Chapter 10: Postgraduate Co-supervision Conundrums: Complementarity and Contradiction

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Abstract

This chapter focuses on doctoral students' experiences of co-supervision. We utilise a triadic dialectical coherence framework to examine complementarity, contradictions and conundrums inherent in co-supervision arrangements. Our research shows that co-supervision between doctoral students and co-supervisors leads to both positive outcomes and obstacles. Different supervision approaches provide comprehensive academic and emotional support, while inconsistent supervision approaches lead to cognitive development and personal independence. Consistent challenges in coordination and power dynamics fuel intellectual development. The research shows that productive co-supervision depends on organisational frameworks and human skills that manage rather than eliminate these tensions. The three-headed approach inspired by Janus offers insights for transforming supervision challenges into opportunities for growth in interdisciplinary research environments.

Keywords: Co-supervision, *Currere*, Doctoral students, Triadic analysis

Introduction

The number of PhDs produced by the 26 higher education institutions (HEIs) in South Africa has been a vexing point for the state, leading to a proclamation by the state for HEIs to produce by the year 2030, more than 100 PhDs per million inhabitants (DHET 2019). The 2030 target presupposes the capacity of higher education institutions to increase the supervision workload of academics successfully and, more importantly, that an expanded supervision workload will not compromise the quality and rigour of doctoral education. In this chapter, we argue that quality and rigour can be maintained if research supervision is pursued creatively. The single supervisor-student approach continues to dominate doctoral education (Lee 2017). However, co-supervision can neutralise some of the negative effects of the single student-single supervisor model (McKenna & Van Schalkwyk 2023; Wilmot 2021).

Co-supervision represents an evolutionary shift in how we think and supervise research (Brown, Geesa & McConnel 2020). The nature of supervision is comparable to the Roman deity Janus, whose two faces always look in opposite directions. One face, representing the decades-old traditional, dyadic interaction between a single supervisor and a student, has formed the basis of postgraduate research training for many decades (Ruano-Borbalan 2020). While the other face, the engagement of two or more supervisors guiding a research student is an emerging response to the increasingly complicated and multidisciplinary nature of current research (Mazzocchi 2019). It is evident that a collegial and negotiated approach is supplementing the decades-old traditional and hierarchical mode of transferring knowledge. The move to multidisciplinary studies reveals the shortcomings of the traditional approach. However, these are not competing positions, and both are necessary and useful depending on the nature of the study. Both represent one of many approaches to research supervision, e.g. solution-based doctoral research supervision (Walsh *et al.* 2018), group supervision (Stynes & Pathak 2022), writing supervision (Lee & Murray 2013) and partnership supervision (Noel, Kurgat & Chang'ach 2022).

In South Africa, cohort doctoral programmes offering indirect supervision have become a thriving community of practice (De Lange *et al.* 2011). Whilst cohort supervision does not replace the single student-single supervisor model, it acts as a buffer for some of its challenges through supplemental support for research students. During cohort sessions, students engage with their peers and several supervisors. Cohorts can be organised by discipline, multiple disciplines, year of study, or by a group of supervisors and their students (De

Lange *et al.* 2011). The aim is to expose students to multiple voices, expertise and experience. The multiplicity of perspectives, methodologies, and theories add richness to studies and create opportunities to present, receive critique and share resources (Govender & Dhunpath 2011).

Supervision, we conclude, has diversified and become more inventive over time. In terms of the tradition-innovation continuum, we have chosen to focus on the co-supervision experiences of doctoral students. We analyse the benefits and difficulties of co-supervision through the lenses of complementarity, contradiction and conundrum. We conclude with the implications of co-supervision.

Conceptions of Co-supervision

The concept of co-supervision is not entirely new, as the first discussions date back to the late 20th century (Olmos-López & Sunderland 2017). The growing number of articles and books on co-supervision is a testament to its importance (McKenna & van Schalkwyk 2023). In addition, the national review of South African doctoral qualifications features several important aspects related to co-supervision (Faller *et al.* 2023). According to Faller *et al.* (2023) a key finding was that traditional one-to-one supervision can be problematic, particularly in interdisciplinary research. This limitation is particularly evident when supervisors lack adequate guidance on graduate student characteristics and when students must consider multiple disciplinary perspectives. To address these challenges, the National Report explicitly recommends innovative practices that make doctoral supervision more collegial and interdependent.

