

Research into Tutoring: Exploring Agency and Intersubjectivity

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Attestation of Authorship

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgments), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.

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Ethics Approval

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Abstract

This thesis explores the notions of agency and intersubjectivity, using knowledge communication in research into high school tutoring as an example. Both agency and intersubjectivity are central to communication, but thus far, empirically applicable theoretical and methodological tools to investigate these notions have been lacking. This thesis attempts to fill this gap.

Using multimodal (inter)action analysis as the underlying theoretical and methodological framework and recorded tutoring research sessions as the data, this thesis develops three theoretical/methodological tools: 1. Primary agency; 2. Handing primary agency from one social actor to another; and 3. Tiers of intersubjectivity.

The analytical part of the thesis comprises four analysis chapters and one discussion chapter. The first three analysis chapters establish the new theoretical/methodological tools; the fourth analysis chapter showcases what these tools have to offer; and the discussion chapter entails some further analysis in order to engage with and critically examine current literature.

First, the thesis demonstrates that one social actor often expresses primary agency over a co-produced higher-level action. Primary agency is recognisable through an identification of agency over the most relevant mediational means, and thus becomes an applicable methodological tool. The thesis proposes that successful knowledge communication may rely on a social actor producing an action with primary agency.

Second, the thesis develops the notion of co-production by showing that social actors hand primary agency to one another during dyadic and triadic interaction. By linking semantic/pragmatic means that indicate shifts in attention/awareness to the notion of handing of primary agency, handing (or taking on) primary agency becomes a methodological tool.

Third, the thesis illustrates how students establish intersubjectivity with tutors. Here, it is theorised that social actors in interaction first establish a stable and adjustable intersubjectivity, before going on to establish more fleeting intersubjectivity. By taking the notion of modal configurations as the starting point, these three levels of intersubjectivity build an empirically applicable methodological tool, i.e.: *tiers of intersubjectivity*.

Fourth, the theoretical and methodological tools are then utilised to analyse how novel objects are taken up in tutoring, and how mediational means are used for knowledge communication. Here, the thesis demonstrates that successful knowledge communication requires coherence between the social actor, the mediational means and the knowledge to be communicated.

The thesis contributes to the theoretical/methodological framework of multimodal (inter)action analysis as well as to the field of knowledge communication.

Empirically, the thesis contributes to our understanding of dyadic and triadic interaction and to tutoring as knowledge communication.

1.0 Introduction: Research into Tutoring: Exploring Agency and Intersubjectivity

In this chapter, I first introduce the rationale of the study and explain why I studied tutoring. I then explicate the reasoning behind my interest in the notions of agency and intersubjectivity. After that I discuss why I chose to position my thesis within the field of knowledge communication. Then I elucidate my reasoning for using multimodal (inter)action analysis as my theoretical and methodological approach; and describe my research questions. Lastly I provide an overview of each of the chapters that comprise the thesis.

1.1 Rationale of the study

Contemporary approaches to the complexities of social action, interaction and experience, contribute theoretical and methodological tools to study social actors in a wide range of situations (Norris, 2002, 2004, 2006, 2009, 2010, 2011a, 2011c, 2012c, 2012d, 2013a, 2013b, 2015b; Norris & Jones, 2005a; Pirini, 2014a; Scollon, 1998, 2001; Wertsch, 1998). Recently, the burgeoning field of knowledge communication has emerged from knowledge management, and places the concept of knowledge within social interaction (Bischof & Eppler, 2011; Engberg, 2010; Eppler, 2006, 2007; Kastberg, 2007, 2010, 2011, 2014; Kastberg & Ditlevsen, 2011; Mengis & Eppler, 2008). As a developing field knowledge communication provides the opportunity to explore interaction

from a fresh perspective, without an entrenched bias towards any particular approach. Consequently, the developing field of knowledge communication provides fertile ground for the application of contemporary approaches to (inter)action (Norris, 2002, 2004, 2006, 2009, 2010, 2011a, 2011c, 2012a, 2012b, 2012c, 2012d, 2013a, 2013b, 2014a, 2014b, 2015a, 2015b) and the development of theoretical and methodological tools to address some key questions regarding agency and intersubjectivity. I analyse these concepts because they are of critical importance in knowledge communication and wider areas of human action, interaction and experience.

Agency is a core concept in the study of social action (Ahearn, 2000, 2001; Lillis, 2013; Malafouris, 2008, 2013; Norris, 2005; Norris & Jones, 2005b; van Lier, 2008; Wertsch & Rupert, 1993; Wertsch, Tulviste, & Hagstrom, 1993). Agency relates to the notion of selfhood, and the ability to initiate actions and instigate events (Bruner, 1996; Linell, 1998). However, there is little agreement on where agency begins, and other forces and constraints in the environment end. The extent to which social actors *have* or *express* agency, and the contribution of agency to action in a meaningful way requires further investigation to develop into a theoretically and methodologically applicable concept in multimodal (inter)action analysis (Norris, 2004, 2011a). In this thesis, I consider how agency can be assessed in ongoing interaction, and the importance or relevance of agency to the production of action, and to knowledge communication (Bischof & Eppler, 2011; Engberg, 2010; Eppler, 2006, 2007; Kastberg, 2007, 2010, 2011, 2014; Kastberg & Ditlevsen, 2011; Mengis & Eppler, 2008). In education, the

notion of agency has begun to be linked to concepts such as metacognition (Perkins, 2000; Tishman, 2008), and to growth mindsets (Briceno, 2013); and the implications seem relatively clear for learning and knowledge communication. What is missing is a clear conception of agency that can be applied to empirical research into interaction. An empirically applicable notion of agency in turn will contribute to a clearer conception of knowledge as emerging from interaction.

Intersubjectivity is a central notion in interaction and, therefore, has great relevance to knowledge communication. Intersubjectivity is defined as some commonality and shared understanding in the minds of social actors (Linell, 1998, 2009; Rommetveit, 1974, 1986; Zlatev, Racine, Sinha, & Itkonen, 2008) and is often taken as a pre-condition for interaction (Duranti, 2010) or as something that must be taken for granted to establish some form of interaction (Rommetveit, 1974). While intersubjectivity remains central to studies in interaction, empirical researchers require methodological tools to analyse how intersubjectivity, as temporary shared experience, is established, maintained, and/or dismantled.

Applying multimodal (inter)action analysis (Norris, 2002, 2004, 2006, 2009, 2010, 2011a, 2011c, 2012a, 2012b, 2012c, 2012d, 2013a, 2013b, 2014a, 2014b, 2015a, 2015b) to the study of agency and intersubjectivity in *research into tutoring* provides for an analysis grounded in the tension between the social actor and the wider sociocultural environment, through the notion of the mediated action (Norris, 2004, 2011a; Norris & Jones, 2005c; Scollon, 1998,

2001; Wertsch, 1994, 1998). Applying such an approach is important to develop an analysis of agency that incorporates the social actor and the environment within which they act. Linking the social actor to the wider environment also provides an approach to investigate the notion of intersubjectivity, as shared understanding established and maintained through interaction.

1.2 Why tutoring?

I established a tutoring business called Pencilcase in 2010. Before, I had been first working in business training, and then in one-to-one student support. During this work, I developed an interest in business coaching, and the approaches that business coaches take. Through Pencilcase my initial aim was to bring a coaching approach to tutoring. During my student support role, I had observed that students needed guidance about how to approach course content, what was expected of them, and how to go about meeting or exceeding the course requirements. Accordingly, I found my input was more effective when I assisted students to explore how they dealt with course content, than when I tried to provide details regarding specific content. This required more than a deep knowledge of course content. Rather it required some sensitivity to the student's process, helping them to explore their own practice of learning.

I started Pencilcase to provide training to tutors to assist them to include the process-orientated approach to tutoring in their tutoring practice. Tutors

working in this way could help students develop what are often termed metacognitive skills (Livingston, 2003). Tutoring differs from classroom work because students receive the one-to-one attention of the tutor, who can then determine more closely how the student is working, and what specific areas they need to develop. There is also a service/provider aspect to tutoring provided by private companies, which may allow students to feel more comfortable asking for, or expecting, help. Lastly, tutoring can occur in the student's home and this provides some level of comfort and autonomy to the student that is very different from classroom teaching. At first, I referred to this as a coaching-based approach to tutoring where students were encouraged to explore their own actions in a safe environment (Stober & Grant, 2006). However, further research into coaching (Pirini, 2011, 2013) revealed that the coaching literature is limited regarding what it is that makes coaching unique, or how positive outcomes emerge from coaching sessions. I came across the relevant notion of agency, outside the coaching literature and realised that this concept captures the intuitive sense of exploring one's own actions that I had identified.

1.3 Why agency?

Above I have explained the intuitive sense of agency that I observed throughout my work in business training, student support and tutoring. There is a fundamental difference between the student who explores their own understanding of a problem, and develops a response, versus one who is

directed to produce an answer by following a set of clearly articulated directions. The difference is encapsulated to some extent in Vygotsky's zone of proximal development (Vygotsky, 1978). The zone of proximal development is defined by Vygotsky (1978) as 'the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers' (p. 86). Similarly, the metaphor of scaffolding (Wood, Bruner, & Ross, 1976; Wood, Wood, Ainsworth, & O'Malley, 1995; Wood & Wood, 1996) provides a set of functions that constitute a theory of instruction in which the tutor recruits the student's interest and breaks a task down into achievable subroutines. Tutor feedback is generated from the interaction between a theoretical model of the task, and a theoretical model of the performance characteristics of the student (Wood et al., 1976). Wertsch (1984) points out that the nature of tutor guidance is important. Regimented directions are less likely to contribute to the development of the student than strategies employed to provide a structure for problem-solving that carefully transfers responsibility to the learner over time. The metaphor of scaffolding, which can be characterised as working in the zone of proximal development (Rogoff & Wertsch, 1984), focuses on the actions of the tutor producing the instructional process. I am interested in the particular characteristics of a student's actions and what it is about taking responsibility for these actions that gives the student agency or ownership.

Scaffolding and the zone of proximal development include a very clear goal, captured in the theoretical model of the task (Wood et al., 1976) or the situation definition (Wertsch, 1984). This approach requires the tutor to have a stable conception of what the student needs to do to be successful. In my work with students, and my tutor training, I have found that it is impossible to understand the complexities of a student in their entirety. Rather, encouraging student independence and responsibility goes further than allowing them to take over the subroutines of a defined task. It requires them to produce actions with a sense of agency (Ahearn, 2000, 2001; Lillis, 2013; Malafouris, 2008, 2013; Norris, 2005; Norris & Jones, 2005b; van Lier, 2008; Wertsch & Rupert, 1993; Wertsch et al., 1993). I suggest that this sense of agency draws upon a social actor's own resources and experiences. The notion of a social actor's experiences and resources built up over time is somewhat captured in the concept of habitus/historical body (Bourdieu, 1977; Nishida, 1956; Scollon, 1998) and this relies on a sociocultural perspective of being in the world in which social actors are embedded in a material, social and historical world (Norris, 2013b; Wertsch, 1998). By taking this approach, I expand the notion of agency from instruction, to a wider notion of what it means to produce actions with a sense of agency. By analysing *research into tutoring*, I seek to develop a concept of agency that addresses social actors producing actions with a sense of agency, which is applicable to instruction, and that can be applied to other contexts of interaction.

Due to my interest in a broader sense of instruction and agency, I encourage tutors to support students to explore their own ideas, to make mistakes and to take ownership over the tutoring session. Encouraging open exploration is a commonly promoted approach in education, although difficult to achieve in a classroom, and research suggests this type of approach develops particular mindsets or metacognitive skills (Dweck, 2007; Livingston, 2003; Sternberg, 1998). Interest in independent exploration raises another related question. That is, how do social actors encourage, support or make it possible for other social actors to explore their own ideas and rely on their own abilities? Current research and approaches to agency (Ahearn, 2000, 2001; Lillis, 2013; Malafouris, 2008, 2013; Norris, 2005; Norris & Jones, 2005b; van Lier, 2008; Wertsch & Rupert, 1993; Wertsch et al., 1993) do not provide empirically useful theoretical and methodological tools to investigate these questions in detail. Thus, one reason I embark upon this study is to explore these questions and develop theoretical and methodological contributions to further investigate agency in education, knowledge communication and interaction.

1.4 Why intersubjectivity?

My interest in intersubjectivity also comes from my interest in tutoring, and related forms of coaching and training. A central feature of interaction in general, and especially training centered interactions, is arriving at temporarily shared moments of understanding (Linell, 1998, 2009; Mortimer & Wertsch, 2003; Rommetveit, 1974, 1986). In tutoring the moment that a student and

tutor first sit down together is incredibly important. They must establish some sense of why they are there, and what kind of action they are both engaged in.

This shared understanding needs to be maintained throughout the tutoring session. Similarly, when conducting research that utilises observation as a method, the researcher is part of the interaction (Lewis & Nicholls, 2013), and they need to establish how they participate in the interaction. In a previous study, when collecting data on business coaching, I was present in the session but seated behind a screen out of view (Norris, Geenen, Metten, & Pirini, 2014). The coaching session itself was authentic, and quite emotional, yet at the same time the participants were engaged in research. I have previously addressed how moving behind a screen helps to structure the attention/awareness of the participants (Pirini, 2014a) but there is some wider sense of material intersubjectivity that remains to be explored. While often researchers focus on the spoken language component of intersubjectivity, I suggest in this thesis that stable material aspects of intersubjectivity must first be established, which then contribute to more fleeting moments of shared understanding. These material aspects include, for example the layout of the room (Hall, 1959; Kress & van Leeuwen, 2001), the social actors' positioning in the room (Hall, 1959, 1966) and their posture (Schefflen, 1964).

Rommetviet (1974, 1979a, 1979b, 1986) outlines an account of intersubjectivity that relies on partially sharing realities through socially situated language. He asks 'in what sense and under what conditions two persons who engage in...dialogue can transcend their different private worlds' (Rommetviet, 1979a,

p.7). However, Rommetviet begins with the assumption that intersubjectivity is difficult if not impossible without shared language. As noted above I seek to investigate intersubjectivity as established through mediated actions produced by social actors in interaction, and this approach does not prioritise language. Perspectives on intersubjectivity that range more widely than language have been developing. Duranti (2010) argues for a notion of intersubjectivity that is graduated, and always present to some extent. Fusaroli, Demuru and Borghi (2009, p. 2) define intersubjectivity as ‘shared bodily engagement that partially defines the subjects that take part in it’ suggesting that ‘cultural practices and semiotic systems – such as language – build on and extend these mechanisms’. In this thesis I set out to build on an understanding of intersubjectivity grounded in social actors acting in the world, and to develop a methodological tool or theoretical approach for the analysis of social actors establishing, maintaining, and/or dismantling intersubjectivity.

1.5 Why knowledge communication?

The field of knowledge communication (Bischof & Eppler, 2011; Engberg, 2010; Eppler, 2006, 2007; Kastberg, 2007, 2010, 2011, 2014; Kastberg & Ditlevsen, 2011; Mengis & Eppler, 2008) is growing, and researchers in the field typically take an organisational or business perspective towards knowledge. This reflects the emergence of knowledge communication, from knowledge management. Knowledge communication is a key activity in tutoring. I was attracted to the field of knowledge communication because it is growing and dynamic, without

some of the entrenched methodological and theoretical biases present in more established areas. Equally, I wanted to address the business aspect of tutoring to ensure the applicability of my research beyond its academic contributions. In my experience running Pencilcase, I have found that students often request tutoring and treat a tutor as someone that they have hired to provide a service. This service model manifests as expectations from the student during the tutoring session about what the tutor should know, how the tutor should help them and whether or not they continue with tutoring. Parents, as the purchaser of the service, have similar expectations about what should be involved in a tutoring session. Lastly, as the owner of Pencilcase I have my own expectations for tutors, and the service they provide. Tutors, therefore, operate in a complex, varied context with sometimes competing expectations. Keeping this context alive in research has the reciprocal effect of strengthening the academic outcomes, and the social contributions of the research.

1.6 Why multimodal (inter)action analysis?

In my pursuit of agency (Ahearn, 2000, 2001; Lillis, 2013; Malafouris, 2008, 2013; Norris, 2005; Norris & Jones, 2005b; van Lier, 2008; Wertsch & Rupert, 1993; Wertsch et al., 1993) and intersubjectivity (Crossley, 1996; Duranti, 2010; Mortimer & Wertsch, 2003; Rommetveit, 1974, 1979a, 1979b, 1986; Zlatev et al., 2008), I required a theoretical and methodological framework that offered a cognitive/psychological component because of the different perspectives that tutors, students and the researcher bring to interaction; a notion of mediation

because of the interaction between the participants, and the environment; and a notion of materiality because of the contribution of the material environment to intersubjectivity and agency. I found that multimodal (inter)action analysis (Norris, 2002, 2004, 2006, 2009, 2010, 2011a, 2011c, 2012a, 2012b, 2012c, 2012d, 2013a, 2013b, 2014a, 2014b, 2015a, 2015b) is the best-suited framework for my analysis of research into tutoring, as this methodology encompasses tools that allow for the analysis of cognitive/psychological levels of attention/awareness (Norris, 2004, 2006, 2009, 2011a), and the mediated actions (Norris, 2004, 2011a; Norris & Jones, 2005c; Scollon, 1998, 2001; Wertsch, 1994, 1998) social actors produce which are essential for my study. Further, I was drawn to multimodal (inter)action analysis because of its strong theoretical underpinnings, which I needed to develop my thinking in regards to both agency and intersubjectivity.

Multimodal (inter)action analysis (Norris, 2002, 2004, 2006, 2009, 2010, 2011a, 2011c, 2012a, 2012b, 2012c, 2012d, 2013a, 2013b, 2014a, 2014b, 2015a, 2015b) builds on the work of Scollon and mediated discourse analysis (Scollon, 1998, 2001). Central to multimodal (inter)action analysis is the mediated action, which is the unit of analysis I employ here. The mediated action is defined as a social actor acting with or through mediational means or cultural tools (Scollon, 1998; Wertsch, 1994, 1998); and all actions are mediated. There is an inherent, irresolvable tension present between the social actor and the mediational means (Geenen, 2013; Norris, 2004, 2011a; Norris & Jones, 2005d; Scollon, 2001; Wertsch, 1998). This allows me to incorporate a notion of mind, or an

aspect of psychology and cognition into this study. At the same time, through the inherent tension, I incorporate a conception of a sociocultural environment, which the social actor acts within and is part of. Multimodal (inter)action analysis (Norris, 2002, 2004, 2006, 2009, 2010, 2011a, 2011c, 2012a, 2012b, 2012c, 2012d, 2013a, 2013b, 2014a, 2014b, 2015a, 2015b) is the only framework that provides for social actors producing multiple, simultaneous actions at different levels of attention and awareness (Norris, 2004, 2006, 2009, 2011a). I required this notion of attention/awareness to allow me to show social actors in triadic and dyadic interaction producing various (inter)actions together, but not necessarily coordinating their levels of attention/awareness. Furthermore by focusing on the mediated action, multimodal (inter)action analysis allows me to address intersubjectivity as a feature produced through mediated action, and maintained through the materiality of the environment.

Multimodal (inter)action analysis incorporates a concept of phenomenological mind, which is operationalised in the methodological tool of the foreground/background continuum (Norris, 2004, 2006, 2009). A social actor's interactional attention/awareness shows that social actors attend to and are aware of multiple, simultaneous (inter)actions at the same time, but at different levels. A notion of attention/awareness levels is required to maintain the complexity of social (inter)action evident in the triadic interaction between the researcher, tutor and student, and the dyadic interaction between the tutor and student. Thus, rather than direct my analytical focus to one interaction at a

time, I can first show the multiple levels of attention/awareness that social actors produce, and secondly relate this to agency, and intersubjectivity.

Multimodal (inter)action analysis (Norris, 2002, 2004, 2006, 2009, 2010, 2011a, 2011c, 2012a, 2012b, 2012c, 2012d, 2013a, 2013b, 2014a, 2014b, 2015a, 2015b) demonstrates applicability to a wide range of interactional situations and settings, including vegetarian identity (Makboon, 2013), kite surfing (Geenen, 2013), marketing (White, 2011, 2012), business coaching (Pirini, 2013a), training interpreters (Krystallidou, 2014), and education in private art classes (Norris, 2015b). The flexibility of multimodal (inter)action analysis allows me to collect naturally occurring data, and incorporate an experimental facet, to address particular aspects of agency and intersubjectivity. This approach involves organising tutoring situations that are as naturally occurring as possible, and introducing novel objects as potential mediational means (Geenen, 2013; Norris, 2004, 2011a; Norris & Jones, 2005d; Scollon, 2001; Wertsch, 1998). Additionally, this approach makes it possible to develop theoretical concepts and methodological tools that can then be applied in observational, ethnographic, or other qualitative experimental studies.

Overall, multimodal (inter)action analysis (Norris, 2002, 2004, 2006, 2009, 2010, 2011a, 2011c, 2012a, 2012b, 2012c, 2012d, 2013a, 2013b, 2014a, 2014b, 2015a, 2015b) provides an analytical framework that I apply to examine agency and intersubjectivity including a cognitive/psychological aspect, mediation with and through the social actor and mediational means, and the notion of social actors as part of a material world. The framework offers an interdisciplinary,

holistic examination of social action, built upon strong theoretical foundations that provide a stable platform for theoretical and methodological explorations into social action.

