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SURVIVAL OF THE FIT: A BOURDIEUIAN AND GRAPH THEORY NETWORK ANALOGY FOR MATHEMATICS TEACHER EDUCATION

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Supervision of student teachers in their field experience is one of the practices that characterizes the work of many teacher educators. This paper takes up the issue of teacher education field experience and associated faculty supervision, drawing on the conceptual tools of Bourdieu's social field theory and a graph theory network analogy to interpret data from a self-study research project. In this brief paper, one data storyline is presented to convey narratives of a teacher educator's efforts to disrupt and reconceptualize the network of relations in teacher education field experience.

PURPOSE OF RESEARCH STUDY

Field experience supervision constitutes a key aspect of the work of many teacher educators. The specific nature of this work varies significantly across teacher education program contexts, with varying efforts to enact supervision in ways that reflect the complexity of teaching and learning to teach. However constructed and conceptualized, supervision of student teachers in their field experience (also called practicum or internship) is one of the practices that characterizes my work as a teacher educator and faculty advisor. In addition to constituting one of my realities as a teacher educator, I also see it as an opportunity for studying my own learning about what shapes my identity as teacher educator, faculty advisor, and researcher.

This paper takes up the issue of teacher education field experience, with a particular focus on the role of teacher educator as faculty supervisor 'in the field'. Having felt less than satisfied over the years with my role as a faculty advisor, I have been drawn to experiment with various models and visions for enacting my role differently (Nolan, 2011). Without describing these models in detail, this paper focuses on the tensions and disruptions erupting as I endeavored to move my role as a faculty advisor beyond tokenism in the field (Nolan, *under review*).

The paper draws on the theoretical framework of Bourdieu's social field theory—and his 'thinking tools' of habitus, field, capital and doxa—put forth as a way of visualizing the networks of social relations in the field of field experience. Also in this paper, I draw on the ideas and language of mathematics graph (network) theory (Clark & Holton, 1991) as a way to draw analogies between the two theoretical constructs. Both theories, when interlinked in this unique and playful manner, lend themselves to a way of conceptualizing how networks of relations feature prominently in (re)constructing the field of teacher education, and token faculty advisors within.

RELATED LITERATURE

The field of teacher education is being researched extensively from diverse perspectives. The study of theory-practice transitions from university courses to school practicum has been a prominent one, including those interested in making the transition a smoother one ([Jaworski & Gellert, 2003](#)) as well as those resisting the existence (or at least the language) of a theory-practice dichotomy ([Zeichner, 2010](#)). In addition, there are numerous and theoretically diversified studies on becoming a teacher, from those with a poststructural focus on identity constructions ([Brown & McNamara, 2011](#); [Nolan & Walshaw, 2012](#); [Williams, 2011](#)) to those with the more technical concern of understanding the skills and content knowledge required by teachers ([Ball, Thames & Phelps, 2008](#); [Chapman, 2013](#)). More recently, the field of teacher education research has been paying much closer attention to the structures and roles of that specific component of teacher education programs referred to as the school practicum or field experiences ([Cuenca, 2012](#); [Falkenberg & Smits, 2010](#)).

CONTEXT AND METHODOLOGY

In my university's four-year undergraduate teacher education program, the culminating field experience is a four-month internship (practicum, field) experience in schools. Each prospective teacher (intern) is paired with a cooperating (mentor) teacher in the school and assigned a university supervisor (faculty advisor). Each faculty advisor works with approximately four interns over the internship semester, and are expected to visit, observe and conference with each intern 3-5 times during this four-month internship. From my perspective, the model is problematic and 'deficient' in a number of ways, not the least of which is that a mentorship relationship between faculty advisor and intern based on only 3-5 visits over four months is not adequate to disrupt and challenge the view that teacher education programs merely train and prepare prospective teachers for the *real* experience of school classrooms. As a faculty advisor, my role in this internship model has felt superfluous, even token over the years. Thus, I was drawn to design and implement new ways of being a faculty advisor and doing internship supervision.