Additionally, the national report suggests that the rise in the number of doctoral students has led to the appointment of both new supervisors and external supervisors (Faller *et al.* 2023), which brings difficulties as external supervisors may have limited orientation to the institutional vision and mission and may be unfamiliar with how the characteristics of doctoral students should be aligned with institutional goals (Faller *et al.* 2023). This situation can potentially impact the quality and consistency of supervision. Other complications include the practice of supervision, which operates within complex university dynamics influenced by the intersecting imperatives of growth, efficiency, transformation, and equality (Wilson-Strydom 2016) and disciplinary differences. However, there are differences related to disciplines. For example, Pyhältö *et al.* (2024) found that environmental, food and

biological sciences report the highest frequency of co-supervision, while natural sciences prefer one-to-one supervision.

Although less common than one-to-one PhD supervision (Ukwoma & Ngulube 2020), the 'few-to-one' supervision model trend reflects the increase in interdisciplinary research, the specialisation of methods and the quality assurance requirements (Pyhältö *et al.* 2024). Co-supervision offers significant benefits, including knowledge sharing, improved learning experiences, and enhanced quality of research (Grossman & Crowther 2015; Segalo 2021). It serves as a safety net for academic mobility, ensuring continuity when supervisors retire, take sabbaticals or relocate. Additionally, it provides a valuable platform for training novice supervisors through mentoring by experienced academics (Grossman & Crowther 2015).

Co-supervision in Practice

The implementation of co-supervision presents an entanglement of relationships, power dynamics, and institutional practices that significantly impact student experience and success (Hansson & Schmidt 2023). While co-supervision disrupts traditional power dynamics by distributing authority among multiple mentors, it is replete with positive and negative consequences (Olmos-López & Sunderland 2017).

According to Paul, Olson and Gul (2014) students in co-supervision arrangements often report feeling more empowered to express their ideas and challenge assumptions. They also found that students must navigate a complex team climate in which prior relationships, power hierarchies, and supervisors' personal interests influence the supervision process. In their study, Hansson and Schmidt (2023: 1178) reported that some students felt like 'pawns in a bigger game', particularly when supervision arrangements prioritise supervisors' career advancement or networking opportunities over students' needs. This includes instances of 'back-scratching' arrangements and internal supervisor changes, which, while potentially beneficial to academic careers, do not always serve students' best interests (Hansson & Schmidt 2023: 1179).

The challenges of co-supervision are particularly evident in open e-learning contexts, where problems with student selection, supervision and communication can be exacerbated (Manyike 2017). To maximise the potential of co-supervision, Grossman & Crowther (2015) and Segalo (2021) suggest that institutions should develop responsible co-supervision practices, improve the training of novice supervisors and develop discipline-specific guidelines.

Hansson and Schmidt (2023) argue that supervision teams should explicitly discuss roles and responsibilities before supervision begins to better support doctoral students' success.

Ultimately, while co-supervision aims to improve doctoral success - defined as completing the doctorate in the shortest possible time at the highest academic/scientific/professional level (Bitzer 2012) - the complex interpersonal dynamics and power structures often leave students feeling disempowered, with the potential to reinforce rather than dismantle traditional academic hierarchies (Hansson & Schmidt 2023). Perhaps one of the most compelling arguments for co-supervision is the access co-supervision provides to diverse perspectives and expertise. In an era of increasing specialisation and interdisciplinary research, no single supervisor can be expected to possess comprehensive expertise across all relevant domains. A study by Paul, Olson and Gul (2014) found that students under co-supervision were more likely to produce research that successfully integrated multiple disciplinary perspectives, which suggests that co-supervision may be particularly beneficial for projects that span traditional academic boundaries.

Co-supervision necessitates the development of new communication patterns that can accommodate multiple voices and perspectives. While this can present challenges, it also offers opportunities for richer dialogue and more comprehensive feedback. Olmos-López and Sunderland (2017) found that supervisors often developed explicit communication protocols to ensure clarity and consistency in their interactions with students. These protocols facilitated more effective supervision and provided students with valuable models for professional communication in collaborative research environments.

The complementary structural elements of co-supervision within institutional frameworks offer significant advantages for both educational quality and academic collaboration. Bitzer and Albertyn (2011) provide a comprehensive, structured planning framework to distribute supervisory workload efficiently while maximising specialists' skills. Their multifaceted approach serves several crucial functions: establishing a foundation for productive student-supervisor discussions, enhancing capacity development among academic staff, enabling critical reflection and practice improvement, facilitating clear role delegation and accountability, and allowing customisation of supervision to meet individual student needs. The benefits extend beyond immediate educational outcomes to broader academic culture, as Paul, Olson and Gul (2014) observed that students exposed to co-supervision demonstrate a greater propensity for seeking collaborative opportunities in their future careers,

contributing to a more interconnected research ecosystem. These complementary elements reveal how well-structured co-supervision can transform institutional culture beyond individual doctoral projects, creating ripple effects that enhance research connectivity and interdisciplinary engagement.

