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METAPHORS WE WRITE BY

1.   INTRODUCTION

Academic writing has been likened to "an act of artistic creation, in which the real payoff is not the work itself, but instead in the creation of a new product" (Hourcade & Anderson, 1998, p. 276). Through the image generated by this artistic metaphor for writing, I "see" writing in a research project as a creative process in which I willingly participate to produce an artefact that documents the sense I make of the topic. It is through the writing that I become most aware of my feelings and understanding of a particular phenomenon; in this case, metaphors that guide and illuminate the process of research writing.

Recent discussions of research practices inform us that metaphors permeate research discourses (Brew, 2001) and that metaphors can guide our practice (Alvesson & Sköldberg, 2000). In fact, Alvesson and Sköldberg (2000) have argued the case for researchers to generate multiple metaphors to guide their practice:

> The point is that having access to several different metaphors facilitates offering various comprehensive images of research, thus reducing the risk of latching on to a one-sided favourite conception. Having a favourite metaphor is both (sic) natural, desirable and inevitable, but the trick is to have a certain distance in relation to it, that is, an ability to look at one's favourite position from an other angle. Metaphors should be chosen so as to stimulate reflection and movement between the levels of interpretation. (p. 284)

The extent to which this goal can be realised is yet to be fully tested empirically, if that were possible. As well, it is not known whether researchers will take up the suggestion to generate multiple metaphors to guide their research practice. What is possible in the context of this chapter is to offer descriptions of particular metaphors for writing, gleaned from my interviews with science education researchers about their research practices. Another purpose for this chapter is for me to begin to consider how I might adopt or generate particular writing metaphors in my research. Such writing might benefit novice researchers most because the practice of writing for publication can be a mysterious process, especially when traditional academic writing tends to be devoid of reflexive accounts of this practice (Brew, 2001; Roth & McGinn, 1998). Ultimately, through my research writing, I hope to come to know myself better, and as Brew (2001) asserted: "If in coming to know myself I also help

others to know themselves or to know the world in which we live so much the better" (p. 184).

2.   BACKGROUND TO THE STUDY

As part of a broader study of researcher practices with my long-term collaborator (Donna Rigano – see, Ritchie & Rigano, 2002), 24 science education researchers were asked questions relating to their writing practices. Each face-to-face interview focussed initially on the researcher's self-selected article involving qualitative research. As the interviews progressed, it was possible to interrogate researcher responses, often leading to the discussion of both similar and different writing experiences. In this way I was able to access a much wider set of experiences than those that were briefly articulated in the text of the focus articles. As well, most of these articles were artefacts of productive collaborations from long-standing research teams, giving me a chance to hear about a range of different writing styles and working practices, from the interviewee's perspective. Fortuitously, I was able to interview members of the same research teams on several occasions.

Thirteen Australian researchers from three major university sites comprised the original sample of informants. While all ranks (i.e., Lecturer, Senior Lecturer, Associate Professor, Professor) were represented in the sample, only three women were included – none at the rank of Professor. To redress this imbalance and to internationalise the sample, an additional 11 researchers from North America were interviewed. Once again, all ranks were represented (i.e., Assistant Professor, Associate Professor, Professor), but seven informants were women; two of these were full professors. Six researchers from the North American sample were selected from two well-known science education centres while the remaining five women worked at different sites. All researchers had published their work in international journals in science education and had presented conference papers at international conferences. Despite this, two of the researchers did not identify themselves as primarily science educators. One identified more with information technology education and the other was trained in literacy education. To ensure anonymity of researchers throughout this chapter, pseudonyms are used for interviewed researchers while letters (e.g., Researcher X) are assigned to those non-participating researchers who were named in interviews.

