Student and teacher co-navigation of a course: following the *natural lines* of academic enquiry

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Abstract

Using the mountaineering metaphor of 'natural lines' this article describes the co-navigation of an honours course by students and teachers. It suggests the benefits and possibilities of going beyond the confines of conventional teaching and learning wisdom (as canonised in the notion of constructive alignment) and offering just and joyful ways for students to explore disciplinary knowledge. We openly explore issues of power between students and teachers in the construction of so-called partnerships, recognising the inherent challenges in moving beyond the prevailing mainstream. We suggest that a natural lines approach enables students to act as genuine co-navigators and to experience disciplinary knowledge in authentic ways and provides rich opportunities for personal reflection and development.

Keywords

Student-Staff Partnerships, Constructive Alignment, Critical Pedagogy, Boot-grit feedback, Student engagement

Introduction

Mountaineers navigate a rockface by examining, understanding – and ultimately working with – the natural features of the rock, choosing a way which balances

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challenge and feasibility. The most highly prized routes are 'natural lines'
distinguished by their aesthetic simplicity; gullies, cracks and buttresses offered up by
the mountain as compelling temptation. Such lines demand commitment. Escape
routes are few, the climbing is sustained, without meandering slack pitches, and the
key moves are often difficult to reverse. In contrast 'contrived' routes feel fragmented
and artificial; they may bring fun and technical challenge, but are often easy to forget
and have multiple possible escape points. In this article we use the metaphor of
natural lines to explore the experiences of student and teacher co-navigation of
disciplinary knowledge within an honours module. We find the blend of
commitment, challenge, mutual endeavour and exhilaration experienced in climbing a
great natural line to have powerful parallels with sharing control of difficult learning.

The importance of student-teacher partnerships within higher education has
gained prominence over recent years (eg. Bovill, 2013; Little, 2011), but the idea is
interpreted in many ways. Our own position comes from critical pedagogy and is thus
built upon a commitment to the social justice purposes of higher education. This
article builds on previous work of two of the authors looking at the possibilities of
"sharing control" for course design and delivery between students and teachers
[citation removed].   A further commitment, of equal importance, is to the rigour and
complexity of the disciplinary knowledge (in this case ecology) and to students' rights
to experience such knowledge in its rich, contested and authentic forms (McArthur,
2012, 2013). A third current, which draws heavily on critical pedagogy and systems
thinking in ecology, is provided by education for sustainable development. The
literature here emphasises how, in tackling the looming ecological crisis that we face,
'much of the same kind of education will only compound our problems… it is not
education but education of a certain kind that will save us' (Orr, 2004, p. 8).

Greene's (eg. 1995) conception of learning in terms of imagining things to be different was also a powerful influence; this project has been a series of attempts to imagine the curriculum and our relationships in different ways. The looming prospect of navigating this high stakes, honours year module was intimidating for staff (as we contemplated potentially risky changes to a successful module) and students (for whom this represented an important contribution to their final degree classification). Using the idea of natural lines helped us to imagine different ways to co-navigate the curriculum and our engagements with knowledge.

Two previous examples of sharing control with students inspired us. Firstly, Shor's (1996) account of trying to invest power in students at a New York college warned us about the necessity of this being an uncomfortable process, if it is to be genuine:

> In the coming months these students ate my liver twice a week while I lay chained to the rock of experimental democracy. To my amazement, they told me far more than I was comfortable knowing. (124)

From Rowland's (2000) account of trying to negotiate a curriculum with Masters level students we took the powerful idea of genuine rather than superficial negotiation with students. Negotiation is a far more complex process than simply asking 'do we all agree?'

Finally, our project has taken issues of trust, power and authority very seriously. Rather than denying or hiding the differences in our roles we have tried to make these explicit and deal openly with the implications of such differences.

The project was based on a fourth year module "Advances in Ecology" at [institution removed] which usually has 25-35 students, of mixed ages and backgrounds (although typically with a majority in the 20-22 age group and with more women than men). The module had run successfully (as measured by

assessment scores and student evaluations) for many years. Hence our motivation to change it was ideological and reflective – drawing on conversations with students about their learning, both in this module and elsewhere, and on the literature – rather than a reaction to perceived failure. The process of change began with a series of discussions with students two years before the current project, which had resulted in radical alteration to the assessments used in the module and initial attempts to find more exciting and authentic spaces and locations for learning [citation removed].