Despite these potential benefits, structural contradictions emerge at the institutional level that impede the effective implementation of co-supervision models. Kumar and Wald (2022) identify how universities frequently struggle to adapt their institutional systems to effectively accommodate co-supervisory arrangements, creating administrative barriers to what might otherwise be beneficial educational practices. Gender-related issues introduce particularly troubling contradictions, as Almlöv and Grubbström (2024) expose practices where female co-supervisors are sometimes added to teams without their knowledge merely to fulfil gender quotas in funding applications. This revelation highlights how institutional pressures around equality can paradoxically reinforce problematic power dynamics rather than addressing them substantively. These contradictions demonstrate how institutional structures and cultures can simultaneously promote co-supervision in principle while undermining its effective implementation in practice.

The institutional conundrum centres on maintaining academic standards while fostering innovation in supervisory practices – a challenge requiring structural changes rather than individual adaptations. Polkinghorne *et al.* (2023) argue that successful co-supervision demands deliberate planning, clear role definitions, and ongoing communication to harness its benefits and mitigate its challenges. Their approach recognises that the tensions inherent in co-supervision can potentially drive innovation in supervisory practices and foster more robust support systems for doctoral students, but only with appropriate institutional frameworks. Grossman and Crowther (2015) offer specific measures to resolve this conundrum, including positively addressing the role of co-supervision in employee advancement, ensuring equitable workload recognition, formalising and recognising informal supervisory activities, developing clear policies and guidelines, and providing proper training and support for novice supervisors.

The Grossman and Crowther (2015) recommendations acknowledge that the conundrum cannot be resolved without systemic change at the institutional level. The fundamental challenge lies in creating structures flexible enough to accommodate innovative supervisory practices while maintaining sufficient standardisation to ensure quality and equity—a balance that requires

reimagining institutional frameworks rather than simply modifying existing ones. This conundrum reveals how co-supervision, while promising significant benefits for doctoral education, demands institutional transformation rather than mere accommodation within traditional academic structures.

Theoretical Framework: Triadic Dialectical Coherentism

Utilising complementarity, contradiction, and conundrum as three important epistemological notions, triadic dialectical coherentism provides a theoretical framework that combines these three ideas. This structure is based on and expands upon several well-established philosophical traditions, such as the complementarity principle from quantum physics developed by Niels Bohr (1948), dialectics from Hegel (McKenna 2011) and Marx (Norman & Sayers 1980), and modern coherentism in epistemology (Olsson 2017; Hage 2013). Triadic dialectical coherentism offers a stable framework for understanding complicated events characterised by viewpoints that seem incompatible with one another and ongoing conflicts. We discuss in the following order: duality that is complementary, contradictions that are generative, conundrums as catalysts and implications for the study at hand.

Duality that is Complementary

The concept of complementary duality is the first pillar of this framework. This theory states that views seemingly contradictory or incompatible with each other can simultaneously be legitimate and necessary for a thorough knowledge of complex events. An example of this is Einstein's observations that light is both a particle and a wave stream, which unites the opposing views of Huygens and Newton (Anastopoulos 2008). Einstein's findings showed that both explanations are necessary to comprehensively understand how light travels. Both views are interconnected components of a coherent whole, in contrast to classical dualism, which only offers either/or options. In higher education, complementary duality refers to accepting that different methodological techniques, theoretical traditions and disciplinary viewpoints do not represent contradictory truth claims but complementary aspects of a multi-layered reality. Consequently, multiple paradigms or discourses are needed to explain unique elements of the same phenomenon, as no single approach can fully capture it (Tambun, Yudoko & Aldianto 2024).

Contradictions that are Generative

Generative contradiction, the second pillar, views contradictions not as logical failures that need to be addressed but as dynamic tensions that drive the growth of concepts and the generation of knowledge (Holmqvist, Gustavsson & Wernberg 2007). Hegelian dialectics is expanded upon by this concept, which proposes that the sequence of thesis-antithesis-synthesis does not eradicate conflict but instead changes it into more complicated forms (Maybee 2020). Rather than producing paradoxes or necessitating the rejection of one viewpoint in favour of another, generative contradiction emphasises that conflicts between opposing views offer unique insights when properly addressed. This is something that is emphasised by the concept of generative contradiction. In particular, productive conflicts serve as engines of intellectual and practical innovation, especially in fields where complex and multidimensional issues defy straightforward solutions (Chapkis 2010).

