Dr Alison Shreeve, Head of School Design Craft and Visual Arts, Buckinghamshire New University, UK

Dr Ray Batchelor, Learning and Teaching Co-ordinator, Buckinghamshire New University, UK

At the heart of learning and teaching in studio based design subjects lies the engagement by students and tutors in activities which are based on practical work simulating design professionals' work. We report here on a research project which explored the student/tutor relationship in design pedagogies across a range of academic levels and subjects in one institution. Although a small sample of interviews was obtained, severn students and severn academics, the data is a rich account of relationships which support or restrict student learning. We consider that the relationships, which are mutable, often ambiguous and uncertain in character, are part of enacted roles structured by the university, the design practice and individual dispositions. These are further complicated by socio-cultural, political and spatial factors. In the most positive learning engagements students and tutors are working towards a two-way exchange on an equal level, which enables students to achieve their best and to become independent practitioners in their own right.

Key words

student tutor relations; engagement; design pedagogies

Introduction

Traditionally art and design teaching is predicated on learning through doing, usually through a project brief designed to simulate a professional situation. Students, it could be argued, are neophyte designers engaged in a process of becoming part of the community of practice (Wenger 1998) of design. They learn the appropriate behaviours and responses to certain situations which require them to take risks, to develop their own individual, creative responses and to become independent learners. Throughout this process they are supported by the learning activities designed by academics, loosely based on the design studio, identified by Schön (1985) as a cultural milieu in which certain kinds of design activities take place. However, there are distinctly different studio practices according to historical precedence and disciplinary traditions. Within the university, de la Harpe and Peterson (2008) identify predominant teaching methods in the studio as case-based instruction, problembased learning and practices including critique, experimentation and making.

Throughout these activities the tutor is engaged in dialogue with students, either in small groups or in individual discussion. These dialogues are therefore one of

the primary modes of instruction. This dialogic approach is a key signature pedagogy (Sims and Shreeve 2012) and studio teaching has been described as a pedagogy of ambiguity (Austerlitz et al 2008) because practices, tacit knowledge, aesthetic decisions and material products are difficult to articulate and individual student directions create uncertainty for the tutor. The expectations of students may also differ because of their previous educational experiences (Prosser and Trigwell 1999). The dialogue in the studio is characterised by Shreeve et al (2010) as 'a kind of exchange' in which students and tutors engage in order to develop knowledge. It was through reflection on such exchanges and the reported challenges of student and tutor interactions that the research project we report on was conceived. Given that studio based teaching activities are still prevalent in many design disciplines in higher education we asked: How are positive relations for learning constructed in the studio? What conditions might lead to less productive learning and teaching relations and how might we circumvent them?

Methodology

The research was conducted within the School of Design, Craft and Visual Arts at Buckinghamshire New University and encompassed practice based disciplines across the school. We adopted an appreciative enquiry approach (Cousin 2009) asking students and tutors to describe learning situations which were successful. Inevitably this also raised examples of those which were less successful. This was a second order, qualitative approach based on the subjective experience of both students and tutors and therefore had some limitations, as we were not observing examples in situ. However, the advantage was the individual recreation of understanding and emotional experience through the interview process, providing insights which an observation could not do. We recognise that this limits our research, and a combination of approaches may have been better (for example, Mann 2003). In order to reduce what we suspected might be issues of power within the research context we recruited student interviewers to allow students to talk freely about their experience. Pilot interviews were conducted using semi-structured interviews in order to start with common parameters from which individual experiences could be further explored. A total of severn student interviews were audio recorded and transcribed verbatim, with student identity anonymised. Following advice from the University

ethics committee the interviews with tutors were conducted by the learning and teaching co-ordinator for the school (Ray Batchelor) rather than the Head of School, due to similar kinds of power issues. Ten tutors volunteered and seven were interviewed. All participants were fully informed and gave consent to participate in the project and were able to withdraw at any time. We sought examples of students and tutors from a range of years, levels and discipline groups and did not seek to identify or match specific students with tutors.

Analysis of the data was carried out initially by each researcher, identifying significant statements relating to student/tutor relationships in learning. This could be loosely described as a grounded approach in which we were not applying theory, rather creating categories from our interpretation of the data. These we tabulated through excel spreadsheets identifying where there were commonly occurring issues in student and tutor accounts and where there appeared to be no common issues. These categories were grouped into three overlapping spheres of activity which we later labeled as identities associated with roles structured by the university, disciplinary practice or individual dispositions.

