Mapping Superpositionality in Global Ethnography

[M]ost people will be in both oppressed and dominant positions in relation to
some other groups at the same time (Ferguson 1998, 105).

... pursuing multi-sited approaches ... makes particularly problematic the
characterization of research as "studying up" or "studying down" …. The
immersion of the ethnographer in a complex and multidimensional field means
that the ethnographer ... shift[s] in role and relationship to subjects in different
sites (Hine 2007, 656-657).

QUANTUM MECHANICAL SUPERPOSITION PRINCIPLE…When a
situation is a composition of a number of elementary situations, its amplitude is
the linear superposition of the amplitudes of the components (Marvin 2010, 388).

This essay offers a tool to reflect upon how global political economy and local research sites shape power dynamics between an ethnographer from the global north and his or her "high tech elite" research interlocutors in the global south. In retrospect, I would have preferred to utilize such a tool to map my positionality before conducting my first multi-sited qualitative field research. I define positionality as the difference in status between the ethnographer and his or her interlocutors that is specific to the site and the situation.

During my first field research trip to Nepal in 2009, I experienced a status inconsistency: I had high standing in one status position and low standing in another status position (Lenski 1954, 405). This "status inconsistency" manifested in the dissonance I experienced from my simultaneous high geo-political status on the streets of Kathmandu as a U.S. citizen, and low social status as a black woman student studying Nepalese experts (ophthalmologists, managers and engineers) in Tilganga Institute of Ophthalmology.

On the streets of Kathmandu – especially in the tourist destinations – my high status position as a traveler from the U.S. with geo-political privilege in the world-system meant that many local Nepalese people had certain monetary expectations of me. For example, a taxi-driver once speculated out loud (in English!) that he needed a rich girlfriend and he would just take me to his home instead of to my next destination. To all these Nepalese people – I had the money to travel as a tourist and therefore in comparison to them I was wealthy (Henry, Higate, and Sanghera 2009). While my relative wealth was a factual accuracy by dint of the US dollars at my disposal in comparison to the average Nepalese citizen, it did not precisely describe my own ascribed status in Nepal, my aim for travelling, or my economic status in the U.S.

Unexpectedly, I found my implicit expectation of easily conducting my research by leveraging my high status was only partially fulfilled. My high geo-political status and relative economic wealth were enough to transport me to my field site, but afterwards was not useful. Although I was initially welcomed to perform the pilot study at Tilganga Institute of Ophthalmology, I quickly encountered the day to day realities of conducting fieldwork: my occupational status as a student ethnographer from a wealthy industrialized nation was relatively unimportant in comparison to community ophthalmology professionals' high status as local "high tech elites" (where community ophthalmology is eye health care focused predominately on

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the rural poor, see Williams 2013, 2017). Also, my black skin caused me to have low status in a city where billboards frequently advertised skin bleaching cream for whitening the range of already light beige, tan and brown skin tones represented among Kathmandu's residents. Thus, that summer I read many Nepalese newspaper articles written in English about the founder, ophthalmologist Dr. Sanduk Ruit, but I did not interview him: my emails to him received no reply and he was frequently away on business for the eye center. At Tilganga, they had not yet created an organizational chart or directory; in fact there was no document available for me to look up Dr. Ruit's phone number or the contact information for his assistant. There are a variety of potential reasons why: they had very recently opened the new building for which they were still determining staff and organization, alternatively, it was because their tremendous organizational energy was focused on patients and not administrators, or most likely it was because they did not want to provide such easy access to the founder of their organization.

My inability to interview Dr. Ruit meant I was dissatisfied upon completing my first 1.5 months as a participant observer (pilot fieldwork for a longer multi-sited dissertation). The time I had spent at the Tilganga Institute of Ophthalmology was not as productive as I had imagined it would be. This dissonant experience developed into a "crisis point" (McCorkel and Myers 2003) that prompted me to examine my own positionality as a feminist ethnographer: what are the ethics of empowerment, complicity, and access when I am in the field?

This article will discuss positionality in the world-system. Unlike Hwang (2008) I will not discuss the position of natural scientists originating in less economically developed countries of the global south. Instead, I will generate insights for ethnographers from the "global north" who study such "high tech elite" in the "global south". I propose the "complicity and empowerment positionality circle" as a procedure to visualize power relationships embedded in the ethnographer's superpositionality, that is, the researcher's varied, and simultaneous, hierarchical, situation-dependent status positions in relation to her or his interlocutors. Although I created this mapping procedure after reflecting upon my field experiences, I propose that this mapping procedure might be used BEFORE or DURING fieldwork to visualize how the researcher is simultaneously "studying down, up, sideways, and through" that is, I am "studying power" (Becker & Aiello 2013; Nader 1972). In addition to the variety of status positions I inhabit by studying down, up and through, I am also studying sideways and "standing with" my interlocutors, meaning that despite the similarities and differences between our occupations and interests, we move in some of the same arenas, and some share social justice commitments (TallBear 2014). Considering all these relations between an ethnographer and her or his interlocutors is important to better elucidate the tensions between avoiding complicity and empowering her or his interlocutors.

In the next sections, I will briefly survey literature on status positions in qualitative field research and mapping tools in feminist science studies. Then, I will introduce the complicity and empowerment positionality circle and argue that using it to study down, up, sideways, with, and through enhances the ethnographers' understanding of how to avoid complicity and empower her or his interlocutors. I will briefly discuss my methodology for this paper and for the global ethnography before describing four situations that help to illuminate the northern ethnographer's positionality. By analyzing my own experiences, I determine that an ethnographer from the global north, conducting fieldwork in the global south, must understand her or his positionality as multidimensional, situation-dependent, and hierarchical in comparison to her or his interlocutors.