Conundrum as a Catalyst

The third pillar of triadic dialectical coherentism rests on the concept of conundrum as a necessary catalyst for further investigation (Pinnegar & Hamilton 2020). Coherentism considers persisting conundrums, aporias, or unresolved questions important elements that prevent premature theoretical closure and maintain intellectual momentum (Robinson 2019). Conundrums are unpleasant aspects of knowledge systems with an advantage: they encourage ongoing enquiry and discourage premature resolution (Nuckolls 2018). The idea of delayed resolution challenges the conventional academic focus on conflict resolution, as it places a higher value on the ability to hold differing viewpoints in constructive tension. It is argued that the most intellectually productive stance is not one of complete explanation but rather of skilful engagement with recurring problems (Wessler 2020; Chapkis 2010).

Implications for Epistemology and the Study at Hand

Triadic dialectical coherence leads to three important epistemological consequences. The original stance rejects foundational methods that strive for ultimate certainty and extreme relativism that abandons the goals of coherence entirely. Coherentism evaluates knowledge systems according to their explanatory power and internal consistency while accepting their constant susceptibility to change. Also, it changes the definition of expertise so that

mastery of previous paradigms is no longer considered decisive (Olsson 2022). The definition of this new expertise includes the ability to move between complementary views and to discuss the contradictions between them. The most complete understanding of complex phenomena will always require further conundrums rather than resolving every conflict (Hage 2013). We must rely on this method to understand complex phenomena because no other approach provides a sufficient explanation.

The framework of triadic dialectical coherentism is best suited to the study of doctoral students' experiences in co-supervision. Co-supervision relationships naturally create complementary perspectives through the supervisors' different expertise and orientations, but they also lead to contradictions through conflicting advice and generate unresolved issues that challenge existing paradigms (Hein & Lawson 2008). The use of dialectical coherentism in co-supervision research allows researchers to investigate supervisory relationships beyond the level of agreement between supervisors. Researchers are given the opportunity to make more thorough assessments through this method. Triadic dialectical coherentism allows researchers to engage in analytic work, emphasising constructive tensions and intellectual development through contradictions while fostering students' abilities to navigate complicated intellectual landscapes full of persistent conundrums.

Methodology as Theory: The Janus Head, the Method of *Currere* and Phenomenology

To conceptualise doctoral students' reflective processes, this study draws on the metaphor of the Roman God Janus, traditionally depicted with two faces - one looking to the future and one to the past – (Brady 1985). A third face, looking inward (Agarwal & Malloy 2000), represents participants' reflective and reflexive introspection of their thoughts, feelings, motives, and actions as private and public intellectuals. The Janus three-dimensional perspective aligns with *Currere*'s emphasis on temporal reflection and phenomenology's focus on lived experience; creating an integrated methodological framework for understanding doctoral students' co-supervision journeys (Denzin & Lincoln 2005).

Through the method of '*currere*' and 'complicated conversation' (Pinar 1975; 2004; 2019), the study explores how doctoral students navigate their unique past and present experiences while simultaneously looking toward the future and symbolising the ongoing challenges they face as they negotiate

conflicts between their philosophical beliefs, ethical considerations, and institutional commitments during the co-supervision journey.

The method of *currere* allowed for deep introspection and analysis of educational experiences, creating opportunities for students to engage with their past and present backgrounds while considering possible futures (Kanu & Glor 2006; Pinar 1975; 2019). This study's research questions aligned with Pinar's four-step method – regressive, progressive, analytical, and synthetical - while incorporating phenomenological inquiry. The regressive dimension examined how doctoral students describe and make meaning of past experiences leading to their current co-supervision arrangement. Progressive questions explored their envisioned futures and the anticipated impact of co-supervision on their academic development. The analytical component investigated their current co-supervision relationships detached from temporal influences, while synthetical questions examined how students integrate past experiences, present realities, and future aspirations to make meaning of the co-supervision journey (Pinar 1975; 2004).

