and high ceilings for sophisticated expansion?

How: Linearity vs Messiness

- How will your group manage feedback in a constructive

way?

- Why might participants feel motivated to give feedback?

- How firm and extensive are the social contracts for this

group? Do they apply to everyone equally, or do they vary with participation level?

- What do people need to know at the start? What can you

work out as you go along? Who decides?

- How welcome are "meta-discussions"? What kinds of discussions are not likely to be welcome? Do you have facilities in place for "breakout groups" or other peer-to-peer interactions? (Alternatively, if the project is mostly distributed, do you have any facilities in place for coming to- gether as a group?)

Cycles of group development

The above questions remain important thoughout the life of the project. People may come and go, particpants may propose fundamentally new approaches, people may evolve from lurkers to major content creators or vice-versa. The questions we suggest can be most effective if your group discusses them over time, as part of its workflow, using synchronous online meetings (e.g., Big Blue Button, Adobe Connect, Blackboard Collaborate), forums, Google docs, wikis, and/or email lists. Regular meetings are one way to establish a "heartbeat" for the group.

In thinking about other ways of structuring things, note that the "body" of the Peeragogy Handbook follows a Tuckmanlike outline (Convening a Group is our "forming", Organiz- ing a Learning Context is our "storming and norming", Coworking/Facilitation is our "performing", and Assessment is our "adjourning"). But we agree with Gersick [1], and Engeström [2], that groups do not always follow a linear or cyclical pattern with their activities!

Nevertheless, there may be some specific stages or phases that you want your group to go through. Do you need some "milestones," for example? How will you know when you've achieved "success?"

In closing, it is worth reminding you that it is natural for groups to experience conflict, especially as they grow or cross other threshold points or milestones - or perhaps more likely, when they don't cross important milestones in a timely fashion (ah, so you remember those milestones from the previous section!). Nevertheless, there are some strategies can be used to make this conflict productive, rather than merely destructive (see Ozturk and Simsek [3])

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Play

Once more we're back to the question, "What makes learning fun?" There are deep links between play and learning. Consider, for in- stance, the way we learn the rules of a game through playing it. The first times we play a card game, or a physical sport, or a computer simulation we test out rule boundaries as well as our understanding. Actors and role-players learn their roles through the dynamic process of performance. The resulting learning isn't absorbed all at once, but accretes over time through an emergent process, one unfolding fur- ther through iterations. In other words, the more we play a game, the more we learn it.

    In addition to the rules of play, we learn about the subject which play represents, be it a strategy game (chess, for example) or simu- lation of economic conflict. Good games echo good teaching prac- tice, too, in that they structure a single player's experience to fit their regime of competence (cf. Vygotsky's zone of proximal learning, a la Gee [1]). That is to say a game challenges players at a level suited to their skill and knowledge: comfortable enough that play is possible, but so challenging as to avoid boredom, eliciting player growth. Role- playing in theater lets performers explore and test out concepts; see Boal [2]. Further, adopting a playful attitude helps individuals meet new challenges with curiosity, along with a readiness to mobilize ideas and practical knowledge. Indeed, the energy activated by play can take a person beyond an event's formal limitations, as players can assume that play can go on and on [3].

> **Douglas Thomas and John Seely Brown**: "All systems of play are, at base, learning systems." [4]

Games have always had a major social component, and learning plays a key role in that interpersonal function. Using games to build group cohesion is an old practice, actually a triusm in team sports.

It is important to locate our peeragogical moment in a world where gaming is undergoing a renaissance. Not only has digital gaming become a large industry, but gaming has begun to infiltrate non-gaming aspects of the world, sometimes referred to as "gamification." Putting all three of these levels together, we see that we can possibly improve co-learning by adopting a playful mindset. Such a playful attitude can then mobilize any or all of the above advantages. For example,

- Two friends are learning the Russian language together. They invent a vocabulary game: one identifies an object in the world, and the other must name it in Russian. They take turns, each challenging the other, building up their common knowledge.

- A middle-aged man decides to take up hiking. The prospect is somewhat daunting, since he's a very proud person and is easily stymied by learning something from scratch. So he adopts a "trail name", a playful pseudonym. This new identity lets him set-aside his self-importance and risk making mistakes. Gradually he grows comfortable with what his new persona learns.

- We can also consider the **design** field as a useful kind of playful peeragogy. The person *playing the role* of the designer can select the contextual frame within which the design is performed. This frame can be seen as the *rules* governing the design, the artifact and the process. These rules, as with some games, may change over time. Therefore the possibility to adapt, to tailor one's activities to changing context is important when designing playful learning activities. (And we'll look at some ways to design peer learning experiences next!)