COMPLICITY AND EMPOWERMENT POSITIONALITY CIRCLE

For many years ethnographers have been interested in considering positionality because, importantly, it helps the ethnographer conduct reflective, ethical research. Several qualitative researchers have demonstrated interest in studying up to the elite, and how this impacts access (Becker and Aiello 2013; Conti and O'Neil 2007; Forsythe 1999; Ho 2012; Nader 1972; Shore 2002). Among scholars using qualitative field methods, attending to the researcher's position illuminates her simultaneous positions as both an insider and outsider within the field site (Casper 1997; Merton 1972; Soni-Sinha 2008; Traweek 1992; Turgo 2012a; Turgo 2012b) and how accessing the field site impacts the research results (Casper 1997; Turgo 2012a). Only a few scholars have considered the ethnographers' multiple hierarchical status positions in comparison to their interlocutors (Bowman 2009; Hannerz 2006; Nader 1972; Reinhold 1994).

Some may argue that ethnographers performing science and technology studies, whether conducting field research in the global north or global south, are more likely to study up. This is because of the elite status that science and technology fields and professionals frequently have in many societies. Therefore, studying up is the power relationship that should most frequently concern STS scholars and that we should focus on speaking truth to power. While the importance of such critical scholarship cannot be denied, such a narrow focus on studying up narrowly conceptualizes high status and power and thus avoids the status inconsistencies that many ethnographers experience in multiple situations and field sites. For example, northern ethnographers in STS may believe that studying traditional indigenous medical healers in the global south is studying down; as such healers are not part of the high tech elite. However, in order to negotiate access, ethnographers studying traditional medical healers may also have to go through gatekeepers, wait patiently, and demonstrate knowledge of "the lingo" (in this case lay expertise instead of certified knowledge; Forsythe 1999; Undheim 2003). These access strategies suggest that the northern qualitative field researcher is instead studying up in the local field site to traditional medical healers who are the local power elite. This northern researcher is simultaneously studying down to these traditional medical healers whose knowledge is not considered legitimate in universal Western science and technology. Therefore, the superpositionality mapping exercise that I will propose might be useful to scholars who are not working within the field of STS, but are still interested in considering the ethics of access from engaged or feminist perspectives.

By directing greater scholarly attention to superpositionality, further insights might be gained into the nature and degree of complicity with the elite that is avoided, and empowerment of the marginalized that is attained. Two gender and criminology scholars, in their efforts to study power, offer a unique reflection on the positionality of ethnographers in relation to multiple subjects in their field site called the continuum of complicity (Becker and Aiello 2013). For example, Aiello found that in one field site, the Northeast Jail, she was both studying up to and complicit with the security guards and administrators who frequently disparaged the incarcerated mothers that she was studying down to (Becker and Aiello 2013). However, by focusing solely on studying up (Becker and Aiello 2013), their tool does not consider the ethnographer's superpositionality across asymmetric divides of power that are global in addition to local, and that diverge and converge across multiple field sites. Becker and Aiello (2013) argue that it is inappropriate to attempt to level power relations during fieldwork when studying the power elite; they qualify this statement with an acknowledgement that they have not attended to all status positions of the qualitative researcher. This suggests a need for a visualization tool the ethnographer's multiple status positions.

Feminist science studies scholar Adele Clarke developed situational analysis (2005) to offer scholars a set of reflexive visual exercises for mapping arenas and social worlds that help ethnographers consider relationships between multiple field sites. Yet situational analysis does not consider the simultaneous, multiple and hierarchical positions of northern ethnographers conducting research on the southern high-tech elite and the ethical issues of accessing field sites, etc. My goal in creating the complicity and empowerment positionality circle is to help ethnographers consider their own superpositionality and the necessity to concurrently study down, up, sideways and through.

To create the complicity and empowerment positionality circle, after exiting the field, I read more literature on feminist (or engaged) methods of leveling power relations during fieldwork for more ethical field research. I also reflected upon the power dynamics that occurred during my field work. If feminist (or engaged) ethnographers are more intentional about reflecting upon these power dynamics before entering the field, then we will be better able to select accessible field sites and also illuminate the ethical tensions and contradictions that arise during our fieldwork.