Outcomes

In this paper we report on situations where dialogic exchange is hedged about with ambiguities. These are related to enacting identities of 'professionalism', mother/father/child/adult/family relations; friend/guide/enabler; dependent/independent/; expert/novice relations, whilst recognising that there is also fluidity in the relationship, these are not static positions for student or tutor.

Whilst we were expecting to find some challenging outcomes from the research we were surprised by the breadth of learning activities described as positive by the tutors. The project was primarily concerned with learning in the studio environment, with its emphasis on the almost sacred belief in the one to one relationship between student and tutor in art and design. Tutors in particular recognised many forms of excellent learning experiences, including visits and summer schools in international venues, student-led learning, studio interactions with no tutor present or group learning activities in which tutors learned too. However, although there were different opinions of optimal learning situations, one tutor described the importance of relationships which the one to one tutorial epitomised, by using a tailoring metaphor:

One to one tutorial is fundamental, tailor made – you need the body to cut it so it fits, therefore you need a one to one tutorial. (Male tutor 1)

The data suggests that relationships are incredibly nuanced, complex and fluid. Tutors described many different aspects of their roles and relations with students and many of these relied on interpreting or understanding what might be appropriate with each individual on a particular occasion. This required negotiation on the part of the tutor and a sensitivity and awareness towards individuals. It is not surprising perhaps that ambiguity exists within the myriad relationships in the studio. One tutor described that she tried to empathise with her students and felt that this was very important.

It's not just being a woman when I think about it, it's about having empathy, seeing things from their view, which I do try to do all the time. (Female tutor 1)

This is a challenge which requires tutors to build up knowledge of each student and envisage how they think and feel which in the current climate of reduced contact hours and large cohorts is increasingly difficult. Some of the tutors interviewed stressed that the relationship they build with a group of students is quite personal and this may be more important in the first year when students are new, need to quickly gain confidence and learn to relate to tutors differently to their previous academic situation.

It's very close – don't get me wrong – I keep a distance, so it's a warm relationship, but for example, I won't engage in Face book... (Female tutor 2)

This description intimates that there are boundaries in the relationship, which are not obvious. She describes an incident when a student abbreviated her name, which she found unacceptable and asked them to use her full given name. In the UK it is normal for students to call tutors by their first names, unlike cultural norms in other educational situations. Face book was not deemed appropriate for the tutor, any contact by social media sites being undertaken on her behalf by a student.

There were other examples of tutors describing the distance or professionalism which they sought to achieve. One tutor (Female 3) talked about being 'wary' of becoming too involved ('we're not a family') and spoke of a previous poor relationship in which she had inadvertently made a student cry because she was frank about the students' work in a critique. The students' parents had subsequently challenged her and accused her of publicly shaming their daughter ('a terrible experience') which had a lasting impact on the tutor and shaped her preferred way of working, which was to engage in more group sessions. 'You have to be very careful of what you say to students' she stated and stressed that the group sessions took the focus off the tutor and led to a more 'enabling' position rather than a didactic one.

Professionalism

The notion of professional was also raised in terms of the facade presented to students:

It's important that they see ducks! Smooth on the surface, paddling furiously underneath! We had to be professional, students need to know that we're coping, professional; they need to have confidence in us. (Female tutor 4)

Such notions of professionalism suggest that there is a point at which emotional exchanges are unhelpful, yet being emotionally aware is also required and the fluidity of response is suggested when the same tutor explains that you have to have room for compassion, humour, 'space for a kick up the backside every now and then', suggesting that a professional distance can be achieved which enables you to state poor performance and for students to accept it. This tutor also stated quite clearly that she was 'not a parent' and would be giving a personal but objective view in order to help students when they required pastoral advice.

Mother/father/child/adult

Where one tutor sees that they are 'not a parent', there are many references to parental roles in the interviews and these are finely nuanced. One tutor, having experienced a colleague overstep the dividing line between a father figure and being patronising, developing dependency in the students, emphatically stated, 'I don't think that works — I think we have to treat them like adults from day one (...) I don't think it's healthy.' Yet, at the same time he recognises different stages in the students' learning journey may require different kinds of relationship:

We had some tutors in the past who saw their level 4 tutor almost like a relative, almost like a member of the family, to help guide. And level 6 there's more distance, not on a human level, but maybe it's an emotional level. It's less a member of the family, more like I'm learning from him. It's a much more emotional bond when they come here as a level 4 student. (Male tutor 1)

A similar line between emotional engagement and professional distance is described by another tutor describing listening to student concerns. We would describe this role not as patronising or controlling, but more the role of a father confessor, to hear and absolve student worries.