In the next section we describe the background and context for this initiative. We then situate our natural lines approach in the context of more established methods, in particular Biggs' (2003) notion of constructive alignment. In the main section, we consider three key aspects of our approach: rethinking time and space; building-in crux points to evaluate understanding and build confidence; and developing a responsiveness to dealing with the inevitable challenges. We suggest that natural lines allows for engagement with a course, and the associated disciplinary knowledge, in more complex, meaningful and authentic ways.

Intentions at base camp

In both mountaineering and learning, any individual expedition is built on the experiences of many previous ones. Two of the co-authors have undertaken a series of other projects, all broadly looking to find alternative, more just and joyous, approaches to higher education [citations removed] The student co-authors [names removed] also came with their own relevant experiences. These included positive educational opportunities (for example a residential field trip that afforded an intense and immersive experience of learning together) along with more negative ones of

fragmented and surface learning and of curricula that seemed to encourage inauthentic tasks.

At the start of the 2013 iteration, students were told about the recent history of the module and of how changes had been made through negotiation, and also that they too would be asked to approach the course in a new, and we hoped exciting, way. However, while Mark was keen to move forward along 'natural lines' the decision to do so rested with the course participants as a whole, and only proceeded after discussion and agreement.

As with the previous project, major decisions were subject to a class vote only after active discussion. The mountaineering metaphor - 'natural lines' - was explained as involving three key elements: ***commitment***, implying spending larger amounts of time learning, and concentrating that time into sustained blocks (or 'pitches'); ***moving together***, implying careful and on-going evaluation of our progress and a sharing of that evaluation in a spirit of trust and mutual support; ***exposure***, involving looking for more imaginative and exciting spaces in which to learn, and a flexibility and willingness to move around obstacles such as timetabling. The whole class voted in support of this 'natural lines' approach, providing unanimous backing in principle whilst also articulating a range of concerns for further discussion and monitoring along route. Natural lines, as experienced here, primarily concerned changes in the processes, timing and places of learning and teaching rather than the content and its assessment, which had been recently altered through negotiation with the previous cohort.

'Moving together' required regular formal and informal exchanges about the progress and direction of the module. This sometimes took the form of 'boot grit' feedback (McArthur & Huxham, 2013; McArthur et al., 2011) whereby students

could take stock of their own progress and ask for extra advice to assist with the next stages. All students were also encouraged to keep reflective diaries. These were confidential but students were welcome to share with Mark if they wished. An exception came with the invitation to act as co-researchers for this article. In these cases, the reflective diaries of Mark and these students formed an essential part of the evaluative data used in this article, and part of the analytical process was the sharing of these diaries. Three students volunteered for the role of co-researchers, and they are co-authors of this paper. We acknowledge that these three represent only a small section of the students on this course, and no claims are made for these being representative of all students. The data from the reflective diaries was complemented with other sources, including class votes, conversations, boot-grit feedback and other evaluations. Hence this paper presents an ethnographic study drawing on our shared experiences as co-navigators of this course.

This study was granted ethical approval by the [institution removed] Faculty of Health and Life Sciences Ethics Committee.

Natural Lines – implications for course design and delivery

Mountaineering is an exemplary case of process masquerading as outcome; there are a myriad easier ways to the top, hence the purpose is not the peak but the route there. It is both highly constrained, in that misreading the state of the mountain or of the party can lead to disaster, and flexible, in that there are many different ways of achieving a climb. It entails enormous, lonely effort and intense, honest teamwork. All of this is equally true, we suggest, of genuine student-teacher partnerships within higher education.