One such tension is, surprisingly, between empowering our interlocutors and avoiding complicity with the power elite. This tension occurs because of each northern ethnographer is superpositioned: our globally marginalized interlocutors can also be the local power elite. This has new implications for leveling power relations during our field research; it suggests that northern ethnographers are very likely to experience dissonance through status inconsistency when compared to their southern interlocutors. Therefore ethnographers must navigate the tension between giving voice and empowering the marginalized and avoiding complicity with the power elite when they are one and the same. To do so, I propose a visual mapping procedure for studying down, up, sideways and through in order to guide feminist ethnographers as they design and implement multi-sited ethnographies using grounded theory (Marcus 1995) or global ethnographies using the extended case method (Burawoy 1998, 2000, 2009; Glaeser 2005). I call this procedure the complicity and empowerment positionality circle, or CEPC (please see Figure 1 below). The complicity and empowerment positionality circle might be completed to interrogate the multiple identities and hierarchical status positions of the ethnographer that are situation-dependent.
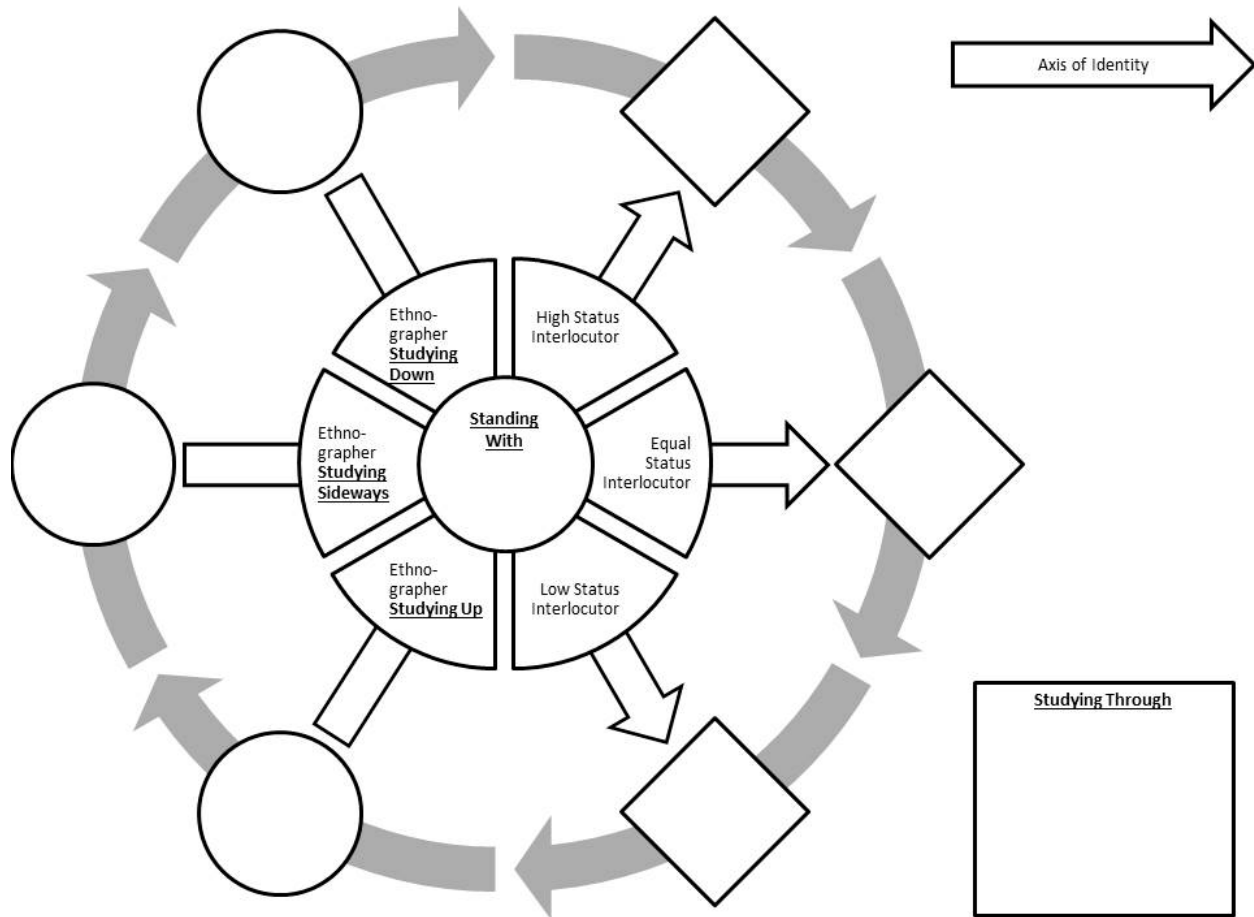
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Figure 1 Feminist (or Engaged) Ethnographer's Visual Mapping Procedure for Superpositionality

Utilizing the complicity and empowerment positionality circle to reflect upon the dynamics of superpositionality not only highlights invisible practices of power, but does so through multi-sited research with persons who, when compared to the ethnographer, have: higher status; equal status (sharing the same skills and sensibilities), or lower status. It builds upon Becker and Aiello's (2013) continuum of complicity, which considered the impact of identity, specific situations, and status positions on an ethnographers' access to a field site. The complicity and empowerment positionality circle robustly interrogates the power dynamics of the field site before entering the field. It offers a procedure by which ethnographers can identify potential ethical tensions and contradictions that are configured by the multiple field sites and one's superpositionality within these sites. Additionally, once in the field site, the complicity and empowerment positionality circle offers ethnographers an opportunity to reflexively recalibrate when encountering an ethnical conundrum. The complexity and empowerment positionality circle can help sensitize the ethnographer to how the multiple status positions he embodies within the field impacts his ability to avoid complicity and empower his interlocutors in different situations.

The complicity and empowerment positionality circle is built upon the following: Firstly, by selecting multiple field sites and making connections and comparisons across them, the

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ethnographer has made a choice to study an emergent network or field, which is a choice to study through; Secondly, as alluded to in the epigraph by philosopher Ann Ferguson (1998; see above), ethnographers occupy positions of high status, equivalent status, and low status as compared to their interlocutors in the field site. Therefore, within any field site, an ethnographer is simultaneously studying down, up and sideways; Thirdly, the ethnographer is committed to leveling power relations during fieldwork through simultaneously avoiding complicity with invisible power structures and empowering her interlocutors. When paired with the typical reflexive data collection practices of ethnographers, including note-taking and unstructured memo writing, the complicity and empowerment positionality circle might be utilized for interrogating the ethnographer's superpositionality before and during multi-sited research.

METHOD

My retrospective analysis of my fieldwork produced the understanding that I had experienced multiple status inconsistencies in the field. I examined my own positionality and found: my positionality is multidimensional with elements of elite status due to my geo-political location of origin, my citizenship, post-graduate degree, and being middle class and also elements of marginalized status due to my race, gender, and occupation. As a Black woman in the U.S., I am positioned through my race and gender identity at two intersecting axes of oppression, where my race is frequently the "master status-determining trait" (Crenshaw 1989; Hughes 1971, 147). However, outside the US, my nationality and training/education also shaped my positionality as it corresponds to that of my research interlocutors. There is asymmetry within the world-system between the northern ethnographer and her southern "high tech elite" research interlocutors; their varying citizenships and technical training determine their differences in status. Hwang (2008) has identified the contrast in status in the world-system between "socio-cultural identities" and "scientific identities", and how natural scientists and engineers from less economically developed countries articulate both concurrently. In our world-system there exists "sociocultural elements [such] as nationality, scientific heritage, and infrastructures which predetermine the status of an individual scientist and engineer or an individual institution that stands in the core or periphery in the hierarchical structure of international relations" (Hwang 2008, 104). While these elements may have developed from contingent social processes, over time they have become durable and shaped uneven development and structural inequality in particular ways (Hess et al. 2016). Certain global, asymmetrical power dynamics privilege scientists who are citizens of, or have been trained in, the world-system's core countries, e.g., the U.S., UK, other European countries, etc. (Hwang 2008; Schøtt 1998). There is asymmetry within the world-system between the northern ethnographer and her southern "high tech elite" research interlocutors; their varying citizenships and technical training determine their differences in status.