Once they get to know you and you have their confidence they are quite prepared to lean on your shoulder, you know the reason I haven't been on top form is my father has cancer and such, and all these problems start to unravel and I just ask if it is all under control or do we need to go to Student Services, and so on. With the more

mature student everything is under control but they seem relieved they've told you and its all part of that relationship that you've built up. (Male tutor 2)

This role is explored further and the tutor's intention is clearly to ensure that personal worries are relieved as far as possible in order for the student to learn. There is no suggestion of patronising or directing, or putting the student into the relative position of child within this relationship.

I think if the student isn't performing if the student has got worries, doesn't matter if they are personal financial or whatever, they are not performing, they're not learning and it doesn't matter how good a teacher or what sort of environment you are in, if they are not relaxed happy they are not learning so therefore its important if there is a problem to identify it and see what we can do. ...so it is a question of helping them deal with personal circumstances and if they're happy they will learn. (Male tutor 2)

A female tutor describes students who call her 'mum' which she says she doesn't mind on the odd occasion, ascribing this to students seeing her as a generation away, therefore like their own mothers. This begs the question about students who may wish to see the tutor as being in loco parentis, which is at odds with tutors' professional identity as an academic and practitioner. If students perceive the student/tutor relationship as one in which they are instructed or treated like a child this is counter to the intention to create independent practitioners. Likewise, students behaving in irresponsible ways are a challenge for tutors:

There were two girls who failed because they didn't turn up (...) they started coming in towards the end of the third year. (...) It's a difficult situation because we spoke to our tutor about it as we felt it was unfair that they were getting help at one point, but he was like, I can't treat them any differently because they're not turning up, but I can't treat them like children because they are at university and it's their choice, it's not the same discipline as school, can't give them a detention because they didn't turn up to a tutorial. (Student 1)

The enactment of 'child' by the student in the teaching relationship triggers a potential reaction to act as 'father', which in the above case is avoided. The notion of being part of a family on a course is however identified in a positive way by one student:

It made me feel like part of a very dysfunctional family, but basically a family.

Why dysfunctional?

There are a lot of positives but it is a working environment, people get stressed, annoyed, their work isn't going right and there's a lot of noise and they'll get annoyed and everyone can't always get along, but that's a family for you, a distant family because not everyone gets along and holds hands and chatting, but overall it's a very respectful environment. (Student 2)

Respect was a word used by students and tutors about the relationship they have and should have. Tutors respected students as individuals and students respected tutors for their professional expertise:

I think there's a lot of respect because they do their own work on the side, one of our tutors is well known in his own right, there is a lot of respect, and if he helps you in your work, its Wow! I've spent an hour doing this and he can do it in five minutes. (Student 1)

However, it was also possible for students to experience their learning relationships as being less positive:

He is a brilliant man in terms of intellect, he is brilliant but the way he teaches you can be demeaning. (...) it made me feel very bad about myself and I didn't meet his expectations and it made me feel guilty. (Student 2)

The need for mutual respect was raised by several tutors and emphasised by a student who stated in no uncertain terms that they were not children, though felt sometimes as if they were treated in that way:

I think they have to know that respect does go both ways, we respect them because they are tutors, but a lot of tutors have a superiority complex, I'm a tutor and you're a student therefore you're a child, I'm big, you're small kind of thing. We are all adults and we are paying to be here. (Student 2)

The emphasis on fees and payment is an additional factor that can potentially structure a learning relationship into one of demand and deliver, rather than one in which mutual respect is fostered and tutors are seen as guides or enablers.

Friend/guide/enabler

A further complexity in studio based learning relations is the notion of friendliness or friendship. Most tutors stated that they were not friends with students, but a student identified that inevitably, because of the close proximity they develop a friendly approach.