It is instructive to contrast our natural lines metaphor with more familiar descriptions of module design such as 'constructive alignment' (Biggs, 2003). Biggs outlines three elements of course design, the presage (which involves a tutor considering students' prior knowledge and ability), the process (the 'learning-focused activities' which the student will undertake, which include assessments) and the product (the learning outcomes desired from those activities). He emphasizes the importance of aligning these elements so that they support or 'trap' students into a net of learning. This approach has been used to demonstrate the importance of learning outcomes and to stress that it is what students do, rather than what teachers expect them to do, that determines their learning. However the metaphor is less favourable for those interested in issues of shared power, because of its implied focus on the design activities by the tutor and its strong emphasis on pre-determined outcomes. In addition, a commitment to sharing power within the learning and teaching context involves more than simply moving from a teacher-focus to a student-focus, but instead a full re-examination of the inter-relationships of both roles. To explore the different nuances of these two metaphors a set of implied binary contrasts is given in the table below.

Natural lines	Constructive alignment
Mountaineering metaphor	Surveying/engineering metaphor
Identifying an elegant route	Creating an efficient route
Team effort	Individual effort
Process informed by outcome	Outcomes determine process
Bounded flexibility and spontaneity	Carefully planned and predictable
Requires risky commitment	Risk is minimized

Table 1: comparison of natural lines and constructive alignment approaches to course design and delivery

Challenging Time and Space: Following the Natural Lines in Advances in Ecology

Our previous experience of sharing control (McArthur & Huxham, 2011) revealed a dissatisfaction with the constraints imposed by routine structures such as: the artificial labeling of sessions as "lecture" or "tutorial"; timetabling constraints that stopped learning interactions just when they might be getting interesting; the uninspiring confines of the traditional classroom (however fresh the paint); and the seemingly necessary abstraction of disciplinary knowledge from the "real" environments in which students would later need to apply it. The power imbalance whereby the teacher made all key decisions was a further barrier to genuine engagement with knowledge: our commitment to rethinking power in the learning and teaching context is not simply about a political ideal but embedded in a sense of what is best educationally. For example when all decisions about assessments are made by the tutor there is no mutual ownership of the risks involved. Students argued for a more authentic assessment in this module; the new assessment (critiquing a published rather than simulated paper) was both more authentic and harder, and the mutual agreement on the basis of this change gave a strong mandate for making it and committing to its implications (McArthur & Huxham, 2011).

Time and space

We found ourselves seeking opportunities for more authentic learning, not constrained by the limits imposed by a crowded timetable and formal university architecture. Such a goal was both grand and modest. On one level it seeks to

challenge, even undermine, some of the key structural aspects and instruments of power of present day higher education – time and space. And yet, our engagement with this challenge is also modest in many respects, its significance coming from the overall meaning of a collection of small alternative acts.

A commitment to following the natural lines of the course was not consistent with the traditional timetabling of classes into small blocks, interspersed with other courses, and labeled to direct particular teaching and learning interactions (eg lecture, tutorial, practical). To this end, total contact hours were doubled (Mark voluntarily took on this greater workload) and grouped into a smaller number of longer blocks. The yearning for deep coherent learning appears necessarily linked to a willingness to commit extra time if necessary, but the ability to do so is not always shared. Time is limited for most students who are balancing study with paid work commitments, along with family and other responsibilities.

The importance of alternative spaces and places for learning and teaching interactions became clear in discussions with the 2011-12 'Sharing Control' project. This may have a particular disciplinary dimension, the outdoor world being especially relevant to the study of ecology, but we do not believe it is exclusively so. We introduced the notion of a 'sandwalk', inspired by Charles Darwin's daily contemplative stroll around Down House. The sandwalk involves a 'walk and talk', incorporating a trip to a local site of natural history interest, in this case a beach, and attempting to contextualize the theoretical aspects of the lecture by observing and recording relevant features of the real world that could illustrate key points. However teaching outside the classroom did not change the content of the module – which was advanced theory rather than 'fieldwork' – and hence doing so is not necessarily restricted to 'field' subjects.