My high status position as an ethnographer from the global north meant I was "studying down": I was studying those with less privilege and power than myself because of differences in our geo-political and economic statuses (Nader 1972). While I was studying down, I was also "studying through" (Reinhold 1994, 29). I was using multi-sited research to trace out networks through which flow ideologies and discourses that shape policies and practice (Bowman 2009; Hannerz 2006; Shore and Wright 1997, 14 citing Reinhold 1994). As I interviewed the top echelons of the global community ophthalmology network, I realized I was also "studying sideways": to people engaged in a "similarity of task" (Hannerz 1998; Nader 1972), "with practices not so unlike [my] own" (Hannerz 2006, 24; Nader 1972). Finally, I recognized I was simultaneously "studying up" to learn about "the people at the top" (Hannerz 2006, 26; Nader

1972). Anthropologist Laura Nader (1972, 288) suggested such "studies raise important questions as to responsibility, accountability, self-regulation, … social structure" and also research methodology. She encouraged anthropologists to go beyond producing and reproducing micro analyses of small, typically economically and socially marginalized communities.

Philosopher Ann Ferguson reasoned "most researchers …from the North, even when they are anti-imperialists and advocates of social justice, have a horizon of ignorance around their own 'othering' practices and privileges that distorts their investigative …practices"(1998, 96). I am a Black woman/ U.S. citizen/ feminist/ middle class/ engineer turned sociologist of technology. It was a challenge for me to divest my epistemic privilege; especially when I experienced status inconsistency when interacting with my interlocutors in Nepal. As a feminist ethnographer from the global north I am attempting to ethically study high tech elites from the global south. However, my attempt to do this presented certain challenges. In different situations, I found myself wondering how best to both "cede [my research interlocutors] epistemic privilege to challenge [my] unacknowledged racism, sexism, and other traits" (Ferguson 1998, 107), as well as accomplish my data collection goals.

I developed this paper using an iterative and reflexive analysis where I thought through both a series of email exchanges I had with my interlocutors as I negotiated access to my multiple field sites, and, stand-out incidents fraught with ethical tension during months of ethnographic fieldwork. I will show in this paper how my positionality as an ethnographer shifted with different situations. My simultaneous multiple identities as a northern ethnographer impacted my access to field sites in the global south. During my longer months of fieldwork 2011-2013, I reflected upon how I, the ethnographer, shifted position as I moved between subjects, sites, and situations in my attempts to gain access to various interview subjects (Hine 2007). STS scholar Christine Hine describes the ethnographer's shifting positionality when conducting science studies research using Marcus' (1995) multi-sited ethnography/grounded theory. My retrospective reflexive analysis started after I first returned from my pilot fieldwork in Nepal.

GLOBAL ETHNOGRAPHY: STUDYING THROUGH

I learned about Aravind Eye Care System through a public broadcasting service program on social entrepreneurs after I returned from the crisis point of my 2009 fieldwork in Kathmandu. I spent August through December 2009 pondering my field notes and speculating how I might access Aravind Eye Care System in southern India. At the time, I was trying to design my multi-sited dissertation research project. What would be my rationale for including both a second visit to Tilganga, and this new field site Aravind which was similar in organization and activities? Two methodologies ethnographers from the global north can use to conduct ethnography in multiple field sites in the global south include: Marcus' (1995) multi-sited ethnography using grounded theory and Burawoy's global ethnography using the extended case method (Burawoy 1998, 2000, 2009). Lapegna (2009) proposes that, between the two, Burawoy's global ethnography offers more direction for choosing field sites. In fact, by using the extended case method (Burawoy 1998, 2000, 2009; Glaeser 2005), I was able to design my multi-sited global ethnography to focus on similar institutions within the global network of community ophthalmology.

I studied through (Bowman 2009; Hannerz 2006; Shore and Wright 1997, 14) to see how a network of community ophthalmologists was challenging developmentalism. "Studying through offers insight as to what happens both within and outside a single locale. It allows space

for the actual complex interdependence of multiple sites, actors, institutions and struggles that have heretofore been a mostly uncharted area" (Reinhold 1994, 478). Studying through afforded me the opportunity to concentrate on elucidating the discourses and ideologies produced by the network. I found community ophthalmologists were challenging the prominence of developmentalist discourse in the global scientific field of ophthalmology (Pieterse 1991; Williams 2013, 2017). Challenging developmentalism is something I too am interested in doing within broader science, technology and development networks. This finding emerged over 10.25 months of participant observation conducted in primarily South Asian field sites from 2009-2013. I completed a global ethnography of science and technology circulation among a network of community ophthalmologists at one ophthalmology conference in the U.S., and four ophthalmology organizations in: Nepal, Kenya, India and Mexico. While in the field I interviewed 83 people (53% South Asians, 24% women; primarily ophthalmologists) and spent 20 hours conducting direct observation (of surgeries, eye camps, conferences, trainings, etc.). Additionally, I spent a total of five days completing archival work at the Govindappa Venkataswamy Eye Research Institute in India, the Lemelson Center for the Study of Invention and Innovation at the National Museum of American History in Washington, D.C., and the American Academy of Ophthalmology Museum of Vision in San Francisco, CA.

Studying through involves researching several interconnected field sites predominantly in the "global south" within a global community ophthalmology network. I studied through by working with these research interlocutors whose organizations shape national and transnational policy discourses for community ophthalmology. My access to this network was not serendipitous, but can instead be traced back to global asymmetries of knowledge production resulting from previous colonial power to impose languages by controlling access to education. Within each field site, I encountered situations where I was studying down (with all the privilege of an ethnographer to give voice, give back) and studying sideways and up (with the challenge of questioning my own world view in as much as it overlapped with that of my high tech elite interlocutors). I also had the opportunity to stand with (TallBear 2014): to articulate shared concerns about social justice with my interlocutors (although, perhaps, to slightly different audiences).