1.7 Research questions

In this thesis, I set out to investigate how social actors communicate knowledge, by focusing on the extent to which social actors have agency (Ahearn, 2000, 2001; Lillis, 2013; Malafouris, 2008, 2013; Norris, 2005; Norris & Jones, 2005b; van Lier, 2008; Wertsch & Rupert, 1993; Wertsch et al., 1993), and how social actors establish intersubjectivity (Crossley, 1996; Duranti, 2010; Mortimer & Wertsch, 2003; Rommetveit, 1974, 1979a, 1979b, 1986; Zlatev et al., 2008) in interactions where knowledge is communicated. I study one-to-one, in home, high school tutoring as I have a strong interest in tutoring, through my work with Pencilcase Tutoring. I chose to consider *research into tutoring*, as well as *tutoring*, as I wanted to address the triadic interaction between researcher, tutor and student and the dyadic interaction of tutoring. I theorised that both triadic and dyadic interactions would be highly relevant when investigating agency, and intersubjectivity. I set out to answer the following research questions:

1. What does a multimodal analysis of research into tutoring as knowledge communication contribute to an understanding of agency?

2. What do levels of attention/awareness, and intersecting higher-level actions contribute to understanding agency in research into tutoring?
3. Can a multimodal analysis of research into tutoring broaden current understandings of intersubjectivity?
4. How do tutors and students use, or not use, objects provided by the researcher in their tutoring sessions as part of knowledge communication?

I now provide an overview of the thesis, briefly describing each of the following chapters in which I will address these research questions.

1.8 Overview of the thesis

This thesis investigates research into high school tutoring, focusing on the notions of agency and intersubjectivity. The data are collected from research carried out on one-to-one tutoring sessions between experienced tutors and students. The researcher's interactions with the participants are included. Here, I outline the thesis, which is made up of ten chapters including this introduction, providing a brief overview of each following chapter.

Chapter two describes the research process, which I explain as naturally occurring with an experimental facet. I address Labov's (1966, 1972) observer paradox by involving participants as co-researchers so that tutoring sessions are naturally occurring, and I introduce novel objects to investigate how they are taken up and incorporated into tutors' established ways of tutoring. I theorise

that agency and intersubjectivity will be implicated, as tutors will negotiate the involvement of novel objects in the tutoring session. I introduce the nine student participants, and three tutor participants, and detail the recruitment processes and ethical considerations. I then explain my participation as the researcher, how I feature in the data and why I decided to expand my perspective to include myself as a researcher. After that, I detail the novel objects that I introduced into tutoring sessions. These include lesson plans and other physical objects that can be handled, and relate to the subjects chosen for tutoring. Then, I describe my data collection methods, which include data recording via video and microphone, observation and taking field notes, and semi-structured interviews with tutors and students. Lastly I discuss my selection of excerpts from the full data set. I consider how they represent the data set, and how findings drawn from this range of excerpts can potentially be applied elsewhere.

Chapter three examines the literature regarding the growth of tutoring worldwide and considers the evidence supporting its efficacy. I also review the metaphor of scaffolding that is commonly applied to tutoring. After that, I address the literature regarding agency, focusing my review on sociocultural approaches that treat agency as a feature of mediated action. I argue that an empirically applicable notion of agency is needed that can be applied to studies of interaction. I then review the literature on intersubjectivity, starting with how intersubjectivity is approached from the perspective of language, before moving on to approaches that incorporate the body and material environment in

intersubjectivity. I argue that a notion of intersubjectivity that incorporates materiality, the body and fleeting actions like language, gesture and gaze is required. I then review models of communication and definitions of knowledge, to provide a basis for an in-depth review of the knowledge communication literature. Finally I describe how the notion of co-construction is applied throughout the literature on interaction, and argue for an approach that problematises co-construction, referring instead to co-production (Norris, 2004, 2006, 2009). Chapter three positions this thesis within the literature and provides a basis for addressing agency and intersubjectivity in research into tutoring.

Chapter four examines the theoretical notions and methodological tools that I have chosen to take up and apply to investigate my research questions. I take multimodal (inter)action analysis (Norris, 2002, 2004, 2006, 2009, 2010, 2011a, 2011c, 2012a, 2012b, 2012c, 2012d, 2013a, 2013b, 2014a, 2014b, 2015a, 2015b) as my theoretical and methodological framework, and I review two other approaches to multimodality to justify this theoretical and methodological choice. These approaches are social semiotics, and conversation analysis. Multimodal (inter)action analysis (Norris, 2002, 2004, 2006, 2009, 2010, 2011a, 2011c, 2012a, 2012b, 2012c, 2012d, 2013a, 2013b, 2014a, 2014b, 2015a, 2015b) draws upon extensive research from gesture studies, and non-verbal studies, and I review the literature from these areas that I incorporate into my analyses. I then detail more specifically the methodological tools, and theoretical underpinnings that I take from multimodal (inter)action analysis.

These include the mediated action as a unit of analysis, delineated in higher- and lower-level actions (Norris, 2004, 2012c, 2013a, 2013b). I also consider scales of higher-level actions (Norris, 2015a), and the materiality produced by mediated actions. Then I describe mode, as defined by Norris (2013b), and the modal density foreground/background continuum (Norris, 2004, 2006, 2009, 2011a). After that I describe the theoretical notion of mediational means, considering the characteristics identified by Scollon (2001), building on Wertsch (1998). Following the discussion of methodological tools, I describe various applications of multimodal (inter)action analysis to more clearly define the approach. Lastly, I outline the transcription conventions I use.

Chapter five is my first analysis chapter. I apply the methodological and theoretical approaches discussed in chapter four to show that when multiple social actors interact, often one social actor expresses primary agency over a co-produced higher-level action. To develop the notion of primary agency, I analyse three higher-level actions (Norris, 2004, 2011a) produced by two or three social actors. For each higher-level action, I show that one social actor produces the co-produced higher-level action with primary agency while the others do not produce the action with the same sense of agency. The higher-level actions (Norris, 2004, 2011a) I analyse are: the higher-level action of *conducting research, tutoring and reading the text*. I determine primary agency analytically by identifying the social actor with agency over the most relevant mediational means (Geenen, 2013; Norris, 2004, 2011a; Norris & Jones, 2005d; Scollon, 2001; Wertsch, 1998) for the higher-level action. I argue that successful

knowledge communication (Bischof & Eppler, 2011; Engberg, 2010; Eppler, 2006, 2007, 2007; Kastberg, 2007, 2010, 2011, 2014; Kastberg & Ditlevsen, 2011; Mengis & Eppler, 2008) may rely on a social actor reconstructing an action with primary agency.

After identifying the notion of primary agency, I analyse the landscape of attention/awareness that social actors in interaction produce. I develop the notion of co-production (Norris, 2004, 2006, 2011a) further, showing that co-production is complex and that primary agency is a global feature of higher-level action that goes beyond sequential contingency in interaction.

Chapter six is my second analysis chapter, and I continue to develop the notion of co-production (Norris, 2004, 2006, 2011a). I incorporate the notion of primary agency, and show that social actors hand over primary agency to others during triadic and dyadic interaction. To illustrate how primary agency is handed between social actors, I show that many of the actions produced during research into tutoring are embedded higher-level actions (Norris, 2015a). The higher-level action of *conducting research* is the largest-scale action that I analyse. As part of the higher-level action of *conducting research*, the researcher makes the smaller scale higher-level action of *tutoring* possible, by recruiting the students and tutors, and providing the most relevant mediational means (Geenen, 2013; Norris, 2004, 2011a; Norris & Jones, 2005d; Scollon, 2001; Wertsch, 1998). Thus, the higher-level action of *tutoring* is embedded within the higher-level action of *conducting research*. I also analyse two actions that are nested within the higher-level action of *tutoring*. These are the higher-

level action of *reading the text*, and the higher-level action of *choosing a question*. During the triadic and dyadic interactions that produce research into tutoring, social actors produce these various higher-level actions, often simultaneously, and at different levels of attention/awareness (Norris, 2004, 2006, 2009, 2011a). I show that primary agency is handed over from larger scale actions to smaller scale actions, and from smaller scale actions to larger scale actions. I theorise the importance of shifts in attention/awareness for handing over and taking on primary agency, and describe how social actors hand over ownership, and take on ownership, over mediational means.

Chapter seven is my third analysis chapter, and I show how students establish material intersubjectivity with their tutor. I theorise that social actors in interaction first establish what I have termed stable and adjustable intersubjectivity, before they proceed with more fleeting intersubjectivity. To illustrate these notions and make them applicable for further research, I have developed the methodological tool that I call *tiers of intersubjectivity*. This tool developed out of the notion that higher-level actions (Norris, 2004, 2011a) produce varying materialities in the interaction, and that these materialities establish intersubjectivity. A social actor sitting down to chat with a friend, for example, produces durable proxemic relationships (Hall, 1959, 1966) through furniture and layout. At the same time they produce posture (Schefflen, 1964) and proxemic relationships to movable objects, which they may adjust throughout the conversation. They also produce other actions like gaze shifts and gestures (C. Goodwin, 1981; Kendon, 1967, 1990), which are fleeting. Thus,

chatting with a friend produces material intersubjectivity, along a scale of materiality. The more durable aspects of the higher-level action produce what I call an *interactive substrate*, upon which more fleeting intersubjectivity can be produced. The methodological tool *tiers of intersubjectivity* delineates material intersubjectivity into three tiers based on durability. The three tiers are *durable intersubjectivity*, *adjustable intersubjectivity*, and *fleeting intersubjectivity*. The first two tiers, durable and adjustable materiality, produce the *interactive substrate*.

Developing these notions, I concentrate on the beginnings of tutoring sessions and use the modal density foreground-background continuum (Norris, 2004, 2006, 2009, 2011a) and then the theoretical/methodological notion of modal configuration (Norris, 2009, 2014b, 2015b) to demonstrate how students establish intersubjectivity.

Chapter eight is my fourth analysis chapter, and I investigate how mediational means (Geenen, 2013; Norris, 2004, 2011a; Norris & Jones, 2005d; Scollon, 2001; Wertsch, 1998) are used in tutoring to communicate knowledge. I begin with an analysis of two instances where social actors are not able to communicate knowledge well. In the first the tutor, Emma produces a higher-level action (Norris, 2004, 2011a) of *playing* when she introduces novel mediational means into the tutoring session. In the second the student Pranto is unable to produce an analysis of a text, and in fact attempts to produce an analysis without reading the text. I argue in the first instance the issue with knowledge communication (Bischof & Eppler, 2011; Engberg, 2010; Eppler,

2006, 2007; Kastberg, 2007, 2010, 2011, 2014; Kastberg & Ditlevsen, 2011; Mengis & Eppler, 2008) stemmed primarily from the mediational means (although not entirely), and in the second instance the issue stemmed primarily from the social actor (although not entirely). Therefore, I highlight the inherent tension in mediated action (Norris, 2004, 2011a; Norris & Jones, 2005c; Scollon, 1998, 2001; Wertsch, 1994, 1998), between the social actor and the mediational means, while making the complexity of knowledge communication available for analysis.

Also, I analyse an instance of successful knowledge communication (Bischof & Eppler, 2011; Engberg, 2010; Eppler, 2006, 2007; Kastberg, 2007, 2010, 2011, 2014; Kastberg & Ditlevsen, 2011; Mengis & Eppler, 2008) mediated by a novel object, in this case, a model brain. Here, the social actor and the mediational means (Geenen, 2013; Norris, 2004, 2011a; Norris & Jones, 2005d; Scollon, 2001; Wertsch, 1998) come together to communicate knowledge successfully. I demonstrate that the moment of knowledge communication can be analysed and described using the notions of primary agency and material intersubjectivity developed in the previous analysis chapters. This provides a lead-in to the discussion chapter where I position my findings from this thesis within the literature.

In chapter nine I discuss my findings in relation to the literature. In order to develop critical engagement with the literature, I analyse some interview data. I show that data collected from interviews supports the literature regarding the efficacy of tutoring, and the reasons that students take up tutoring. My

interviews also show an orientation from both tutors and students that aligns with the metaphor of scaffolding (Wood et al., 1976, 1995; Wood & Wood, 1996). However, I also show that scaffolding does not capture the notion of primary agency I have developed in this thesis. I position my findings regarding agency and intersubjectivity within the literature, showing that both these concepts move studies into communication forwards by providing tools grounded in a notion of the social actor as a part of the world (Norris, 2013b, 2015b). Lastly, I discuss my findings about knowledge communication (Bischof & Eppler, 2011; Engberg, 2010; Eppler, 2006, 2007; Kastberg, 2007, 2010, 2011, 2014; Kastberg & Ditlevsen, 2011; Mengis & Eppler, 2008). I apply Norris's (2013b) theoretical notion of systems of mediated action, and use this to define knowledge as a system of mediated action. I show how this contributes to knowledge communication, unifying the disparate definitions in the field.

In chapter ten I provide a conclusion to the thesis. I describe each of the theoretical/methodological tools I developed. Namely the notion of primary agency, handing over (and taking up) agency, and tiers of intersubjectivity. I emphasise the contribution of applicable theoretical/methodological tools for agency and intersubjectivity to the study of knowledge communication, and communication more widely. I also examine these contributions more closely. Throughout, I clearly detail how I have addressed each of my research questions in the thesis. Then, I consider the limitations of the research design. Lastly I suggest future research directions, and provide concluding remarks.

1.9 Conclusion: Research into Tutoring: Exploring Agency and Intersubjectivity.

Above, I have introduced the rationale for this study as an investigation of two core concepts that have not received enough empirical attention; namely, agency (Ahearn, 2000, 2001; Lillis, 2013; Malafouris, 2008, 2013; Norris, 2005; Norris & Jones, 2005b; van Lier, 2008; Wertsch & Rupert, 1993; Wertsch et al., 1993) and intersubjectivity (Crossley, 1996; Duranti, 2010; Mortimer & Wertsch, 2003; Rommetveit, 1974, 1979a, 1979b, 1986; Schegloff, 1992; Sidnell, 2014; Zlatev et al., 2008). I have highlighted the ways in which tutoring has engaged my analytical interest in these concepts, and emphasised the practical outcomes possible with a stronger understanding of agency and intersubjectivity for tutoring, knowledge communication, and communication research more widely. I have briefly justified my theoretical and methodological approach, that of multimodal (inter)action analysis (Norris, 2002, 2004, 2006, 2009, 2010, 2011a, 2011c, 2012a, 2012b, 2012c, 2012d, 2013a, 2013b, 2014a, 2014b, 2015a, 2015b), and my use of the mediated action as a holistic unit of analysis. Finally, I have outlined the empirical questions that informed the design of study and analysis of data, and provided an overview of the remainder of this thesis. In the next chapter, I explain the design of study in detail.

2.0 Design of Study: Research into Tutoring

In this chapter, I describe the research design this thesis is based on, and how it addresses the research questions posed in chapter one. I collected data from nine naturally occurring tutoring sessions and included an experimental facet by introducing novel objects as potential mediational means. The tutoring sessions I analysed cover three subjects: mathematics, English and biology. I introduced lesson plans that broadly structured the sessions, and objects that could potentially be used by the tutor or student during the session as a pedagogical tool. However, I did not give tutors any requirements about using the objects, or any instructions about how to use the objects. My data collection methods include video recording of the tutoring sessions, participant observation during the tutoring sessions, and informal interviews after tutoring.

I recruited nine student participants and three tutor participants. I outline my ethical considerations during recruitment and research, drawing on Guillemin and Gillam's (2004) reference to *ethics in practice* as the ethical decisions and actions produced throughout the research project. *Ethics in practice* holds the researcher responsible for critically considering their research methods as they produce them and remaining aware of their participants at all times. I also participated in the research, since I investigate research into tutoring. I reflect on my role as the researcher and describe how I analyse my actions and interactions with the participants during tutoring.

2.1 Naturally occurring tutoring with a qualitative experimental facet.

In this thesis, I investigate research into naturally occurring tutoring sessions, to contribute to an understanding of agency and intersubjectivity in *research into tutoring*, and *tutoring*. In addition, I intend to investigate the ways in which students and tutors respond to, take up, or do not take up novel objects as mediational means. To achieve the research aims outlined in chapter one I organised tutoring sessions, and introduced lesson plans and novel objects.

Lewis and Nicholls (2013) define naturally occurring data as existing independent of the research, but they point out that the distinction between researcher generated and naturally occurring data is not clear-cut, and can be visualised as a continuum. Even at the far end of this continuum, Silverman (2011) argues that no data are ever independent of the research. Here I first discuss the ways in which the tutoring sessions I research are naturally occurring, and then I discuss the experimental aspect of my research approach.

2.1.1 Tutoring sessions as naturally occurring

Labov (1966, 1972) points out that a paradox exists in observational research where the researcher aims to investigate how social actors operate while not being systematically observed, yet one can only obtain this data by systematic observation. The first part of Labov's paradox refers to ideal natural data, occurring independently of research. While Labov developed his notion of the

observer's paradox about sociolinguistic interviews and collecting data on natural linguistic production, a similar issue exists for the collection of data on research into tutoring. Specifically, I seek to collect data on naturally occurring tutoring sessions, but my presence as an observer, and my interaction with participants influences the participants in unknowable ways (Labov, 1972). Following Labov, I involved the participants as much as possible in the research process to illicit naturally occurring tutoring. Involving participants ensures that they are comfortable, and are able to pay only a low level of attention to the ongoing research process during the tutoring session. I sought to move beyond the perception of empowering participants, and rather to maintain a complex sociolinguistic relationship as espoused by Garner et al. (2006). In turn I made methodological decisions based on that relationship (Smith, 1999). In multimodal (inter)action analysis participants are treated as co-researchers and this provides them with autonomy (Pirini, et al., 2014). Tutors and students gave input into tutoring topics: Tutors chose to tutor topics they were comfortable with and had expertise in; and students, at times, chose topics that they felt would help them with school, or that they were generally interested in; at other times, students were simply interested in participating in research. Tutoring sessions were in-home, and students determined the setting of the tutoring within their homes. All sessions ended up occurring at the kitchen or dining room table. Also students are all current or previous clients of Pencilcase tutoring, and one-to-one in-home tutoring is a normal aspect of their lives. Tutors had tutored with Pencilcase tutoring throughout the past 12-months, and so for them too one-to-one in-home tutoring is a normal aspect of their

lives. Indeed, out of the three tutoring sessions that each tutor delivered, one was with a current or previous student and two were with students they had not worked with before. Therefore, by giving the participants autonomy in the research process as co-researchers, they were comfortable and able to act naturally during the research process because they had some control over what constituted the research. I also ensured that tutoring sessions were as close as possible to the type of tutoring that students and tutors were previously and currently engaged in. Therefore there was close alignment between the participants' existing practices, in the sense of actions with a history (Scollon, 1998), and the research sessions.

2.1.2 Experimental aspect: Introducing novel objects/mediational means

Geenen (2013, p. 244) points out that objects become mediational means through action, and argues that 'the materiality of objects, their affordances and constraints along with their dispositions-for-use, are unequivocally embedded within particular systems of mediated action'. In this sense objects both become mediational means when acted with or through, and acting with or through mediational means always embeds them or relates them to existing ways of acting for the social actor. Here, Geenen draws on the work of Wertsch (1998) and Scollon (2001) who postulate that mediational means are always multiple. However Geenen (2013), building on Norris (2013b), emphasises this multiple nature of mediational means much more strongly, and uses this emphasis to highlight the embeddedness of any mediational means within a

wider system of mediated action (Norris, 2013b). This point is important to this thesis, because I introduced novel objects into tutoring sessions to investigate the extent to which they would be taken up and how they might be embedded within the experienced tutors' systems of mediated action (Norris, 2013b). Furthermore, I theorised that if the tutors took up the objects in some way, they would need to negotiate with the students how actions might be mediated with this novel mediational means. This negotiation, of course, would involve the notions of agency and intersubjectivity.

I introduced two main objects for each session. The first was a lesson plan that outlined a broad structure for the tutoring session (Appendices A and B), and the second was an object related to the tutoring subject. Objects were chosen so that they could be easily handled, and could potentially be acted with or through as mediational means for the purposes of tutoring. I did not require the tutors to use the objects, nor did I provide any guidance about how the objects might be used. I went over the lesson plans and objects with the tutors before their first tutoring session, and at times gave them materials to take away with them so they could prepare for the session. Therefore, the lesson plans and objects were explicitly for the tutor. The students' only requirement was participating, and I did not request they prepare any materials of their own for the session. Some students did, however, start sessions with some of their materials, such as papers, pens and workbooks. I discuss the tutoring subjects and the material features of the novel objects further in section 2.3.

2.2 Participants: Recruitment and ethical considerations

This study involves three types of participant: students, tutors, and the researcher. Students and tutors required a different approach to recruitment and ethical considerations while the inclusion of the self (the researcher) in the analysis of the study required thoughtful reflection as well as ethical considerations. Regarding ethics, I follow the approach outlined in Pirini et al. (2014, p. 239), focusing on 'sharing control over what constitutes research'. This inclusive practice not only ensures participants are comfortable and natural during data collection, but enriches the process and outcomes of research with the additional input of the participants.

2.2.1 Students: Recruitment and ethical considerations

I recruited nine students aged between 16 and 19 years, who were current or previous clients of Pencilcase tutoring. For these students, relatively regular one-to-one in-home tutoring is a normal part of student life. All of the students were unique in that they had different dispositions towards school, experience with different subjects, and had initially worked with Pencilcase tutoring for different reasons. The main criteria were their willingness to participate in the study, their previous experience with one-to-one in-home tutoring, and some interest in mathematics, English or biology.