Nsibande (2007) proposes *currere* as an autobiographical tool for supervisors to reflect on and improve their research supervision practices. Nsibande (2007) suggests using *currere* to expose and critique the assumptions underlying supervision orientation, arguing that acquiring knowledge and understanding of best practices requires supervisors to embark on a '*currere*' that encourages investigation of their supervision experience. Smith (2013) advocates integrating critical pedagogy with *currere* to enhance students' and teachers' understanding of the structural and political contexts shaping their experiences. *Currere* engages with students' personal histories, aspirations, and subjectivities as a self-reflective method of inquiry. While extensive academic work has focused on privileging student and teacher experience to foreground these histories and subjectivities, such work faces criticism regarding its utility for eliciting more systemic understandings of the educative experience (Smith 2013). These studies collectively emphasise the *currere* method's potential for encouraging self-reflection, addressing systemic issues, and promoting transformation in educational settings, particularly in the context of post-apartheid South Africa (Nsibande 2007; Smith 2013).

In-depth semi-structured interviews, designed as conversations to elicit rich descriptions from participants who experienced co-supervision, were deployed to generate data (Patton 1990). To allow participants to feel comfortable sharing their personal experiences, the authors used an experienced field worker to conduct the interviews. Following phenomenological principles

(Patton 1990), probing questions were used to deepen responses and clarify meanings, which were captured verbatim whilst acknowledging that voices might be 'shaped or constrained by other influences' (Lowe 2007: 12).

The data analysis process followed three key phenomenological steps (Patton 1990). *First*, *epoché* required the researchers to acknowledge and bracket personal biases and perspectives. *Second*, phenomenological reduction involves breaking down the data into its pure form, free from assumptions and intrusions. The *last step* was the development of a structural synthesis that revealed the essence of participants' experiences. Tesch's steps were followed in the coding process to systematically develop interpretations by breaking down data into smaller components and identifying emerging themes (Creswell 2014).

Participant Selection

Purposive sampling was used to generate data rather than seek representativeness (Leedy & Ormrod 2019). Three female participants were purposively selected for this study: Jenny, Terry and Mbali (pseudonyms). Female co-supervisors supervise all three participants. Jenny and Terry are at the data analysis stage. Mbali has generated the first full draft of the thesis.
In the next section, we analyse their experiences.

Triadic Analysis of Co-supervision Dynamics

The data in this section is taken from interviews with three female PhD students named Terry, Mbali, and Jenny. The students described their experiences with co-supervision arrangements from their respective perspectives. Participants discuss a professor and an early career academic referred to as Prof and ECA, respectively. The data offers insights into how students handle the intricate relationships, power dynamics, and practical obstacles inherent in having numerous supervisors guiding them through their doctoral journey.

Complementary Duality in Co-supervision

In this section, we shed light on various complementary components that, when integrated, constitute a more comprehensive support system for students who are co-supervised. For instance, Jenny observed, '*The two personalities are completely different. ... It also served as a kind of balance, as Prof is stricter*

than ECA'. The phrase '*It also served as ...'.* shows that having co-supervisors with distinct personalities was advantageous. Specifically, Jenny appreciates each supervision style because she understands that strict supervision brings unique benefits while lenient supervision offers advantages. Furthermore, she explains that having supervisors with varied styles enhances the educational experience for students. Consequently, the statement also suggests that Jenny had to adapt to different expectations or feedback styles when working with each supervisor and is perhaps more suited to a student who is open-minded and flexible.

Moreover, Jenny recounts that ECA is vocal once the meeting is over: '*When we go outside, that is when she is able to say something, and also, her office is always open*'. As a result, Jenny's well-being is not affected by the dualistic supervision approach because she knows she has access to both supervisors, albeit in different spaces.

In addition, rigorous academic guidance and emotional support are provided through co-supervision. To illustrate this point, Mbali observed, '*The silent lady is there for me, like emotionally'.* Meanwhile, Jenny notes that the ECA acts as '*a buffer*' when she approaches the professor, which makes her more anxious. In support of these findings, Bitzer and Albertyn (2011) described this dual support system as a multi-layered approach that allows support to be tailored to students' individual needs. Similarly, the study by White *et al.* (2024) shows that student well-being differs significantly depending on how they deal with the perspectives of their supervisors. In their research, student well-being reached higher with co-supervision methods than traditional solo-supervision models. Additionally, research (Olmos-López & Sunderland 2017) shows that successful co-supervisor teams implemented defined communication protocols but kept their interactions flexible. Correspondingly, Almlov and Grubbström (2024) report that co-supervisors often practice the hidden curriculum, providing unofficial emotional support outside the formal academic context.