The transcripts of interviews were the primary data sources. These transcripts were returned to the researchers for checking. Informal conversations with the researchers pre- and post-interview, as well as follow-up email correspondence informed my interpretations. Consistent with the phenomenological stance adopted for this study, I borrowed "other people's experiences and their reflections on their experiences in order to better be able (sic) to come to an understanding of the deeper meaning or significance on an aspect of human experience" (van Manen, 1990, p. 62); in this case, writing for research publication. Lincoln and Guba (2000) best expressed the assumption underpinning my writing in this chapter, as follows:

> There is no single "truth" – that all truths are but partial truths; that the slippage between signifier and signified in linguistic and textual terms creates re-presentations

that are only and always shadows of the actual people, events, and places; that identities are fluid rather than fixed. (p. 185)

3.   METAPHORS FOR WRITING RESEARCH

Almost all of the researchers shared a commitment to, and enjoyment for, writing. Mirana, Carla, and Prue suggested that they each had something worthwhile to say through writing for publication. Perhaps more importantly, many researchers claimed that it was through their writing that they completed the analysis of data and came to a better understanding of the phenomenon under study. For example, Carla (a full Professor) said:

> I don't know that you can have the same learning experience without writing. The writing, I believe really strongly that you figure some of this out in the write. The write-up isn't post analysis; the write-up is part of the analysis. And so if you thought that you didn't have to publish then you wouldn't write and if you didn't write then you really wouldn't do the analysis… I like to write. I think it's grand fun to write, but I still have to push myself to do it. Definitely, you've got to do the writing.

Similarly, Martin explained: "I think this notion of writing as research is a very powerful idea. For me, more often than not, the ideas only come through the writing; [they] only come when I actually sit down to engage with the data."

Given that so many of the researchers endorsed the *writing as research* metaphor, it should not surprise that most of them considered the writing process a challenging activity. Even full professors admitted to being slow writers who intellectually struggled expressing their ideas. For Scott, a full professor, writing the first draft of a paper was "hell". He elaborated:

> I enjoy writing the [research] proposals; I have fun with the titles and the abstracts. Then when it actually comes to writing, it's [like] pulling teeth. I enjoy gathering the data and thinking about it and coming up with ideas, that kind of stuff, [but] sitting down and writing is hard work.

Only one of the researchers interviewed admitted to hating writing, though. For Anna, she wrote only because it was expected. She was much more comfortable with her teaching identity. Accordingly, she preferred conference presentations rather than writing refereed articles because, "I can present [just] as much information, but you have to be there." Yet for another researcher who strongly identified with his role as teacher, Frank has come to believe he has a responsibility to influence others by writing for publication. Frank asserted:

> My shift in understanding about writing and reading has been dramatic in the last decade. Once when I started, I didn't think I really understood what value there really is in writing. Now I'm a great believer, I still view myself as a teacher in that sense, that what I do in my class is important, but I now see myself as a researcher where what I learn has got to be made public. If I can share what I learn and I can research in ways that give strength to those claims, I must make that available to others, that's part of my academic role and people can decide if they want to pursue things this way, whether it's important, whether it will influence their practice. I can't accept any more that I could do a terrific job in my classes here and never do anything more. As an academic, that's not good enough. It is implicit in our job to go further than that… I don't accept any more that I'm too busy to research or write. If I'm an academic I have to find time to do

> those things because if the things I'm doing are helpful they've got to be helpful beyond
> me and my class, they've got to be helpful out in the world.

While a few of the researchers nominated sole-authored articles to discuss during the interviews, all researchers had collaborated with others on research projects. In fact, research collaboration has increased in recent times (Milem, Sherlin, & Irwin, 2001; Phelan, Anderson, & Bourke, 2000). Given this changing trend in conducting educational research, research collaboration became a focus area for discussion in my interviews with the researchers. Lincoln (2001) borrowed a physics metaphor of free molecules used by her spouse-collaborator to make the point that "collaborations represent self-other relationships that are unique, shape-shifting entities" (p. 53). She recounted:

> Researchers acting and writing alone… are like free molecules. They have enormous
> degrees of freedom but are sometimes characterized as moving in Brownian motion – a
> random pattern of movement determined largely by electrical charges on the molecules.
> Sometimes molecules with attractors manage to attract other molecules and become
> more stable as the attractor links them and they move in tandem. While molecules lose a
> degree of freedom in such attraction, new forms of movement and new linkages are
> created. (Lincoln, 2001, p. 53)