I think you are more friendly towards the tutors in the workshop because you spend more time with them and you end up having a general chat and they will join in with conversations about things mentioned on the radio, they will join in with that and then they feel like a friend

and then they teach you and you forget they are a teacher. (Student 1)

However, such friendly relations are also subject to overstepping the line; there are times when a tutor might be too friendly in the students' eyes.

You can have workplace banter, but he goes more to the extreme friends banter when you're not! Sometimes he can be inappropriate. (Student 2)

The professional distance tutoring required was in part determined by the functions of assessment and critique. One student stated that:

you want a good balance and good criticism and all that, so it's not like being a friend, but it is in a way, but there is always that little bit of distance because they are there to assess you and give you constructive criticism, but I feel that I have a good relationship with them all. (Student 3)

The difficulty of drawing a precise line between friendliness, friendship and professionalism is clearly indicated by this students' immediate refutation of 'it's not like being a friend', by saying, 'but it is in a way'. Such ambiguity appears to charge most aspects of relationships for learning in the studio environment.

Dependent/independent

The underlying issue appears to be maintaining the appropriate professional distance, working on an adult to adult level as described by Berne (1961) in transactional analysis, but also being sensitive and aware of individual difference in order to support learning (see Gravelle 2009 for a personal account in a similar context). Tutors are determined that students should become independent thinkers and actors:

They have to determine what they want from the course (...) I'm not in the office to be called in at any point. (0.5 FTE Female tutor 4).

Too close or too emotional a relationship has been identified as leading to dependency and for mature students, being patronised. If a relationship is 'too intense, too personal' it creates a relationship which is 'not healthy'. A student (#2) described their development in the studio, 'There are so many different things you can do and it is like your own journey with a safety net around you'. If this perception is mutual there is more likelihood of positive relationships for learning, but it is possible for some students to want instruction rather than a safety net.

Possibly the ideal relationship between students and tutors was described by one student as being a two-way

thing based on respect. The notion of having to grow into it also suggests that the student, in this case a young person, is also growing up into a professional working relationship.

I think my tutors have got it right. They know what they're doing; they've done it for a while. They are experienced and talk to you like adults and will debate with you but it's also like with a learning curve you can talk to your tutors and can have a debate as long as it's in a polite manner and you're not being rude or anything, it is that sort of growing up that you personally have to do in order to understand your tutors properly so it's definitely a two way thing, you have to do some growing up before you can understand them but I think they have got it right and talk to you in the way you expect to be talked to and they talk to you with respect. You do develop a relationship with your tutors but it's a healthy working relationship. They don't become scary, they come like work colleagues in a way, they're someone you can ask questions with and someone you work with because you are both working to the same thing, they are working to you coming out with the best degree you can. Interesting.

Your tutors are there to help you grow and will teach you a lot if you let them and work with them. (Student 8)

In this case the student identifies that the tutors' role is to help them to get the best degree they can. In an ideal world, this would perhaps represent what many design tutors want. Underlying this relationship is the sense of working together to grow a designer, an approach to learning that is best described as ontological (dall'Alba & Barnycle 2007), where the emphasis is on development, and not the filling of an empty vessel suggested by an overemphasis on curriculum content. However, tutors identified a temptation for some students to please the tutor, rather than to grow and develop their own personal approach to being a designer, 'some think you're setting down rules in order to please you' (Female tutor 3). The ideal relationship, seen as a dialogue between practitioners, with 'something in common' (Male tutor 1) is what most tutors wanted. They also recognised that there were dangers in students wanting the relationship to be more than this, or in wanting to have instruction, which most tutors saw as diminishing the autonomy and independence of the student.

Expert/novice

Whilst tutors frequently mentioned that their intentions were for equal relations, students talked about lack of confidence, understanding things in a different way to the explanation offered by the tutor, feeling 'terrified' or

shamed or demeaned. Some of these emotional states may have been induced by the tutor's manner and may have been inadvertent, but they are also compounded by the students' need to learn and therefore often being in a more vulnerable position in an unavoidably unequal relationship. This could be mitigated by the empathy of the tutor, 'putting yourself back' (Male tutor 2) into the students' position as learner and remembering how it felt. Tutors too have feelings and fragilities which is why it was important for the 'leveling experience' and the 'two-way thing' to be developed between student and tutor. Tutors frequently felt a need to maintain their expertise, credibility and status, to be current designers, makers or artists, in order to gain respect from their students and to maintain self-belief too. Expert and novice positions are also fluid and relational, potentially contributing to ambiguity and uncertainty.