Furthermore, decentralised authority during co-supervision generates a learning environment that promotes intellectual advancement and encourages diversity. As a result, students obtain multiple mentoring and advising opportunities through complementary approaches that demonstrate collaborative practices and consequently help shift traditional academic hierarchies towards more collegial settings. Therefore, our conclusion shows that a complementary approach can deliver support that fits student needs and situations.

Contradictions that Generate Growth

The analysis of data reveals multiple conflicts encountered by the study participants. For example, the following statement from Terry says, '*When you get comments from both of them, it can be a little bit confusing because maybe Prof says one thing and ECA says something else. However, I eventually became used to it*'. Specifically, this statement reveals important insights into how co-supervision works. A closer examination of this statement provides a better understanding of the dynamics of co-supervision. Terry noted that conflicting professor and ECA feedback leads to confusion. As a result, dual supervision models demonstrate their fundamental problem by leading to conflicting instructions due to intellectual and methodological differences. Notably, when students describe conflicting feedback as only '*a little bit confusing*' (Terry), they underestimate the frustration and cognitive dissonance they face when following conflicting instructions from authority figures. In contrast, the statement by Terry, '*I eventually became used to it*', represents a significant developmental step in which the student has moved from confusion to accommodation while demonstrating growing critical thinking skills and intellectual independence. Therefore, Terry has reached a stage where she successfully combined different viewpoints and crucial feedback provided within complex supervisory contexts rather than simply carrying out instructions.

While positive development is activated by conflict, students with multiple supervisors are under tremendous stress due to conflicting instructions (Hansson & Schmidt 2023; Olmos-López & Sunderland 2017). Additionally, undesired outcomes can be amplified when teaching staff are often forced to supervise areas peripheral to their specialisation due to staff shortages, leading to discrepancies in subject and methodological knowledge that can hinder student progress (Polkinghorne *et al.* 2023).

Contradictions are particularly apparent in sequential feedback procedures, as Terry describes, '*So, the instant I receive Prof's response, I do not know what to do with it since ECA has not reacted yet... I submit it to her... And after that, at some point in the future, it will be returned to me with remarks*'. The terms '*submit*' and '*returned with remarks*' create a transactional framework that turns students into passive recipients on a feedback conveyor belt rather than active partners in a dialogue-based learning process. Moreover, as the timeframe remains unclear when feedback is promised '*at some point in the future*', students face unpredictable wait times that can disrupt their workflow and cause delays in the learning process while increasing anxiety levels.

Although this sequential model may be administratively convenient for supervisors, it leads to a fragmented learning experience where the synthesis of feedback is solely the student's responsibility without the benefit of experiencing a direct academic exchange between experts. Consequently, the statement shows how the institutional practices of co-supervision unintentionally create systemic inefficiencies and psychological pressures that complicate the student journey by transforming potentially rich dialectical learning into sequences of fragmented student responses that must be navigated and reconciled independently.

Similarly, through her account of how she balances the conflicting expectations of her two supervisors, Jenny demonstrates the underlying power dynamic while ensuring that she does not offend either of them. Thus, through the model of co-supervision, students learn to manage conflicting viewpoints and expectations, mirroring common academic and professional situations where intellectual debate unfolds amidst uncertainty.

In contrast, Mbali is more accepting of the power hierarchy: '*Prof is the main supervisor for me, so she would lead'.* Regarding this dynamic, Hansson and Schmidt (2023) explain that co-supervision dismantles traditional power hierarchies by distributing authority among multiple mentors and show that Mbali's positive feedback about unity and support echoes Hansson and Schmidt's (2023) finding that the supervisory relationship can evolve if this tension is adequately managed.

When analysing how power is exercised in practice within co-supervision relationships, Mbali provides the following description of what happens during a co-supervision session: '*When Prof takes over, ECA became silent, so she would just come in and make one comment, and that's the end of it ... when we leave that space... that is where and when ECA would then come to me ...*'. This narrative shows how institutional hierarchies can unintentionally suppress significant contributions in formal contexts and force secondary exchanges in informal settings. Mbali's description of the co-supervision session shows that the dominance of the professor leads ECA to remain silent during formal sessions, which prompts them to share their ideas in informal conversations afterwards.

Interestingly, according to the students, their impressions of their supervisors are always contradictory. For instance, Mbali says, '*Over time, as I got to know Prof, I think I realised that her bark is much louder than her bite*'. Subsequently, this inconsistency in perception leads to unusual insights as students learn to interact with authority figures on numerous levels. Indeed, this

is an example of a generative contradiction, meaning it changes rather than needs to be resolved (Chapkis 2010).