The next section will focus on my interactions at two locations within my multi-sited global ethnography, the non-profit organizations: Tilganga Institute of Ophthalmology in Kathmandu Nepal and Aravind Eye Care System in southern India. They make useful cases for understanding the relationship between an ethnographer's positionality and ability to access her field sites. I build on previous scholarship in sociology where, in addition to the expected shifts in position that occur between multiple sites, there are other unexpected and equally important position shifts that occur while accessing and conducting research at a single site (Soni-Sinha 2008; Turgo 2012a, 2012b). To more fully understand the relationship dynamics between an ethnographer and her research subject in a global ethnography, we must also attend to positionality that shifts based upon situation and field site (Hine 2007).

FOUR SITUATIONS DURING FIELDWORK

In this section, I will discuss the four situations that serve as significant points of reflection and intervention during any ethnography: entry to the field site, daily work in the field site, exit from the field site, and writing up fieldwork. For my pilot fieldwork, I entered and exited Nepal in Summer 2009, and performed my write up in 2009-2010. Additionally, for my dissertation research, I entered and exited Kenya in Summer 2011, entered Nepal in Fall 2011 and exited in

Spring 2012, and entered India in Spring 2012 and exited in Summer 2012. I worked on my write-up continuously while I was in the field, but my main research products started appearing after I graduated with my PhD and started my position in 2013.

Exiting Tilganga: Studying Up & Down

During my exit from Tilganga Institute of Ophthalmology, I had to challenge paternalism while studying up as a woman of color; however, I also perpetuated Western paternalism by studying down as a US ethnographer. On my revisit to Tilganga starting in 2011, I spent three and a half months as a volunteer intern again. This time, my internship included editing a variety of documents for their English, and revising a paper I had written in 2009 based on the survey we had designed, collected data for, and analyzed together during that pilot visit based upon an idea my volunteer internship supervisor and I had together. The problem came when the paper was ready for submission about one week before I was due to leave. This was the first time I was informed by my volunteer internship supervisor of Tilganga's authorship policy. Why was he telling me now after all the work was done? Later, the research department chair told me the policy had been in place since 2008 and it stated that a Tilganga staff-person would always be first author on any jointly authored articles. This policy was never mentioned to me in 2009 when I first visited and finished the paper draft alone without the initial team that had brainstormed survey questions together. Nor was it mentioned at any time during my multiple revisions of the paper which I also worked on alone without any response to my requests for feedback. However, now my supervisor wanted to be the first author and when I questioned him about it, he then asked the research department chair to apply more peer pressure.

At first I went along with this last minute change in authorship order. However, the Committee on Publication Ethics (COPE) authorship guidelines allocates authorship according to who puts the most work and ideas into the article. To submit the article following Tilganga's authorship policy, I had to lie to the journal editor about who did what amount of work as the COPE guidelines were integrated into the interface of the journal submission system as "click wrap" (Lessig 2006). Meanwhile, every day in 2009, and again in 2011-2012, I had walked past a list of publications printed on a large poster in the hallway. The list contained a variety of Western and Asian medical journals where both my volunteer internship supervisor and the research department chair were listed as co-authors with many of our colleagues at Tilganga. I had difficulty reconciling their application of peer pressure, with their need for publications and my need to be credited for the work I had completed. Finally, two days after submitting the paper to the journal, I withdrew it. I told my supervisor he could take my reference list and Tilganga's data, and use both to re-write the paper, but could not publish it as I had written it without me as the first author.

Paternalism operated in this case at two levels. Firstly, paternalism occurred in the explicit sense from male authority to female subordinate. My dark skin tone and gender put me at a disadvantage. Had I been a white male, I would not have been pressured at the last minute, with a short timetable of one week, to change the order of authorship. Instead of last minute paternalism, I imagine instead that my Nepalese male supervisor would have been sure to inform me about the authorship policy early on in our research together. This would have given me the opportunity to choose whether I still desired to complete the work. My answer would likely have been yes. But the freedom to choose whether I wanted to complete the majority of the work without the majority of the credit was never offered to me.

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Secondly, paternalism occurred implicitly through my use of the COPE guidelines to attempt to impose Western standards on a non-Western institution. The COPE guidelines, when evaluated at the level of individual fairness, are a great idea; they incentivize individual authors seeking credibility in their scientific fields. When the COPE guidelines are evaluated at the level of comparing institutions across global scales, it becomes clear that this may not be the best set of guidelines for the uneven playing field of Western universal science. Cumulative advantage is part of the structure of science (Merton 1973); it is illogical to assume that scientists in poorly resourced countries of the world-system can exactly pattern themselves after their colleagues in wealthy Western countries and achieve the same results, when they do not start with the same advantages. Therefore, for international research partnerships that involve partners from the global north and global south, the COPE guidelines will always give more advantage to the northern partner(s) to the detriment of the status and accumulation of advantage of the southern partner(s). Thus the COPE guidelines are another example of a standard developed by Westerners and imposed on the Rest of the world (Quark 2012).

To study up means investigating the invisible practices of the powerful as a distinct culture (Ho 2012). This elite culture potentially creates systemic inequalities; bringing attention to these inequalities may enhance our understanding of relevant social policies (Becker and Aiello 2013; Ho 2012; Nader 1972). Typically, the elite are less vulnerable than marginalized populations, while the ethnographer still must be concerned with conducting ethical and responsible research (Casper 1997; Conti and O'Neil 2007). Tilganga's authorship policy then is an example of a non-Western institution challenging Western developmentalism. While this challenge is of interest to me as an ethnographer, I could not act in solidarity with Tilganga, in this particular situation because of my own master status determining traits. There may have been other ways of avoiding complicity with an unfair power structure, while still publishing the research project I had worked on as a volunteer intern. However, at the time I satisfied my own sense of ethics.

