

Multiple Supervisors from Multiple Disciplines: Lessons from the Past As Multidisciplinary Supervision Becomes the Way of the Future

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The current drive for multidisciplinary research is strong, and increasing numbers of postgraduate students are undertaking projects that cross disciplines. Combining multiple supervisors from multiple disciplines generates both great benefits and significant challenges for both supervisors and students. This paper explores some of the key challenges associated with multidisciplinary supervision: practical, academic and epistemological. The aim is to present these challenges within a broader context of advocating for multidisciplinary research endeavours and their associated benefits, but also to prepare students and supervisors for some of the likely difficulties associated with multidisciplinary supervision and to equip them with practical strategies for negotiating these difficulties.

INTRODUCTION

Between 1990 and the year 2000, total PhD enrolments in Australian universities increased from just over 9000 students to almost 28,000.³ As higher degree research students have increased in number, the landscape of research has also evolved. Historically, research was overseen by a single supervisor and thus much of it occurred in single disciplines, or research 'silos'. However, over the past two decades, this trend has changed. Universities are now actively encouraging multidisciplinary research endeavours⁴ and it is now common to have multiple supervisors from multiple disciplines supervising the one project.⁵ Research now demonstrates an increase in multiple PhD supervisors.⁶ In most universities, academic departments have both a disciplinary and an organisational culture,⁷ yet there is 'no consistent view... across disciplines... about what constitutes an acceptable PhD.'⁸ These factors mean that the challenges associated with bringing together multiple supervisors from multiple disciplines can be great.

Supervisors in different disciplines do things differently and this creates its own special challenges when supervisors come together. There are 'substantial differences between disciplines in their approach to research, research cultures and supervisory practices and relationships'.⁹ The cultural aspects of disciplines and their cognitive aspects are inseparably intertwined.¹⁰

As the trend for multidisciplinary research has strengthened, so too has the incidence of multidisciplinary supervision. Much literature has been published concerning multidisciplinary research, as has literature concerning supervisory practices more generally. Yet there still appears to be an absence of literature specifically considering the intersection of these two topics: multidisciplinary supervision. Early literature concerning the topic of postgraduate education in Australia was often driven by dissatisfaction with the quality of supervision, staff uncertainty about their roles and responsibilities, and the need for new strategies to develop research and writing skills of students.¹¹ As government funding has increasingly been linked to completion rates of higher degree research students, a growing corpus of research has also emerged concerning supervisory practices that encourage successful and timely completion.¹² However, at this time there seems to be a clear lack of guidance for supervisors, students and examiners

about expectations of multidisciplinary research and the related frameworks for supervision.¹³ Given the drive to increase multidisciplinary research, this is a potentially serious problem.¹⁴ In 1994, Parry and Hayden argued that, although a vast array of research has been conducted concerning postgraduate education, the importance of the disciplinary setting to supervisory practices had not been investigated in detail in the Australian literature.¹⁵ This is still the case. They also argued that some of the differences encountered across supervisory practices can only be accounted for by the influence of the disciplinary setting.

Multidisciplinary supervision has the potential for both great benefits and significant challenges for both students and supervisors. Multidisciplinary supervision brings with it multiple opinions, methods, research approaches, theoretical frameworks, understandings and epistemologies. Supervisors may be from different departments, faculties, universities or institutions and may have different backgrounds, ontological beliefs and research cultures. Each supervisor may have a unique perspective on study design, appropriate sources of literature, writing and argument style, thesis format, relevant examiners and timelines. Supervisors may also have different supervision styles and ideas about what their supervisory role should entail. As multiple supervisors from multiple disciplines come together to mentor the next generation of researchers, it is therefore timely to reflect on some emerging lessons associated with such supervisory practices in order to prepare future researchers, both senior and junior, for some of the key challenges they are likely to face.

This paper begins with an exploration of the drive for multidisciplinary research and a discussion of the importance of high quality supervision. The focus then turns specifically to some of the major challenges associated with multidisciplinary supervision. These challenges are divided into three categories: practical, academic and epistemological. They are also accompanied by practical recommendations for negotiating difficulties during candidature. Finally, the benefits associated with multidisciplinary research are explored in detail. The content of the paper is important for three key groups: academics who supervise students working on multidisciplinary projects, students involved in or considering multidisciplinary research, and universities promoting such endeavours.