We used alternative spaces from the start of the Natural Lines project. By chance, the first teaching session of the year fell on a public holiday, and thus would normally have been rearranged. However, in order to avoid delay, we moved the class elsewhere into the beautiful setting of the Royal Botanic Gardens. Two of us found that this first session worked well:

> The sun shined on us despite predictions and we found space to work on population dynamics and scientific methods in the botanic gardens, surely one of the most beautiful places in Scotland. Working on a public holiday with no access to university facilities (and no insurance), in disregard of a sensible work life balance and the needs of my family ... A minor act of rebellion perhaps? At least rebellion against the fussy dictates of a crowded timetable and a clinical lecture room. (Mark)

> Today's session was held in the Botanical Gardens. This provided an informal yet inspirational setting, and was a refreshing start to the trimester. Moving from place to place, stopping for discussions and continuing to think as we moved on, created a physical representation of the 'train of thought' of the lecture. The visual sensory component to this also helps in retention of information – I can now think back to when we sat in the greenhouses and it helps to remember what we discussed at this point! This contrasts with lectures held in the conventional setting, where heat, lack of natural light, tiredness or boredom can cause all information to merge and it therefore may not be retained. (Robin)

But some of us were less positive about the initial experience:

> Today's lecture was unconventional, we had to stand around outside and find places indoors [like the palm house] to learn. I much prefer the conventional lectures. …There was a lot of confusion and no-one seemed to really know what we were supposed to be doing….To be honest I'm not sure what I have taken away today other than confusion. I did the majority of the recommended reading but feel that it was not beneficial, perhaps it was due to the wind/background noise at the Botanics.   (Angela)

There were other organizational problems incurred by moving away from a fixed

timetable of limited slots published months in advance: timetabling changes could be

easily missed. Mark wrote after one session:

> three students not there; two turned up a little late but then Susan didn't come in
> until one, having missed the morning. She explained that she had been
> consulting the standard timetable and missed the notice on moodle [our VLE]
> about the different time and place. A reminder of the dangers in tinkering with a
> complex system like the teaching timetable. Very easy to send out confusing
> messages. It's only really possible with a small class...imagine doing this with a
> hundred confused first years.

We also found that people had different experiences of the changes in time, so while

the first session in the Botanics was meant to be calm and relaxed, with double the

contact hours, one student reflected:

> During the day I never knew where we were at some points or what we were
> discussing as the subject changed quite rapidly from one to another.

Indeed, later in the course Mark himself reflected that he had not experienced time as

expected:

> surprised how rushed it feels. I imagined we would have plenty of languorous
> minutes to spend in earnest reflection.. Maybe there is a bit too much material
> here? Might be worth cutting down on one or two of the examples.

What felt rushed to Mark, could feel very long to a student:

> Today's session was fairly long, although being broken up by several breaks
> helped a lot. I think any longer would have been too much for the class though;
> energy levels in the final hour were dropping fast. (Robin)

The battle between content and finding the space for genuine engagement remained a

challenge throughout the natural lines module, and while we felt we went some way

to achieving a better balance it remained an issue that we needed to revisit.   Some

students found the blocks of time too long and demanding, while acknowledging Mark's attempts to break them up and add variety. Despite these problems, Megan found the overall approach beneficial:

> I was unsure about increasing lecture hours to begin with, but I do believe that it has its benefits. For the most part the material was revision of topics we have previously covered and this was certainly something that I needed.

Megan's observation is interesting because it reminds us that a consideration of 'content' should involve the opportunity for re-evaluation of previous course material as well as new topics:

> Despite being indoors all day, this form of teaching is definitely something that I prefer…. I felt confident with the material on leaving the lecture and also learnt some things about myself and my knowledge that will need refreshing and perhaps some issues I should confront to involve myself more to enhance my own learning experience.

While we strove for genuine negotiation, it is impossible to ensure that everyone will feel equally happy about decisions made once they are enacted: there is a significant difference between sharing power and aspiring to unanimity. However, it is equally important to allow time for participants to become used to alternative approaches, and in the case of Angela, misgivings about the unconventional, dialogical nature of the teaching were assuaged during later sessions as she became more confident about the subject material and found opportunities (through 'bootgrit' and other mechanisms) to explore areas of misunderstanding.