There were some ethical considerations during student recruitment. Students are aged between 16 – 19 years, and, therefore, can provide informed consent.

However, as Pencilcase clients they have an established relationship with the researcher that may be viewed as coercive to some extent, as students may feel obliged to participate or be concerned about the continued provision of tutoring if they were to decline. I mitigated this potential issue by using a third-party recruitment strategy. I identified the names of past and present clients who may have been interested in participating, and passed their details to a third party not involved in the study. Since tutoring usually occurs in the students' home, and all student participants live with their parents, the third-party recruiter contacted parents first to request their permission for in-home tutoring. The parents were asked to inform the student of the research. On the one hand this provided a layer of protection for the student participants, and on the other hand it decreased their autonomy (Trussel, 2008; Matutina, 2009) and limited their full participation as co-researchers. However, given the requirements of tutoring in-home it was deemed preferable to contact parents in the first instance. The third-party remained the potential participants' main source of contact until the students had received the information about the study, taken their time to make a decision, and provided informed consent. Only once consent had been received, did I contact the students to arrange a tutoring session.

2.2.2 Tutors: Recruitment and ethical considerations

Three tutors participated in the study. Tutors had received tutor training from myself as part of their work for Pencilcase tutoring and had tutored for at least one year. Tutor training consists of a three-hour group training session where

tutors learn practical techniques to build rapport with students, establish goals for tutoring and work with course content. The tutors were very capable and have had 20 or more hours of one-to-one tutoring experience. All tutors were current university students; each tutor was a specialist in mathematics, biology or English and delivered a total of three sessions, each to a different student, on their specialist subject. Beyond these requirements, the only criteria were the tutors' willingness to participate in the research, which manifested in an interest in the practice of tutoring. The biology tutor, Didi, ran three tutoring sessions on brain anatomy. Didi was completing her masters in osteopathy during data collection and is an experienced biology tutor. The mathematics tutor, Sean, ran three tutoring sessions on a probability problem. Sean has two years tutoring experience with mathematics and economics. The English tutor, Emma, ran three tutoring sessions analysing texts. Emma is an honours student in media studies and has many years of tutoring experience with English students at all levels.

I used a third party recruitment strategy with tutors as well, as I had some concern that, as contract tutors for Pencilcase tutoring, the tutors might feel obliged to participate and have some apprehensions about their ongoing work. Although, as contractors tutors have much more autonomy than employees which mitigates this potential issue to some extent. I have found that tutors regularly turn down work when they are too busy, or are already satisfied with their current workload. I was hoping that they would similarly feel comfortable turning down participating in research if it did not suit them. The research

information sheet (Appendix E) emphasises that tutors would not be assessed on *how* they delivered tutoring, as this is not a feature of the study. Tutors all have their style of tutoring, and a particular way of carrying out the session was not suggested.

2.2.3 The researcher as participant: Reflections and ethical considerations

As I investigate *research into high school tutoring*, the final participant was myself, as the researcher. Lewis and Nicholls (2013, p. 54) point out that research with observation ‘involves an interaction in which the researcher is present, and sometimes an active participant’. For example during research into business coaching I spoke with the participants prior to the coaching session and asked them where they would be comfortable with me sitting. Or, at one moment I partly interrupted the session to remove a chair that was obstructing a video camera (Norris et al., 2014). In this project, I take a slightly different approach to data analysis because I analyse the participants’ interactions with the researcher, as well as the participants and their interactions with one another. In a sense, I raise the curtain of research to focus explicitly at times on how the researcher enters into the attention of the participants. Of course, a researcher is quite often present when collecting data, and this is true regardless of the analytical focus and whether the researcher includes themselves in the analysis or not. My presence as the researcher in the data, therefore, is not an unusual occurrence. In this study, what is somewhat unusual is that I broaden the more common focus from the participants, to

include myself because I theorise that interactions with the researcher have implications for investigating agency and intersubjectivity.

I analyse myself as the researcher using the video data from the tutoring sessions. The interactions involving the researcher where agency and intersubjectivity are most strongly implicated, or are relevant, occur near the beginning and ending of tutoring. I appear in the shot in the moments after I turn on the camera and move to take my seat. Often I speak to the participants as I move off towards the back of the room, or around a corner. I also appear in the shot at the end of the sessions as participants turn to me once they have finished with the tutoring. It is these moments that I set out to collect data on, while researching tutoring. However, I analyse primarily the mediated actions I produce, as recorded through the video data, and as visible in the actions of the tutor and student. For example, using the modal density foreground/background continuum (Norris, 2004, 2006, 2009, 2011a), introduced in detail in chapter four, I analyse how the tutor and student orientate to me as the researcher, and how they attend to, or are aware of, me and the research materials (e.g. camera, microphone) throughout the session.

2.3 Tutoring subjects and novel objects/mediational

means

I chose to study three subjects for the tutoring sessions so that a variety of different types of tutoring problems might come up. Mathematics, English and biology are commonly taught in schools and sought by families for tutoring. Students, therefore, have experience with these subjects, and tutors have experience tutoring them. Again, this contributes to the naturally occurring nature of the tutoring sessions. As outlined above, each tutor was a specialist in mathematics, English or biology, and delivered a total of three sessions, each to a different student, on their specialist subject. Now, I justify the subject choices I made, and introduce each of the novel objects in detail.

2.3.1 Tutoring subjects

Subjects provide a central context for educational activities and, therefore, have wide-ranging influence on pedagogical activities produced in the pursuit of some level of mastery of these subjects. Given that different subjects are likely to provide a different pedagogical context I included a range of subjects with different features. Grossman and Stodolsky (1995) surveyed teachers from different subjects, including English, mathematics, social studies, science and foreign languages. They found that teachers differ in their conceptions of the subject matter along at least three features. These features include the extent to which teachers agree on the content of the subject, the extent to which a subject is perceived as static or dynamic in terms of changing knowledge and

definitions, and the extent to which prior, or sequential learning is important. To ensure a variety of different tutoring problems, I chose subjects that show some variance in terms of these features. Mathematics is considered highly sequential, making it very difficult to progress without prior learning. English, and to some extent biology, are less sequential and more global. Students within English, for instance, could be partly characterised as working on continually developing a similar set of skills each year. Mathematics and English are relatively static, although the texts in English may change. Biology, however, introduces new topics such as genetics, and greenhouse gases as the field develops and societal concerns fluctuate. Lastly teachers in mathematics are in broad agreement regarding the content of the course, while English and biology teachers agree to a lesser extent. In addition, the way that teachers conceive of their subjects, for example as sequential, impacts upon their approach to teaching (Stodolsky & Grossman, 1995). In Stodolsky and Grossman's findings mathematics teachers focussed more strongly on covering content than in less sequential subjects. It is reasonable to assume that these conceptions and pedagogical approaches flow through into how tutors conceive of subjects, and also how students conceive of subjects. Consequently, I chose to study tutoring sessions in mathematics, English and Biology to enable a potential range of different tutoring approaches and learning approaches.

2.3.2 Novel objects/mediational means

Here, I describe in detail each of the novel objects that I introduced for the tutoring sessions. In most cases, I introduced a lesson plan that broadly

structured the session, and in all cases I introduced objects that could be handled. The lesson plan was the strongest requirement that I placed over the tutoring session, and I pointed out that the tutoring session needed to remain broadly within the confines of the topic. The English tutor Emma chose to tutor texts that she had worked with previously, so I did not prepare a lesson plan for her. As pointed out above, I gave the lesson plans and novel objects to tutors, because this provided the potential to study agency in relation to objects as they are taken up as mediational means through action (Geenen, 2013; Norris, 2013; Scollon, 1998; Wertsch, 1998). But, I also perceived tutors as co-researchers, giving them autonomy in choosing their own material such as texts in the case of Emma, and autonomy over *how* they carried out the tutoring session.

2.3.2.1 Mathematics

The mathematics tutor, Sean, ran three tutoring sessions on a probability problem known as the Monty Hall Problem. The Monty Hall problem is an example of a class of probability problems that relate to the proportionality principle. I provided Sean with a lesson plan (Appendix A), a list of problems that started with the Monty Hall Problem and became progressively more difficult (Appendix C), and some models. The models included three cardboard boxes, two goats and a car, shown in Figure 2.1. The models were designed to have potential as mediational means to demonstrate the Monty Hall Problem.



Figure 2.1: Objects provided for the Monty Hall Problem.

The Monty Hall Problem is based on a game show where the host asks a contestant to choose one of three doors. Behind two doors are goats, and behind one is a car. After the contestant makes their choice, the host opens one of the doors that they did not choose. As the host knows the location of the car, they always open a door to reveal a goat. They then give the contestant the opportunity to change doors or stay with their original choice. The probabilities involved in the choice can be described using the proportionality principle, and the contestant always has a higher chance of winning if they switch doors. However, people are often convinced by their intuitive understanding of the probabilities that the odds are 50/50 (Krauss & Wang, 2003). The intent of the session was to help the student develop an understanding of the Monty Hall Problem, and the proportionality principle, which relates to statistics and general mathematics in school. I included more advanced questions for

students that already knew of the problem, or quickly understood the underlying probability (Appendix C). These questions required different applications of the probability principle, for example in one the game show host slips and opens a door by mistake, rather than on purpose. These additional questions could be used to extend students, and check the depth of their understanding.

2.3.2.2 English

The English tutor, Emma, ran three tutoring sessions analysing texts. Emma had more input into her topic than the other tutors, as she chose the poem to analyse in the tutoring sessions. The poem was Friends, by Hone Tuwhare. Emma particularly appreciates some of the features in this poem and had recently analysed it in a session with one of her regular students. Therefore after some discussion, we decided it would be a good poem for her to work with, as she already knew many of the language features, the themes in the poem and how these could be addressed in relation to assessment. I provided copies of the poem (Appendix D), plus a model tree and some human figurines, shown in Figure 2.2.



Figure 2.2: The model tree and human figurines provided for the poem Friends by Hone Tuwhare.

The poem involves a boy reminiscing about his youth, and time spent playing under a tree. These models were selected to provide the possibility of illustrating some features of the poem. Also, Emma brought along many of her own mediational means to the sessions, including details of the assessment criteria for the curriculum, past exam questions and blank paper.

Emma tutored the poem Friends for two sessions. In the third session, the student Pranto requested that they work on a scene from Shakespeare's play Richard III. He was working on this play in preparation for his exams and was also a current student of Emma's. Tutoring with Pranto therefore provided an opportunity to collect data from a regularly occurring tutoring session, and provide a comparison with the other purposefully organised tutoring sessions.

For this session, I provided some novel objects. These were model soldiers, ghosts, a crown and some flags, shown in Figure 2.3.



Figure 2.3: Models provided for a scene from Richard III.

I selected these objects after discussion with Emma about the most appropriate mediational means for the scene. In this sense they were not novel in that Emma was involved in selecting them, however they were novel from the perspective of Emma's tutoring practice, as she does not usually use models and relies mainly on paper-based tutoring materials.

2.3.2.3 Biology

I introduced a lesson plan regarding brain anatomy (Appendix B) for the biology session, which outlined a broad three-part approach to brain anatomy. Part one involved discussing the various functions of the brain and producing a brainstorm of the results. Part two involved introducing brain anatomy and

relating the functions of the brain to the different parts of the brain. Part three related the evolutionary advantages of humans to the brain. I also introduced a model brain, shown in Figure 2.4.



Figure 2.4: Model brain provided for the brain anatomy topic.

The model was plastic and could be split into separate hemispheres. Brain structures were highlighted on the inside face of each hemisphere, and the outside surface was textured mimicking the folds of a brain.

2.3.4 Organisation of tutoring sessions

Table 2.1 presents an overview of the tutoring sessions, showing the three tutors and the students that they had tutoring sessions with.

Table 2.1: Tutors, and the students that they worked with during the research.

Tutors and subjects	Students		
Sean, mathematics	Terrese	Eleanor	Nikora
Didi, biology	Summer	Olivia	Jackson
Emma, English	Kate	Sarah	Pranto

Data from tutoring sessions was collected across approximately a 6-month period.

2.4 Data Collection

In this section, I describe my methods of data collection. These include data recording using a video camera and microphone, observation of tutoring sessions and informal interviews.

2.4.1 Data Recording

I recorded video and audio data from tutoring sessions using a Kodak Zi8 camera, pictured in Figure 2.5, paired with an unbranded lens to widen the field

of view which provided more options for positioning the camera (Luff & Heath, 2012). The Kodak Zi8 captures HD quality video but is small which makes it unobtrusive and facilitates more natural interactions. It measures 11.5 X 2.2 X 6cm.



Figure 2.5: The Kodak Zi8 camera placed on a table on a mini-tripod.

I placed the camera on a tripod on a table, or on a freestanding tripod resting on the floor, depending on the configuration of the room. I connected a shotgun microphone to the camera to improve the audio quality of the video, and to dampen peripheral sound. I positioned the camera to capture a single stable mid-shot, an example of the field of view in a single stable mid-shot is shown in Figure 2.6.



Figure 2.6: Example composition of a mid-shot capturing participants' upper bodies and the table area in front of them.

The shot includes the participants' bodies that were visible above the tabletop, and the area in front of the participants where they were likely to interact with objects and produce other body movements, such as gestures, posture shifts and gaze shifts. This area constituted the region where actions or events of analytic interest were most likely to occur (Luff & Heath, 2012) but precluded collecting video data from outside of this area. The single stable mid-shot provided sufficient coverage of the environment as the tutor and student remained in their seats throughout the tutoring session. I set up the camera immediately after arriving at the house and greeting the participants. This usually took no more than five minutes. I always attempted to turn the camera on without explicitly alerting participants, to distinguish as little as possible between being 'on' and 'off' camera. After turning on the camera, I would retire to take a seat in the background, and preferably out of camera shot, with some

view of the participants. After the participants had indicated that the tutoring session was complete, I would return to the camera and turn it off, while talking with the participants.

2.4.2 Observation

Ritchie (2003) points out that observation:

‘is a particularly useful approach when a study is concerned with investigating a “process” involving several players, where an understanding of non-verbal communications are likely to be important or where the behavioural consequences of events form a focal point of study.’

(Ritchie, 2003, p. 35).

I employed observation for the purposes Ritchie identifies. Also I used observation to both triangulate findings with video data, and address some of the shortcomings of video data. The nature of video data collection highlights some aspects of interaction, and obscures others (Luff & Heath, 2012; Norris et al., 2014). Those aspects that are most obviously obscured include anything occurring outside of the camera shot. In addition, subjective experiences of the environment may not be detectable in video data, but provide some valuable perspective to later analysis. Therefore, I observed tutoring sessions during data collection and took field notes to ensure that I could capture analytically relevant aspects of the environment and the interaction that were not available

in video data. These include for example, temperature, smells, activities occurring out of shot, and the interactions between the tutor and student before, after and during camera set up. While I observed tutoring sessions, I was focussed on the tutoring session and did not collect any data on my role as the researcher.

2.4.3 Semi-structured Interviews

I conducted phone interviews with students and tutors to access a source of data that cannot be observed during the tutoring session, or captured on video (Patton, 2003). These data provide some indication of the non-observable sociocultural aspects of agency and intersubjectivity. When interviewing students, I completed interviews approximately two weeks after their tutoring session. For tutor interviews I waited until they had completed their series of three tutoring sessions. During interviews I followed a semi-structured approach. Minichiello et al. (2008) suggest a semi-structured interview approach provides data that are 'more systematic and comprehensive than in the informal, conversational interview, while the tone of the interview remains fairly conversational and informal' (p. 52). This approach allowed me to investigate specific aspects of tutoring while remaining open to directions that the student or tutor might take the interview in. For example, participants might talk at length about topics that were more interesting to them, revisit specific topics, and introduce topics outside of the themes I had identified. I operationalised the semi-structured approach by identifying relevant themes

for the interviews. The relevant themes were phrased as questions for ease of use and are presented below.

Student interview themes

- What made you begin to take tutoring?
- What did you expect from tutoring?
- What was it about the tutoring that helped you?
- In a normal tutoring session what do you do?
- What would you say is most unique about tutoring compared with school?
- Do you ever use objects or anything at school?
- What made you interested in getting tutoring? Was it your choice or was it something that your parents thought you should do?

Tutor interview themes

- What do you enjoy most about tutoring?
- What made you start tutoring?
- Did you find you became more comfortable with the tutoring material over the course of the three sessions?
- Did the object become useful in the tutoring sessions?
- Do you include objects like this in your own sessions?
- Having used an object designed for the topic you were tutoring, would you consider using something similar in future?

Interviews naturally lasted between 5 and 15 minutes. All the interviews were transcribed, and one of the most relevant findings from the interview data was the explicit connection to the business/service aspect of tutoring. For instance, in the interview with the student Kate, when asked *What would you say is most unique about tutoring compared with school?* she responds:

Interview 2.1: Kate

(419) Kate: most unique.
(420) um, (...)
(421) I guess, (.)
(422) like,

(423) cuz they're there for you,
(424) so you don't feel, (.)
(425) bad about asking questions,
(426) or like,
(427) more than one,
(428) you know?
(429) but,
(430) sometimes at school,
(431) after you've asked one question,
(432) and if you still don't get it?
(433) Jesse: mm hm[m
(434) Kate: [you kinda think,
(435) well,
(436) I'm holding the th'rest of the class up?

Kate addresses the benefit of having a person devoted to her learning, which makes her feel comfortable asking many questions without feeling as if she is wasting other people's time. There is an implication here that the exchange of money for a service facilitates Kate's sense of not 'feeling bad' about asking questions of the tutor.

2.5 Selecting video excerpts to present in analysis chapters

A strength of this thesis is the close contact I have with the tutors and students throughout the research process (Garner et al., 2006; Smith, 1999), and my immersion in tutoring and knowledge communication through Pencilcase. I seek to develop a useful understanding (Elliott, 2006) of *tutoring*, and *research into tutoring* to progress the field of knowledge communication, and of multimodality. The utility of my findings rely on understanding my dataset, and considering the extent that my findings support developing understanding beyond the boundaries of this thesis. In this section, I describe the analytical

decisions I made when selecting excerpts for analysis in this thesis. All but two of the excerpts are representative of situations in the wider data set. The two excerpts that are not representative are in section 8.1 and 8.2. These excerpts were selected because they show an unusual occurrence and can therefore be used to illustrate my points in chapter eight.

In order to determine which excerpts to utilise, I engaged repeatedly in the data through extensive analysis. I have transcribed many different excerpts, and discussed my analyses with other experienced researchers within the Multimodal Research Centre where I am based, and with colleagues outside of the centre. Throughout this in-depth analytic engagement (Freeman, Preissle, Roulston, Pierre, & others, 2007) I applied the methodological tools of multimodal (inter)action analysis (Norris, 2002, 2004, 2006, 2009, 2010, 2011a, 2011c, 2012a, 2012b, 2012c, 2012d, 2013a, 2013b, 2014a, 2014b, 2015a, 2015b), presented in detail in chapter four. Some of these analyses have been published (e.g. Pirini, 2014c) and others presented at conferences (Pirini, 2014b). However, I have also conducted many as yet unpublished analyses that contribute to arriving at the final analyses presented here.

By engaging deeply in my data, as described above, I established the extent to which my findings are representative of phenomena within the dataset. In this thesis I seek to develop understanding of complex social interaction, rather than make predictions about what might happen under controlled circumstances (Denzin, 2009). Through developing this understanding, I contribute theoretical/methodological tools that can be applied in other contexts. As a

result of deep engagement in the data, I have determined the applicability of the theoretical/methodological tools that I develop to the dataset.

However, to advance knowledge communication, and multimodal (inter)action analysis, it is important also that these theoretical/methodological tools are applicable more widely. In order to apply the understanding that I develop within this thesis to other contexts, I draw on the established theoretical and methodological framework of multimodal (inter)action analysis (Norris, 2002, 2004, 2006, 2009, 2010, 2011a, 2011c, 2012a, 2012b, 2012c, 2012d, 2013a, 2013b, 2014a, 2014b, 2015a, 2015b). I introduce multimodal (inter)action analysis in detail in chapter four, however here I would like to point out that as a methodological framework, multimodal (inter)action analysis has a range of methodological tools that have been applied in many different contexts (Adams, 2015; Geenen, 2013; Krystallidou, 2014; Kuśmierczyk, 2013; Makboon, 2013; Pirini, 2013a, 2014c; White, 2011, 2012). I apply these tools in this thesis to analyse my data, and to develop the theoretical/methodological tools of primary agency, handing (or taking on) primary agency, and tiers of intersubjectivity. The extent to which the theoretical/methodological tools that I develop here can be applied in other contexts thus relies on their congruence with the established framework of multimodal (inter)action analysis (Norris, 2002, 2004, 2006, 2009, 2010, 2011a, 2011c, 2012a, 2012b, 2012c, 2012d, 2013a, 2013b, 2014a, 2014b, 2015a, 2015b). As I will show in subsequent chapters, the theoretical/methodological tools I develop are built upon the currently existing theoretical and methodological framework of multimodal

(inter)action analysis. In addition, in chapter ten I consider the limitations of this approach, and future directions to further strengthen the findings of this thesis.