THE DRIVE FOR MULTIDISCIPLINARY RESEARCH

The current drive for multidisciplinary research is strong.¹⁶ Multidisciplinary research teams are touted as the future of research, with Professor Glyn Davis, Vice-Chancellor of the University of Melbourne, stating that the ‘complex issues facing our world require cross-disciplinary, inter-institutional and international research responses. These kinds of responses will be a key focus for our researchers during 2008.’¹⁷ Professor Davis goes on to highlight that in 2007 ‘the University undertook long-term planning for major new, cross-disciplinary initiatives’ in the future. Doctoral studies are being increasingly undertaken across two or more academic disciplines as well as across academic and professional disciplines.¹⁸ Nowotny and colleagues refer to this changing landscape as ‘knowledge production’ or ‘Mode 2’ research, which is ‘socially distributed, application-oriented, trans-disciplinary, and subject to multiple accountabilities’,¹⁹ as opposed to ‘Mode 1’ research, in which research is conducted using discrete discipline-specific taxonomies by autonomous researchers and institutions. There are five dimensions to Mode 2 research—application, ‘trans-disciplinarity’, diversity, reflexivity and quality—with the authors defining ‘trans-disciplinarity’ as the ‘mobilization of a range of theoretical perspectives and practical methodologies to solve problems’.²⁰

Academics in Australia and internationally are being called to look beyond their departments for research collaborations. The outgoing president of the National Association for Research in Science Teaching in the United States recently stated:

We can expand science educators’ sphere of research in teaching and learning by reaching across the divides that separate education, science and engineering. We can do so by involving more scientists and engineers in research with educators in teaching and learning... We must respect each other’s perspectives and understandings.²¹

Davies and Devlin also highlight the importance of interdisciplinary research when referring to the recently-implemented ‘Melbourne Model’ at the University of Melbourne. They simultaneously argued that a balance is required and that such research should not compromise the necessary learning that occurs within academic disciplines:

Interdisciplinary exchanges occur normally and need not be mandated by universities, although under the Melbourne Model, these exchanges are likely to intensify and become more critical. It is thus wise for the University of Melbourne to embrace interdisciplinary education, with appropriate checks and balances, while simultaneously maintaining and preserving a robust disciplinary focus. The evaluation and quality assurance processes already in place should allow interdisciplinary exchanges to flourish while ensuring that learning in academic disciplines is not compromised.²²

But what exactly is meant by ‘cross-disciplinary’ research? What types of disciplines are we crossing and how can we distinguish between them? There have been many attempts to describe the characteristics associated with distinct research disciplines. Although broad in their approach, these divisions and descriptions are valuable for understanding some of the core differences between academic disciplines. Only when we understand the key cultural differences between disciplines can we begin to grasp the potential for difficulty when supervisors from multiple disciplines come together to oversee a single research project.

Traditionally, the distinction between academic disciplines was a dual one, with a clear delineation between the sciences and the humanities. Eley and Jennings describe a dual model, referring to the Sciences as the ‘hands on’ approach and the Arts as the ‘hands off’ approach.²³ Delamont and colleagues also describe doctoral research approaches as part of a dual model, outlining a ‘positional’ and ‘personal’ approach.²⁴ In the positional approach, students attend a laboratory daily, clear leadership occurs by a senior academic, research tends to be grant-dependent, and immersion within the research group occurs, as does the assumption that research findings will be published. In the personal approach, students determine their own area of research, there is a high level of autonomy, and contact with the supervisor is regular but infrequent. Some authors have challenged these dual models, arguing for ‘more numerous and subtle boundaries’ than simply two.²⁵

Becher, Henkel and Kogan found clear linkages between the epistemology of research in different disciplines and the characteristics of the research education that students receive.²⁶ Gilmer described

these epistemological conflicts by contrasting the scientific view of knowledge, as something to be discovered, with the educational view of knowledge, as a human construction.²⁷ These are very different perspectives. Becher divided academic disciplines along axes of hard/soft and pure/applied, also referring to these as abstract/concrete and reflective/active.²⁸ These characteristics are outlined in Figure 1.

These cognitive and social characteristics of academic disciplines, however one chooses to categorise them, constrain how knowledge is