Crux points

While working to create a more expansive sense of time to enable more engaged learning, we were also conscious of the need to make progress. Previous changes to

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the course assessment, through the Sharing Control project [citation removed] had aimed to reinforce the learning purposes of assessment. Thus, extending further the natural lines metaphor, we introduced the idea of 'crux points' to check and consolidate learning from one assessment moment to the next. In mountaineering a crux is the hardest or defining move of a route. Sometimes there are more than one crux and sometimes there is a 'technical crux' (the part that is physically most difficult) and a separate psychological crux (the part that might be easier but which is perhaps very exposed, or committing, involving moves during which a mistake would be very serious).

We took this idea and applied it to a moment of critical feedback, at which students' engagement was crucial to their further navigation of the course. The first formal assessment of the course came in week four; moved forward from week five, which had itself been considered early, after requests from the students based on possible clashes with coursework for other modules. While this only allowed three weeks to prepare the first assignment (worth 25% of total module marks), the students' perspective was that it would be good to 'get something done' and achieve progress early on. Hence by tackling a 'crux' early we would demonstrate achievement and leave time to learn from it through formative feedback/feedforward, since a similar assessment would feature at the end of the module.

This first summative assessment – a critical review of a published paper – was therefore a *crux point* in co-navigation. In order for students to gain the most from this marking and feedback needed to be done with urgency. Thus Mark set himself the task of completing all marking within a week. The following Monday was then devoted to individual oral feedback to each student in one to one sessions with Mark,

a *psychological crux* point on which students could base their further navigation of the subject material.

In his reflective diary Mark makes the following observation as he sits marking:

> well I am now half way through marking the scripts. It's 7.45 on a Friday evening so am looking forward to at least a day of marking over the weekend. I think that's OK provided we realise the benefits I hope for. Of course marking is always a challenge but this seems tougher because of the tight time scale.

He continues later on the Monday, following all one to one feedback sessions:

> It's now six thirty on Monday 7th. Have spent seven hours giving one to one feedback on the work. Two students didn't turn up, but both contacted me with good reasons…so excellent engagement in terms of attendance, and everyone sticking to time which allowed us to keep to the tight schedule. The sessions were short (12 minutes each) but mostly felt sufficient to discuss the key issues I wanted to get across.

Students were asked to come to their sessions having read a model answer, reflected on their work and prepared with questions on areas and concepts with which they had struggled. Sixty percent of the issues raised by students as being particularly challenging or requiring further exploration coincided with those that Mark had also identified for each student. So there was common ground as a basis for discussion, upon which Mark could then build.

This experience compares well with a previous initiative on 'focused feedback' [citations removed] in which students were very reluctant to raise substantial critical points about their own work. The key difference appears to be that our crux point discussions were held *after* marking was done, so it was clear that our discussions could not influence the grade, and that there was a strong sense of trust

developed between tutor and students. The previous focused feedback work had highlighted how easy it is for idealistic tutors to under-estimate the importance of power differentials between students and tutors. Overcoming this requires the careful nurturing of trust along with a recognition of the inherent power imbalances that exist between students and the tutors who mark their work.

The commitment to speedy turnaround and to devoting a whole day to feedback discussions made serious demands on our time. However, we would argue that this is time well spent to improve students' self-efficacy, sense of direction and confidence for the rest of the module. Mark reflects in his diary:

> I expected to find the day long and tiring, as well as a little emotionally draining; this was based on the reluctance to give bad news, a feeling amplified when the message is delivered face to face with no room for ambiguity. Actually most of the class had done well (average mark of 61) and some had done excellently, but one or two had scraped passes and there were people with lower scores than I expected, based on their profiles as students. In the event, I found the consultations very positive. Not once did we get into a defensive or pedantic justification of marks, and people seemed to be well prepared having read the model answer, so their grade did not come as a shock. …Speaking one to one without the group meant I could make much more conscious efforts to adjust to the individual needs and understandings of the students.

The time and effort contributed by Mark was appreciated by the class, with many commenting in anonymous evaluation afterwards that receiving face-to-face comments encouraged consideration and reflection of their feedback. This contrasts with traditional non-dialogical written feedback that is easily dismissed or ignored. It allowed students to question any feedback that they did not understand creating a more meaningful and comprehensive experience overall. Thus the strength of this approach was not in meeting an arbitrarily fixed target for turnaround of feedback, but in working with notions of time and space that maximised the opportunities for

genuine dialogue, and hence learning through feedback.