Furthermore, in the following example, Jenny explains how feedback can demotivate and provide clear direction: '*When it comes back and you [see] that oh, they've pulled this thing apart, then it is rather demotivating... But the thing that I really love is that they do offer feedback; there's is no room for you to make assumptions*'. Jenny's emotional conflict shows the possibility of an advantageous coexistence between competing forces without having to choose sides. However, it also indicates the need for affirmation or communication from both supervisors before deciding on minor matters. Consequently, the emotionally conflicted response leads to delayed development and reduced confidence in students' own judgement. Paradoxically, the need for supervisor approval produces effects that directly counter the independence that co-supervision intends to encourage. Nevertheless, it serves as an example of how competing forces can co-exist beneficially rather than demanding a solution in favour of one side. Therefore, we conclude that student well-being can be at stake in co-supervision arrangements even when contradictions are generative.

Conundrums as Catalysts

The data reveal several conundrums. Students report that it is difficult to coordinate input from multiple supervisors in different cases. For instance, Mbali reveals that she feels unsure how to process the professor's feedback when other supervisors have not yet shared their thoughts. Similarly, Terry's observation shows how time lags between successive comments from superiors can unexpectedly drive intellectual development. Terry's confession that she did '*not know what to do with it*' shows the student is experiencing both frustration and cognitive dissonance. Interestingly, the wait time for the ECA to comment after the professor's feedback initially appears to be a procedural obstacle, but instead, it becomes a necessary space for students to work through incomplete instructions to cultivate their academic voice. However, while seemingly inefficient, the limbo between supervisor input forces students to critically evaluate competing perspectives rather than passively receive instruct-tion. Therefore, Terry's description demonstrates how institutional constraints unintentionally create productive tensions that mirror real-world research environments where definitive answers are difficult to find, and multiple inter-pretations must be weighed. As a result, the paradox of asynchronous feedback becomes a powerful developmental mechanism that transforms what might be seen as an

administrative failure into an opportunity for intellectual maturation as students learn to deal with ambiguity, resolve contradictions, and ultimately move from knowledge consumers to knowledge producers through the gaps in the monitoring structure that might otherwise be dismissed as purely pro-blematic.

Furthermore, the students recognise the collaboration between caregivers but do not fully understand how it works. For example, Mbali felt that '*their relationship needed to be discussed prior to the meeting*', meaning that students need to know the relationship between the co-supervisors. Additionally, Mbali explained. '*On the other hand, I believe that it is something that they planned or that they discussed outside of the meetings*'. Consequently, the planning process is a conundrum for students as they are not privy to it, and simultaneously creates a constructive tension that helps to maintain intellectual momentum (Robinson 2019). In other words, they accept that they cannot know.

Moreover, Terry explains the repercussions: '*If one party is not available, there is a bit of a delay and prolongs the study period... it breaks the process and progress*'. Evidently, coordination issues between co-supervisors disrupt their progress. In this regard, Polkinghorne *et al.* (2023) refer to the tension between the theoretical benefits of different perspectives and the coordination difficulties as a factor that requires deliberate planning, clear role definitions, and ongoing communication to maximise the benefits and reduce the challenges.

According to Elbow (1989), poorly managed arrangements lead to a good cop/ bad cop dynamic. Specifically, the dynamic shows how students become trapped in power struggles or conflicting expectations due to the supervisors' failure to communicate clearly. Notably, in an increasingly multidisciplinary environment requiring a broad range of knowledge, the difficulty of the situation becomes particularly apparent. Similarly, Almlov and Grubbström (2024) found that co-supervisors regularly become important contacts for students' emotional and psychological problems. However, this happens even though they are not sufficiently trained for this task and do not feel able to seek help from older colleagues. Consequently, this leads to a paradoxical scenario in which the strengthened support network that is theoretically accessible in co-supervision arrangements does not function effectively in reality due to communication barriers, lack of clarity about roles and insufficient preparation for solving problems that are not related to academia. Therefore, this difficulty requires a careful balance between equalising different perspectives and avoiding decision-making paralysis.

In essence, the development paradox arises from the opposing forces between promoting independent growth and providing the necessary support. Indeed, this is probably the most fundamental conundrum associated with doctoral education. Thus, the challenge remains to provide adequate guidance while avoiding the creation of dependencies and supporting intellectual risk-taking without violating academic standards. Furthermore, two common failures at the formal level that are not addressed are the inequitable distribution of tasks and the lack of recognition of mentors' informal contributions (Grossman & Crowther 2015). According to Almlov and Grubbström (2024), some teams add female co-supervisors without realising it to meet gender quotas for funding applications. Consequently, institutional mandates for gender equality can unintentionally perpetuate existing power issues rather than solve them. However, in this instance, gender quotas are not an issue as the three students and the co-supervisors are females.