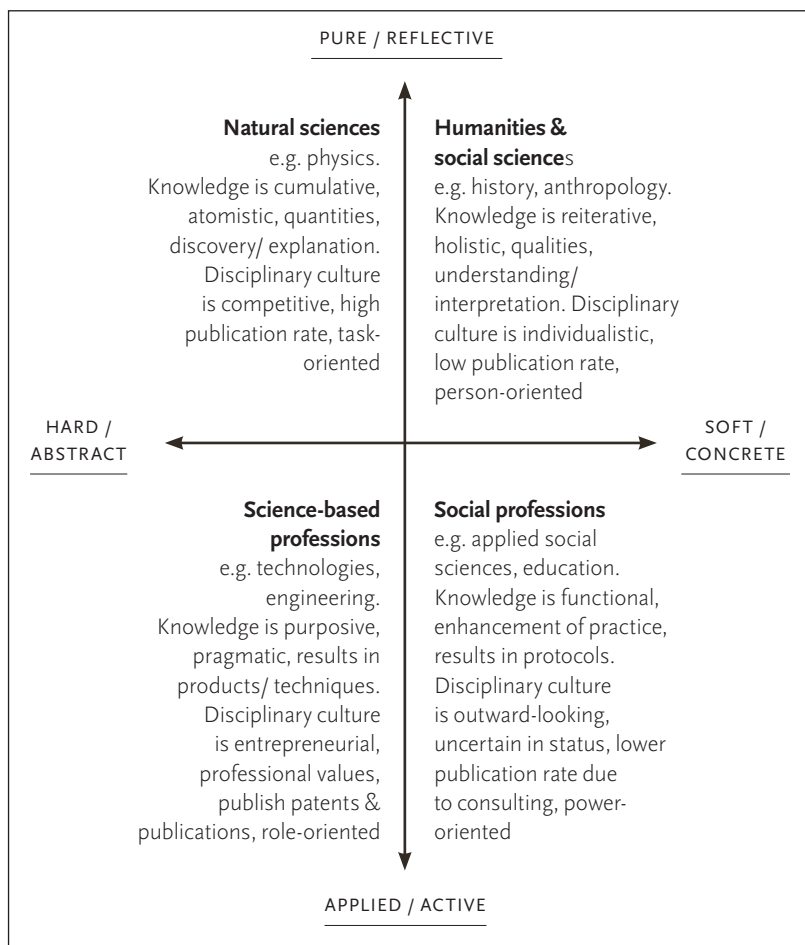


FIGURE 1. CHARACTERISTICS OF THE FOUR CATEGORIES OF ACADEMIC DISCIPLINES (DERIVED FROM BECHER, 1994)

understood, created and reported. This is critical for understanding why supervisors may have such different values and approaches. Any solution to harmonising these differences must take account of why there are differences in the first place.

THE IMPORTANCE OF SUPERVISION

Student satisfaction with their course experience is strongly linked to the quality and effectiveness of supervision.²⁹ When supervision goes amiss, there can be disastrous impacts for the student and the research project, including delaying completion or even leading to abandonment of the project.³⁰ As government funding of universities has become more tightly associated with completion rates of higher degree research students, there has been growing interest in the factors that contribute to successful and timely completion. However, literature that focuses only upon this notion of 'good supervision' fails to consider the many other roles that supervisors have. Petersen argues that postdoctoral work is as much about forming an identity as an academic as it is about producing a dissertation.³¹ Becoming an academic entails knowing how to act, speak, think, write and feel as an academic. And the supervisory relationship is key to this process. Petersen also argues that the drive for completion can undermine this underlying purpose of supervision, where supervisors are forced to help their students 'get' a PhD rather than 'become' a doctor.

The supervision process has been described as a relationship.³² Pearson and Brew state that the responsibility of the supervisor is to ensure that more than a technique is learnt.³³ Supervisors have multiple roles,³⁴ many of which have been provided with labels in the literature, perhaps the most common of which include mentor, master and coach. Supervision has been described as the 'mainstay of teaching at the level of research higher degrees' involving 'the supervisor acting as a mentor, guide or adviser to an individual seeking to be inducted to a specialised academic community'.³⁵ Leder proposes at least nine roles of the supervisor, including offering guidance with the research topic and program, providing personal support, encouraging networking opportunities and providing positive encouragement on drafts of work as it develops.³⁶ Eley and Jennings also describe multiple roles associated with supervising, including those of director, adviser, teacher, guide, tutor and critic.³⁷ They note that these roles change, not only

depending on the discipline within which a given supervisor works, but also depending upon the stage of the doctoral candidate. Shannon refers explicitly to the role of the supervisor as mentor, explaining that some supervisors attract students because they are skilled researchers who adopt a mentoring role.³⁸

Ensuring a high quality of research supervision is therefore critical for several reasons. The quality of research supervision has a large impact on the satisfaction of students undertaking research.³⁹ Student satisfaction is also intimately linked with completion rates for research degrees.⁴⁰ This is an immediate driver for universities where the number of student completions has an important impact on university funding. This must also be a major driver when we consider the 'knowledge economy' of Australia more broadly,⁴¹ and the importance of attracting and retaining Australia's next generation of researchers. At a more basic level, better quality supervision leads to better quality research and better dissemination of research findings to key stakeholders. There are also individual benefits that arise from high quality supervision. Supervisors benefit on a personal level if their supervision is of a high standard because they become more likely to retain and attract high quality students and produce research findings that are important and worthwhile. Students benefit from high quality research supervision for similar reasons. If students receive supervision of a high standard, they are more likely to enjoy the research experience, develop personally, acquire the skills required for forging a successful research career and produce new, significant knowledge.