Of course, "game-based learning" can be part of standard pedagogy too. When peers create the game themselves, this presumably

involves both game-based learning and peer learning. Classic strategy games like Go and Chess also provide clear examples of peer learning practices: the question is partly, what skills and mindsets do our game-related practices really teach?

> **Socrates**: "No compulsory learning can remain in the soul …In teaching children, train them by a kind of game, and you will be able to see more clearly the natural bent of each."

Exercises that can help you cultivate a playful attitude

- Use the Oblique Strategies card deck (Brian Eno and Peter Schmidt, 1st edition 1975, now available in its fifth edition) to spur playful creativity. Each card advises players to change their creative process, often in surprising directions.

- Take turns making and sharing videos. This online collaborative continuous video storytelling involves a group of people creating short videos, uploading them to YouTube, then making playlists of results. Similar to Clip Kino, only online.

- Engage in theater play using Google+ Hangout. e.g. coming together with a group of people online and performing theatrical performances on a shared topic that are recorded.

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Planning Peer Learning Activities

We begin with two simple questions:

- How do we select an appropriate learning activity?

- How do we go about creating a learning activity if we don't find an existing one?

"Planning a learning activity" should mean planning an *effective* learning activity, and in particular that means something that people can and will engage with. In short, an appropriate learning activity may be one that you already do! At the very least, current activities can provide a "seed" for even more effective ones.

But when entering unfamiliar territory, it can be difficult to know where to begin. And remember the bottlenecks mentioned above? When you run into difficulty, ask yourself: why is this hard? You might try adapting Zed Shaw's task-management trick, and make a list of limiting factors, obstacles, etc., then cross off those which you can find a strategy to deal with (add an annotation as to why). For example, you might decide to overcome your lack of knowledge in some area by hiring a tutor or expert consultant, or by putting in the hours learning things the hard way (Zed would particularly approve of this choice). If you can't find a strategy to deal with some issue, presumably you can table it, at least for a while.

Strategic thinking like this works well for one person. What about when you're planning activities for someone else? Here you have to be careful: remember, this is peer learning, not traditional "teaching" or "curriculum design". The first rule of thumb for *peer learning* is: don't plan activities for others unless you plan to to take part as a fully engaged participant. Otherwise, you might be more

interested in the literature on *collaborative learning*, which has often been deployed to good effect within a standard pedagogical context (see e.g. Bruffee [1]). In a peer learning setting, everyone will have something to say about "what do you need to do" and "why is it hard," and everyone is likely to be interested in everyone else's answer as well as their own.

Furthermore, different participants will be doing different things, and these will be "hard" for different reasons. Part of *your* job is to try to make sure that not only are all of the relevant roles covered, but that the participants involved are getting enough support.

Co-facilitating in peer-to-peer learning

Co-facilitation can be found in collaborations between two or more people who need each other to complete a task, for example, learn about a given subject, author a technical report, solve a problem, or conduct research. Dee Fink writes that "in this process, there has to be some kind of change in the learner. No change, no learning" [1]. Significant learning requires that there be some kind of lasting change that is important in terms of the learner's life; in peeragogy, one way to measure the effectiveness of co-facilitation is to look for a change in the peer group.

Co-facilitation roles can be found in groups/teams like basketball, health, Alcoholics Anonymous, spiritual groups, etc. For example, self-help groups are composed of people who gather to share common problems and experiences associated with a particular problem, condition, illness, or personal circumstance. There are some further commonalities across different settings. Commenting on the work of Carl Rogers:

> **Godfrey Barrett-Lennard**: The educational situation which most effectively promotes significant learning is one in which (1) threat to the self of the learner is reduced a minimum, and (2) differentiated perception of the field of experience is facilitated. [2]

Part of the facilitator's role is to create a safe place for learning to take place; but they should also challenge the participants.

> John Heron: Too much hierarchical control, and partici-
> pants become passive and dependent or hostile and resis-
> tant. They wane in self-direction, which is the core of all
> learning. Too much cooperative guidance may degener-
> ate into a subtle kind of nurturing oppression, and may
> deny the group the benefits of totally autonomous learn-
> ing. Too much autonomy for participants and laissez-
> faire on your part, and they may wallow in ignorance,
> misconception, and chaos. [3]

Adapting strategies for learning assessment to the peer-learning context

In "Effective Grading: A Tool for Learning and Assessment," Bar-
bara E. Walvoord and Virginia Johnson Anderson have outlined an
approach to grading. They address three questions:

1. Who needs to know, and why?

2. Which data are collected?

3. How does the assessment body analyze data and present find-
   ings?

The authors suggest that institutions, departments, and assess-
ment committees should begin with these simple questions and work
from them towards anything more complex. These simple questions
provide a way to understand - and assess - any strategy for assessment!
For example, consider "formative assessment" (in other words, keep-
ing track of how things are going). In this context, the answers to the
questions above would be:

1. Teachers need to know about the way students are thinking
   about their work, so they can deliver better teaching.

2. Teachers gather a lot of these details on learning activities by
   "listening over the shoulders" of students.

3. Teachers apply analysis techniques that come from their train-
   ing or experience – and they do not necessarily present their
   assessments to students directly, but rather, feed it back in the
   form of improved teaching.