2.6 Conclusion

In this chapter, I have outlined the design of the study that this thesis is based on. I described my approach, as research into naturally occurring tutoring sessions, with a qualitative experimental facet. Throughout research design, I focused on how tutors and students are treated as co-researchers, and the importance this plays in overcoming the observer paradox, and ensuring ethical research practice. I also addressed how I included myself as the researcher, and the relevance of the researcher in my investigation into notions of agency and intersubjectivity. I then described the participants in the study, and how they were recruited. After that I described the tutoring subjects I selected, and the novel objects/mediational means I provided for each subject. I then described my data collection methods. Lastly, I explained my approach to selecting excerpts for the analysis chapters. In the next chapter I review the thematic literature, identifying some gaps in the literature that I seek to address in subsequent chapters.

3.0 Thematic Literature Review

In this chapter I first describe the growth of tutoring worldwide, and discuss the reasons that parents and students seek out tutoring. After that I describe the research supporting the efficacy of tutoring, and review research into the metaphor of scaffolding that is commonly applied to tutoring. Following this introduction to tutoring I review the literature regarding agency and intersubjectivity. I then outline the development of models of communication, from transmission models to co-constructive transactional models. Next, I review a wide range of approaches taken to defining knowledge. After introducing both communication and knowledge, I explore the knowledge communication literature in detail. Finally I review the notion of co-construction that is dominant within literature on interaction and contrast this with the notion of co-production.

3.1 Tutoring

Tutoring is a popular adjunct to schooling. In this section, I discuss the growth of tutoring to emphasise its relevance as a topic of study in knowledge communication. I then discuss research into the efficacy of tutoring, showing that research is definitive about the efficacy of tutoring; however, where this efficacy stems from is much less clear. Lastly, I examine the notion of scaffolding, which has been developed partly in studies on tutoring. As I outlined in chapter one, the metaphor of scaffolding captures to some extent

the notion of agency that I am seeking to address. Here I review the literature in more detail to differentiate my focus on agency from that of scaffolding.

3.1.1 Growth of tutoring

Parents seek tutoring for their children to increase their understanding of the subject, improve self-confidence, and help them achieve high academic grades (Ireson & Rushforth, 2005). Parents put a premium on education and are willing to invest to increase their child's performance and opportunities. Tutoring can increase a child's educational outcomes, opportunity of entry into tertiary education, and eventually income and standard of living (Bray, 2006). Tutoring generally operates as part of the shadow education system, which refers to supplementary academic support outside of the hours of mainstream schooling (Bray, 2006). This shadow education system is a large and growing industry in Asia, Europe, the UK, and North America (Gordon, 2007; Ireson & Rushforth, 2005). In New Zealand, the New Zealand Tutoring Association (NZTA) was established in 2008 to represent tutoring companies. Research is not available regarding the extent of tutoring in New Zealand; however, the establishment of the NZTA, global trends, and a visible increase in local tutoring companies, suggest that tutoring in New Zealand is following global trends of growth.

The growing popularity of tutoring raises the issue of equal access. Families with more money are able to purchase higher quality and quantities of tutoring. The cost of tutoring may disadvantage students in lower socioeconomic groups, contributing to both maintaining and growing social stratification. Governments

worldwide have at times intervened in the private tutoring market, even enforcing prohibition of tutoring at times (Bray, 2006). However, in one instance Bray (2006) found that government intervention led to an *increase* in private tutoring, rather than a decrease. Dang and Rogers (2008) develop a framework for assessing the efficiency and equity effects of tutoring, arguing that tutoring can raise the effectiveness of the education system under the right conditions. While I take a micro-level focus on interaction in this thesis, clearly tutoring has institutional and social implications that extend beyond the micro-level. A better understanding of what happens in tutoring sessions, at the level of the interaction, may contribute to making high quality tutoring more widely accessible.

3.1.2 Efficacy of tutoring

Compared to learning in a classroom setting, one to one tutoring has been shown to be considerably more beneficial to students' examination performance. In a period of instruction over three weeks, students who were taught material in a one-to-one tutoring situation were found to perform above 98% of the students in the control class (Anania, 1981, 1983; A. J. Burke, 1983). This places the students in the one-to-one tutoring group two standard deviations above the students taught in a traditional classroom setting. Further evidence supporting the efficacy of tutoring comes from a meta-analysis of 65 studies that described the effects of tutoring (Cohen, Kulik, & Kulik, 1982). These effects were significant in two main areas: student achievement on examinations and student attitudes towards subject matter. Of the 52 studies

that reported on student examination achievement, 45 showed students receiving tutoring performed higher than those in conventional classrooms. Eight studies reported on student attitudes towards the subject matter, and all showed student attitudes were more positive towards their subject when receiving tutoring. Student self-esteem was also included, and seven studies found students had higher self-esteem when receiving tutoring, while two found students in conventional classrooms had higher self-esteem. However the self-esteem findings were not statistically significant and further research has been suggested.

While some studies do vary, there is extensive support for the efficacy of tutoring. However, what it is that goes on in tutoring to contribute to its efficacy remains unclear. Chi, Roy and Hausmann (2008) tested three hypotheses regarding the effectiveness of tutoring. These hypotheses attribute the effectiveness of tutoring to either the actions of the tutor, the actions of the tutee, or the interaction between both. The results suggest that the interaction between tutor and tutee is responsible for the effectiveness of tutoring, rather than the specific actions of the tutor or the tutee.

Research into multiple representations by Kozma (2003) suggests one important difference between tutors, as experts, and students may manifest in the way that experts use multiple representations. Kozma (2003) describes experienced scientists using the material features of multiple representations to support shared understanding and laboratory practices. He found that experienced scientists use representations, such as chemical diagrams, and models of

elements, to support their understanding of underlying processes. Less experienced students in contrast were not able to fluently move across different representations, e.g. from diagram to model. Their discourse was focussed on the surface elements of a representation, rather than the underlying chemical processes. In turn they found it difficult to shift from one representation to another. Kozma's findings support the notion that mediational means are always multiple (Geenen, 2013; Scollon, 1998; Wertsch, 1998) and suggest that experts, operating with the same material objects as novices, are producing very different complex-mediational means (Geenen, 2013), which in turn contribute to their production of very different actions from the novice. In a tutoring situation an expert is working to support a novice to develop practices and understanding of topics. The tutor uses objects in different ways, and the objects will mean different things to them than to the student. This study investigates some ways that a tutor works to help a student take on or develop some mediational means that an expert uses.

3.2.3 Scaffolding in tutoring research

Research into tutoring and learning has resulted in the metaphor of 'scaffolding' to describe how more experienced people effectively support learners during tutoring (most commonly in the context of adult/child interactions). Wood and Wood (1996) identify the following five key functions of scaffolding in adult/child interactions:

1. Recruiting the child's interest in the task
2. Establishing and maintaining orientation towards task-relevant goals
3. Highlighting critical features of the task that the child might overlook
4. Demonstrating how to achieve goals
5. Helping to control frustration

(Wood & Wood, 1996, p. 5)

Optimal scaffolding involves providing support contingent on the learner's current abilities. When a student is unable to carry out many aspects of a task independently a tutor provides more support, including modeling and explicit direction. As a student becomes more independent a tutor provides more indirect support, such as open questions and more strategic cues. A tutor who is able to alter their approach contingent on the student's actions is likely to be more effective. In an early study into scaffolding Wood and Middleton (1975) studied mothers helping their children build block towers. They found that the most effective instruction came from mothers who displayed more strategic changes in their approach to helping.

Research into scaffolding predominantly focuses on the mode of spoken language. In some cases tutors are instructed to always start with verbal support, before 'showing' the student what to do (Wood et al., 1976). Sharpe (2006) briefly considers multimodal strategies in scaffolding during a year 7

history class, but focuses primarily on multimodality in terms of supplying diagrams and images. She concludes that providing diagrams and images along with verbal instruction results in 'message abundance' (Gibbons, 2003) which aids learning. The lack of consideration of the actions that students take with diagrams and images, and the contribution beyond spoken language to scaffolding represents a gap in the research that I address in this thesis.

When considering *what* students learn through scaffolding, Rogoff (1990) argues that 'individual appropriation of practices occurs in a creative process' (p. 197), suggesting that rather than social interaction fostering the *reproduction* of knowledge, it is transformed as social actors partake in social interaction. This notion of knowledge aligns with the approach taken in knowledge communication when referring to knowledge as part of social interaction (Kastberg, 2007, 2011).

The scaffolding metaphor captures to some extent the notion of agency that I explore in this thesis; however, there are some crucial differences. Scaffolding is most commonly applied in structured settings, where the task definition is very clear and the more experienced social actor always has some conception of what the student should be doing. In tutoring I have observed tutors 'leaving students to it', in a way that scaffolding does not capture. Identifying and describing the features of this type of action is one of the research gaps I seek to fill in this thesis.

3.2 Agency

Agency is often conceived as a struggle between social and institutional structures and the agency of the individual (Emirbayer and Mische, 1998).

Theorists tackle the extent to which people have agency, or are constrained by the structures of society. This perspective positions agency within the individual, and poses social actors in a struggle against social and institutional norms. However, work drawing on Vygotsky (1976) and the notion of mediated action proposes an approach that does not search for agency in the individual. Wertsch, Tulviste and Hagstrom (1993) argue that ‘the nature of individuals’ mental functioning can be understood only by beginning with a consideration of the social system in which it entails’ (p. 340). A sociocultural approach to agency goes beyond the individual mind as the centre of human action, and has revealed promising results in defining an empirically useful notion of agency. As Norris and Jones (2005b) point out:

‘...human action is *never* a matter of individual agency, but instead a product of the “tension” between the agency of the individual and the agendas embedded in the mediational means made available in the socio-cultural setting and appropriated into the individual’s *habitus* as components of social practices’

(Norris and Jones, 2005b, pp. 170-171).

Here I review the literature that construes agency in these sociocultural terms, seeking agency in the interaction between social actors and the sociocultural environment. I start with a discussion of agency that focuses on language as the primary mediational means, and then expand my review to sociocultural approaches to agency that address a wider range of mediational means, through mediated action. The agency literature is extremely broad, and since I am interested in an empirically applicable notion of agency that can be applied to knowledge communication, I limit my literature review to those researchers working with empirical data and taking a sociocultural approach.

3.2.1 Agency mediated by language

Ahearn (2001) offers a notion of agency based somewhat on how people view their own actions. She points out that 'it is important to ask how people themselves conceive of their own actions and whether they attribute responsibility for events to individuals, to fate, to deities, or to other animate or inanimate forces' (2001, p. 113). Thus she treats agency as a property of action. However, she does not rely entirely on the perceptions of the social actor. Rather she offers a broad definition of agency as 'the socioculturally mediated capacity to act' (Ahearn, 2001, p. 112). This definition is important because Ahearn (2001) positions the social actor's perceptions of their agency within the inherent tension between the social actor, and the mediational means, which they act with and through. In an ethnographic study of a Nepalese village, Ahearn (2000) noted shifting values as the village became more exposed to the outside world. People in the village began to value individual agency, more so

than fate, karma or religious deities. One manifestation of this shift in values was for people to choose their own marriage partners, and Ahearn studies how love letter writing expressed agency. Ahearn (2000) notes that 'love letters reflect and shape the shift – a shift that is not yet complete or even necessarily unidirectional – currently underway in how villagers conceive of their own agency' (p. 204). Agency then can be seen as mediated through these love letters, and although Ahearn focuses primarily on the language used in the letters, she positions language, through ethnography, within a much wider suite of courtship activities including secret meetings, stolen conversations and the passing of letters to one another.

Van Lier (2008) suggests taking a language mediated approach to agency, and positions his discussion within classroom discourse. He provides six examples of student talk during classroom teaching, and argues that they display different degrees of agency. Van Lier argues for a two-stage approach to agency. The first involves analysis of the talk of social actors to determine the extent to which they produce their actions agentively. This analysis focuses on how social actors display initiative in their talk, addressing 'aspects of the voluntary initiation of verbal behaviour in social-interactive contexts' (van Lier, 2008, p. 175). From the learner's perspective, agency involves the notion of having an opinion to share and feeling that it is important to be heard. Van Lier questions how classrooms might allow or encourage such expressions of agency. For Van Lier agency is mediated through classroom talk, and the classroom environment has the potential to foster agency, or to stifle agency in terms of initiative. The

second stage of Van Lier's approach involves interviewing social actors to access their own perceptions of their actions, and whether they produce these as agentive. This second level of agency draws on Duranti (1993) who proposes that agency includes some realisation that a person's actions are their own responsibility.

In this section I have presented approaches to agency that focus on language as the most important mediational means through which agency is expressed (e.g. Van Lier, 2008), or can be studied (e.g. Ahearn 2000, 2001). These approaches take a sociocultural perspective on mediation, and include interviewing participants to gain insight into their own perceptions of their agency. I now explore approaches that focus on mediational means that go beyond language.

3.2.2 Agency mediated multimodally

Norris (2005) views agency through a layers of discourse model. Similar to Ahearn (2000, 2001) Norris builds an argument based on how people perceive themselves as agentive to varying extents. However, Norris focuses on mediated action and includes multiple modes in her analysis, where Ahearn drew primarily upon language as a mediational means. Norris (2005) uses a combination of sociolinguistic interviews, ethnography and video analysis to collect data on the mediated actions produced by two women, Anna and Sandra in Germany. She draws on nexus analysis (Scollon & Scollon, 2004) and multimodal (inter)action analysis (Norris, 2004) to position their actions within the sociocultural environment and tease apart the notion of agency. In one

example Anna is participating in a sociolinguistic interview with Norris, discussing her identity. At the same time she irons clothes, watches daytime TV, and interacts with her daughter. Anna's actions here multimodally produce her identity element as a housewife, and she discusses how she came to take on the role of housewife. Norris argues that Anna's narrative shows that she took on the social norm of being a housewife and relying financially on her husband as a conscious meaning-making agent. Anna's use of active constructions produces herself as responsible for and happy with taking on the social norm of housewife. Here, Norris makes explicit links between everyday actions, such as ironing clothes, and how the social actor perceives of her actions within social norms that serve to position Anna as a housewife. In a second example Norris shows Sandra, a newly divorced woman struggling to take on a new identity of single-mother. Sandra produces new actions, many of which her husband used to produce, and she produces these actions agentively. Norris's analysis of Sandra's agency is based on Sandra's talk about her actions, her action of putting together a computer (an action her husband used to do), and paintings Sandra has painted and displayed on the walls of her house.

Both Sandra and Anna's actions can be analysed through a layers of discourse model. Norris (2011a) identifies the following three layers in the model:

1. *The outer layers of discourse*: Formed by the larger society, enforced by the extended networks that a social actor is part of, and by institutions that the social actor engages with.

2. *The intermediary layers of discourse*: Formed by a social actor with and through their immediate and extended networks. This layer is enacted with networks like friends and family.

3. *The central layers of discourse*: Formed by a social actor enacting immediate actions. These are the actions that others are directly or indirectly responding to.

(Adapted from Norris, 2011a, pp. 179 – 180)

Norris argues that Sandra has chosen to pursue the new identity element of single-mother, and that this choice illustrates the agency at the central layer of discourse. Sandra could have pursued many other possible identity elements after her divorce. Anna, similarly, produces her housewife identity element at the central layer of discourse, and could have chosen other possible identity elements. Norris (2011a) also points out in her later work, when revisiting these examples, that at the outer layer of discourse social actors may have no, or very little agency. In the courtroom the lawyers and the court produce Sandra as both a good mother and a bad mother. These constructions of Sandra's identity are outside of her agentic control, and are enforced by the legal institution.

I have spent some time describing Norris's approach to agency as she defines all actions as identity producing, and therefore these notions of agency as choices made between possible options at the central layer of discourse can potentially be applied to (inter)actions (Norris, 2004, 2011a) in general. The layers of

discourse model can also provide a useful link to how some other authors are treating agency. Williams (2009) investigates the day-to-day literacy practices of teenagers, showing that students have more agency, in terms of freedom of expression, on websites like YouTube, and a fan fiction website where students write their own stories. In a discussion of writing and agency, Lillis (2013) refers to online spaces as 'weakly regulated', and there is a link between Norris's (2011a) layers of discourse, and the notion of a weakly regulated space. Lillis (2013) argues that 'agency here, then, lies in opportunities for participating in practices where users feel they have some personal enjoyment, investment and control' (p. 146). By writing outside of institutions, such as school, students avoid the established discourses about what constitutes 'correct' writing, i.e. established genres or styles. Indeed, Lillis draws on the notion of agency as choice also, pointing out that

'...agency doesn't disappear in institutionalised semiotic spaces – people can also be identified as being agentive seeking ways to accommodate to regulatory space, recreating and recontextualising resources to create different spaces – but it is also the case that options for choice are more tightly constrained'

(Lillis, 2013, p. 139)

Thus, writing within school settings is more tightly constrained than writing online. However, Lillis argues that in both environments choice is a marker of agency. In addition, social actors can choose to act in environments that afford

more options or flexibility for meaning making. It is possible that one-to-one in home tutoring is an environment that affords students with more options or flexibility to produce meaning, than in classroom settings.

Lillis (2013) also addresses materiality in agency, suggesting that ownership over, or access to material means can open up opportunities for self-expression and identity. She focuses on notebooks as an example of material means that afford personal expression, and agency, since the social actor controls the semiotic space of the notebook. Recent work in anthropology also highlights the contribution of materiality and objects to agency. At times the balance is skewed too far towards the material, for example in Actor Network Theory (Latour, 2005), objects are attributed with the same potential for agency as human social actors. As I take the mediated action as my unit of analysis, defined as a social actor acting with and through mediational means (Scollon, 1998), I do not engage further with Actor Network Theory.

Malafouris (2008, 2013) studies an expert potter making pottery to frame a theoretical discussion of agency. One aspect of Malafouris' discussion focuses on the *sense of agency*, which in many ways equates to the notion of agency used by others taking a sociocultural approach (Ahearn, 2000, 2001; Norris, 2005; van Lier, 2008; Wertsch et al., 1993). Malafouris (2013) defines the sense of agency as 'not only generation and awareness of voluntary behaviours but also conscious perception of the effects of such behaviours and a sense of responsibility' (p. 214). This definition aligns somewhat with Duranti's (2004) definition of agency that incorporates some sense of responsibility for one's

actions and affected others, which van Lier (2008) draws on also. Malafouris clearly positions his definition of the sense of agency as an emergent property that does not sit with the social actor, nor with the material world. Rather he argues that 'the feeling of agency should be seen as an emergent property of action rather than as an *a priori* possession of the embodied biological organism' (Malafouris, 2013, p. 215).

Both Norris (2005, 2011a) and Malafouris (2008, 2013) direct their analytical focus towards the mediated action as the site for the expression or production of agency. Malafouris delineates between two notions of agency. The first is agency as initiating action. The second is agency incorporating a sense of responsibility and conscious perception. However, both these notions of agency remain largely theoretical, as with much of the research into agency. Thus, I seek to develop an empirically applicable approach to agency, that captures the sense of independence and ownership over one's actions that I have observed are so important to tutoring.

3.3 Intersubjectivity

Social actors produce some form of shared understanding in interaction. This notion of shared understanding is commonly referred to as intersubjectivity (Linell, 1998; Mortimer & Wertsch, 2003; Rommetveit, 1974, 1979b; Sidnell, 2014). Intersubjectivity is a multidisciplinary concept that spans a wide range of fields (Crossley, 1996). The concept of a shared understanding begins with the

notion of a 'reciprocity of perspectives' (Schutz, 1964) which involves some common-sense assumption produced by social actors regarding what others would see, based on what they themselves see (Duranti, 2010; Garfinkel, 1967).

In this section I review two related approaches to intersubjectivity that delve deeper into how social actors perceive a world in common. I focus my discussion on how social actors establish, maintain and/or dismantle intersubjectivity. The first approach primarily addresses how social actors establish intersubjectivity through spoken language. Rommetveit (1974, 1979a, 1979b) offers the notion of an architecture of intersubjectivity, established through spoken language, relating to the ongoing experience of social actors. While Rommetveit's approach involves much more than spoken language, he focuses on shared understanding developed through language. A conversation analytic perspective also relies on language, and treats intersubjectivity at the level of the sequential utterance (Schegloff, 1992; Sidnell, 2014; Sidnell & Stivers, 2012a). Other approaches to intersubjectivity address the notion of shared understanding more widely, and incorporate the materiality of the environment more directly. These approaches include, for example, how the positioning of social actors contributes to intersubjectivity. While I review these approaches separately, there is overlap between the two. In subsequent sections of this thesis I propose a methodological tool that encompasses both approaches, and can be applied to the analysis of interaction.

3.3.1 Establishing intersubjectivity through language

Rommetveit (1974) discusses the realities social actors experience as 'multifaceted, only partially shared and only fragmentarily known' (p. 34). In this deeply pluralistic view social actors cannot directly share one another's experience. Rommetveit (1974) contends that social actors are required to 'construct some sort of bridge between very different and previously separate social worlds' (p. 35). His perspective on language and intersubjectivity is grounded in a critique of literal meaning, arguing against language as a decontextualized system that can exist outside of its use. Throughout his work Rommetveit (1974, 1979a, 1979b, 1986) develops a conceptual framework to assess what he calls the 'architecture of intersubjectivity'. The notion of an architecture of intersubjectivity, thus, refers to the bridge social actors produce between pluralistic worlds during acts of verbal communication. Rommetveit suggests a system of spatio-temporal-interpersonal co-ordinates, depicted in Figure 3.1, that allow one to identify the time of the communicative act, its location, and the identification of the listener by the speaker and vice versa.