Responding to the challenges

Fundamental to a natural lines approach is the absence of a pre-determined plan of action for every stage of the course. Rather than sticking to a fixed routine, all of us as co-navigators had to evaluate and make decisions throughout the process. This brought to the fore issues of responding to challenges as a natural part of a learning interaction:

> It took me a while to get in the swing of things during today's lecture. I couldn't quite find my concentration, and I am slightly disappointed I didn't involve myself more. Many students were interactive and happy to answer questions, whereas others such as myself preferred to just sit and listen. Perhaps this is something I need to work on to get more out of the lecture and material. (Megan)

Angela found her initial reflections on the changes to the course were rather negative, and how she dealt with these feelings was itself a challenge. After re-reading her initial reflective diary comments, Angela chose to go away and 're-process it before I write down anything else that is quite negative'. Here is the result:

> Having now gone over what subjects we covered at the Botanics today, updating my notes and module booklet, I feel a lot happier and relaxed about the topic. Having spent a few hours 3 days prior to the lecture reading I find that this did not prepare me, however the lecture itself has singled out what I need to know from the reading.

A natural lines approach requires re-learning how to behave as learners and teachers. Angela's reflection reinforces the point that power cannot be simply given by a teacher to students; sharing power involves a subtle process of engagement in which participants need to adjust to new opportunities and responsibilities. It took time for

some of the benefits to appear and there was considerable anxiety early in the module – and particularly before that 'crux' first assessment – that we had collectively made the wrong decisions:

> A regular lecture normally consists of being inundated with information and having to pick out yourself the important components. So Mark has turned this on its head, it is a challenge for me to learn this way as I like information to flow in a logical manner with clear headings with a chance for my thought process to absorb the information…. At the moment I'm on the fence as to this teaching method, but from 2 other modules in previous years I have done with Mark I know it will all come good in the end. I consider myself an unconventional person so why am I having difficulty converting to an unconventional teaching method? (Angela)

However people were gradually reassured as they became familiar with the new learning approach and as we made progress 'up the face' of the module:

> Discussing the subjects in our group today was good - 5 heads are definitely better than 1. And everyone engaged with the subject and discussions a lot better today than last week. We covered a lot. (Angela)

Mark too had to face some of the challenges of following the natural lines, not least the demand on his time. After one day, he wrote in his reflective diary: 'feeling shattered tonight'. Beyond this, however, Mark also struggled to ensure the group 'moved together' over the large pitches:

> Everyone seemed to engage well with the topics and with group work, although I got more than one comment of 'it's too early in the morning to answer that'. So although I thought everyone brought a positive attitude I also felt I had to push the pace a little and perhaps did not give enough time for individual work. (later in day) did have a few 'I'll need to go away and think about it' comments.

> Aware of a little frustration with that. After all I wanted to commit to a 'natural line' where we deal with the tasks together. That feels a little like wandering off the route for a break. But have to remember people need some space to ruminate.

For Mark there was a tension between perceived responsibilities to lead the group on, to achieve what needed to be achieved, and allowing the less predictable pace that came with diffused power.

Conclusion: some thoughts from the peak

A 'natural lines' approach to co-navigation of a course is, like its mountaineering namesake, a risky exercise. Our use of the natural lines metaphor aims to capture an emerging approach to teaching and learning, that emphasises commitment, flexibility, dialogue, travelling together and working outside the normal (and sometimes stifling) classrooms. It proved a challenge to student conceptions of themselves as learners, making an impact far beyond this one module:

> ...in the past we have been taught to take widely accepted theories for granted, so it was interesting to think of it from a different angle. It was surprising how easy it was to think like this, in a way we haven't done before but once we start, it seems fairly obvious eg. finding evidence that competition is not important, as opposed to evidence supporting theories of competition. It was also interesting to think about how to interpret the same results from different angles.. a valuable skill to have next semester when we are writing our honours projects. (Robin)

Natural lines does not imply a more 'pleasant' learning experience; all of us experienced anxiety about the risks involved. The challenges should not be underestimated, but therein also lies the joy, as this quote from Angela at the end of the module reveals:

> I am left feeling restless after handing in the take home exam. After sitting a conventional exam I am always used to feeling negativity - realising afterwards

> that I have written the wrong answer, remembering facts I had forgotten during the exam and complete dread that I have failed. It is the lack of this negativity that has left me feeling restless, I am simply not used to the positive after effects that the take home exam has filled me with. I feel like I have learned so much, like I have done the best I possibly could and I know there is very little chance that I could fail.