Entry to Aravind and Daily Work: Studying Down & Up

Working as a volunteer intern at Aravind meant I was both studying down by trading on my U.S. citizenship and education to provide western expertise to my interlocutors, and studying up when my proposed solution was rejected by my interlocutors.

Most visitors and trainees coming to the Aravind Eye Care System are coordinated through its Training department located within the Lions Aravind Institute for Community Ophthalmology. I was interested in minimizing exploitation of my research interlocutors. Therefore, I requested work as a volunteer intern at each community ophthalmology organization where I planned to conduct participant observation for two weeks or more. Since I was interested in observing the day to day work practices of medical and management ophthalmology professionals, Thulasiraj Ravilla decided I should also be physically located at Lions Aravind Institute for Community Ophthalmology. He acceded to my requests (for office space with internet access, and opportunities to observe) while inviting me to help Aravind Eye Care System create an innovation center.

Prior to leaving for Kenya in the summer of 2011, I carefully prepared for my volunteer internship at Aravind Eye Care System. I assured Thulasiraj Ravilla about my excitement about attempting to create an innovation center. I spoke with technology entrepreneurship experts at my university, read the literature they suggested, and researched successful biotechnology innovation centers affiliated with U.S. and Indian universities. Upon my arrival at Aravind in

March 2012, I hit the ground running: I gathered data for my project brief by interviewing Aravind Eye Care System management across the Madurai campus in southern India, to include engineers, managers, and clinicians. I finalized the project brief for the proposed innovation center and delivered it to Thulasiraj Ravilla a month later. While he rejected my proposed innovation center, my report helped him to initiate a system-wide dialogue about innovation at Aravind.

Like many feminist scholars, I was concerned with leveling power relations during my fieldwork (DeVault 1996). Leveling power relations during fieldwork can involve a spectrum of potential choices from participatory action research, where the researcher and interlocutors articulate and investigate research questions together, to reciprocity or giving back. An ethics of reciprocity has emerged out of many years of ethical reflections by traditional ethnographers. Feminist or 'engaged' anthropologists might provide gifts ranging from unpaid work during participant observation, to royalties from published books, to assistance in grant-writing or establishing NGOs or clinics (Checker 2014). These gifts, in addition to "giving voice" to those they are studying, are part of countering the exploitation inherent to the power imbalance between an ethnographer and her research interlocutors.

While intended as a 'gift', upon later reflection I realized my work as volunteer may have further supported my expertise and my high status as a social scientist from the global north conveying Western knowledge and expertise. I drew on insights gained from my previous cooperative work experiences in Fortune 500 companies (Chevron-Philips and IBM) during my undergraduate studies, and also from the preparatory work I had completed to write up common innovation practices from university innovation incubators and industrial design. The problem was my knowledge about innovation was through a theoretical lens that privileged the business practices of Western multinational companies. The resulting plans and process I created for an innovation center during my first month of participant observation at Aravind was based on Western practices that did not jibe well with what Thulasiraj Ravilla described as the "grassroots innovation" at Aravind.

Therefore, I was disappointed because Thulasiraj Ravilla rejected the plans I had worked so hard to prepare. His rejection challenges developmentalist discourse in innovation studies and up-ends the inscribed geo-political relationships between knowledge from the global north and the global south. It also points to the importance of a long-duration for an ethnographer in the field site (Forsythe 1999; Ho 2012; Traweek 1992). In contrast to the extensive preparation of anthropologists and their typical two years in the field, one month on-the-ground and seventeen interviews to write the report for Aravind (see Williams 2012) does not seem such a long time or a substantial data set. While the data from those innovation interviews showed both triangulation and saturation around the contours of innovation at Aravind, thus providing an accurate snapshot about current concerns, it was not enough time or data for me to fully grasp such a large organization with its historical depth and breadth of activities. The interview questions I asked to write the project brief, while deliberately designed to elicit a broader discussion of innovation at Aravind, still had embedded assumptions about what an innovation center looked like and focused on creating. These embedded assumptions came largely from the preparatory reading and conversations I had about innovation centers in the US before arriving at Aravind. Upon reflection, I should not have been surprised at the mismatch between my plans for them, and their long-term and successful self-initiatives. Although my report was not as useful to them as I had hoped it would be, that first month of interviews for the project brief helped me to acquire

contacts and establish relationships I needed to complete later interviews during my remaining three and a half months.

Thus far, I have discussed studying through a global network, studying down from a high status position as a citizen of the U.S., as an ethnographer from the global North with post-graduate education in engineering, and studying up from a low status position as a student and woman of color. These were not the only status positions I inhabited as part of my superpositionality.

Daily Work at Aravind: Standing With and Studying Up

Our shared commitment to challenging developmentalism meant I was standing with my interlocutors in solidarity; however, I was simultaneously studying up to professionals with elite status in my local field site.

In global health partnerships there is a "dark heart"; many northern institutions collect data from their southern partners and gain global recognition as well as increased credibility in the fields of science and medicine in comparison to their southern partners who gain little to nothing (Crane 2010, 2014). With a few exceptions, these northern institutions frequently spend more time and funds on creating and assessing educational activities for northern undergraduate students, than on engaging their southern partners in creating local, endogenous development of medical infrastructures and scientific knowledge.

I share with the global community ophthalmology network and especially the institutions of Aravind Eye Care System and Tilganga Institute of Ophthalmology, an overt commitment to social justice. For these community ophthalmology organizations, this means indirectly challenging developmentalism in order to provide the best science-based care for rural poor patients with eye disease. For me, this means explicitly challenging developmentalism by provincializing the West (Chakrabarty 1995) and decentering it from my narrative about the work of community ophthalmologists. At Aravind I also tried to decenter the West from the publishing cycle around Aravind's large patient data sets.