CHALLENGES ASSOCIATED WITH MULTIDISCIPLINARY SUPERVISION

In the following discussion, the challenges associated with multidisciplinary supervision have been divided into three categories: practical, academic and epistemological. Box 1 outlines some key pieces of advice to students and supervisors, related to each of these categories.

PRACTICAL CHALLENGES

There are several practical challenges associated with combining multiple supervisors from multiple disciplines, and these are separate

BOX 1. STRATEGIES FOR NEGOTIATING CHALLENGES OF MULTIDISCIPLINARY SUPERVISION

Strategies for Negotiating Practical Challenges

- Choose a combination of co-supervisors carefully. Take into account their discipline, area of expertise, physical location, workload, research networks, supervisory style and department/university. The aim is to have a reasonable balance between these characteristics, without resulting in an unfeasible combination.
- Think about where the student of multiple supervisors should be physically located. This will impact upon their peer and professional networks, the seminars they attend, and which supervisors they meet with most frequently.
- Make an informed decision about where the student should enrol. The choice of department, university and/or institute can impact upon the expectations of the research process and thesis.
- Acknowledge that coordinating multiple supervisors from multiple disciplines for meetings will be difficult. Co-supervisors will need to be flexible and willing to visit each other's departments. Teleconferences or meeting separately may be options.
- Help to make the task of coordinating comments on drafts from multiple supervisors easier. Explore options including handing work to co-supervisors in sequence or assigning roles for each co-supervisor when reviewing work.

Strategies for Negotiating Academic Challenges

- Have discussions early on about the style that written work will take. What structure, format, citation preferences and type of argument will be acceptable?
- Be clear about who will drive decisions about how to disseminate the research and how this might change across the course of the candidature. Will this be driven by impact factors of journals, the intended audiences or both?
- Engage in open discussions about authorship and the motivations for different formats. Different disciplines have different traditions regarding what constitutes an original contribution and how this is recognised in the order of authors.
- Make an explicit decision about what discipline the examiners of the thesis will work within. This will influence the style, structure and format of the thesis.

Strategies for Negotiating Epistemological Challenges

- Maintain an awareness of the fact that different disciplines, supervisors and students may all have different ideas about the purpose of a PhD. Is it about the process or the product?
- 'Disciplinary chauvinism' should not impact on the debates that occur regarding academic rigour. Have respect for a range of disciplines and approaches.
- Be open to a range of supervisory styles. Some supervisors believe in providing more independence to their students than others. Some supervisors are 'task focused' while others are 'person focused'.

from the academic and epistemological concerns that may arise. They include how to choose an appropriate grouping of academics to co-supervise the one student, where to physically situate the student, in which department and, on occasion, which university to enrol the student in, how to coordinate meetings between multiple co-supervisors and how to coordinate multiple comments on the one piece of work. These challenges are each discussed in more detail below.

Choosing an appropriate combination of academics to co-supervise one research student is critical. As discussed in the previous section, supervisors provide much more than simply academic advice to the postgraduate student. The quality and style of supervision will directly impact upon students' personal development, research skills, completion time, networks built and future career directions. For some multidisciplinary projects, attempts at recruiting a supervisor for all disciplines covered within the project will not be possible, as the number of disciplines covered may be far greater than the feasible number of supervisors. In seeking a functional balance, several considerations should be taken into account. These include the physical location of each supervisor, the expertise each brings to the project, their supervisory style, their networks, their research orientation and their workload. Different departments have different requirements about how many students can be allocated to one supervisor at any time and supervisors also receive different types of training depending on their department.⁴² Leder argues that a 'supervisor's research preferences and prejudices can constrain the scope, perspectives, methodology and direction of a student's work.'⁴³

There is also a decision to be made about where the student of multiple supervisors will physically sit. Although this may at first appear to be a trivial issue, the workspace a student is placed within can have a substantial impact on their experience, expertise developed and networks formed. Research students depend on many more individuals than simply their supervisor for support. Other avenues of advice can include academics in the department, a disciplinary network, the university, post-doctoral researchers and other students.⁴⁴ The avenues of support open to a given student will be directly related to the individual's physical location. In the study by Parry and Hayden, opportunities for informal contact with supervisors were identified by students as important.⁴⁵ Students also shared the view that the strongest motivating factor in higher degree research was the feeling

of being part of a lively research culture within the department. The institute, university faculty or department that a student sits within can influence thinking and research approaches and also determine which seminars are attended. Conversely, spending time in multiple departments can create different challenges, such as permanently feeling like an outsider, not feeling like part of an academic network, and not feeling comfortable turning to peers for advice. This is a particular challenge for postgraduate research students who often work off-campus.