This paper is based on a self-study of my practice as a faculty advisor, working with interns during their internship conducted each year over a period of approximately six years (2007-2012). As a methodology, self-study can be defined as the intentional and systematic inquiry into one's own practice ([Loughran, 2007](#)). In teacher education, self-study is powerful because of the potential to influence prospective teachers, as well as impact one's own learning and practice as a teacher educator. Drawing on self study approaches in my research highlight my conviction that the boundaries between research, teaching, and learning are blurred ([Nolan, 2014](#)). In fact, self study embeds the learning acts of teacher educator as both researcher and learner. By studying my own professional practice, I am in a better position to reflect on the relationships between research, teaching, and learning and to interrogate the discourses shaping my roles and practices as a teacher educator. I accept that a key "aim of self-study research

is to provoke, challenge, and illustrate rather than confirm and settle” (Bullough & Pinnegar, 2001, p. 20).

THEORETICAL FRAMEWORK

The research study informing this paper challenges and disrupts traditional discourses of teacher education programs and associated field experience, tracing the intersections of identity, agency and reflexivity in mathematics teacher education using Bourdieu’s sociological theory (Bourdieu, 1977, 1990; [Bourdieu & Passeron, 1977](#)). The key concepts of Bourdieu’s social field theory confirm the complexities of becoming a teacher by focusing on the dynamic relationships between structure and agency within a social practice. Such an approach highlights the network of relations and discursive practices that support (and (re)produce) traditional practices in field experience models, acknowledging the normalized practices and dispositions of schooling as strong forces in shaping teacher educator (faculty advisor) identity and agency ([Nolan, 2012](#)). In this research, I draw on Bourdieu’s social field theory (specifically, the concepts of *habitus*, *field*, *capital* and *doxa*) to expose the discursive productions of the network of relations constituting field experience.

Bourdieu (1990) claims that a person’s habitus, or set of dispositions, in a social practice field (that is, a socially instituted and structured domain or space) are tightly bound up in and by the network of practices and discourses (relations) within that field. Field and habitus are central to understanding this social network of relations since the two concepts are produced and reproduced in a dialectical relation to each other through social practice. Grenfell (1996) clarifies these relations by offering the following:

Individuals are embedded, located in time and space, which sets up relations. These relations are not simply self-motivated and arising from individual choices but immanent in the site locations in which they find themselves. Such relations are differential and objectively identifiable. They are structured structures, but, equally, structuring structures in a generative sense. (p. 290)

In this brief paper, it is not possible to provide a comprehensive overview of Bourdieu’s key concepts or thinking tools. The larger research study draws more extensively on these conceptual tools of Bourdieu’s sociological theory to understand social relations in networks of practices, specifically those relations produced through teacher education field experience and supervision models.

METHODS AND DATA SOURCES

The study has taken on various characteristics as it has evolved over the years, and as I have adapted my internship ‘supervision’ approaches in response to research data. During each year of this self-study, a Professional Learning Community (PLC) was sustained ‘virtually’ through the use of desktop video conferencing and through ‘real’ face-to-face professional development sessions with interns and their cooperating teachers. The professional development aspect of the project focused on lesson study

approaches that incorporated the recording and analysis of classroom teaching videos. By creating a multi-dimensional model for internship, my aim was to construct an expanded faculty advisor role that would enhance opportunities for sustaining a mentorship relationship between myself and my interns. Data collection for this self-study included interviews and focus groups with interns during six internship semesters (2007-2012). The interviews and focus groups were conducted in person and through video conferences. Also, as researcher, I kept a self-study journal to better understand and reflect on my role as a faculty advisor.

While the key aim of my evolving model for internship supervision focused on strategies for expanding my role as faculty advisor, that aim merely serves as the subtext for what I attend to in this paper. As alluded to earlier, the intent of this paper is not to present, analyze, and discuss large amounts of the research data per se, but more to reflect on the self-study data in the context of illuminating (and interrogating) the network of field experience relations within which my own identity and learning as a teacher educator and faculty advisor is being (re)produced. This paper draws on data from that larger research study, along with Bourdieu's social field theory, to conceptualize the network of relations that are shaping me as a faculty advisor in reconceptualizing secondary mathematics teacher education field experiences.