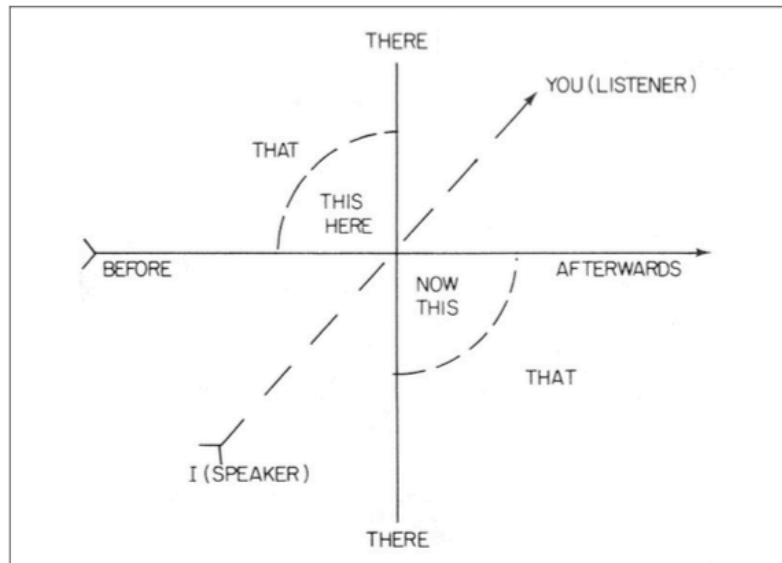


Figure 3.1: The spatio-temporal-interpersonal coordinates of the act of speech
(Reproduced from Rommetveit, 1979a, p. 95)

Rommetveit (1974) provides the example of two friends watching a football match on television. At the moment of a particularly strong tackle one friend exclaims ‘Magnificent!’ This cry achieves almost perfect intersubjectivity, as the second friend immediately comprehends the meaning of his friend’s utterance. The friends have a ‘fairly unequivocal and immediately shared social reality’ (Rommetveit, 1974, p. 30). If the friends were not watching the game, but were riding the bus some days later, there would be much more work required for the discussion of the tackle to be brought up. Rommetveit suggests a sentence such as ‘That tackle performed by the slim, funny-looking quarterback was magnificent!’ The friends, now on the bus, inhabit a different set of spatio-temporal-interpersonal co-ordinates. If the first friend was to simply exclaim ‘Magnificent!’ while riding the bus there would be very little shared social

reality with the second friend, and therefore no shared understanding of what 'Magnificent!' referred to in that instance. Rommetveit implicates the wider material environment in his notion of an architecture of intersubjectivity (e.g. the friends, in the same room, watching the game), but he focuses on how this relates to the shared meaning produced through verbal communication, and how language achieves intersubjectivity. Conversation analytic perspectives of intersubjectivity (Schegloff, 1992; Sidnell, 2014) take a more micro level view, zooming in to the level of the utterance to observe intersubjectivity in the sequential organisation of talk. The current utterance displays some responsiveness to the prior utterance, and therefore each utterance provides evidence of a shared, or not shared, understanding. Spoken language, whether taken at the level of individual utterances, or more sizeable units, clearly plays a critical role for social actors to share their private worlds. However, social actors do much more than produce spoken language, and now I review approaches to intersubjectivity that take a wider perspective.

3.3.2 Intersubjectivity beyond language

Goffman (1963) observed social actors entering into focussed interaction and determined that there must be some shared definition of the situation through which two or more social actors could demarcate what sort of focused interaction they were engaged in. This is important since it also determines what aspects of the social and material environment are made relevant, and irrelevant, and more specifically how actions and objects are defined. Goffman, building on Bateson (1972), developed frame analysis (Goffman, 1974) to

explain the notion of an overarching frame that provides a sense for how utterances and actions are to be taken. Similar to Rommetveit, Goffman recognises that in any interaction actions and utterances are not produced dependent on some meaning external to the interaction.

Kendon (1990, 1992) builds on Goffman's work to consider 'through what kinds of overt acts, do people come to be able to assume that their co-interactants share with them the same perspective in the situation as they do themselves?' (Kendon, 1990, p. 327). One way of doing this is through bodily alignment. The position that a person takes with their body defines what Kendon terms a 'transactional segment'. This segment projects out in front of a person's body. Kendon uses the example of himself sitting at a desk, and the transactional segment is the desk space that he orientates towards. At times people's transactional segments do not overlap, for example while standing in line for food, or sitting at a bus stop. However, at other times transactional segments produce joint attention, and Kendon notes that 'persons jointly interacting, jointly sustain an orientation to a common space to which they have an access that is different from others' (Kendon, 1992, p. 329). This notion of jointly attended space implicates a material aspect to intersubjectivity, and Kendon refers to this formation that indicates joint attention as an F-formation. Persons in interaction thus produce a space for shared interaction via the orientation of their bodies. Several studies have analysed how participants orientate their bodies, including movements such as gaze shifts, head movements and positioning of legs and torsos, to communicate different levels of engagement

or disengagement with a course of action (Goodwin, 1981; Kendon, 1990; Schegloff, 2007). While the notion of the F-formation implicates the body in intersubjectivity, Kendon treats bodily orientation as secondary to spoken language. His conception of the F-formation and body orientation indicates that a person is and will continue to maintain a common orientation. This orientation then allows social actors to produce utterances that are relevant and consistent with the frame of the ongoing interaction. The F-formation is treated as providing support for spoken language. Furthermore it relates to frame analysis (Kendon, 1992). Frame analysis, emerges from practice theory, which somewhat separates the agent from the world (Reckwitz, 2002). This does not align with the approach I take, which positions social actors acting as part of the world (Merlau-Ponty, 1962).

Goodwin and Goodwin (C. Goodwin, 2007; C. Goodwin & Goodwin, 2004; M. H. Goodwin, 1990) have developed a comprehensive analysis of the interactive and cognitive organisation of a shared focus of attention. The shared focus of attention is situated within a larger arrangement of participants' bodies and the material environment, and can be analysed through the notion of participation frameworks. Goodwin (2007) discusses a father helping his daughter with her homework and considers how gesture, language, and his daughter's workbook come together in interaction. He refers to these as structurally different semiotic practices, which rely upon the particular configuration of participants' bodies, and the material environment. Goodwin's (2007) work does not prioritise language, and offers a multimodal analysis of a teaching moment.

Goodwin (2007) argues that ‘the visible structure of such participation frameworks enables separate individuals to build joint action together in ways that take account of...structure in the environment that is the focus of their work’ (p. 69). However, as with the F-formation (Kendon, 1990, 1992), the notion of participation frameworks develops from frame analysis and contrasts with the approach I take here of social actors acting as part of the world (Merlau-Ponty, 1962). In addition, participation frameworks address a shared focus of attention, whereas here I seek to explore the landscape of attention/awareness (Norris, 2004, 2006, 2009, 2011a) produced by social actors engaged in co-production. I address co-production further in section 3.7 of this chapter. Both F-formations and participation frameworks, however, offer insight into, and highlight, the value of incorporating the body and material environment into notions of intersubjectivity.

3.4 Communication

In this section I examine the development of models of communication. First I introduce Shannon and Weaver’s (1949) transmission model, and then describe the now widely accepted transactional model that relies on the notion of co-construction.

3.4.1 Definitions of communication

Shannon and Weaver (1949) introduced a linear input/output model of communication. Their Sender – Receiver model characterises communication as

the sending of messages from one person to another. Their model includes five key components:

1. Source

The source is the originator of the information that is encoded into a message that can be decoded by the receiver. The information comes from the thoughts of the source.

2. Receiver

The receiver decodes the message and tries to make sense of it.

3. Message

The message is produced by the actions of the sender to be decoded by the receiver.

4. Channel

The channel is the means through which a message is sent. This might include for example speaking, writing, and gestures.

5. Noise

Noise is interference that inhibits the message from being understood as intended. Noise may be physical obstructions to the channel such as speaking in a loud room, or cultural differences that lead to the message being decoded differently from what the sender intended.

The Sender-Receiver model is based on a transport metaphor (Carey, 1989) where information is packaged up by a sender and transported via a channel to another location. However, more recent work in communication points out that all forms of interaction are communication (Fiske, 1982). Thus, it is problematic to determine when a communicative event begins and ends (Kastberg, 2007). Furthermore, communication occurs in a rich sociocultural environment, and it is difficult to single out one communicative event from ongoing experience. My data show tutors and students producing and attending to multiple different communicative actions at different levels of their attention/awareness (Norris, 2004, 2006, 2009, 2011a) and the linear model of Sender – Receiver is not useful for analysing these.

3.4.2 Transmission models of communication to transactional models of communication.

Scollon (1998) points out the benefits of Schegloff's (1972) work directed at the restricted channel of telephone calls, and the contribution of the channel metaphor to highlight the problematical aspects of establishing a basis for communication. However, he points out that metaphors for communication:

‘based upon messages, channels, and contexts tend to keep the focus on the message itself. That is, when context is used as a metaphor to mean “what is around” (but what is not *in*) the communication, our attention is diverted from the social aspects of communication such as the relationships or the identity of participants, which are my central interest.’

(Scollon, 1998, p. 83)

Scollon (1998) argues for a theatre of discourse metaphor to highlight the social construction of identities and membership. Drawing on Hymes (1972) and Burke (1972), Scollon points out that a theatre metaphor is a metaphor of ‘actors, scenes, motive, roles and even of tragedy and redemption’ (1998, p. 85). A theatre metaphor is a model of communication grounded in a notion of meaning from different perspectives. Scollon points out his interest in newspaper publishing goes beyond a journalist and reader, to people who use newspapers to display vegetables and to wrap food. These types of action are excluded from a transport metaphor of communication. Similar to a theatre metaphor, a transactional model of communication has been widely taken up, and the theatre metaphor could be placed within this overarching model described as such:

‘The model [...] depicts two participants (A and B) sharing a piece of information in a communicative situation or a series of situations. A and B perceive, interpret and understand the information, which may result in some sort of belief and action. This process, occurring over time, is a psychological one with an individual’s background, personality, and so on playing a significant role.’

(Windahl, Signitzer & Olsen 2002, p. 73)

The transactional model of communication is now widely accepted throughout the literature. However, even though Shannon and Weaver’s model is critiqued for not taking into account the complexity of communication, its influence can still be seen in some definitions of knowledge. A transport metaphor is still entrenched (Carey, 1989), especially in the notion of knowledge as something that can be packaged up and sent from person to person. Indeed, Windahl, Signitzer and Olsen’s (2002) definition of a transactional model uses ‘information’ which is highly problematic within the knowledge management and knowledge communication literature. This suggests that models of communication are still somewhat problematic, and that knowledge communication would benefit from a definition of communication with more clarity.

3.5 Knowledge

Definitions of knowledge vary, with many different approaches taken (Holsapple & Joshi, 2011; Ragab & Arisha, 2013; Serenko, Bontis, Booker, Sadeddin, & Hardie, 2010) and little agreement on the most useful way to treat knowledge. In this section I review definitions of knowledge, starting with epistemology to examine traditional philosophical conceptions of knowledge. Following the discussion of epistemology, I position the ways in which the literature approaches knowledge into two groups. The first group defines knowledge through its relation to data and information. Primarily researchers refer to a hierarchical relationship between data, information and knowledge, but cyclical models have recently been proposed (Firestone & McElroy, 2012; Boisot & Canals, 2004). The second group defines knowledge through different characteristics. A wide assortment of characteristics has been described (Holsapple, 2005), and I focus later in this section on two of the most widespread: the tacit/explicit continuum, and treating knowledge as object, action or both.

3.5.1 Epistemology: The philosophy of knowledge

Ichikawa and Steup (2014) define epistemology as the branch of philosophy that deals with what it means to know, or to have knowledge of something. Since ancient Greek times philosophers such as Plato (2004) have been working with a tripartite analysis, defining knowledge as justified, true belief. This tripartite analysis of knowledge defines a statement as knowledge if:

1. P (a proposition) is true
2. S (a person) believes that P is true
3. S is justified in believing that P is true

The tripartite analysis tests propositional knowledge that a person holds about the world. For example, the statement 'the student is reading the book' could be tested against these three criteria. The first part of the analysis refers to an objective reality, while parts two and three deal with a person's belief and whether their belief is justified. If each of the three criteria is met then a person can be said to be in possession of knowledge. In this framework, knowledge resides in the justified belief held by a social actor, corresponding to an objective truth.

Analyses of knowledge that use this approach focus on *what* knowledge is. Aarons (2006) argues this approach does not consider how knowledge is created, shared or used collaboratively. In addition it relies on an objective reality, which is at odds with the most widely recognised co-constructive model of communication (Kastberg, 2007).

3.5.2 Hierarchical and cyclical models of knowledge

One of the most common approaches to defining knowledge is to explore the relationships between data, information and knowledge¹. This approach is based on the proposition that there must be some differences between the three, and that the nature of knowledge can be defined through describing these (Eppler, 2006). The literature varies in the way that it defines data, information and knowledge, although a general thread runs through many of the definitions for each term (Faucher, Everett, & Lawson, 2008). The relationship between data, information and knowledge was initially described as hierarchical and linear, and this is still a common model (e.g. Ragab & Arisha, 2013). However, as mentioned above, recent cyclical models attempt to include feedback in their definitions (Firestone & McElroy, 2012; Boisot & Canals, 2004). I first review definitions for each term, and then discuss linear and cyclical models describing the relationships between data, information and knowledge in each.

The notion of defining knowledge in relation to data and information originated with Zelany (1987) and Ackoff (1989). Central to the idea of knowledge in this approach is that knowledge does not exist outside of a 'knower' (Alavi & Leidner, 2001). This stance also suggests that regardless of how much

¹ Note that a fourth category of wisdom is sometimes included. Following on from Faucher et al. (2008) I have excluded wisdom to focus on the terms most commonly used in the literature.

information a social actor may amass, it does not become knowledge until they are able to engage with it in a meaningful way. Thus, within this framework knowledge can be defined as residing in a social actor, and knowledge is developed through some meaningful interaction with information.

Definitions for data and information are closely linked. Data is usually taken to be the most basic of the two, and in scientific terms data is often treated as facts about the world, that are in some way bereft of context (Davenport & Prusak, 2000). Ackoff (1989) suggests that data is the product of observation, and equates observation with sensing, defining data as 'symbols that represent properties of objects, events and their environments' (1989, p. 3). Faucher et al. (2008) identify a common thread in the literature that is even more basic than Ackoff's approach. This common thread defines data as 'unprocessed basic representations of reality' (Faucher et al., 2008, p. 5).

The difference between symbols and unprocessed representations is unclear, and a lack of clarity around how data can be defined remains. The very notion of data has been criticised as not dissimilar enough from information to serve any useful purpose (Moteleb & Woodman, 2007), and fewer authors define data than they do information (Faucher et al., 2008). Tuomi (1999) argues that 'raw data' do not exist, and that identifying and collecting data expose it to some process of knowledge.

Information is defined through its relationship to data. Authors add context, or some organising principles to the notion of data as isolated facts. Kidwell et al.

(2000) simply define information as data in context. They suggest that information is easily captured in databases and texts and can form a material knowledge base for an organisation. Faucher et al. (2008) identify a commonality in the literature when defining information as 'data that has been processed in some meaningful ways' (p. 5).

Data, information and knowledge are frequently arranged in a hierarchical relationship (Ragab & Arisha, 2013). The relationship can be depicted as beginning with data, progressing to information and then knowledge. Based on the discussion of definitions above the hierarchy progresses as such:

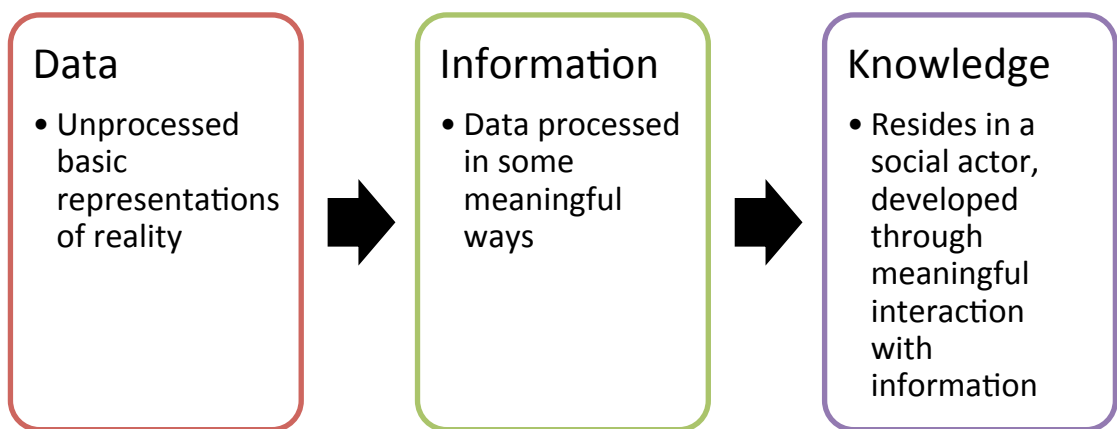


Figure 3.2: The progression from data to information to knowledge.

The relationship between definitions of data, information and knowledge is problematic, and it is not clear what exactly is added at each stage or what justifies the linearity of the model (Moteleb & Woodman, 2007). Knowledge

resides in the social actor through their engagement with information, but what motivates the movement of data to information is undefined. If it is the actions produced by a social actor, then the transition from data to knowledge via information must be almost immediate. In Tuomi's (1999) aforementioned work the model was reversed on the basis that knowledge must exist before data. Moteleb and Woodman (2007) take a strong position against the notion of data, information and knowledge arguing that the concept is 'ill-founded, irrelevant and distracting' (p. 60). In fact the linearity of the hierarchical model can be compared to the linear Sender-Receiver model developed by Shannon and Weaver (1949). Data progresses to knowledge in one direction, just as a message is sent in one direction to be decoded. The social actor occupies a similar position to the receiver in Shannon and Weaver's model. In the 'data-information-knowledge' process the social actor interprets data/information and draws inferences and connections based on their sociocultural history, but there is no provision for feedback.

In the same way that a transactional model of communication has replaced the sender-receiver model, cyclical models that incorporate feedback through a holistic approach have been proposed to describe the relationship between data, information and knowledge. Firestone and McElroy (2012) develop a model they call the Knowledge Life Cycle (KLC). This model is designed specifically to describe developing knowledge in an organisational context. The Knowledge Life Cycle models behaviour and motivation in the organisation directed at reaching a 'knowledge state'. In the Knowledge Life Cycle data,

information and knowledge are all defined as different types of information that develop as a problem is encountered, and enters into the cycle.

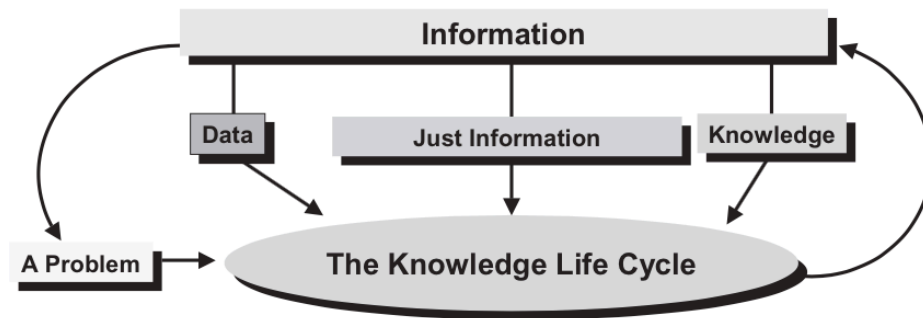


Figure 3.3 The Knowledge Life Cycle (Firestone & McElroy, 2012, p.13).

Data in this model represents what is available through observation, while ‘just information’ refers to the traditional notion of information in the data-information-knowledge hierarchy (i.e. data in context). This differentiates ‘just information’ from Firestone and McElroy’s (2012) overarching ‘information’, which is a category defined as consisting of data, just information and knowledge. Knowledge in this model is processed information that has passed some evaluation or tests of validity regarding truthfulness. Knowledge here is related closely to the justified, true belief analysis, although the authors point out that this is treated pragmatically and refers to getting as close to a useable notion of truth as possible for the organisation’s purposes.

In the knowledge lifecycle, new information is created by addressing problems with data, just information and knowledge. Faucher (2010) identifies an issue with the definitions used in the model. Data is defined as a type of information, and information is defined as processed data. In this circular reasoning then

data is a type of processed data. Despite this, the knowledge life cycle attempts to address the linearity of data → information → knowledge by defining each term as information. However while they reorganise the relationships between the terms, the authors do not significantly alter them, and in doing so they maintain the confusion within the literature regarding the differences between each term (Moteleb & Woodman, 2007), and do not deal with the question of whether data even exists (Tuomi, 1999).

Boisot and Canals (2004) take an economic perspective to information, and through this perspective they introduce significantly different definitions for the terms data, information and knowledge. Their model includes an explicit agent at all times, which is lacking in a hierarchical model, and the Knowledge Life Cycle model.