Some postgraduate students may have the option of choosing between multiple departments, institutes or universities in which to enrol. Each university, institute and department may have slightly different requirements and it is important to make an informed choice about these options. It may in fact be best to enrol within two departments in some cases, with a fifty percent load under each. Institutional expectations of supervisors and students may differ.⁴⁶ At the University of Melbourne, *The PhD Handbook* states that the minimal requirement for completing doctoral studies is to 'carry out research for a specific period under the direct supervision of one or more members of academic staff'.⁴⁷ Individual faculties and departments may then require additional components such as coursework, a thesis and creative work. Some universities now accept a series of bound publications as the product of a PhD, while others require an 80,000 to 120,000 word thesis. There are also vastly different requirements for confirmation of students and great variation amongst departments about the level of financial support made available.⁴⁸

Coordinating meetings between multiple co-supervisors can be a substantial challenge for both supervisors and students and can have a significant impact on the types of relationships that develop between each supervisor and student and also between co-supervisors. When co-supervisors are situated on different campuses or, in rare cases, in different states or countries, meetings may occur without the full complement of supervisors present. Sometimes holding a teleconference may be the best option. It is also likely that in these situations students will meet with one or two supervisors more frequently than the others, which may influence their thinking and approach towards a certain discipline. There are also different traditions between disciplines concerning the frequency and quality of supervision meetings. Parry and Hayden reported that meetings ranged from daily to once

every three months depending on the research discipline.⁴⁹ In applied professional fields such as health, where many students work part-time and hold full-time professional positions, meeting frequency is particularly low. In the sciences, where research tends to be based in a laboratory, frequent contact is considered to be critical, but this is not always part of a formal meeting.

Finally, coordinating comments on pieces of work from multiple supervisors can be highly challenging for the postgraduate student and extremely frustrating for the co-supervisors. Although there are academic aspects to this specific challenge, which are discussed more in the next section, there is a pragmatic aspect to this difficulty which is important. Supervisors may be required to comment on a range of work including draft publications, conference presentations, grant applications or thesis chapters. A survey of all Australian universities found that both students and supervisors struggled with communicating feedback throughout a PhD.⁵⁰ Often, sending a single draft to all co-supervisors simultaneously can result in multiple perspectives on what must be altered. It is critical to negotiate strategies for managing such dilemmas early in the student's candidature. These strategies may include sending the draft to each supervisor in turn or working with each supervisor's area of expertise by asking them only to comment on one aspect. For example, one supervisor may prefer to create conceptual frameworks and refine the research question rather than spend time editing, while another may be a better editor for that paper. These issues can be discussed openly with supervisors early on in the candidature so that supervisors have an opportunity to choose specific roles and to gain an awareness of how their co-supervisors will also be involved. These roles are fluid and may change according to the piece of work. Taylor and Beasley note that a division of labour between supervisors only works when there is clear agreement about their respective roles.⁵¹ They also highlight that the worst case scenario is when supervisors pass responsibility to each other, resulting in no effective supervision for the student.

ACADEMIC CHALLENGES

There are a range of academic challenges associated with multidisciplinary supervision. Much like the practical challenges outlined above, it is critical for both students and supervisors to maintain an

awareness of these and to be open to discussing these early on in the candidature. Academic challenges include deciding on the style of the work that is produced, choosing where and how to disseminate this work, making decisions about authorship, and deciding who should examine the thesis.

The style of work produced during the candidature has the potential to create great debate amongst supervisors from disparate disciplines. Parry provides a detailed discussion of some of the expectations of style that are associated with different disciplines.⁵² She divides this into three distinct disciplines: science, social science/applied professions and humanities. Highlighted in this discussion are the differences in expectations around language, the overall focus of the thesis, the structure of the thesis, the structure of the argument and the way in which research is cited. The student working within only one discipline must only decipher one set of expectations and align their work with these. However, the student working across disciplines, with supervision provided by experts across each of these, must decide which expectations to fit within.