So did Natural Lines 'work'? Well the peak was successfully climbed – all students achieved passes or better (and with a higher average than previous years), the usual evaluations were positive, the external was happy. But these measures are the blurred and clichéd snapshot at the summit cairn; at best they can stimulate memory of the exhilaration and struggle up to that point. Our engagement had been with the subject matter, but also with the on-going, shared negotiations over how to learn and what power to share. This was risky – and thinking through how to manage this risk fairly is an important responsibility for anyone embarking on a similar natural line – but we found that the costs of democracy in this study were consistently outweighed by the benefits.

While the natural lines metaphor and approach may seem particularly apt for a course on ecology, the principles - of mutual respect, genuine sharing of control and rethinking the parameters of time and space to suit what is most appropriate for the type of knowledge students are engaging with - could apply in most disciplinary areas. As we have highlighted, there are clear time commitments involved, however, time may be saved elsewhere; in re-assessing students who have failed, clarifying course objectives and assumptions over and over to individual students, and in the wasted time spent on frustration caused by miscommunication and mismatched understandings. Moreover, while this example spanned the life of this module, it is also possible to introduce natural lines to moments or sections of a course. If this was done across a programme as a whole, the cumulative benefits in terms of students'

capacity for self-direction could, we argue, save considerable time otherwise spent on

procedural matters rather than mutual engagement with knowledge.

References

Biggs, J. (2003). *Teaching for Quality Learning at University* (2nd ed.). Buckingham: The Society for Research into Higher Education & Open University Press.

Bovill, C. (2013). Staff–student partnerships in higher education. *Educational Review, 65*(3), 380-382.

Freire, P. (1996). *Pedagogy of the Oppressed*. London: Penguin.

Greene, M. (1995). *Releasing the Imagination: essay on education, the arts, and social change*. San Francisco: Jossey-Bass.

Little, S. (Ed.). (2011). *Staff-Student Partnerships in Higher Education*. London: Continuum.

McArthur, J. (2012). Against standardised experience: leaving our marks on the palimpsests of disciplinary knowledge. *Teaching in Higher Education, 17*(4), 485-496.

McArthur, J. (2013). *Rethinking Knowledge in Higher Education: Adorno and Social Justice*. London: Bloomsbury.

McArthur, J., & Huxham, M. (2011). Sharing Control: A Partnership Approach to Curriculum Design and Delivery, York: Higher Education Academy http://www.heacademy.ac.uk/assets/documents/subjects/escalate/8403.pdf.

McArthur, J., & Huxham, M. (2013). Feedback Unbound: From Master to Usher. In S. Merry, D. Carless, M. Price, & M. Taras (Eds.), *Reconceptualising Feedback in Higher Education*. London: Routledge.

McArthur, J., Huxham, M., Hounsell, J., & Warsop, C. (2011). Tipping out the Boot Grit: the use of on-going feedback devices to enhance feedback dialogue, York: Higher Education Academy Education http://www.heacademy.ac.uk/assets/documents/subjects/escalate/8403.pdf.

Orr, D. (2004). *Earth in Mind: On Education, Environment and the Human Prospect*. Washington, DC: Island Press.

Rowland, S. (2000). *The Enquiring University Teacher*. Buckingham: The Society for Research into Higher Education & Open University Press.

Scoles, J., Huxham, M., & McArthur, J. (2013). No longer exempt from good practice: using exemplars to close the feedback gap for exams. *Assessment & Evaluation in Higher Education, 38*(6), 631-645.

Shor, I. (1996). *When Students Have Power*. Chicago IL and London: University of Chicago Press.