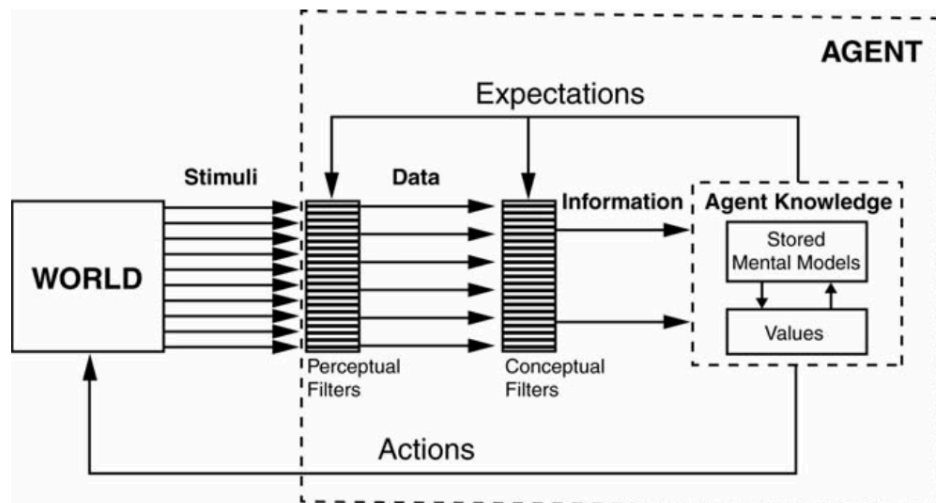


Figure 3.4: The agent in the world model (Boisot & Canals, 2004, p. 48).

Boisot and Canals (2004) refer to their model as the agent-in-the-world, and it is presented in Figure 3.4. In this model the following terms are used:

- Data: originates in discernable differences in the physical states of the world. However not all differences are discernable by an agent. Those differences that are discerned by a particular agent are considered data for that agent.
- Information: is defined as significant regularities extracted from data by agents. What is significant depends on the agent, and therefore information is a relationship between differences in the world that are discernable by a particular agent, and the individual dispositions of the agent.
- Knowledge: is defined as a set of expectations held by agents and modified by the arrival of information. There is a reciprocal relationship between knowledge and information, as knowledge contrives the 'individual dispositions' that make regularities in discernable data significant.

Through this cycle as information is received, an agent's knowledge base is modified. And in a reciprocal relationship, information, in the form of *significant* regularities, is dependent on the knowledge base. An agent can only identify significant regularities in data based on their knowledge base. The model shows how through each cycle the knowledge base develops, and as it develops different regularities in data may become significant. This is relevant for tutoring as it suggests a model for developing one's ability to identify significant regularities in a particular task, such as analysing a text.

The agent in the world model still contains elements of a transfer model. Information is considered to 'arrive' in the knowledge base, and in turn modify it. The knowledge base is active in the sense that it determines what regularities are significant. But the model focuses on the cyclical nature of this process, i.e. it occurs in one direction. There is however no particular avenue for the agent to act directly upon information. Data is also problematic in this model as there is no mechanism identifying how agents end up with a differentiation in the particular differences that they discern. Norris (2013b) addresses this issue with her notion of a system of mediated action, in which experience in the world directly impacts the agent's ability to discern differences. I will discuss systems of mediated action (Norris, 2013b) and their relation to knowledge further in the methodology section and discussion chapter of this thesis.

3.5.3 Characteristics of knowledge

The literature explores a range of characteristics of knowledge (Holsapple, 2005). There are two characteristics of knowledge that I address in this section. The first is the tacit/explicit dimension of knowledge, and the second is the treatment of knowledge as action, object or both.

Knowledge as tacit/explicit

The tacit/explicit dimension of knowledge was first explored by Polanyi (1962, 1967) who described knowledge along a continuum with highly explicable knowledge at one end and tacit knowledge at the other (Grant, 2007). This notion has obvious importance for tutoring as it suggests that some knowledge

cannot be communicated explicitly. At all times Polanyi positions knowledge within the person, and treats knowledge as an action carried out by a person.

He argued that:

‘...into every act of knowing there enters a passionate contribution of the person knowing what is being known and that this coefficient is no mere imperfection but a vital component of his knowledge’

(Polanyi, 1962, p. V)

Explicit knowledge at the far end of the continuum might be widely held amongst the people present in a particular situation. In this case the knowledge would be explicit, as it is widely shared and therefore easily codified. Knowledge that is less explicit might be widely held by experts present in a particular situation, but might be less accessible to a layperson. Knowledge progresses along this continuum until it becomes very difficult or even impossible for a person to express.

Knowledge which is tacit has been linked to the actions that people perform to carry out their work, and to making sense of their world (Choo, 2006). Tacit knowledge is commonly referred to as implicit, and this reflects a difficulty in verbalising tacit knowledge and reducing it to a series of rules. For these reasons tacit knowledge is associated with people acting based on feelings and intuitions, rooted in their experiences, values and ideals (Nonaka & Takeuchi, 1995). Definitions of tacit knowledge in the wider knowledge management

literature contain a person, as the very notion of tacit knowledge relies on a person producing action by drawing upon their tacit knowledge.

Explicit knowledge has been defined as knowledge that 'can be expressed in words and numbers, and easily communicated and shared in the form of hard data, scientific formulae, codified procedures, or universal principles' (Nonaka & Takeuchi, 1995, p. 8). Choo (2006) provides examples of explicit knowledge including chemical formula, market forecasts and software code.

Grant (1996, p. 111) refers to explicit knowledge as 'knowing about' and tacit knowledge as 'knowing how', suggesting also that it is ease of communication that distinguishes the two. Defined as such, explicit knowledge then is easily codified, and therefore easily communicated. Nonaka, Takeuchi and Umemoto (1996) argue that turning tacit knowledge into explicit knowledge is a key function of knowledge management. For example, a manager could take time to carefully document the steps involved in an organisational process, thus making their tacit knowledge about the process easily available to others.

In these examples of explicit knowledge, distinctions from Polanyi's original thoughts emerge. Where Polanyi argued that knowledge contains a 'passionate contribution' from a person, much of the more recent knowledge management literature takes explicit knowledge to be codified knowledge, embedded in an object such as a text or IT system. Locating codified knowledge is explored in detail below.

Knowledge as object, action or both

The literature is not definitive, nor well aligned on whether knowledge should be defined as object, action or both. At times knowledge is described as located in a person and their actions (Blackler, 1995; Svabo, 2009) and at other times knowledge is described as located in objects (such as texts, or IT systems)(e.g. Alavi and Leidner, 2001). Some authors refer to knowledge as both the actions of a person, and the objects they use and create (Zack, 1999). Zack (1999) defines knowledge as what is believed based on experience, communication and inference. Even though his definition is based on belief, he argues that from the organisational perspective knowledge can be defined as an object to be managed. Machlup (1979) takes a similar approach, distinguishing between recorded knowledge, and knowledge in people's memories.

Zack (1999) provides two examples of organisations effectively treating knowledge as an object. Ray Croc explicated the process of cooking consistent hamburgers to found McDonalds, and the company Mrs Fields applied a similar approach to baking cookies. By codifying the production and service processes both companies were able to produce a reliable food product and establish outlets around the world. These explicit processes are codified knowledge in the form of objects (or texts).

Zack (1999) refers to a knowledge repository as a key component in an organisation's knowledge management. The basic structural element of a knowledge repository is the knowledge unit. Zack (1999) defines a knowledge

unit as an 'atomic packet of knowledge content that can be labelled, indexed, stored, retrieved, and manipulated.' (p. 48). A knowledge unit is a flexible term and its format, size and content is dependent on the type of knowledge stored, and its use. A knowledge unit for cooking fast food might be one step of instruction involved in a recipe, or it could include the entire recipe.

Knowledge as object can be considered as constructed of two components: *structure* and *content* (MacKay, 1969; Zack, 1999). Structure provides the context for interpreting the content of a knowledge object. This two-component approach to knowledge allows organisations to store knowledge, without losing the contextual nature of knowledge. This approach to knowledge further emphasises the difficulties in the data–information–knowledge approach as when treated as object, knowledge lacks the human aspect emphasised by Alavi and Leidner (1999).

Blackler (1995) refers to knowledge as action, focussing on the verb form *knowing*. By treating knowledge as something people *do* rather than *have* he seeks a unified view of the different forms of knowledge defined throughout the literature. Blackler (1995) points out that one way knowledge in the literature can be distinguished is where knowledge is located. Blackler identifies literature as locating knowledge in the brain, culture, objects and relationships. Blackler argues that defining knowledge in these ways isolates people, activities, communities and objects. He presents an activity theory based model of knowledge. This model includes an agent, acting towards some goal (activity object) within a particular community. These elements interact with implicit and

explicit rules, instruments and concepts, and roles or division of labour. Activity theory provides an analytical framework to examine knowledge in the organisation as distributed across these various elements.

Activity theory is one of four intellectual traditions that share many similarities and make up what is termed a practice-based approach to knowing in organisations (Svabo, 2009). The three other traditions are the cultural interpretive framework, social learning and sociology of translation. A practice-based approach treats knowing as a social process that is materially grounded, includes a historical perspective, and is always situated and thus temporary and open-ended (Nicolini et al., 2003). A key aspect of the practice-based approach to knowledge is the intersection of social and material realities (Svabo, 2009). This is where my approach in this thesis differs from a practice-based approach.

Activity theory, as a practice-based approach, includes an 'object of activity', which refers to the thing, or project that people are working to transform (Blackler and Regan, 2009). This might be material, like a product, human, like a student, or abstract, like a theory. Objects of activity contain embedded features, such as values. In the unit of analysis of mediated action that I use in this thesis, an object of activity *may* at times correspond with a *mediational means*, but at all times features and values of actions reside in the tension between the social actor and the mediational means (e.g. Wertsch, 1998; Norris, 2004, 2011a; Scollon, 1998). In addition *mediated actions* are not always directed towards an object of activity. For these reasons, the object of activity

used in activity theory is a crucial theoretical point that is incompatible with the approach I take in this thesis.

There are similar incompatibilities with other traditions that make up a practice-based (Gherardi, 2000; Nicolini et al., 2003; Svabo, 2009) approach. The goal of this thesis is not to review the distinguishing features of the approach I take here in relation to a field as broad as the practice-based approach, however I will point out a key difference in theoretical positioning. The primary difference between this thesis and a practice-based approach (Blackler, 1995, 2009; Gherardi, 2000; Nicolini, Gherardi, & Yanow, 2003; Svabo, 2009) is the extent to which objects can be analysed distinct from human action. A fundamental point in some forms of a practice-based approach is that no *a priori* distinction should be made between humans and objects (Law & Hassard, 1999). Thus objects take on some form of agency, which contrasts directly with multimodal (inter)action analysis (Norris, 2002, 2004, 2006, 2009, 2010, 2011a, 2011c, 2012a, 2012b, 2012c, 2012d, 2013a, 2013b, 2014a, 2014b, 2015a, 2015b), which is the approach I take here. In multimodal (inter)action analysis every action is mediated, and objects that are not acted upon do not inhabit some agency that can or should be distinguished from that of a social actor. Objects become implicated in action through the tension between a social actor and mediational means, through the mediated action. Objects, in the position I take in this thesis, do not exist with characteristics that can be determined prior to or without action. Scollon (1998) provides the example of a newspaper created to be read, and then ultimately used to wrap fish. The newspaper as object may be

said theoretically to contain cultural meaning in the form of words and pictures, but these are only relevant as they are engaged in through mediated action (Scollon, 1998). A social actor that wraps fish in the newspaper engages very different material features of the newspaper, and a very different set of affordances and constraints that are a product of the tension between the social actor and the mediational means (Scollon, 1998; Wertsch, 1998).

This key notion separates multimodal (inter)action analysis (Norris, 2002, 2004, 2006, 2009, 2010, 2011a, 2011c, 2012a, 2012b, 2012c, 2012d, 2013a, 2013b, 2014a, 2014b, 2015a, 2015b) from practice-based approaches (Blackler, 1995, 2009; Gherardi, 2000; Nicolini et al., 2003; Svabo, 2009) to the organisation.

While it may be possible to position multimodal (inter)action analysis as a type of practice based approach (Norris, 2011b), I am not seeking to carry out that task within this thesis. Rather I seek to analyse the knowledge communication carried out in high school tutoring sessions, and contribute to the field of knowledge communication. For my purposes multimodal (inter)action analysis (Norris, 2002, 2004, 2006, 2009, 2010, 2011a, 2011c, 2012a, 2012b, 2012c, 2012d, 2013a, 2013b, 2014a, 2014b, 2015a, 2015b) is the most useful methodological approach, for the reasons described above in terms of action, which will become clearer throughout the subsequent chapters. Therefore I will move on from practice-based approaches and not attempt to position multimodal (inter)action analysis either within or in opposition to such approaches, although I fully acknowledge and appreciate the similarities in the two.

3.6 Knowledge communication as an emerging discipline

As pointed out earlier, communicating knowledge is the key focus of tutoring. It is also a central activity in the workplace, especially in modern day knowledge intensive organisations (Drucker, 1989). People communicate knowledge in a range of activities including decision making (Eppler, 2006), innovation (Souto, 2014), sharing expertise (Kastberg, 2011) and coordinating teams (Jones & McKie, 2009). As a field, knowledge communication is devoted to examining how knowledge is communicated, and how to make knowledge communication more effective. Knowledge communication is also an emerging field, and I consider two recent definitions of knowledge communication, and their implications for both knowledge and communication. I then review the literature in the field focusing on issues identified in communicating knowledge. Finally I review the research approaches commonly taken in the literature, highlighting a lack of data collected from face-to-face, naturally occurring interactions.

3.6.1 Knowledge communication: Definitions

I focus on two definitions of knowledge communication that are widely cited in the literature. The first, from Eppler (2006), defines knowledge communication as:

‘the (deliberate) activity of interactively conveying and co-constructing insights, assessments, experiences, or skills through verbal and non-verbal means.’

(2006, p. 317)

This definition treats knowledge broadly as insights, assessments, experiences and skills. It also touches on the notion of co-construction, which relies on social actors focusing jointly on an activity. Lastly, Eppler includes both verbal and non-verbal communicative means.

Eppler also defines a measure for identifying successful knowledge communication. He suggests knowledge has been communicated when an individual has been able to reconstruct the ‘insight, experience or skill’ of another (2006, p. 317). In his work, Eppler follows the mainstream conception distinguishing between data, information and knowledge. He states that ‘information only becomes knowledge, if a person interprets that information correctly, connects that piece of information with his or her prior knowledge, and can apply it to problems or decisions’ (Eppler, 2006, p. 325). This definition of knowledge communication then contains at its core a social actor producing action. There is an emphasis on reproducing and applying knowledge correctly. Eppler’s test for knowledge communication includes the notion of ‘successful reconstruction by an individual’. This raises the question of the criteria for success, and also suggests that the knowledge of one person can be identified in the actions of another, in the form of a reconstruction.

Kastberg (2007) offers a similar definition for knowledge communication, emphasising goal oriented communication as follows:

‘Knowledge communication is strategic communication. As “strategic” it is deliberately goal-orientated, the goal being the mediation of understanding across knowledge asymmetries. As “communication” it is participative (interactive) and the communication “positions” converge on the co-construction of (specialized) knowledge.’

(Kastberg, 2007, p. 8)

Kastberg focuses on shared understanding across knowledge asymmetries. However again the notion of knowledge is not entirely clear. Kastberg (2007) refers in his definition to ‘specialized knowledge’, co-constructed through interaction. He goes on to define specialised knowledge as that which has been ‘produced, refined and subsequently made public by one or a combination of the elements of the triple helix’ (Kastberg, 2007, p.17). The triple helix here refers to universities, government research organisations and private research establishments.

In this definition (specialised) knowledge is produced or sanctioned by governments, public research groups or private research groups. It is also made public in some way through a codification process. That is, the knowledge has been refined to a state where it can be published. Kastberg notes some examples including research journals or manuals. It is unclear what non-

specialised knowledge might refer to; however, the notion of knowledge as object, via semiotic codification, is clear here.

In a later publication Kastberg (2011) clarifies his definition of knowledge as 'somehow a product of a knower's collated experiences and inferences' (Kastberg, 2011, p. 143). He emphasises that knowledge exists as a discursive construction and that to appreciate knowledge we must enter into the flux of communication. Here Kastberg's definition of knowledge has become more established as something done by a 'knower', and as analysable within the interaction or communicative activities of a person. It is not clear whether Kastberg's earlier definition of (specialised) knowledge included a person engaging with the published, codified material or not. However his position on co-construction, communication and knowledge suggests this would be the case.

Notions of knowledge in the knowledge communication literature contain a person at their centre who is a 'knower' (Kastberg, 2011), seeking, through interaction, to convey insights, assessments, experience or skills. Knowledge in this sense then is said to reside in communication between people, and a transactional model is applied (Jones & McKie, 2009). Knowledge communication is also goal orientated, pursuing either effective communication of knowledge, or strategic organisational goals. However, mechanisms through which to identify successful knowledge communication are unclear in the definitions above.

3.6.2 Key concepts in knowledge communication: Overcoming barriers

A large proportion of the recent knowledge communication literature can be characterised as identifying barriers to effective knowledge communication, and suggesting solutions to these (Bischof & Eppler, 2011; Cetintas & Ozupek, 2012; Eppler, 2006; Helms, Diemer, & Lichtenstein, 2011). While the field is broader than this, these are the areas of research that are most relevant to this thesis as tutoring requires successful knowledge communication.

Eppler (2007) summarises key pitfalls in communicating knowledge identified by engineers and IT managers. Both these roles require experts to interact with managers with less expertise, but more decision making power. Eppler conducted a literature review, ten focus groups and personal interviews. He identifies communication barriers as arising from five possible sources; these include: the expert, the manager, mutual behaviour of each, the interaction situation and organisational context. Eppler's findings suggest therefore that successful knowledge communication goes beyond the level of the interaction between social actors to include an organisational level of discourse.

Bischof and Eppler (2011) explore the notion of clarity as an overarching concept to apply to knowledge communication. Clarity implies communication is free from doubt and well defined. When applied to texts, clarity comes from simplicity, structure, order, conciseness and additional stimulation (diagrams, supporting material). This text based clarity is combined with 'reader-ability', which refers to the cognitive load that a particular person can tolerate (Bischof

& Eppler, 2011). Bischof and Eppler (2011) suggest a model to increase clarity of knowledge communication using the acronym CLEAR. This model provides managers with a sort of checklist for clarity as follows: Concise, Logical, Explicit-context, Ambiguity-low, Resonance (relevance to self, applicability to own experience). The authors do not define clarity as residing in a particular knowledge object, or in a person's actions but suggest that a model of clarity could potentially be applied semi-automatically to knowledge repositories to improve their clarity. Based on Eppler's (2007) definition of knowledge communication, clarity may reside in the 'activity of interactively conveying' knowledge, and clear communication should result in the successful reproduction of an insight, experience or skill.

As with the knowledge management literature, there is a distinctive lack of congruence in where knowledge is said to reside. Bischoff and Eppler (2011) use the example of delivering a clear PowerPoint presentation through low ambiguity between the mode of spoken language and PowerPoint slides. In this example knowledge resides in the actions of a person, mediated through spoken language and through PowerPoint slides. Bischof and Eppler also argue for clarity in knowledge repositories, i.e. stores of codified knowledge where knowledge is treated as object. There is no issue in referring to knowledge residing in actions, objects or both, however the implications for knowledge as object are different from the implications from knowledge as action, and unidentified inconsistencies are likely to lead to methodological and theoretical issues as the field develops.

Kastberg (2011) points out that the notion of a knowledge asymmetry has been considered a barrier to knowledge, however he argues that knowledge asymmetries are always present in interaction. Kastberg and Ditlevson (2011) suggest that knowledge asymmetries only become communicatively salient when they are discursively constructed in interaction. Tutoring provides an example of a knowledge asymmetry that is not a barrier, but rather the desired situation. A core feature of tutoring is that tutors know more about a subject area, and the school system than students do. Thus, within tutoring there exists a communicatively salient knowledge asymmetry (Kastberg, 2011). The relationship in a knowledge asymmetry between tutor and student can be described as a *double* double contingency (Kastberg, 2011), because:

- The tutor expects to know more about the topic than the student, and expects the student to expect that to be the case.
- The student expects that the tutor knows more about the topic. And in addition, that the tutor is aware of their expectation.

Anywhere that a recognised knowledge asymmetry operates the situation can be described as a *double* double contingency. Kastberg (2011) suggests that knowledge asymmetries, due to their symmetrical nature and discursive construction could provide a fruitful area for further study.

Souto (2014) identifies the tacit nature of some knowledge as a major barrier to knowledge communication. She focuses on people she terms 'interpreters' who develop tacit knowledge of sociocultural and technological changes and are able

to anticipate new meanings that can lead to new products and services. It is up to innovators to harness this tacit knowledge, and in turn create new products and services. Souto (2014) argues that tacit knowledge is best communicated face to face because tacit knowledge is more easily accessed when a strong relationship exists, which is more likely to develop and be maintained in face to face interaction. She suggests that 'closeness and confidence [...] allow reflection and enquiry' (Souto, 2014, p.125). In many ways one-to-one tutoring draws on this closeness, and tutors are likely to share their tacit knowledge. However, there is a lack of research into face-to-face interaction in the knowledge communication literature to address these questions.