To help me describe the different ways that researchers write together in collaborative teams I call on principally two contrasting musical metaphors, namely: the "duelling banjos" and "piano duet" metaphors. My writing about these metaphors might evoke images of alternative writing (and researching) practices as well as create a climate for the reader to generate other possible images and metaphors. In addition to discussing how co-authors might write as if they were "duelling banjos", in the next section I identify related writing practices individuals adopted within research teams. This is followed by a discussion of interdependent writing practices that were best represented by the "piano duet" metaphor.

4.   WRITING AS "DUELLING BANJOS"

In an effort to give voice to each researcher and make visible the trajectory of interpretive discussions with my collaborators, notably Donna Rigano, I once suggested that we write as if we were playing "duelling banjos" where the text would show a series of interchanges between us. Unlike the musical piece these interchanges would not be combative as the metaphor suggests, but nevertheless they would be constitutive by building on what was previously argued and represent our different positions where they existed. Our early attempts of using this metaphor translated into the inclusion of brief narrative accounts or stories by Donna, where my voice tended to be that of the narrator of the remaining academic text (e.g., Ritchie, Rigano, & Lowry, 2000). More recently, we have succeeded in including brief reflexive accounts written by each of us within sections of the paper yet without ongoing and interactive texts (see Ritchie & Rigano, 2002).

What I had in mind by generating the "duelling banjos" metaphor was later realised – without reference to the metaphor – when I co-authored a book with Michael Roth and Ken Tobin on teaching and learning science in elementary schools

(i.e., Roth, Tobin, & Ritchie, 2001). Michael had been experimenting with what he called metalogue (and other interactive devices – see for example, Roth & McRobbie, 1999) in some of his academic writing and suggested that we generate metalogues throughout the book. To illustrate the interactive nature of such text, I include an abbreviated example of a metalogue from the introductory chapter of our book.

> S[teve]: Before we provide an overview of the book we should tell readers more about metalogues and why we use them in this book.
>
> **What is a Metalogue?**
>
> M[ichael]: As far as I know, it was Gregory Bateson [in 1972] who introduced metalogues. A metalogue is a conversation about some problematic subject. But it is not just a conversation. Rather, in the ideal case, the structure of the conversation in its entirety is also relevant to the subject; that is the metalogue exemplifies its subject matter in its form… Here we use metalogues in the way Mary Catherine Bateson constructed them, not as stand-alone texts but as conversations that occur in a context. Our metalogues are constructed as continuing conversations about elementary science…
>
> K[en]: In a sense, our metalogues also reflect our argument. Throughout the book, we suggest that for learning to occur, elementary children and their teachers need to engage in conversations around artefacts…
>
> S: But it is important to note that in both situations, we hope that the discourse will evolve to embody some of the best of scientific discourses in each domain. (Roth, Tobin, & Ritchie, 2001, pp. 10-11)

In this extract and elsewhere throughout the book we generated a log of interactive text that not only gave voice to each co-author, but also showed how each responded to the views expressed by others. Metalogues appeared at the end of each chapter to highlight the reflexive post-analysis of the main ideas argued, and these were frequently re-visited in later chapters. I enjoyed participating in the creation of these metalogues with Michael and Ken, but their impact on the reader didn't become clear to me until one of my graduate students suggested that I assign to students the task of reading only the metalogues (rather than the major text upon which the metalogues were based). This more personal genre appeared to appeal more to student teachers than more traditional academic text.