Fluidity in relations:

Learning activities may take place in a variety of places and situations, in industry settings, studios or live events off campus. These different locations and projects may require a different relationship between student and tutor. Here a tutor describes a practical project undertaken in situ:

You cease to become the father figure to become the leader so when you arrive on site they are looking to you, we are here, now what? So you need to get them into the actual project, your role is this, there's the object, you know what to do we've discussed this, have a look at it and we'll come back in 5 minutes to discuss what you are going to do. Again then they are looking to you for leadership and confirmation of what they propose to do is the right thing to do, safe for the object that they are in the right place, they have the right materials. (Male tutor 2)

Being off campus and perhaps in a professional environment is not the only situation where a relationship may need to change. Several tutors spoke about a kind of social engineering, where they structured groups to ensure more social cohesion within the cohort. This might mean tackling certain kinds of behaviour, described as 'bringing them back into the fold' so that the student is stretched, challenged and contributing to the group. But social engineering also suggests that tutors are exercising power and control in relationships, although in this case with benign intentions. A female tutor describes this as being a conductor in an orchestra:

That's where it's a bit like being a conductor, you know you're having to play them all differently and they're all very delicate instruments and you have to know them all really well.' (Female tutor 2)

Whether the tutor reads each 'instrument' correctly or not may affect the perception and the response from the student.

Discussion

Within learning and teaching relationships there are influences which impact how individuals respond to each other. These we identified as roles within identities structured by the University, design practices and individual's dispositions. Within these there were also other layers and influences, such as the physical space or location of learning, for example the layout of the room, previously identified as influencing learning and teaching behaviours (Smith-Taylor, 2009) and the specific pedagogic situation, such as the critique, which can structure relations to disadvantage the student as they place power with the tutor (Percy 2004).

Assessment appears to be the most influential factor structuring relations (see Webster's 2006 account of the architectural 'jury'). One tutor in our study said, 'It's never about the mark, it's the learning experience', but for the student who may see the 'mark' as a symbol of their achievement it is a challenging position with an inherent power imbalance resting with the tutor. The university context is helping to structure the kinds of relationship that takes place in the studio and workshop.

Similarly study trips or field trips to museums and industry could influence the way in which student and tutors' relationships were altered. In a study trip, through prolonged interaction in a more informal environment tutors felt that they could be more relaxed as they were seen on a 'human level' (Male tutor 1), perhaps enjoying themselves, but still being professional. Or in the case cited earlier, the tutor had a leadership role in order to ensure that students could perform to professional standards when working on live projects outside the university. Thus the physical and tacit rules of engagement in different working spheres helped to construct different relations between students and tutors. This indicates empirically the kinds of socio-cultural impacts on academic engagement proposed by Ashwin and McLean (2005). Their model implies that for each individual engaged in a specific teaching and learning interaction there are a range of concentric influences on the engagement, from biographical context, to immediate social and course contexts, to institutional and disciplinary contexts and wider social, political and economic contexts. The importance of student engagement has been emphasised in the literature, particularly from the US where Tinto's studies of student retention highlight the need for students to be involved in their studies (2002,

2006). The role of the individual tutor in shaping the conditions required to maintain student engagement has also been identified by Umbach & Wawrzynski (2005) where active learning techniques, academic challenge for students and enriched educational experiences are important factors within the control of the academic. Art and design disciplines are more likely than others in Higher Education to view engagement as co-participation in learning (Little et al 2009). However, the detailed experiences reported here suggest that engagement is quite a fragile balance in relations between students and tutors in studio based learning environments. There appears to be an ideal, a leveling in relations where students and tutors work towards new independent practitioners. This balance consists of a two-way engagement which is subject to fluctuations forced by an imbalance in power or an ambiguity in the roles structured by the university, discipline expertise and individual dispositions. Wider social and political changes, such as fee structures also impact these three spheres of engagement, affecting how roles are perceived and therefore how relationships are enacted.

This research has been supported by a small grant from the UK's Art, Design and Media Subject Centre of the Higher Education Academy.

References

Ashwin, P. & McLean, M. (2006). Towards a reconciliation of phenomenographic and critical pedagogy perspectives in higher education through a focus on academic engagement. In C. Rust (Ed) *Improving Student Learning: Diversity and Inclusivity.* Proceedings of the 2004 12th International Symposium. Oxford, OCSLD, pp377-389.