This is very much a "teacher knows best" model! In order to do
something like formative assessment among peers, we would have to
make quite a few adjustments.

1. At least some of the project participants would have to know
   how other participants are thinking about their work as well
   as analyzing their own progress. We are then able to "deliver
   better teaching" and work together to problem-solve when dif-
   ficulties arise.

2. It may be most convenient for each participant to take on a
   share of the work (e.g. by maintaining a "learning journal"
   which might be shared with other participants). This imposes a
   certain overhead, but as we remarked elsewhere, "meta-learning
   is a font of knowledge!" Outside of persistent self-reflection,
   details about others' learning can sometimes be abstracted from
   their contributions to the project ("learning analytics" is a whole
   topic unto itself).

3. If a participant in a "learning project" is bored, frustrated, feel-
   ing closed-minded, or for whatever other reason "not learning,"
   then there is definitely a question. But for whom? For the per-
   son who isn't learning? For the collective as a whole? We may
   not have to ponder this conundrum for long: if we go back
   to the idea that "learning is adaptation," someone who is not
   learning in a given context will likely leave and find another
   context where they can learn more.

This is but one example of an assessment strategy: in addition to
"formative assessment", "diagnostic" and "summative" strategies are
also quite popular in mainstream education. The main purpose of
this section has been to show that when the familiar roles from for-
mal education devolve "to the people," the way assessment looks can

change a lot. In the following section, we offer and begin to implement an assessment strategy for evaluating the peeragogy project as a whole.

"Paragogy" and the After Action Review.

In our analysis of our experiences as course organizers at P2PU, we (Joe Corneli and Charlie Danoff) used the US Army's technique of After Action Review (AAR). To quote from our paper [2]:

> 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 [...] 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 combined the AAR with our paragogy principles –

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. Paragogy is distributed and nonlinear.

5. Realize the dream if you can, then wake up!

and went through steps 1-4 for each principle to look at how well it was implemented at P2PU. This process helped generate new policies that could be pursued further at P2PU or similar institutions. By presenting our paper at the Open Knowledge Conference (OKCon), we were able to meetP2PU's executive director, Philipp Schmidt, as well as other highly-involved P2PU participants; our feedback may ultimately have contributed to shaping the development trajectory for P2PU.

In addition, we developed a strong prototype for constructive engagement with peer learning that we and others could deploy again. In other words, variants on the AAR and the paragogical principles could be incorporated into future learning contexts as platform features [3] or re-used in a design/administration/moderation approach [4]. For example, we also used the AAR to help structure our writing and subsequent work on paragogy.net.

[Describe PAR]

Closing Reflections

We can reflect back on how this feedback bears on the main sections of this book with a few more selected quotes. These motivate further refinement to our strategies for working on this project, and help build a constructively-critical jumping off point for future projects that put peeragogy into action.

How can we build strong collaboration?

"A team is not a group of people who work together. A team is a group of people who trust each other."

How can we build a more practical focus?

"The insight that the project will thrive if people are working hard on their individual problems and sharing feedback on the process seems like the key thing going forward. This feels valuable and important."

How to connect with newcomers and oldcomers?

> "I just came on board a month ago. I am designing a self-organizing learning environment (SOLE) or PLE/PLN that I hope will help enable communities of life long learners to practice digital literacies."

How can we be effective and relevant?

> "I am game to also explore ways attach peeragogy to spaces where funding can flow based on real need in communities."

4   Further Directions

[Full handbook]
[Videos: podcast and meetings]
[Our website and contacting us]
[Other papers and books about peeragogy/paragogy.]
Here's a quick list of some of these:

- Re-imagining the Art School: Paragogy and Artistic Learning by Neil Mulholland

- Learning Communities: Learning Together by D Cristol *Savoirs*, 2017

- Open Education Designs: A taxonomy for differentiating and classifying open learning environments

- Smaller lens, bigger picture: Exploring self-generated cellphilms in participatory research

- Patterns of Patterns II

- Patterns of Patterns

- Patterns of Design

- Patterns of Peeragogy

- Building the Peeragogy Accelerator

- Paragogical praxis

- Paragogy

- Peeragogy in Action