Although none of the researchers identified the "duelling banjos" metaphor in our conversations about writing practices, a related common practice for collaborators was turn-writing. Turn-writing was described as a "cooperative (as distinct from collaborative) division of labour" (Mirana) where contributors negotiate different sections or "chunks" (Scott) to write before someone (mostly the professor in research teams involving doctoral students, or the first listed author in other research teams) "glues" (or edits) it together by "gluing [or merging] different voices" (Kristin). Ryan, who predominantly writes in this way with his doctoral students, described this process as follows: "Once we got the structure mapped out, and that was through numerous meetings and sitting down with paper [and pen] just dividing up and saying, 'Okay, you take the lead on this section and I'll take the lead on this section.'" Similarly, Scott recounted a rushed effort to write a paper with his

doctoral students the night before their scheduled conference presentation: "And we sat around a hotel room talking and I think we had several computers and we'd talk for a bit then we'd go off and write and we'd write different chunks and bring them back together and talk some more."

A more common writing practice in research teams was where one person would lead by taking responsibility for writing the first draft of a paper (i.e., lead-writing). The lead would then be rotated for subsequent papers on the project so that each team member would be listed first as an author. This seemed to be a well established "rule of thumb" for collaborators other than those involving doctoral students, where the student mostly was listed first, because "I just think it's their primary work so I've been quite happy to go second author… even if I do a fair bit of work on the writing" (Ryan). While several researchers recounted the same "rule of thumb" (even using this identical nomenclature), it was interesting to hear that one North American university had created a policy that formalised the practice to protect the interests of students: "There's even a document at my university about authorship that whoever writes the first draft should be the first author" (Mirana).

In two cases, the researchers expressed a slightly different perspective. Evan was a very experienced full Professor who no longer wanted or needed professional recognition frequently afforded to a first-listed author. While his contribution may not have been less than his collaborators, he deliberately promoted others ahead of himself in the list of authors, even on those projects for which he had won competitive grants. In the second case, Glen had collaborated mostly with his doctoral students. Initially he did not bid to be listed as a co-author and claims to have missed promotional opportunities as a result. But now he justifies the inclusion of his name as a co-author on publications with his students with reference to his understanding of the post-modern concept of intertextuality. From this perspective:

> There is no single privileged author to writing a paper. Even if it's me only on the keyboard, I'm still drawing from other texts… So we have this notion of intertextuality, that texts don't sit in isolation from other texts. There is a blurring of boundaries. So I've come [to] … a new understanding about what it means to be an author and a co-author… it is not clear, it is not simple, it is not black and white, it is quite complex. To find our way through that we need a strong sense of ethics about participation and about collaboration. (Glen)

In the metaphors described so far a common thread has been that researchers tend to make individual contributions to co-authored publications usually after a general direction has been mapped out within the collaborative team. In contrast, writing side-by-side with one's collaborator involved interdependent work undertaken together. Trina used the metaphor of writing as a "piano duet" to describe this practice. This metaphor and associated practices are now discussed.

5.   WRITING AS A "PIANO DUET"

Trina has never written a sole-authored paper for publication. In almost all of her research collaborations she writes with her collaborator(s) side-by-side as in a piano duet. As she explained:

> Two of us would sit like you play a duet at the piano and one person would talk and the other person would be writing. And the other person would say, "wait, I've got an idea." So I'd move away from the keyboard and they would write. And that's how my collaborative writing has happened in three different instances, in different groups… It's sort of like the ideas that you have when you're thinking to yourself but you don't write them down, and you think "gosh, I should have captured those because they are rich". It was like journaling I guess. So we were taking our live conversation and then capturing it while it was fresh and exciting and then putting it together… I think that my co-writing [sessions] are extremely intense periods where there's no interruption of thought… It's like taking two paintbrushes and having a go at a canvas; it's extremely exciting to see something take shape.

Kristin was one of Trina's collaborators. Typically, the bulk of the writing with Trina would occur in two-week blocks for each paper at Trina's home. According to Kristin, much of the reading and some data analysis would be done before the writing sessions. So Kristin would travel to Trina's town prepared for the task and then they would "spend hours conceptualising and writing and writing and writing… We could sit and talk out loud and write at the computer" (Kristin).