Austerlitz, N., Blythman, M., Grove-White, A., Jones, B., Jones, C., Morgan, S., Orr, S. Shreeve, A. Vaughan, S (2008) Mind the gap: expectations, ambiguity and pedagogy within art and design higher education. In: Drew, Linda, (ed) *The Student Experience in Art and Design Higher Education: Drivers for Change.* Jill Rogers Associates Limited, Cambridge, pp. 125-148.

Berne, E. (1961) *Transactional Analysis in Psycho-therapy.* New York: Grove Press, Inc.

Cousin, G. (2009) *Researching Learning in Higher Education*. New York and Abingdon; Routledge

Dall'Alba, G. & Barnycle, R. (2007). An ontological turn for Higher Education. Studies in Higher Education. 32:6 p679-691

de la Harpe, B. & Peterson, F. (2008). Through the Looking Glass: What Do Academics in Art, Design and Architecture Publish About Most? *Art, Design and Communication in Higher Education*. 7:3 p135-154.

Gravelle, M. (2009) how do I manage my role, yet still maintain my values as a lecturer? A personal reflection. In Simon K. Haslett and Hefin Rowlands (eds) *Linking Research and Teaching in Higher Education* Proceedings of the Newport NEXUS Conference Centre for Excellence in Learning and Teaching Special Publication, No. 1, 2009, pp. 65-70 . Available from:

http://www.newport.ac.uk/research/researchcentres/researchcentres/CELT/NEXUS/Newport%20Nexus%20Conference%202009/Documents/pp%2065-70%20Gravelle.pdf Last accessed March 2012.

Little, B, Locke, W., Scesa, A. & Williams R. (2009) Report on Student Engagement. Centre for higher Education Research and Information, Open University. Available from www.hefce.ac.uk/pubs/rdreports/2009/rd03_09/rd03_0 9.pdf last accessed November 2011

Mann, S. (2003). Inquiring into a Higher Education Classroom: insights into the different perspectives of teacher and students. In C. Rust (Ed) *Improving Student Learning Theory and Practice – 10 years on.* Proceedings of the 2002 International Symposium for Improving Student Learning. Oxford, OCSLD, P215-224

Percy, C. (2004) Critical absence versus critical engagement. Problematics of the crit in design learning and teaching. Art, Design and Communication in Higher Education. 2:3 p 143-154

Prosser, M. & Trigwell, K. (1999) Understanding Learning and Teaching. Buckingham: SRHE/Open University Press.

Schön, D. A. (1985). The Design Studio: An Exploration of Its Traditions and Potentials. London: RIBA Publications Ltd.

Shreeve, A. Sims, E. & Trowler, P. (2010) 'A kind of exchange': learning from art and design teaching. *Higher Education Research and Development.* 29:2 p125-138

Sims, E. & Shreeve, A. (2012). Signature Pedagogies in Art and Design In Chick et al (Eds) *More Signature Pedagogies*. Stylus, USA

Smith Taylor, S. (2009). Effects of Studio Space on Teaching and Learning: Preliminary Findings from Two Case Studies. *Innovative Higher Education*. 33:4 p217-228.

Tinto, V. (2002). Enhancing Student Persistence: Connecting the Dots. Presentation to Optimising the Nation's Investment: Persistence and Success in Postsecondary Education. Conference, University of Wisconsin, Madison, Wisconsin. October 2002 Available from:

https://traditions.ou.edu/content/dam/HousingFood/ Documents/PDF%20-%20Research/Connencting%20the% 20Dots%20-%20Tinto.pdf Last accessed January 9th 2012

Tinto, V. (2006). Research and Practice of Student Retention: What next? *Journal of College Student Retention*. 8:1 p1-19

Umbach, P.D. & Wawrzynski, M.R. (2005) Faculty do matter: the role of college faculty in student learning and engagement. *Research in Higher Education*. 46:2 p153-184

Webster, H. (2006). A Foucauldian look at the Design Jury. *Art, Design and Communication in Higher Education*. 5:1 p5-19

Wenger, E. (1998). .Communities of Practice. *Learning meaning and identity*. Cambridge: Cambridge University Press.

alison.shreeve@bucks.ac.uk ray.batchelor@bucks.ac.uk