During an informal conversation, one co-worker at Lions Aravind Institute of Community Ophthalmology shared with me that too often Westerners come to Aravind and collect Aravind's longitudinal epidemiological data to perform research, publish articles, and get credit in the world-system. This is emblematic of global health's "dark heart" (Crane 2014), which involves exploitation in many of the global health partnerships between institutions in the global north and the global south. I was already sensitized to this issue because of my exit from Tilganga in Nepal.

At Aravind they are still developing the scientific skills, and institutional resources to do epidemiological research on their own. I listened to these comments and decided to create a research seminar in my remaining month of fieldwork for my colleagues, the faculty of Lions Aravind Institute of Community Ophthalmology (all of whom have post-graduate/master's degrees in social work, business or management). In this research seminar I shared all I could about qualitative field methods, giving research presentations and writing research papers (with occasional guest presentations from a few faculty including Thulasiraj Ravilla).

I initially conceptualized this research seminar as part of the reciprocity many ethnographers of science and technology describe as part of their participant observation work (Fortun 2001). However, upon further reflection, I realized I was "Standing With" my interlocutors (TallBear 2014). In this case, I share with community ophthalmology professionals a commitment to social justice for the poor and the importance of challenging developmentalism.

While standing with, concurrently, I was studying up (from a position of subordinate status and power) because within the global scientific field, the elite professionals (e.g., ophthalmologists, engineers, ophthalmologists, and managers, etc.) I was studying have power locally. This became even more apparent as I was exiting field sites.

Writing-up Field Research: Studying Down & Up

My status inconsistency remains: through my write-up of my fieldwork into book chapters and articles, I am still experiencing status inconsistency when studying community ophthalmology professionals from the global south. As an ethnographer, I am studying down because I ultimately shape how other social scientists understand my field site; however, I am also studying up because my ability to give voice will likely have little impact on the day to day work habits and practices of my interlocutors. My ambivalence about my role also continues. I wonder, by writing about their innovation practices for them, am I socially constructing Aravind and Tilganga (and the other community ophthalmology organizations) as sub-altern (Spivak 1988)?

My research was not covert; one or two upper-level administrators at each field site were given copies of my research proposal several months prior to my arrival, with the expectation that they would keep this information confidential. Some of these administrators were later included amongst my 83 interviews. I also provided copies of my research questions to any and all who asked for them before our interview. Therefore, it is also possible these upper-level administrators (as well as the interviewees who requested my interview questions in advance) were feeding me partial and unrepresentative information. However, I find this explanation unlikely. The sheer weight of the evidence derived from both observation and interviews informed my study with rich details to substantiate my claims. Also, the community ophthalmology professionals were much too busy to spend much time thinking about my work or its results. While I am sure they hoped the results would show them in a good light, if my results do not, it will not necessarily impact any of them negatively.

I provided drafts of my dissertation thesis, many of my papers, and my current book manuscript chapters to several of the upper-level administrators in community ophthalmology. I believe the upper-level administrators' review of an early draft of this paper has partially accomplished my divesting of my privilege (Ferguson 1998) as a scholar to produce new knowledge. Feminist scholars have long debated the merits of giving voice versus remaining respectfully silent so as to not falsely appropriate the culture and ideology of our interlocutors (Gillies and Alldred 2014).

Although I have partially divested my privilege, ultimately, I am shaping how a small community of social scientists studying science and technology see and understand the global network of community ophthalmology professionals. This is a heavy responsibility. There are engaged and feminist methods for sharing writing of social science articles with one's interlocutors. However, I did not choose this writing method, which would have further divested my privilege to create community ophthalmology professionals as sub-altern. What I have chosen to do instead, that is, write a book showing how community ophthalmology professionals challenge developmentalism by circulating science and technology on both a local and a global scale, is important despite the fact that I am not fully divesting my privilege as an ethnographer to speak for others. In my book I am citing Dr. Govindappa Venkataswamy's niece's non-fiction book about Aravind as well as a western author's non-fiction book about Tilganga. As in all

research, there are other voices that have come before me, and there will be others after me to add richness of detail and counter-perspectives.