Even though Trina and Kristin forged a very productive collaboration by writing together side-by-side up to five or six papers, they both acknowledged that not all researchers could work this way. When Kristin tried the same practice with another research team (i.e., with Wesley and Zac), they had to revert to turn-writing or lead-writing practices. It was Wesley who could not cope with this dynamic because he needed more time alone to think through the issues. As he explained: "What bothers me the most is there's a sense that you have to make decisions so quickly. [When] you're together there's pressure to perform or to get the job done and I feel that I need more time to work out ideas. Maybe it's just my own inability to think on my feet." This was the same reason offered by Trina for why the "piano duet" style of writing failed for some of her other collaborators. She continued:

> A few of them can't think that fast, [as in the case of Researcher X]. She found it difficult to be generative in terms of thinking on the spot. She needed a bigger chunk of reflective space to do it in. Whereas I think about these things quickly, so people with whom I write like this are also comfortable with spontaneous generation of ideas that emerge through conversation.

As I listened to three researchers talk about their experiences with writing side-by-side, I tried to imagine what I would feel in similar circumstances. Exposing oneself intellectually so intimately to another must involve a high degree of risk-taking and then there would be an interpersonal consciousness – an awareness of one's self and the other's close physical presence for extended periods of time – that might interfere with one's task-related thinking. I could empathise with Wesley's experience. Notwithstanding the logistical barriers to schedule large chunks of time for writing with my collaborators, the challenge of creating a manuscript with another, together is nevertheless tantalising.

After completing the first draft of this chapter I attempted writing side-by-side as a piano duet with Donna Rigano (Ritchie & Rigano, 2003). We found that writing side-by-side was a richly rewarding experience that extended our "interpretive zone" (Wasser & Bresler, 1996) through to the writing of our manuscript. However, the initial image of writing as in playing a piano duet was superseded by our

descriptions of the impromptu jazz ensemble (i.e., an initial theme is developed and extemporized by all performers depending on their musical backgrounds) and think pad (i.e., the keyboard became an interactive thinking/writing device) metaphors. Rather than constraining our contributions by continued use of a single keyboard, our practices evolved to writing together (almost simultaneously) after networking our keyboards to a single hard drive and monitor. Writing in this way we achieved a synergistic connection where "the partners fuel one another, creating an energized dynamic" (Saltiel, 1998, p.8).

6.   WRITING WITH HIGH PROFILE IDENTITIES

All of the researchers I interviewed were successful in that they had presented and published in international forums. However, my preceding discussions have centred on the writing practices of researchers either in equal status teams or from the perspective of the higher status researcher, especially in professor – graduate student relationships. Here, I briefly consider the different writing practices in collaborations involving differential status from the perspective of the lower ranking researcher. Only four of the researchers interviewed (i.e., Prue, Damien, Kate and Jodie) were involved in such collaborations.

Prue had only worked in two research collaborations, both with high profile researchers. Even though Prue has a different relationship with each identity, she respects them both dearly and admires their writing fluency. For example, talking about the writing style of her "sister mentor" Prue revealed:

> Do you know when Researcher Y writes, she'll have a yellow pad and her pen… The way she writes it, that's what is here in the journal. There's very little editing… [U]sually when it comes out of her head onto the piece of paper, that's the final. Me, I have to sit at the computer and I edit and I edit and it takes me half a day to write a paragraph… That's where the intimidation comes from because the only models I've seen are Researcher Z and Researcher Y and they're so prolific – it comes out right the first time… I have to make an outline for myself. I have to stick it on a sticky note, put it on the computer in front of me to remind me of my train of thought – don't diverge, don't write all over the place.

In both relationships, lead-writing was the practice adopted. In her collaboration with Researcher Y, Prue accepted that she brought several novel ideas into their work. This contribution was acknowledged by Researcher Y who readily encouraged Prue with positive comments about the quality of her lead-writing. Researcher Z also made encouraging comments, but these were restricted to one or two sentences that made Prue wonder, "What does that say about the rest of what I just wrote?" Prue generated the "dog and bone" metaphor to contrast writing styles with Researchers Y and Z, as follows:

> Researcher Z sort of tosses me a bone and I go take it and work with it. Researcher Y doesn't do that, she's going to gnaw on the other end of the bone with you. And you're going to be in the middle, teeth glaring all the way, but you'll get there and you'll both wag your tail and be happy in the end. With Researcher Z, I kind of chase this bone, and it was interesting learning for myself, but how much did Researcher Z and I really interact with each other?