3.6.3 Research approaches

I have pointed out above the challenges in defining knowledge, and the shift towards a co-constructive, transactional model of communication. Taking this model, knowledge emerges through ongoing communication; therefore it is always incomplete, always situated and always developing. In response to this definition of communication and knowledge, research approaches in knowledge management, and knowledge communication are still evolving. There is a prevalence of studies that use survey methods, or develop conceptual models without collecting data directly from naturally occurring interactions where 'knowledge work' is going on (Jones & McKie, 2009; Serenko et al., 2010)

Highlighting the issue further, in a major review of the literature on knowledge management, Serenko et al. (2010) identified only 0.3% of studies collecting

empirical data. Jones and McKie (2009) identify this issue in a theoretical paper that argues for more focus on the micro level of interactions. In many ways knowledge communication has emerged from recognition of these limitations, and is grounded in an urge to seek data from face-to-face interactions (Eppler, 2006), based on a sense that interaction is where knowledge work occurs. Indeed the definition of knowledge provided by Kastberg (2007) as discussed above, places knowledge squarely within interaction. In this study I contribute to addressing the identified lack of empirical work on naturally occurring face-to-face interactions, building upon Kastberg's notion of knowledge.

3.7 Interaction

Co-construction is a widely used term in studies of interaction, and refers to the social nature of interaction as dynamic and unfolding. As a social theory, multimodal (inter)action analysis incorporates a notion of co-construction, inherent in the mediated action as a unit of analysis. Norris (2011) points out that all actions are (inter)actions, whether produced with other social actors, or with objects in the environment. The mediated action (Norris, 2004, 2011; Scollon, 1996; Wertsch, 1996) highlights the historical and social aspects of action that are always present. Therefore, in multimodal (inter)action analysis, co-construction can be considered as a broad underlying concept.

3.71 Interaction as co-constructed

Co-construction is used in the same, and other ways within the wider literature pertaining to social interaction. Below, I consider how co-construction is used within sociolinguistics and conversation analysis. I highlight the application of co-construction in three ways:

1. as a philosophical basis
2. as describing the structure of talk
3. as describing the social functions of talk

Through reviewing some of the ways in which co-construction is used, I argue that the wide application of co-construction lessens its analytical utility. Since co-construction can be applied in at least three distinct ways, it becomes easy to claim that everything is co-constructed, and thus it becomes difficult to apply *co-construction* as an analytical tool. In the next section, I review Norris's (2011) use of co-production, and show the analytical benefits that co-production offers to the analysis of higher-level actions when two or more social actors are involved.

Sociolinguistic approaches to social action take up a notion of co-construction, primarily focusing on language as a site of cultural production (Weedon, 1987; Butler, 1990; Holmes, 1997). Studies in sociolinguistics consider, for example, the production of identity, gender and cultural groups through language. Co-construction can be seen as a philosophical basis to much of the work in

sociolinguistics, as many researchers in sociolinguistics work within a social constructivist framework, where language is viewed as 'a set of strategies for negotiating the social landscape' (Crawford, 1995, p. 17). Through language speakers actively construct aspects of their culture, and these constructions are always dynamic, situated and co-constructed.

Sociolinguistic approaches also refer to co-construction in terms of the structure of talk. When studying how New Zealand men and women construct gender identities through storytelling, Holmes (1997) identifies a continuum of joint production that applies to how stories are co-constructed. At times the narrator is given uncontested access to the floor, and at other times the listener(s) co-construct the story with extensive, and at times simultaneous input. Talk may be more or less co-constructed depending on aspects such as context, culture and gender. Similarly, Coates (2004), also working with gender and talk, points out that women more frequently co-construct utterances in a sort of 'conversational jam session' (p. 131) where an utterance containing a subject - verb - object might be produced by two different speakers. Co-construction in these examples is used to refer to the enactment of talk, and co-construction is one element of the production of talk that varies across social settings and groups.

In addition, since the focus of sociolinguistics is often on the ways in which aspects of culture are produced through talk, co-construction can refer to the cultural functions of talk. For example, because particular aspects of storytelling

produce gender identity, gender identity can also be referred to as co-constructed (e.g. Coates, 2004; Holmes, 1997).

Conversation analytic approaches to talk as co-constructed take a much more sequential and micro level approach than the sociolinguistic work discussed above. Goodwin (1979) demonstrates that social actors shape their utterances as they produce them. Through analysing a sentence produced during a dinner conversation, Goodwin shows that the social actor, John, shapes his sentence as he produces it. John's sentence production is affected by whom he gazes at, whether they meet his gaze or not, and whether what he is saying is new to them. Goodwin concludes that analysts cannot remove the analysis of sentences from the interactive process, because the sentence is produced contingent on the interactional environment.

Conversation analytic approaches to co-construction focus on the enactment of talk, but take a highly sequential approach in comparison to sociolinguistic work. Sacks (1987) points out that overwhelmingly talk is produced by one speaker at a time, and conversational analytic work has primarily addressed the 'spontaneous playing out of the sequentially contingent and co-constructed external flow of interactional events' (Jacoby & Ochs, 1995, p. 175). Indeed, Jacoby and Ochs (1995) argue that any moment in interaction is ripe for a social actor to 'redirect the unfolding discourse, such that individual understandings, human relationships, and the social order might be changed' (Jacoby & Ochs, 1995, p. 178).

The use of the term co-construction within sociolinguistics and conversation analysis shows that co-construction is applied in several different ways, lessening its analytical power. As I pointed out above, I argue that the notion of *co-production* (Norris, 2011) conversely, holds more analytical power than the notion of co-construction. I now explore how Norris (2011) has begun to use co-production in her work, in order to show why co-production is a more appropriate approach to take for the analysis of higher-level actions.

3.72 Interaction as multimodally co-produced

Using the concept of modal density Norris (2011) constructs a graph of the attention/awareness of two friends talking in a kitchen. One friend, Anna, is putting away her groceries, while the other, Sandra, is sitting at the kitchen table talking about her relationship with her (almost ex-) husband. Anna, however, focuses her attention on putting away her groceries. She produces high modal density as she puts away her groceries through the complexly intertwined modes of proxemics, posture, walking, gaze and object handling. At the same time, Anna attends to her friend Sandra at the mid-ground of her attention/awareness. Anna produces backchannel responses, gazes to her friend, and makes facial expressions of concern. Norris (2011) shows that Anna is producing multiple interactions simultaneously. The higher-level action of *putting groceries away* is not co-produced with Sandra, and would likely proceed in much the same way with or without her presence. The higher-level action of *listening to Sandra* is co-produced with Sandra, but Anna produces this action in a very different way compared to Sandra, who produces this higher-

level action at the foreground of her attention/awareness. By addressing the multiple levels of attention/awareness that social actors produce, Norris demonstrates the utility of considering the *co-production* of multiple, simultaneous (multimodal) higher-level actions. Co-construction, in contrast, does not provide for multiple levels of attention/awareness, and only considers the focus of social actors' attention/awareness. Thus, using the notion of co-construction in the above example, the analyst would wrongfully conclude that Sandra's conversation about her difficult relationship is co-constructed by both women in their focused attention.

In addition, co-construction is overwhelmingly applied to talk; so much so that even those researchers taking other non-verbal actions into account (Haddington, Mondada and Nevile, 2013), suggest that talk is most likely to be the most relevant and most important mode of communication. As a result, co-construction, when applied to the structure and social functions of talk, does not capture the multimodal nature of higher-level actions.

In summary, co-construction in the broad philosophical sense is applicable to higher-level actions. As I point out in the beginning of this section, this use of co-construction is captured in the historical and social aspects of the mediated action, but nevertheless lacks the explanatory power to provide a detailed analysis of the intersecting attention/awareness of social actors co-producing higher-level actions.

3.8 Conclusion

In this chapter I have positioned this thesis within the knowledge communication literature. I have justified the focus on tutoring as an example, due to the growth of tutoring and the relevance of tutoring to knowledge communication. I reviewed sociocultural approaches to agency, showing that an empirically applicable notion of agency is required to enable studies of (inter)action (Norris, 2004, 2011a) that incorporate agency beyond a purely theoretical notion. I described approaches to intersubjectivity, showing that the literature does not go far enough to incorporate the body and material environment. I have reviewed the development of definitions of communication and knowledge as a way to situate and review the literature in the emerging field of knowledge communication. Lastly I consider the notion of co-construction, introducing the additional perspective of co-production, which provides for social actors with multiple levels of attention/awareness. In the next chapter I describe my theoretical and methodological approach.

4.0 Multimodal Methodology

In this chapter, I first critically discuss various multimodal methodologies. Then, I introduce concepts from gesture studies and non-verbal communication that I draw upon in my analyses. After that, I describe the methodological tools from multimodal (inter)action analysis (Norris, 2002, 2004, 2006, 2009, 2010, 2011a, 2011c, 2012a, 2012b, 2012c, 2012d, 2013a, 2013b, 2014a, 2014b, 2015a, 2015b) that I take up in this thesis and outline their theoretical underpinnings. I then review some of the most recent applications of multimodal (inter)action analysis in the literature. This serves firstly to more clearly explicate my methodology and theoretical positioning through exemplars in use, and secondly to further illustrate my choice to apply multimodal (inter)action analysis rather than various other multimodal methodologies to research into tutoring.

4.1 Social Semiotics

Social Semiotics addresses the social dimensions of meaning in any form of media or communication (Halliday, 1978; Hodge & Kress, 1988; Kress, 2009; Kress & van Leeuwen, 2001). Here I focus specifically on a social semiotic approach as it is applied to multimodality (Jewitt, 2009; Kress, 2009; Kress & van Leeuwen, 2001; Leeuwen, 2005), and how this approach has been applied in education. I review some of the central theoretical concepts taken up by social semiotics and introduce some of the literature addressing pedagogy. Lastly, I delineate conceptual differences in focus between a social semiotic

approach to multimodality and the approach I have chosen to take here, which is based in multimodal (inter)action analysis (Norris, 2002, 2004, 2006, 2009, 2010, 2011a, 2011b, 2012a, 2012b, 2013a, 2013b, 2015b).

A social semiotic approach has been applied with great effect to tease apart the interrelated semiotic modes in use in social interaction. Extensive study into multiple modes in education has revealed how teachers use multiple modes to produce meaning. In a study into classroom interaction, for example, Kress et al. (2001) show how a teacher explores the differences between a solid, a liquid and a gas. The teacher begins with text and drawings on a blackboard, but the visual mode is somewhat constrained in that it cannot display the movement of particles of gas. The teacher demonstrates this movement later in the lesson, drawing on her body to produce an imaginary demonstration of particles dissipating through the air. This type of semiotic analysis shows how social actors draw upon a variety of potential meaning systems. The authors show that the teacher was able to illustrate the fragility of gas, and its propensity to dissipate throughout the container it is within through her bodily actions in ways that were not possible with images and text alone. These movements are carefully aligned with speech, and together form a modal ensemble (Kress, 2009).

More recent work in classrooms has begun to focus on the introduction of technology and how students and teachers take up and engage with devices and their meaning making potential (Archer & Newfield, 2014; Davidsen & Vanderlinde, 2014; Flewitt, Messer, & Kucirkova, 2014). The increasing use of

technology in the classroom and prevalence of images and design features in media and education (Archer & Newfield, 2014) has led to the notion of multiple literacies, or being 'literate' beyond traditional reading and writing (Flewitt, 2012; Flewitt et al., 2014; Jewitt, 2008). Multiliteracies (Gee, 2000), develop the notion of a 'broad range of multimodal systems and the design of these' (Jewitt, 2008, p. 262) and highlight the semiotic notion of meaning potential and semiotic resources (Kress, 2009). Multimodal systems represent semiotic resources that social actors can draw upon to produce meaning through modal ensembles. Language is constituted as 'a discrete network of options' (Halliday, 1978, p. 113), as are other multimodal systems (modes, in the social semiotic definition). These are commonly conceptualised as resources that social actors draw upon in interaction, and these resources are positioned socially. Jewitt (2013) makes a social semiotic claim that 'when making signs, people bring together and connect the available form that is most apt to convey the meaning they want to express at a given moment' (p. 252). This notion itself aligns somewhat with the approach I take in this thesis, however, delving further into the theoretical basis for the claim reveals a focus on a definition of mode as 'elements/resources and organizing principles/norms that realize well-acknowledged regularities within any one community' (Jewitt, 2013, p. 252). This is a crucial point of departure between a social semiotic approach to multimodality and a multimodal (inter)action analytic approach to multimodality (Norris, 2002, 2004, 2006, 2009, 2010, 2011a, 2011c, 2012a, 2012b, 2012c, 2012d, 2013a, 2013b, 2014a, 2014b, 2015a, 2015b). The fundamental difference lies in the social semiotic positioning of mode as a set of

established resources that social actors combine to most aptly convey meaning. In the position I take here, and outline in more detail below, modes are theoretical concepts (Norris, 2013b), which do not have a real existence, and it would not be possible to describe a discrete set of resources (no matter how detailed) that social actors draw upon to produce meaning.

4.2 Conversation analytical approach to multimodality

Conversation analysis emerged from the work of Sacks (1967), Schegloff (1967), Jefferson (1972) and Garfinkel (1967), which took everyday social interaction as a site of interest and worthwhile of study (Heritage, 2001). Conversation Analysis offers an empirically rigorous method for closely examining naturally occurring talk-in-interaction, in ordinary and institutional settings. A conversation analytic approach takes a micro-level focus on talk-in-interaction, which is a term used to refer to spoken language and other bodily conduct in interaction. Based on these analyses, researchers construct empirical, rule-based foundations for research into talk-in-interaction. Early work in conversation analysis and transcription focused on describing aspects of talk such as utterance units, sequencing of utterances and the structure of turn-taking. This minute focus on talk-in-interaction is founded upon the theoretical position that talk-in-interaction is 'the primordial site of sociality' (Schegloff, 1992 p. 1296), and that talk-in-interaction is structured and orderly, and therefore available for systematic study. While initial research in conversation analysis was carried out on recordings of phone calls (Sacks, 1967; Schegloff,

1967), overtime, researchers have expanded their data collection to include video recordings and broaden the focus of conversation analytic work to include bodily conduct such as gaze and body orientation (C. Goodwin, 1981; Robinson, 1999; Schegloff, 1998). Here I briefly introduce the notion of turn-taking and sequentiality in conversation analysis and then review some conversation analytic research into education. Finally, I discuss why I chose not to take a conversation analytic approach.

Turn-taking is a fundamental notion in conversation analysis. Sacks (1987) observed that overwhelmingly in interaction, one person speaks at a time. A person's turn can be analysed for its responsiveness to the prior turn. Prior turns project forward certain 'preferred' responses. Schegloff (1995) analyses a sequence of talk during a phone conversation between Marcia and Donny. Marcia called Donny to tell him her car broke down and ask him for help. Before announcing her news, she says 'Guess what'. Donny responds with 'What'. Marcia's question projects forwards a limited set of relevant response types. Donny's response is termed the 'preferred' response in conversation analysis terminology because he gives Marcia the go-ahead to produce her news. The 'preferred' principle dictates that interlocuters avoid 'explicitly stated disconfirmations in favour of confirmations' (Pomerantz & Heritage, 2013, p. 213). The preferred principle is one example of the kind of findings that close analysis of turn-taking and sequence organisation reveals.

Conversation analytic approaches have been applied to tutoring, and classroom research. Drew and Heritage (1992) note that institutional talk involves

'distribution of knowledge, access to conversational resources, and to participation in the interaction' (p. 42). These features apply to classroom interaction, and could be applied to some types of tutoring interactions, although I would suggest that in-home tutoring overcomes some of the 'institutional flavour' of classroom interaction.

Belhiah (2009) studies how speech, gaze and body orientation are coordinated to conduct one-to-one ESL tutorials. Belhiah demonstrates a conversation analytic approach that incorporates analysis of bodily conduct. Belhiah transcribed four openings and closings of naturally occurring tutoring sessions between native speakers of American English and Korean students working on their language skills. Belhiah (2009) found that tutors and students make extensive use of gaze and body orientation to conduct the business of tutoring. Focusing mainly on the orientations participants displayed, Belhiah shows that through gaze, talk and body orientation tutors and students demonstrate levels of engagement and disengagement in tutoring activities, such as closing the session. Robinson (1999) conducted a similar analysis of doctor-patient interactions, showing the importance of gaze and body orientation to show the frame of dominant orientation and negotiate entry and exit from participation frameworks. These types of analysis show some of the ways that social actors in dyadic interaction produce stable, ongoing interactions.

In this thesis, I chose not to use a conversation analytic approach. As described above, *turns* project forward possible responses, and these can be 'preferred' or 'dispreferred'. This sequential approach does not capture the larger scale level

of action that I intend to investigate. Furthermore, intersubjectivity in conversation analysis is treated as turn-based, and language-based (e.g. Schegloff, 1992) and my analytical focus includes a more durable material basis for intersubjectivity. Also, while conversation analysts have been collecting video data since at least the 1970s (Mondada, 2013), there is still a strong analytical primacy accorded to spoken language within the field. I now consider work in gesture studies and other non-verbal approaches to interaction that I draw upon in this thesis.

4.3 Gesture studies and other non-verbal communication approaches

Gesture studies and other fields that incorporate aspects of non-verbal communication take a rich interdisciplinary approach to the role of gesture, movements of the body, and positioning of the body in communication. The International Society for Gesture Studies quotes members from areas as diverse as anthropology, linguistics, psychology, history, neuroscience, communication, art history, performance studies, computer science, music, theater, and dance (ISGS, 2015). Clearly there is wide-ranging interest in the role of the body and its relation to the material environment in communication. Here I review the approaches from gesture studies and non-verbal communication that I apply in this thesis, including gesture, gaze and proxemics.

McNeill (1992) offers a continuum of gesture, which categorises body movements based on their communicative functions. The continuum progresses from gesticulation to pantomime, to emblem, to sign language. As one moves along the continuum from gesticulation to sign language the extent to which spoken language is required to achieve stable meaning changes. Sign language is highly codified and functions in the same way without the accompaniment of spoken language. Gesticulations are generally accompanied by speech. McNeill (1992) focuses on gesticulations, and further categorises gesticulations into iconic, deictic, metaphoric and beat gestures. The link between gesture and language has been studied in depth (Ciolek & Kendon, 1980; Furuyama, 2000; Kendon, 1990; McNeill, 1992, 2000, 2007). McNeill (1992) theorises that gesture and speech form one integrated system. Thus, rather than gesture supporting speech or vice versa, the meaning of a gesture and utterance are intertwined. In this thesis, I seek an analysis that incorporates gesture and language with other modes. Thus, while the findings from gesture studies play a part in my analyses, I focus on analysing higher-level actions, which incorporate all modes operating as one system (Norris, 2013b, 2014b).

Gaze has been studied within conversation analytic work as I described above (Belhiah, 2009; C. Goodwin, 1981; Robinson, 1999) and has been implicated in turn-taking and displaying engagement or disengagement. Kendon (1967) discusses the intimacy and shared experience fostered by gaze before developing an in-depth analysis of the functions of gaze in interaction. Kendon (1967) shows some of the ways that gaze relates to whether or not a person is

speaking. Speakers usually gaze at their speaking partner in equally long gazes. The listener in contrast engages in both long and short gazes. Kendon (1967) shows that one-way gaze helps speakers maintain interaction is to signal whether they have finished their turn at talk or not. By looking away, a speaker can focus on the organisation of their utterance, and, as a result, signals that they intend to continue speaking. Thus one way gaze functions is to regulate speaker roles. As with gesture, I utilise an analysis of gaze shifts as social actors produce them as mutually constitutive with higher-level actions.

Hall (1966) introduced a theory of proxemics to describe how the spatial relationships between social actors and objects are important for engagement and interaction. He describes cultural differences in the ways people orientate themselves spatially and defined spatial relations as important markers of familiarity. Hall (1959) also considered the contribution of the material environment to the spatial relations people produce. He categorised objects and building space as fixed, and semi-fixed. Fixed-feature space refers to the mostly immobile properties of building space such as walls, floors and permanent aspects of the layout. Semi-fixed features, such as chairs, are arranged within the fixed-feature space and influence the use and perception of space (Hall, 1966). Also addressing material space, Kress and van Leeuwen (2001) consider the layout of children's bedrooms, based on an analysis of photos and text from a home magazine. They analyse the material features of the room from the perspective of design, in a sense treating the room as a text that is open for analysis. Kress and van Leeuwen (2001) show that certain

material features of the design, such as layout, furniture and use of colour suggest the room is organised for certain normative activities such as reading, playing or learning. Moving to civic public spaces, Abousnnouga and Machin (2011) note the social and mental influences that war monuments produce, through their often imposing materiality. The use of space and the influence of space are therefore important in the ways that they reflect design and influence the spatial relations people take up to one another.

Use of space also implicates ownership over material objects and spaces. Hall (1959, 1967) developed his analyses regarding how people *use* space from a notion of territoriality, which refers to the 'behaviours people use to express their feelings of ownership towards physical or social entities' (Langan-Fox, Cooper, & Klimoski, 2007, p. 253). Territoriality, or ownership, is related to feelings of control and efficacy (Pierce, Kostova, & Dirks, 2003), and hence is an important concept for developing a notion of agency that is empirically applicable, and goes beyond language.

Many of the findings from diverse fields incorporating body movements, and spatial positioning are relevant for my approach here since I utilise gesture, gaze, proxemics and other bodily movements in my analyses. Similarly, I intend to investigate the use of space and materiality in relation to intersubjectivity. The interdisciplinary nature of gesture studies and other non-verbal studies carries with it the danger of incorporating theoretically inconsistent approaches into my analysis. To avoid this I draw carefully on concepts in the literature to ensure coherence with the notion of mediated action.