IMPLICATIONS OF SUPERPOSITIONALITY

While conducting a global ethnography (Burawoy 1998), I have superpositionality where I am studying through, down, up and sideways as well as standing with. Please see Figure 2 where I have completed my complicity and empowerment positionality circle and summarize my superpositionality in more detail.
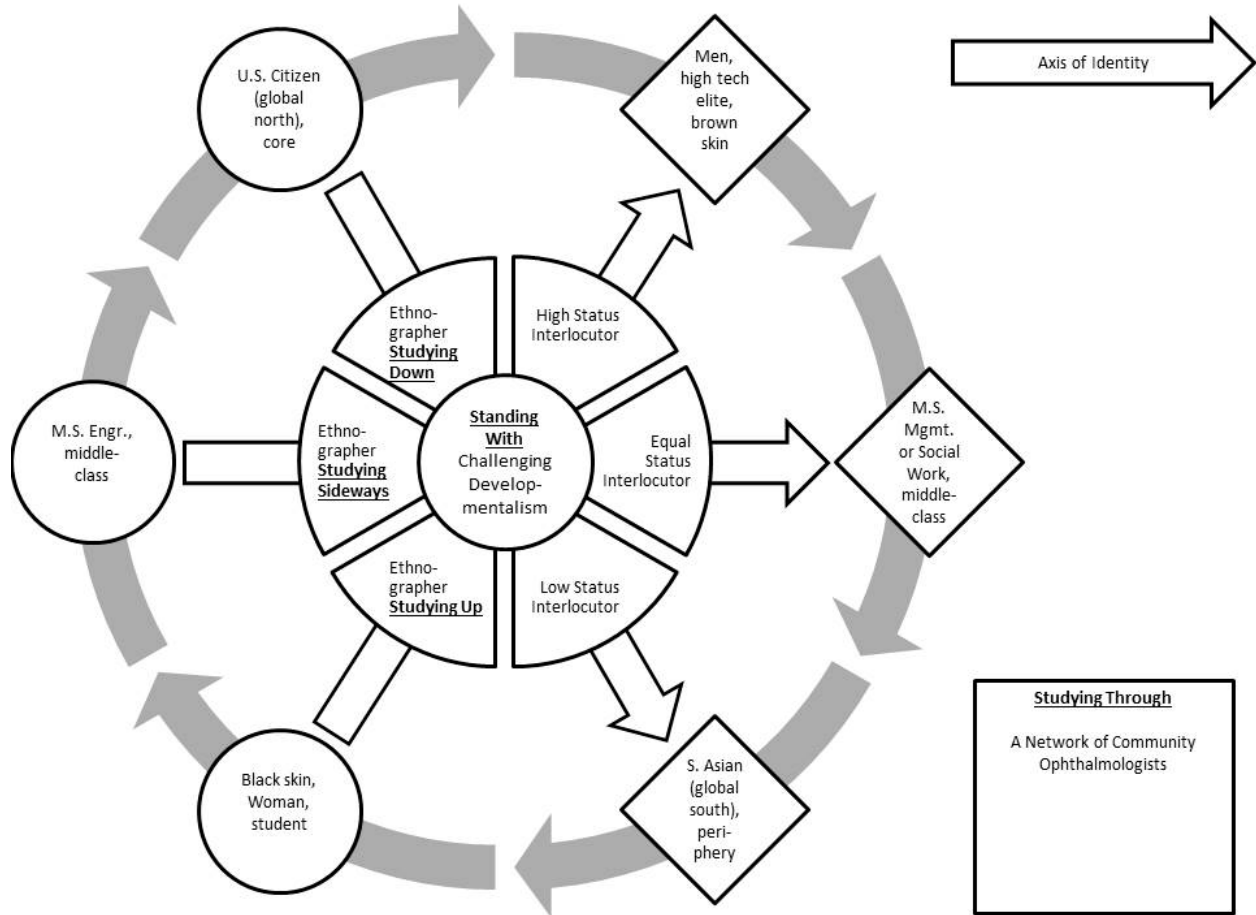

Figure 2 Mapping my Superpositionality For my Dissertation Field Research: My Complicity and Empowerment Positionality Circle

Arguably, I would have been better prepared to make other choices or press forward with narrow windows of opportunity during my ten and a half months of field work if I had rigorously considered issues of empowerment and complicity before entering my field sites and while present within them. Therefore, I propose the complicity and empowerment positionality circle might be used as a planning and decision-making tool for Feminist scholars engaged in Postcolonial STS Field Research to visualize positionality and power through writing/mapping before or during fieldwork.

Insights from the complicity and empowerment positionality circle may be useful to ethnographers of science and technology as they reflect upon the ethics of ethnography across

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the asymmetric global divide(s) of power, and the practical steps required to access and enter field sites. In this paper, I have introduced superpositionality as a different way of considering power relationships between the ethnographer and his or her interlocutors. Superpositionality is the multiple, hierarchical, situation-dependent status positions of the ethnographer in relation to his or her interlocutors in a field site. Three features of superpositionality have further implications.

Firstly, in order to understand superpositionality one must consider the identity of the ethnographer and her or his interlocutor on multiple axes, and contextualize these identities as relational status positions within a specific situation and field site. I suggest two axes are necessary, because examining identity and relational status positions on only one axis provides an incomplete picture of the power dynamics between the ethnographer and his or her interlocutor. It is also possible to further interrogate the power dynamics by looking at more than two axes of identity for one situation (for an example, please see Moser 2006). However, while such an analysis may demonstrate the complexity of the phenomena being observed, it is less likely to demonstrate correlations.

Secondly, a focus on superpositionality reveals that status inconsistencies, rather than being unexpected (and therefore generating a moment of "crisis"), should instead be expected by an ethnographer conducting postcolonial STS field research. This article has explored status inconsistencies due to the asymmetric division of power across the binaries of identity and social location such as: global north/ global south, high-income/low-income, men/women, post-graduate education/undergraduate education, light skin tone/ dark skin tone. The ability to map an ethnographer's status inconsistencies through the complicity and empowerment positionality circle will allow the ethnographer to walk into such situations and field sites better informed and better prepared for decision-making. Such decision-making in the field site affects access to research interlocutors and has implications for being complicit with power, or empowering those who are marginalized.

Thirdly, like its namesake in the field of quantum mechanics (Marvin 2010), an ethnographers' superpositionality indicates the many potential impacts identity may have on a research project, however, similar to the many potential places an atom can be, this potential is not fixed until it is reflected upon through the intervention of an instrument.

This essay is limited because it does not explicitly discuss the interlocutors' positionality (which is relational to the ethnographer's superpositionality). The ramifications of considering the interlocutors' positionality might be further explored. What else might be revealed if the mapping exercise is flipped, and the interlocutor does the mapping instead of the ethnographer?

Future work on superpositionality through the mapping exercise might examine the status inconsistencies of additional identities, e.g., insider or outsider, junior scholar or senior scholar, and able-bodied or disabled, etc. Alternatively, it might examine different types of superpositionality: the multiplicative oppression of intersectional marginal identities (Crenshaw 1989) versus the additive interference of multiple identities and their complex and surprising impacts (Moser 2006 citing Haraway 1997). Then again, future work on studying power in ethnography could elucidate the differences between "studying through" ideologies, discourses and policies by comparing Burawoy's extend case method (1998) to Marcus' (1995) multi-sited method to see how they vary in studying a global process. Likewise, further work might compare the results of two ethnographers reflexively studying power in the same case, the first after exiting the field, where he or she mapped superpositionality before entering the field and the second after exiting the field, where he or she did not map superpositionality before entering the

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field. This comparison is important to make because positionality affects the ethnographer's reflexivity (Berger 2015). It would also potentially support the future creation of an additional exercise that helps the ethnographer move from mapping superpositionality, to mapping the ethnographer's agency and potential outcomes in ethically fraught situations.

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