PRESENTATION AND DISCUSSION OF DATA

Elsewhere (Nolan, *under review*), I present and analyze five (5) data storylines that convey narratives of my efforts to disrupt and reconceptualize the network of relations in teacher education field experience, with the ultimate goal of understanding how (or, if) my professional practice might shape and influence a more dynamic view of these networks. I use the language of nodes and links to playfully highlight the metaphorical connections between Bourdieu's concept of social networks in a field and the mathematics field of these storylines in detail. Then, I briefly refer to the other storylines and present a network diagram to visualize the relations through one possible configuration of a directed graph, or “digraph” (Clark & Holton, 1991, p. 230).

For the purposes of this paper, I refer to the term *nodes* to stand for the sources, actors or agents in the network (of which there are 5, plus myself as faculty advisor (FA)) and *links* to reflect the pathways or relations connecting the various network nodes (represented by a directed graph with single or double arrowheads). The data storyline is presented as constituting a node and connecting pathway of the network. Playfully linking this research analysis to graph theory draws attention to how a mathematical structure such as a graph can be used to model key coupling relations between objects/agents, providing a way to imagine the interactions and links between the structuring structures in Bourdieu's social networks.

Data Storyline: Metaphorically Speaking

This storyline conveys my efforts to understand my interns' perceptions of my role as a faculty advisor in their professional development as interns and becoming teachers. My self-study initiative set out to expand my role as a faculty advisor—that is to move beyond tokenism (Nolan, *under review*). My model for enacting my role as a supervisor included many more contact hours than what is typical. During a focus group session with a group of three interns one semester (2010), I questioned them on my role as faculty advisor and its overall value to them in terms of their professional development during the internship semester. The following quote from one intern speaks to an illustrative response to this question:

If our coop is doing their job right they really *should* be doing that professional development process with us, so having you there is just kind of extra, I guess. I don't know if it's completely necessary. But if you *were* to do it, I would probably still prefer that you come out and see me... like, if I had had problems with [the coop] then I would want you there, I would *need* someone else, but since we got along then the roles kind of seem the same to me. (Intern, Dec 2010)

I pursued this line of questioning a bit deeper in the focus group, but the underlying message of their responses remained: I was “just kind of extra.” Later, I reflected in my self-study journal how I was taken aback by their comments:

Wow. That's harsh. My efforts to disrupt the token and remote role of the faculty advisor have been constituted by the interns as 'extra' and much the same as the cooperating teacher has to offer. In their eyes, I've not expanded and redefined my role in the manner I set out to. Instead, the interns have constructed an identity for me as liaison, mediator, umpire, even peacemaker. So, as long as there are no “problems” with the cooperating teacher, I am not needed. Hmmm. [Researcher journal entry]

In another year of the study (2011), an intern suggested that my role was like that of “a fine tooth comb”:

I think it's good that you're distinct from the cooperating teacher. I feel like with my cooperating teacher, I come to class the morning of, we do a quick little preconference, I teach, and then we post conference. Whereas with you, I feel like it's very specific, focused on one specific lesson and looking for perfection almost. So I think you're more the fine tooth comb of the operation, and [my coop] is more of the overseeing almighty part of the operation, if you know what I mean? [Intern, Dec 2011]

This storyline of 'metaphorically speaking' confirms that interns value their cooperating teacher's experience and perspective first and foremost, and that the role of the university supervisor takes on a distant second, or even unnecessary 'extra'. In a review of research on the ways in which cooperating teachers participate in teacher education, Clarke, Triggs, and Nielsen (2013) also found that the roles of cooperating teachers and university supervisors are valued quite differently. They echo other research in confirming how “the role of the cooperating teacher has always been regarded as important within teacher education” (p. 4), whereas perceptions on the role of the university supervisor is less uniform and agreed upon in the literature. It is