Choosing how and where to disseminate the research that is created during candidature is equally challenging. Which journal is appropriate for which paper? Which audiences need to be reached? These decisions can be difficult within one discipline, but when multiple disciplines are involved such decisions are made even more complex. Research quality frameworks provide motivation to publish in the highest impact journals for many academics. However these may not always provide the ideal audience for the research findings. For example, a supervisor working in a professional field may be more concerned with disseminating findings to the appropriate professional audience than with impact factors. Discussions of this nature can delay publication considerably, as papers are drafted and re-drafted for different journals.

Authorship can create significant challenges for both the inexperienced student and the experienced co-supervisor. This is an issue faced by academics at all stages of their careers, irrespective of whether the research is multidisciplinary, but it is especially prevalent in the field of multidisciplinary research. Some disciplines, such as humanities, are dominated by sole authorship publications. Publications in other disciplines, such as science, political science, higher education, economics and social work, have multiple authors, due to

the increasing use of mixed techniques in each study and to increase the quality of the research, productivity and collegiality.⁵³ Being first, or single, author impacts on funding and career opportunities so guidelines exist about authorship (see, for example, 'The University of Melbourne School of Graduate Research Supervisor Checklist'⁵⁴ or the Australian National Health and Medical Research Council guidelines based on the 'Vancouver Protocol'.⁵⁵ Different disciplines may also have different conceptions of what constitutes an original contribution in research.⁵⁶ In reality, when personalities and disciplines collide, conversations about authorship can be challenging for the student caught in the middle.

Finally, decisions about examination can be particularly challenging when supervisors come from different disciplines. Just as the style of a publication is influenced by the type of journal to which it is submitted, so too the style of a thesis is influenced by the choice of examiners. For this reason, it is often not appropriate to choose examiners from vastly different disciplines, as it is a complex process to write simultaneously for two distinct audiences. Students are most often blinded to their examiners and so the responsibility for choosing examiners falls upon co-supervisors. It is important for students to have knowledge about the discipline of their examiners in order to be steered in the right stylistic direction. Honest and open discussions early in the student's candidature are crucial to this process. Not surprisingly, Parry and Hayden report that a problem expressed by many chairpersons from the social sciences and humanities, and especially in applied professional fields, was that of ensuring that the ideological position of the examiners selected would match that of the thesis being examined.⁵⁷

EPISTEMOLOGICAL CHALLENGES

The epistemological challenges associated with multidisciplinary supervision are complex and ongoing. Key to these challenges is the fundamental question: what is the purpose of a PhD? Sitting alongside this question is a concern about 'disciplinary chauvinism' and inconsistencies in supervisory style.

There is ongoing debate about the purpose of a PhD. Is the value of doctoral research its process or its product?⁵⁸ Becher and Trowler note that in both the UK and the USA there has been an increasing

emphasis on the vocational goals of the PhD, at the expense of the development of the individual student's mind and capabilities.⁵⁹ This can also be framed as a tension between two distinct views of a PhD: an apprenticeship or a production line. The apprenticeship model involves a much larger component of personal and professional development than merely producing a thesis and gaining technical skills. Supervisors who follow this perspective will allow, or even encourage, attendance at leadership and professional development courses and retreats, paid and volunteer teaching, and participation in relevant committees and organisations, both directly and indirectly connected to the field of study. Conversely, if a supervisor sees doctoral study as the requirement to produce a thesis within four years, it is likely that any time away from this fundamental task will constitute time wasted. Holdaway, in a similar vein, discusses primary and secondary activities associated with the research experience.⁶⁰ Primary activities include research, reading and writing, while secondary activities include teaching, publishing and attending conferences. Burns and colleagues, following interviews with mature students, recent graduates and supervisors, reported three distinct ways in which supervisors and students typically think about supervision. These were 'thesis orientation', 'professional orientation' and 'person orientation'.⁶¹ In the first, the emphasis is on producing a thesis; in the second, the emphasis is on a professional apprenticeship; and in the third, the emphasis is on the whole person, both academic and non-academic. If co-supervisors clash in these perspectives, the student may feel confused about the type of 'extracurricular activities' that are encouraged or discouraged.

Another subtle but deeply disconcerting challenge during candidature can be a lack of respect among co-supervisors regarding the different perspectives and research approaches that each holds. Taylor and Beasley refer to this manifestation as 'disciplinary chauvinism'.⁶² An example may be a dispute about qualitative versus quantitative methodology. Another may concern theoretical versus empirical research. Students will eventually be required to align themselves within a specific research paradigm and defend their choice. However, the process leading to such a choice can be daunting for the student caught between supervisors who show little empathy for their colleagues' views. Phelps and colleagues discuss several strategies that students can employ to get the best out of their supervisory relationship.⁶³ They suggest

encouraging students to read their supervisors' publications and thesis to help develop a sense of how they write and think and the methods they prefer to use. They also argue that this will help to build mutual respect. This approach may be equally useful for co-supervisors.