Implications of the Co-supervision Approach

Co-supervision represents an academic mentoring approach that requires navigating between complementary perspectives and discussing their contradictions (Olsson 2022). Consequently, binary thinking approaches to academic mentoring encounter difficulties in this type of mentoring. According to Jenny's experience, '*What's also promising about it is that through the feedback, they are actually building us up to a level that we should be at*', there emerges a realisation that the feedback helps them to reach the level expected of them and necessitates the need to maintain a comfortable tension between different views. Therefore, for successful co-supervision experiences, students need to acquire a new kind of competence. Specifically, this competence is not the mastery of a single supervisor's perspective but the ability to switch between complementary perspectives and to deal constructively with contradictions. For example, Mbali captures the attitude for working with co-supervisors: '*Embrace it. There are many distinct personalities among people. Not only are they at various academic levels, but they are also at distinct degrees of knowledge*', emphasising this type of expertise.

In contrast, Grossman and Crowther (2015) insist that institutional system change rather than individual change must occur because their research shows that repeated problems reinforce this need for change. Notably, the difficulties with time management and coordination of input and process clarity highlight the fundamental challenge of creating structures that balance

innovative supervisory practices with the necessary standards of quality and equity. Furthermore, the experiences shared by the students illustrate how the process of negotiating complementary viewpoints, fruitful conflicts and ongoing conundrums leads to creating an academic identity. When Jenny describes using ECA as '*the go-between*', or when Mbali reflects on how supervisors '*shape me, they give me a lot of information*', they are articulating what Hein and Lawson (2008) describe as that which enables students to participate in analytical tasks that emphasise constructive tension and intellectual growth through contradiction.

In their study, Johansen *et al.* (2019) emphasise the importance of ensuring that roles and responsibilities are clearly defined and documented from the outset. Although there may still be power imbalances in academic relationships, these can be managed through open and honest communication and formal agreements. Similarly, in discussing the developmental dilemma, Bitzer and Albertyn (2011) argue that effective co-supervision requires establishing defined procedures, introducing accountability mechanisms, and explicitly allocating tasks among supervisors. Indeed, their strategy highlights that the potential benefits of co-supervision for student development cannot be realised without explicit structural support to help students navigate the inherent complexity of multiple supervisory relationships. Therefore, it may be argued that co-supervision support is designed to help students navigate multiple perspectives.

Conclusion

The triadic approach of complementarity, contradiction and conundrum in co-supervision demonstrates how these elements effectively represent the complex role interactions and tensions in doctoral supervision relationships. Our research shows conflict in co-supervision could lead to intellectual growth and new institutional practices. This approach focuses on the productive potential inherent in these difficulties rather than viewing them as problems to be solved.

The key to effective co-supervision is building institutional structures and human capacities that productively endure contradictions and conundrums rather than trying to eliminate or solve them all. According to Wessler (2020) and Chapkis (2010), intellectual productivity develops through skilful interaction with recurring challenges rather than through full explanation. The experiences of Terry, Mbali, and Jenny show the difficulties and potential of this method.

Our three-headed approach, reflecting the ancient Roman god Janus, allows us to understand in more detail the impact of co-supervision on doctoral education. The head of complementarity shows how synergistic potential, distributed expertise, and balanced power relations encompass current movements in interdisciplinary research. The head of contradiction exposes fundamental conflicts between established authority structures and informal dynamics, and differences in research methods and support requirements that highlight the ongoing difficulties faced when operating within conventional frameworks of care. The conundrum head reveals the creative potential of these apparent contradictions by suggesting innovative methods to transform tensions into opportunities for growth.

Adopting this three-headed perspective makes apparent problems the basis for innovative solutions. Several perspectives show that innovation in supervision practice arises from generative tensions caused by balancing distributed authority, managing the flow of communication, integrating diverse perspectives, and encouraging student independence. Undoubtedly, the success of future co-supervision depends on the ability to integrate multiple perspectives rather than prioritising a single viewpoint. Supervisors and students should actively collaborate to develop spaces where multiple perspectives can be effectively shared. The complexity and interdisciplinary nature of modern research make a three-headed vision more important than ever.

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