interesting to note that Clarke, et al. (2013) also report that "cooperating teacher feedback remains largely fixed on the technical aspects of teaching" and tends to be "more confirmatory (positive) than investigative (reflective) in nature" (p. 13), which leads me to propose a 'survival of the fit' mindset. That is, I propose that a positive, confirmatory approach to interacting with the interns in their process of becoming (a teacher) is a much better fit with their own habitus (set of dispositions) than one which challenges them to engage in deep and substantive reflections which may actually challenge their habitus-field fit. In other words, cooperating teachers provide interns with feedback in the form of practical tips and techniques, whereas I am asking interns to spend time in what Grenfell (2006) refers to as a *nowhere* space, that is, "areas in which they could engage with the contradictory elements of teaching and respond in line with their own developing pedagogic habitus" (p. 301).

Once in the schools for their field experience, prospective teachers are “confronted with the task of learning the discursive codes of practice” (Walshaw, 2007, p. 124) in the secondary mathematics classroom, and no longer in my own university classroom. Interns identify their cooperating teachers as being much better positioned to initiate them into these practices, and hence the practices themselves often remain unquestioned and misrecognized. These discursive codes of classroom practices, in part, constitute the network of relations that Bourdieu puts forward. The pathways of already well-established classroom practices represent cultural capital that holds considerable value in the field, and thus preservation and normalization of these well-established practices are important in becoming a teacher. In the language of network theory, it is easy and convenient to follow the shortest path or the path of least resistance when it comes to participating in one's field experience.

Bourdieu and Networks: The Work of Interpretation

Since it is only possible to present and discuss one storyline, it is worth at least naming each of the other storylines and constructing a visual network to convey one possible configuration of pathways and nodes (Figure 1). The five storylines (nodes) are: (1) not sitting in the back of the classroom (interns), (2) metaphorically speaking (interns), (3) "I appreciate the opportunity but..." (interns), (4) intern placement protocols (program structure), and (5) "If the process becomes disruptive to students or the intern's growth..." (cooperating teacher). Each of these storylines and the directed links (edges) are further elaborated on in the full paper and presentation.

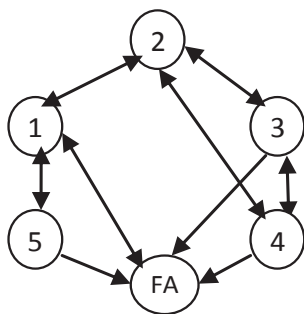


Figure 1

The five storylines constituting a network of relations (consisting of nodes and pathways) all relate to the social practice of teacher education field experience and supervision—drawing attention to how tightly woven together the network of relations within a field are. They reaffirm the sources/nodes and links/pathways that form the core of established and taken-for-granted social practices of teacher education and field supervision—what could be referred to as teacher education and supervision doxa. In many ways, the

storylines also highlight my failed attempts to bring about significant disruptions to the traditional model of supervision, including (as conveyed in storyline #2) cooperating teachers' and interns' constructions of the university supervisor as 'other' or 'extra'.

CONCLUDING THOUGHTS

Reflections on the research presented in this chapter means disrupting the storylines and pathways sustaining the current networks of relations, working to reveal their arbitrary and contingent nature. In connection to my own professional learning, I am coming to terms with the challenges facing me as I attempt to trouble the discursive network of relations in field experience. At times I am drawn toward abandoning my research efforts aimed at reconceptualizing secondary teacher education through an alternative field experience (internship) model. It is hard for me to believe that different and multi-directional pathways can be successfully introduced to trouble the current network.

Adopting a reflexive stance in teacher education would aim to expose the socially conditioned and subconscious structures that underlay the reproductive nature of the network of relations (examining the interactions between and among nodes). What is unique about the approach I take up in this research study is how I acknowledge my own complicity in (re)producing the network of relations in the field experience and for supervision. While I seek to disrupt and reconstruct the network, it is evident that I also comply with its structures and relations. It could be said that I have learned how to be strategic—I am deliberate in striving not to disrupt the game of supervision so much so that no one will want to play with me anymore. In other words, my own 'survival of the fit' as a faculty advisor comes into play in this network analysis.