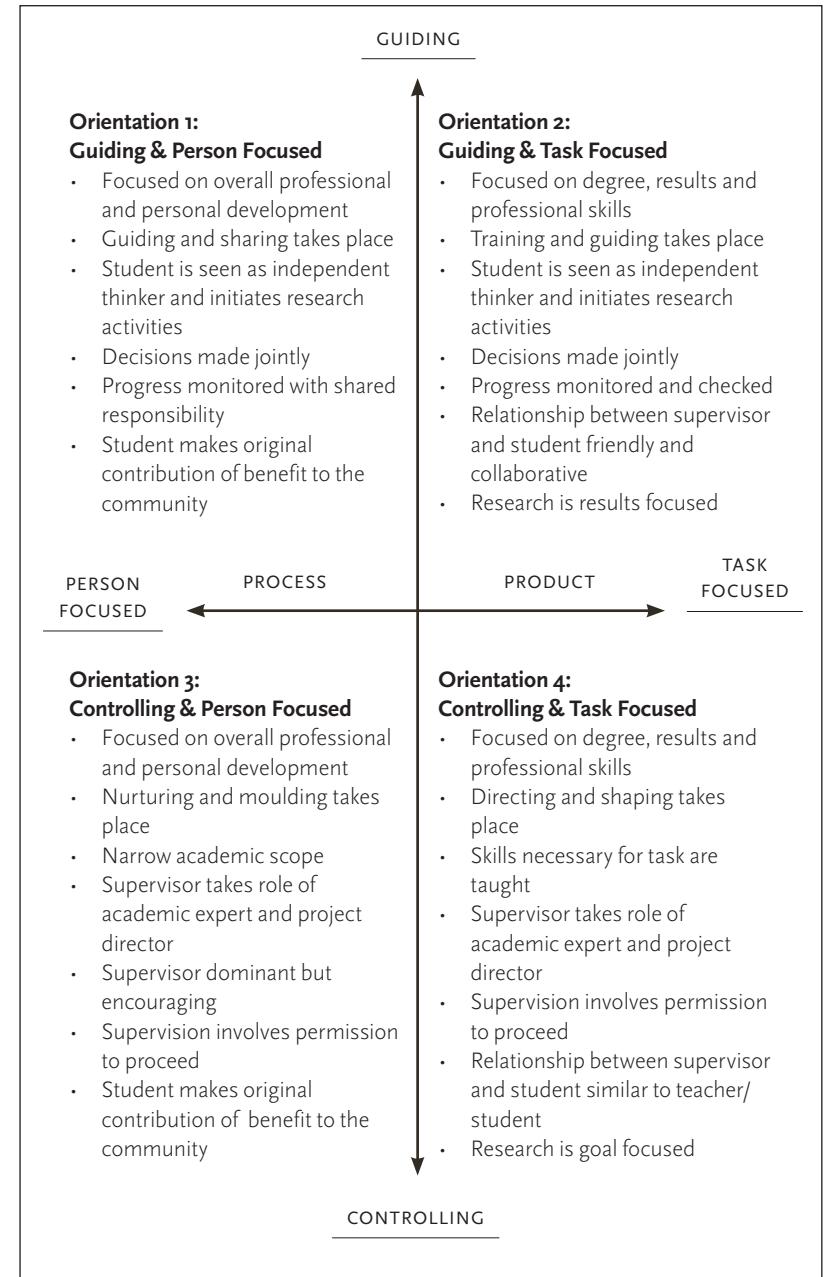
Finally, differences in supervisory style and approach can create considerable challenges for students and supervisors engaged in multidisciplinary research. A common point of discussion in relation to supervisory style is the degree of independence that is provided to students. Delamont and colleagues provide a detailed description of difficulties that arise for supervisors who must negotiate a balance between dominating the student's research and allowing too much autonomy.⁶⁴ Supervisors from different disciplines may have varied views on how much direction to give. These views will also change depending upon which aspect of the candidature one is referring to; for example, the direction given to choosing a topic may differ greatly from the direction given to the process of writing.⁶⁵ Challenges associated with supervisory style are intimately linked with the first epistemological challenge explored above, that of the purpose of a PhD. In other words, the supervisory style that a supervisor chooses will be closely related to their opinions about the reasons a PhD is undertaken. Murphy and colleagues refer to two key distinctions in the way that research supervision is viewed, which then combine to provide four possible orientations.⁶⁶ The two distinctions are controlling/guiding beliefs and task focused/person focused beliefs. These perspectives are summarised in Figure 2 and have vastly different impacts on the everyday life of a postgraduate student.