The style of writing Prue did with Researcher Y was much more interactive than that with Researcher Z; almost like turn-writing. Perhaps the conscious use of writing metaphors could have altered the way Prue wrote in her collaborations with these researchers. For example, Prue's long-term relationship with Researcher Y might have been conducive to co-writing as per the "piano-duet" metaphor and the application of the "duelling banjos" metaphor in her collaboration with Researcher Z might have provided a more satisfying experience for her.

Like Wesley, Damien needed time "to think through things, and I might not look at stuff for a while then I'll come back to it… So in terms of sitting down and jointly writing the paper side by side [with Ben], this didn't happen". Damien welcomed his independence from his more senior co-researcher and they each appeared to take turns leading with only minimal interaction during and after writing, almost in the same way as Prue and Researcher Z, albeit without the bone to chase.

In contrast to Prue and Damien, Kate and Jodie worked within a large research team where, by necessity, meetings needed to be formally scheduled. Each researcher would bring ideas to the attention of others at these meetings, and while each turn-wrote in terms of contributing a section or two (cf. "chunking") to the group, one researcher usually took control of piecing the components together in a first draft. These formal and less formal meetings were extremely valuable for Kate in learning what others considered important in their study: "through the process of writing we came to question each other's understanding or what it might be important to write about. I think we shared a similar understanding." Through the process of sharing and critiquing together, research became a form of professional development for Kate, and indeed the other collaborators. As she explained:

> That's something interesting about this paper; it's a collaborative effort. I think where possible, … writing parts of the paper, being involved in the process of interviews, looking at the data; all those things really, really matter because research then becomes a form of professional development for those people involved… Ideally we'd see the process of research and professional development as intertwined.

7.   REFLECTIONS

I began writing this chapter with the plan to write about two musical metaphors for writing research, namely, "duelling banjos" and "piano duet" that I had gleaned from my interviews with 24 internationally active researchers. I hadn't selected excerpts from the interviews nor particular supporting quotes from the literature. Through the writing process, however, I read and selected excerpts from both sources at different stages along the way. My reading from one source informed my reading of the other. And as I wrote, I decided that I needed to read more or find additional supporting or disconfirming evidence from the transcripts. For me, the metaphor, *writing as research*, matched what I had been doing.

Even though I cited references to support the practice of generating alternative metaphors to guide my research writing, I was not conscious of referring to any deliberately. My writing practice was historically and culturally embodied through my participation in communities of educational research (cf. Roth & McRobbie,

1999). Accordingly, I used particular conventions and developed a thesis that I perceived to be acceptable to my colleagues; that is, that the generation and application of alternative writing metaphors might guide researchers to take up new challenges in writing.

I do want to push the boundaries of my writing practice so I can learn more about writing and the issues about which I write. This is where the new musical metaphors might make a difference. I can recognise how I might build on my experience with turn-writing (and "duelling banjos") and look forward to further opportunities for writing as a piano duet or impromptu jazz ensemble with my collaborators. These new metaphors have the potential to create new realities for researchers. As Lakoff and Johnson (1980) argued:

> This can begin to happen when we start to comprehend our experience in terms of a metaphor, and it becomes a deeper reality when we begin to act in terms of it. If a new metaphor enters the conceptual system that we base our actions on, it will alter that conceptual system and the perceptions and actions that the system gives rise to. (p. 145)

While these metaphors were liberating for me, they also could be constraining for those researchers who feel the need to adhere to the image of a particular guiding metaphor.

My reflections of this writing experience are personally relevant. I hope that this account will alert researchers to both their preferred operating metaphors and alternative metaphors articulated by research colleagues. A function of research is to understand our worlds. According to Brew (2001), to achieve this we must first understand ourselves. The analysis of our research and writing metaphors can contribute to this understanding.

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