References

- Ball, D., Thames, M., & Phelps, G. (2008). Content knowledge for teaching: What makes it special? *Journal of Teacher Education*, 59(5), 389-407.
- Bourdieu, P. (1977). *Outline of a theory of practice*. (R. Nice, Trans.). Cambridge: Cambridge University Press. (Original work published 1972)
- Bourdieu, P. (1990). *The logic of practice*. (R. Nice, Trans.). Cambridge: Polity Press. (Original work published 1980)
- Bourdieu, P., & Passeron, J. (1977). *Reproduction in education, society and culture*. London: Sage.
- Brown, T., & McNamara, O. (2011). *Becoming a mathematics teacher: Identity and identifications*. Dordrecht: Springer.
- Bullough, R., & Pinnegar, S. (2001). Guidelines for quality in autobiographical forms of self study research. *Educational Researcher*, 30(3), 13-21.
- Chapman, O. (2013). Investigating teachers' knowledge for teaching mathematics. *Journal of Mathematics Teacher Education*, 16(4), 237-243. doi: 10.1007/s10857-013-9247-2
- Clark, J., & Holton, D. (1991). *A first look at graph theory*. Singapore: World Scientific.

- Clarke, A., Triggs, V., & Nielsen, W. (2013). Cooperating teacher participation in teacher education: A review of the literature. *Review of Educational Research*, 20(10), 1-40.
- Cuenca, A. (Ed.). (2012). *Supervising student teachers: Issues, perspectives and future directions*. Rotterdam: Sense Publishers.
- Falkenberg, T., & Smits, H. (Eds.). (2010). *Field experiences in the context of reform of Canadian teacher education programs*. Winnipeg, MB: Faculty of Education of the University of Manitoba.
- Grenfell, M. (1996). Bourdieu and initial teacher education: A post-structuralist approach. *British Educational Research Journal*, 22(3), 287-303.
- Jaworski, B., & Gellert, U. (2003). Educating new mathematics teachers: Integrating theory and practice, and the roles of practising teachers. In A. Bishop, M. A. Clements, C. Keitel, J. Kilpatrick, & F. K. S. Leung (Eds.), *Second international handbook of mathematics education, Part two* (pp. 829-875). Dordrecht, The Netherlands: Kluwer Academic Publishers.
- Loughran, J. (2007). Researching teacher education practices: Responding to the challenges, demands and expectations of self-study. *Journal of Teacher Education*, 58(1), 12-20.
- Nolan, K. (2011). A self-study exploring the practices and technologies of a faculty advisor in secondary mathematics teacher education. In L. Weist & T. Lamberg (Eds.), *Proc. 33rd Annual Meeting of the North American chapter of the International Group for the Psychology of Mathematics Education* (pp. 1468-1475). Reno, NV: PMENA.
- Nolan, K. (2012). Dispositions in the field: Viewing mathematics teacher education field experiences through the lens of Bourdieu's social field theory. *Educational Studies in Mathematics*, 80(1-2), 201-215.
- Nolan, K. (2013). *Beyond tokenism in the field: On the learning of a mathematics teacher educator and faculty supervisor*. Manuscript submitted for publication.
- Nolan, K. (2014). The heART of educational inquiry: Deconstructing the boundaries between research, knowing and representation. In A. Reid, P. Hart, & M. Peters (Eds.), *Companion to research in education* (pp. 517-531). Dordrecht: Springer.
- Nolan, K., & Walshaw, M. (2012). Playing the game: A Bourdieuan perspective of pre-service teaching. *Teaching Education*, 23(4), 345-363.
- Walshaw, M. (2007). *Working with Foucault in education*. The Netherlands: Sense Publishers.
- Williams, J. (2011). Teachers telling tales: The narrative mediation of professional identity. *Research in Mathematics Education*, 13(2), 131-142.
- Zeichner, K. (2010). Rethinking the connections between campus courses and field experiences in college- and university-based teacher education. *Journal of Teacher Education*, 61(1-2), 89-99.