BENEFITS OF MULTIDISCIPLINARY SUPERVISION

As noted in the introduction, this exploration of the challenges associated with multidisciplinary supervision sits within a broader context of strong support for such research endeavours and the many benefits that it creates. The student who experiences, reflects, develops and overcomes these challenges will ultimately be better equipped to move into the next phase of their career, be this within or outside the academic world.

Students of multiple supervisors from multiple disciplines are able to witness a range of supervisory styles. This means that there is a

FIGURE 2. FOUR ORIENTATIONS TO SUPERVISION (DERIVED FROM MURPHY, BAIN AND CONRAD, 2007)



greater chance that one of the supervisory styles will match with the preferences of the student.⁶⁷ It also means that students can choose to go to different supervisors for different tasks, depending on what type of supervision the task at hand may require. The student who witnesses multiple supervisory styles also develops a greater awareness of the differences between individual styles, assisting them to think about what type of supervisor they may wish to be in the future.

The opportunity to witness and engage in academic debate across disciplines can be of great value to the postgraduate student. When such debate involves the structure and content of the student's own work it can be particularly helpful in maintaining a high level of rigour in the research, assisting in the student's own development and also their ability to defend all decisions made along the research path, as each has been critiqued from the outset. Academic debate across disciplines is of course not only limited to the arena of multidisciplinary supervision; thus students who have experienced this debate throughout their candidature will be better prepared for the next phase of their research career, should they choose to pursue one.

Greater disciplinary knowledge during candidature can lead to greater experience and more extensive networks. Multiple supervisors from multiple disciplines can provide increased networking exposure, as the network of each supervisor is available. This can result in greater career options at the completion of candidature. If supervisors sit within different departments, universities or institutes, this can translate into more access to funding for students, greater variation in conference attendance and further post-doctoral opportunities. Having a wider scope of professional, research and academic development entails owning a wider skill set with which to venture into the next stages of work and life.

Multidisciplinary supervision also provides co-supervisors with a shared load. In one extreme and well publicised case in the US, a student who committed suicide blamed his sole PhD supervisor for 'abusing' him, stating that if he had had a supervisory panel, his experience would have been vastly improved.⁶⁸ Multiple supervisors can share the division of both labour and responsibility with each other. Specific roles can be assigned to each co-supervisor in some cases, related to their unique field of expertise and knowledge. Importantly, if one supervisor is absent or over-committed at a particular time, co-supervisors are able to counteract this.

Supervisors working in multidisciplinary teams also have an opportunity for personal and professional growth themselves. The supervisory relationship can be a long and intense one. Great collaborations can be built over the period of a student's candidature. In many cases, co-supervisors are forced to engage with a discipline of which they may have only limited knowledge. This creates important opportunities for their own professional development and the development of their research. Gilmer reflected on these benefits when she commented:

Undergoing such collaborations involves risks to all those involved, as you must learn to understand their language while they learn yours... I enjoyed serving as the outside [supervisor] as I could read and reflect on the language used as I learned the educational concepts, learning all the while from these doctoral students.⁶⁹

The student who learns from multiple teachers and works alongside varied colleagues will have a fundamentally greater range of research skills with which to begin the next phase of their career. Multiple supervisors from multiple disciplines bring different perspectives and knowledge about format, argument, methodology, process and style from which to draw on to create a deep and broad knowledge of research conduct.⁷⁰ The student who reaches the end of their candidature with all of these experiences and skills will, in fact, have undergone an apprenticeship in emotional intelligence, learning skills of negotiation, conflict resolution and diplomacy. In his work concerning the traits of high-achieving professionals, Geoff Scott explains that the skills aligned with emotional intelligence, not the technical skills required for specific jobs, create great thinkers and leaders.⁷¹ Successful graduates bring to bear a highly developed emotional and social intelligence and a contextually appropriate way of assessing a situation.⁷² The benefits associated with multidisciplinary supervision align perfectly with this broader conception of relevant experience and knowledge.

CONCLUSION

Multidisciplinary supervision is associated with significant challenges

for both supervisors and students. Insight about these difficulties, combined with an awareness of the great benefits that are produced alongside the challenges, can result in both personal and professional growth for all involved. As multidisciplinary postgraduate research and supervision continues to grow in prevalence, maintaining a dialogue about the associated perks and perils will assist in also growing its reputation as a valuable and worthwhile endeavour. Fostering an open and honest approach to clashes that arise along the way is paramount. ❖

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