4.4 Multimodal (inter)action analysis

Multimodal (inter)action analysis (Norris, 2002, 2004, 2006, 2009, 2010, 2011a, 2011c, 2012a, 2012b, 2012c, 2012d, 2013a, 2013b, 2014a, 2014b, 2015a, 2015b) maintains a primary focus on social actors acting as part of the world (Norris, 2004, 2011a, 2015b). Merlau-Ponty's (1962) philosophical approach problematising the duality of body and environment underlies much of the theoretical developments in multimodal (inter)action analysis. Merlau-Ponty (1962) argued that the significance of the body is downplayed in much of philosophy through a tendency to treat the body as an object directed by a mind. He sought to problematise various dualities such as self and world and subject and object through a focus on the lived and existential body. Drawing on Wertsch (1991, 1998), Scollon (1998, 2002) and Norris (2004, 2011a, 2013b) I take the mediated action as my unit of analysis to maintain the complexity of the social actor acting in, with and through the world. All other theoretical and methodological tools I utilise propagate out from this holistic unit of analysis. I apply higher and lower-level actions (Norris, 2004, 2011a) throughout my analysis to describe the mediated actions of my participants, and I use scales of higher-level action (Norris, 2015a) to show how various higher-level actions are embedded within the higher-level action of *conducting research*; and the higher-level action of *tutoring*. I also address the varying materialities that lower-level actions (Norris, 2004, 2011a) produce in the environment.

4.4.1 Mediated action

A central principle of multimodal (inter)action analysis (Norris, 2002, 2004, 2006, 2009, 2010, 2011a, 2011c, 2012a, 2012b, 2012c, 2012d, 2013a, 2013b, 2014a, 2014b, 2015a, 2015b) is that of *mediated action* (Norris & Jones, 2005c; Scollon, 1998, 2001; Wertsch, 1998), which refers to a social actor acting through or with mediational means (Scollon, 1998). The notion of mediation was developed by Vygotsky (1978, 1986) and the Soviet/Russian school of psychology (e.g. Luria 1976). Wertsch (1991, 1998) has translated large portions of work on mediation from the original Russian, and comprehensively elaborated on the notion of mediation and mediated action. Wertsch's primary attraction to mediated action as a unit of analysis is its utility in straddling the individual and society without giving primacy to one or the other in terms of origin (Wertsch, 1991, 1998; Wertsch et al., 1993).

Instead of attempting to separate the influence of society on the individual, or the individual on society, social actors can always be seen to act through and with mediational means (Scollon, 1998, 2001; Vygotsky, 1978, 1986; Wertsch, 1998). The mediated action implicates individual, historical and sociocultural influences on action (Wertsch, 1998; Wertsch et al., 1993). These influences are manifested in the irreducible tension between social actors and the multiple mediational means they act with and through. The mediated action is thus both a theoretical concept and a methodological tool. In theoretical terms, the mediated action makes relevant the historical body (Nishida, 1958; Scollon, 1998) of a social actor, and the interconnectedness between social actors(s) and

society. In methodological terms, the mediated action is a unit of analysis made up of the two interlinked parts:

1. Social actor(s); and
2. Mediational means/cultural tools

Importantly, these two parts cannot be separated in practice, as the tension between the two is a constant feature of mediated action. This tension attempts to dissolve debates about the primacy of society or individual, by taking each as acting upon the other simultaneously (Wertsch et al., 1993).

Because mediated actions can be very complex and large scale such as a gathering of friends having a meal, or they can be simpler such as a person taking a step forwards while they walk down the street, Norris (2004) developed the methodological tool of higher and lower-level actions.

Delineating the mediated action into lower and higher levels² to provide for the analysis of mediated actions allows for a more detailed analysis of mediated actions.

4.4.1.1 Lower-level mediated actions

A lower-level mediated action is the smallest pragmatic meaning unit of a mode, with a beginning and an end (Norris, 2004, 2012c). An utterance is a lower-level action produced in the mode of spoken language. For example, as a greeting a tutor might say 'hi'. This utterance has a beginning and an end point,

² Norris (2004) also delineates the frozen action, as the actions that are frozen within objects in the environment. However I do not use the notion of frozen action in this thesis and so will not discuss it further.

produces a pragmatic meaning unit, and can be referred to as a lower-level action. Similarly, a gaze shift is a lower-level action produced in the mode of gaze. A tutor might shift their gaze to a student indicating they are expecting an answer to a question. Lower-level actions allow for a micro-analytical focus in interaction.

During transcription, which forms part of analysis, lower-level actions are carefully transcribed for each relevant mode. All modes receive equal attention in the initial analysis, and this facilitates description of the complex interactions social actors produce through chains of lower-level actions. Transcripts of lower-level actions are produced by taking screenshots from video that incorporate relevant moments in the production of lower-level actions. Figure 4.1 shows Sean and Nikora in a tutoring session. Sean, the tutor, is seated to the left in the image. He is demonstrating a principle of probability using three boxes on the table. At the beginning of the transcript Sean looks down at the papers in front of him, with his right arm resting perpendicular to him on the table, and his left arm folded in front of his chest.

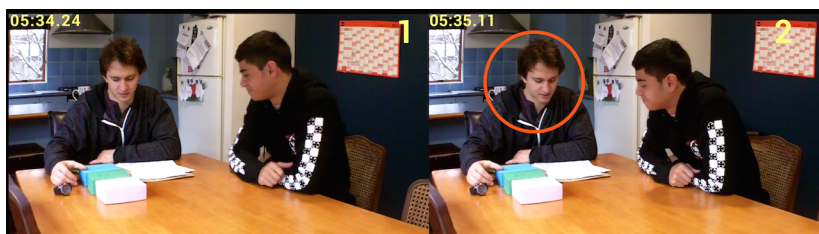


Figure 4.1: Sean producing a gaze shift during a tutoring session.

Sean then makes a slight gaze shift across his papers from his right to his left (circled, Image 2). This gaze shift is a lower-level action in the mode of gaze. It indicates to some extent that Sean is engaging in the probability problem described in his materials. However, this single gaze shift is only part of Sean's ongoing (inter)action. Lower-level actions must be analysed within the wider interactional environment, visible in how chains of lower-level actions constitute, and are constituted by higher-level actions.

4.4.1.2 Higher-level actions

Higher-level actions are defined as intersecting chains of lower-level actions with a beginning and an ending (Norris, 2004). However, higher and lower-level actions are mutually constitutive. Higher-level actions are produced by lower-level actions, and at the same time, lower-level actions are produced by higher-level actions. Throughout this thesis at times I focus on lower-level actions, and at other times on higher-level actions. This is an analytical focus, rather than an indication of logical primacy.

Higher-level actions are demarcated by beginning and ending points, which may be determined through analysis of the attention/awareness of social actors. Shifts in attention/awareness can indicate a beginning point of a higher-level action. Figure 4.2 shows Emma and Pranto near the beginning of a tutoring session. Emma is checking if Pranto has read the whole passage that the session will focus on.



Figure 4.2: Emma asking Pranto if he has read the whole passage

This higher-level action opens with Emma seated at the table with her forearms resting on the table and her hands forming a peak in front of her chest. She gazes down at her papers as she says ‘kay so did you get to the end...’ (Image 1), partway through this utterance Emma reaches out with her left hand and manipulates the corner of her copy of the passage (Image 2). Pranto shifts his gaze over to Emma’s hand (Image 3) and Emma shifts her gaze to Pranto’s face. Emma completes her utterance with ‘...of the passage’. Then, Pranto looks down at his papers, as he says ‘no’ (Image 4). This transcript shows Emma opening her higher-level action of making certain Pranto has read the passage. An analysis of this moment is discussed in chapter eight, and a longer transcript of this interaction can be found in Appendix K.

4.4.1.3 Scales of higher-level actions

Social actors produce higher-level actions at different levels of scale. Norris (forthcoming) discusses the higher-level action of driving during an ethnographic study of an artist. Norris shows how the higher-level action of driving is embedded within the higher-level action of shopping for art supplies, shown in Figure 4.3.

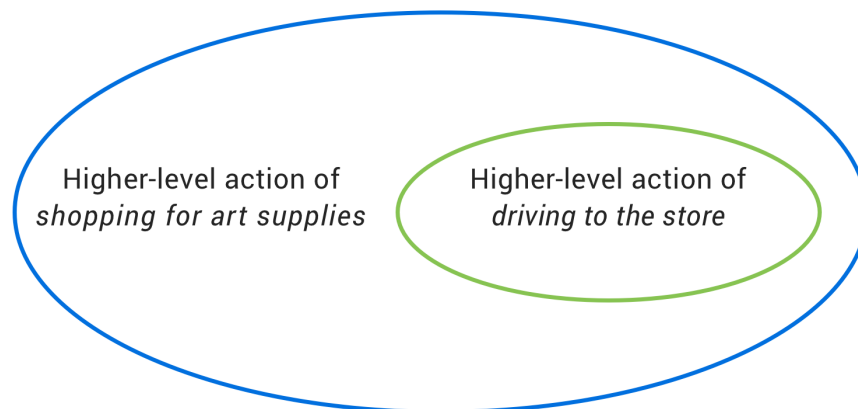


Figure 4.3: The higher-level action of *driving to the store* embedded within the higher-level action of *shopping for art supplies*

The higher-level action of driving has a clearly demarcated beginning and end point and would not be produced in the same way if not for the higher-level action of shopping for art supplies. Embedded within the higher-level action of driving are other higher-level actions, and Norris notes that the driver has a conversation with her at some stage during the drive. Norris (forthcoming) introduces the terminology larger scale and smaller scale higher-level actions to

refer to these differences in scale. Differences in scale demonstrate important relationships between higher-level actions, illustrated in the example of the higher-level action of driving, produced as part of the higher-level action of shopping for art supplies.

4.4.1.4 Materiality

Materiality refers to the extent that something persists across time and space (Wertsch, 1998). Materiality is often considered in relation to mode, as different modes can be said to possess different materiality (Kress & van Leeuwen, 2001; Norris, 2004). However, when theorising mode as a system of mediated actions as I do here it makes less sense to talk of the materiality of modes. Instead I focus on the materiality of lower-level actions, as modes as systems of mediated action are explicitly linked to concrete lower-level action. Norris (2004) distinguishes between audible and visible materiality. Audible materiality applies primarily to spoken language and other sounds produced with the vocal structures. Audible materiality may also be produced by beat gestures (McNeill, 2000; Norris, 2004) such as tapping on a table, sounds of the breath, and sounds created through moving objects such as placing a plate on a table or picking up a set of noisy keys. Audible materiality is always fleeting because sound waves persist in the environment for only a short period before they lose energy. Visible materiality applies to almost all lower-level actions as most actions produce some visible materiality. Like audible materiality, visible materiality can be quite fleeting. For example, a gesture possesses fleeting visible materiality. However, unlike audible materiality, visible materiality can

also be durable. Some lower-level actions like a posture shift produce relatively durable visible materiality. A social actor may hold a particular posture for an extended period, and this will remain visible to other social actors. Other lower-level actions produce even more durable materiality. For example even though a social actor may shift postures within their seat, the seat (and, therefore, the social actor) is likely to remain in the same position in the room. Thus the proxemic relationships social actors produce through their position in a room, for example, can often possess quite a durable materiality.

4.4.2 Mode

Mode is a theoretical construct, and multimodal (inter)action analysis (Norris, 2002, 2004, 2006, 2009, 2010, 2011a, 2011c, 2012a, 2012b, 2012c, 2012d, 2013a, 2013b, 2014a, 2014b, 2015a, 2015b) initially drew on a definition from social semiotics and the work of Kress and van Leeuwen (2001). This definition refers to mode as a semiotic system with rules and regularities attached (Kress & van Leeuwen, 2001). Norris (2004) added the proviso 'as it is in use' to emphasise that mode is a theoretical concept that exists only within an analytical framework, and can be applied analytically to social action.

Later, Norris (2013b) through further theoretical development redefined mode in multimodal (inter)action analysis as a system of mediated action with regularities. Norris points out that defining mode as a system of mediated action provides for three strong explanatory capabilities:

1. Analysts can examine the regularities in mode 'as residing on a continuum somewhere between the social actor(s) and the mediational means' (Norris, 2013b, p. 165)
2. Mode, defined as a system of mediated action, develops out of concrete lower-level actions taken in the world. This provides a concrete analysable micro level basis for the development of the theoretical construct.
3. As a system of mediated action mode is transferable to other types of actions. Norris (2013b) uses the example of learning about textures through touch. Learning to distinguish particular types of texture can be applied in other instances where textures might be investigated that are not closely related to the lower-level actions that initially developed the particular mode.

Norris (2004, 2008, 2009, 2011a, 2014b) emphasises that mode is a theoretical concept, and that mode, in this sense, does not exist as a resource in the world that social actors draw upon. Definitions of mode, however, are debated, and a social semiotics approach treats mode differently. For this thesis, I use Norris's (2013b) definition of mode because I do not position mode as a resource in the world that social actors draw upon. Rather I focus on the mediated action, and social actors acting with and through mediational means.

The notion of mode leads to methodological tools. These are modal density (Norris, 2004, 2006, 2011a), which provides for an analysis of a social actor's attention/awareness along a foreground/background continuum, and modal configurations (Norris, 2009, 2014, 2015b), which refer to the particular configuration of lower-level actions that are relevant to the meaning entailed in a higher-level action. Mode also implicates varying materialities produced by

different lower-level actions (Norris, 2004, 2011a). After introducing modal density, the foreground/background continuum, and modal configurations, I address materiality in relation to both mode and action.

4.4.2.1 The modal density foreground-background continuum

The modal density foreground-background continuum (Norris, 2004, 2006, 2011a) is a methodological tool that allows the researcher to relationally graph the level of attention/awareness that social actors pay to the multiple, simultaneous higher-level actions they produce. Figure 4.4 shows the modal density foreground-background continuum of attention/awareness.

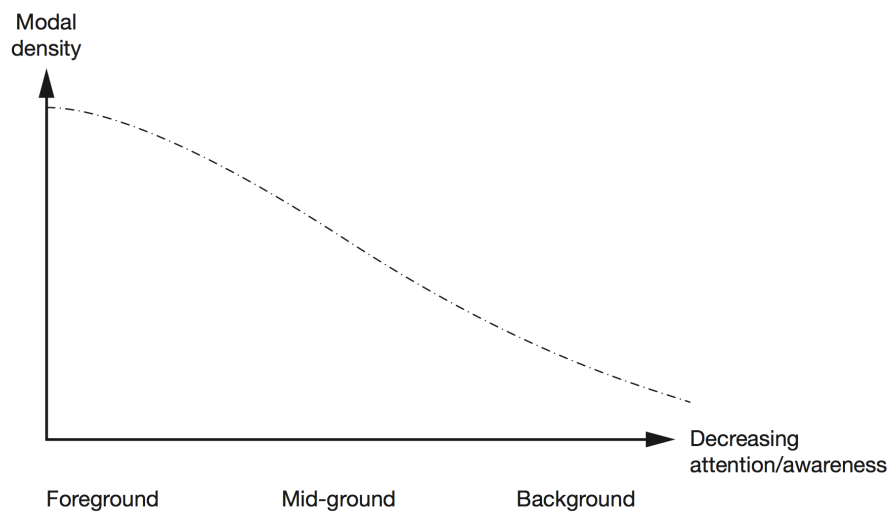


Figure 4.4: Modal density foreground-background continuum of attention/awareness (reproduced from Norris, 2004, p. 99)

Interactional attention/awareness decreases along the X-axis, as modal density decreases along the Y-axis. In this section, I define modal density and the notion of interactional attention/awareness. After that, I describe the semantic/pragmatic means, which social actors use to structure their focused attention and indicate to others that they are doing so.

Modal density

Modal density (Norris, 2004, 2006, 2011a) is a methodological tool that can be used to analyse the interrelationship of particular modes in a higher-level action, and is related to the level of attention/awareness social actors produce the higher-level action with. For example, in Figure 4.5, the tutor Didi is engaged in the higher-level action of describing the parts of the brain.



Figure 4.5: The tutor Didi describing the parts of the brain

A brief example analysis is possible of the modes that are implicated in this higher-level action from this screen capture. These modes include:

- Gesture (McNeill, 1992; 2007) – shown through Didi’s right arm with her hand open and facing her in a grasping gesture.
- Object handling (Norris, 2004) – shown through Didi’s left hand holding a model brain.
- Gaze (Kendon, 1990, 1992) – Didi’s gaze is directed at Jackson.
- Proxemics (Hall, 1959; 1966) – Didi is sitting close to Jackson at the table, and close to her papers.
- Posture (Schefflen, 1964) – Didi’s shoulders are rotated slightly towards Jackson’s, and her head is rotated more strongly towards him.
- Layout (Hall, 1959, 1966; Kress and van Leeuwen, 2001)– The mode of layout is an ongoing feature in many interactions, in tutoring, student and tutor commonly sit side-by-side at a table as shown here.
- Spoken language (Chafe, 1994; Tannen, 1984)– Didi is speaking to Jackson.

Without a full analysis of the higher-level action, it is possible to see that Didi is producing an action with many interrelating modes to describe the parts of the brain. This action is situated in the tutoring session, at the kitchen table, with the student. The various modes that are implicated in the action include these important situated aspects of the action as mediational means. An action with a rich interrelation of modes like this has high *modal complexity*. Modal complexity is one aspect of modal density. The other aspect is modal intensity.

Modal intensity refers to how strongly one particular mode is engaged in during an interaction, or its relative intensity. For example, when watching a movie the

mode of gaze is likely to take on high intensity, and dimming the cinema lights facilitates this. Note that the mode of sound also plays a large part in the movie experience, as does the mode of posture. The notion of modal intensity means that actions that are not particularly complex, such as the example of watching a movie, can still take on a high modal density through the intensity of particular modes.

Modal density relates to the attention and awareness of a social actor (Norris, 2004, 2006, 2011a), as actions produced with higher modal density are attended to more strongly (Norris, 2004, 2006, 2011a). Thus, returning to the modal density foreground-background continuum in Figure 4.4, higher-level actions with high modal density can be positioned at the foreground of attention/awareness, and higher-level actions with lower-levels of modal density are positioned further along the X-axis in the mid-ground and background of attention/awareness (Norris, 2004, 2006, 2011a).

Foreground-background continuum of attention/awareness

Multimodal (inter)action analysis (Norris, 2002, 2004, 2006, 2009, 2010, 2011a, 2011c, 2012a, 2012b, 2012c, 2012d, 2013a, 2013b, 2014b, 2014c, 2015a, 2015b) incorporates a psychological notion of attention/awareness. This notion refers to *interactional attention/awareness*, as it is based upon the attention/awareness of a social actor that is displayed in (inter)action (Norris, 2004, 2011a). The *interactional attention/awareness* of social actors is perceived by other social actors, and can be analysed. Norris (2004, 2011a,

2013b), drawing on Chalmers (1997) points out that in general when a social actor is aware of something, they are attending to it, and similarly when they are attending to something, they are aware of it. This psychological notion can be represented as a continuum of attention/awareness, which illustrates attention/awareness as a landscape within which social actors attend to multiple higher-level actions simultaneously (Norris, 2004, 2006, 2011a). Not all higher-level actions can be focused on at the same time, and the attention/awareness continuum can be delineated into foreground, mid-ground and background. Only one higher-level action is present in the foreground of attention/awareness at any one time, and multiple higher-level actions can be present in the mid- and background of attention/awareness (Norris, 2004, 2009, 2011a). This notion maintains the complexity of interaction, rather than only providing for analysis of a social actor's focussed attention.

Semantic/pragmatic means and restructuring attention/awareness

Shifts in attention/awareness regularly occur throughout interaction. These are moments when social actors restructure the focus in their attention/awareness (2004, 2006, 2011a). At these moments higher-level actions may move within the landscape of attention/awareness and new actions may also enter into attention/awareness.

As social actors restructure their attention/awareness, these shifts are accompanied by some form of pronounced lower-level action that can both help the performer of the action structure their own interaction, and signal to

others that a shift is about to, or has just occurred (Norris, 2004, 2009, 2011a).

These pronounced lower-level actions have been referred to as

semantic/pragmatic means because of how they function. As Norris (2004)

states:

1. A *means* functions semantically by marking the end of a foregrounded higher-level action (or the beginning of a new higher-level action), facilitating the organization of higher-level actions in the performer's own mind.
2. A *means* functions pragmatically by communicating the upcoming occurrence of a shift in foregrounded higher-level action to the other participants.

(Norris 2004, p. 88, italics in original)



Figure 4.6: Eleanor's shift in attention while working with Sean

Throughout interaction, observing instances of semantic/pragmatic means helps explicate how participants structure their interaction by indicating what higher-level actions they are focusing on and when shifts in attention/awareness occur. In Figure 4.6 Sean is describing to Eleanor a probability problem. These frames are taken from a larger extract in an article

focusing on attention/awareness in tutoring (Pirini, 2014c). Sean reaches with his right arm to indicate points on a worksheet. Eleanor looks down at the paper and Sean's gesturing. In her right hand Eleanor holds a pen, and her left makes an open-palmed gesture.

In Image 5 Eleanor, in the pink writing, says '*forty and ten*'. Here she provides an answer to the probability problem, overlapping with Sean's continued explanation. In Image 6 Eleanor leans back from the table and places her pen down. At the same time she says '*or whatever*'. Sean and Eleanor then overlap their speech as they both say '*yeah*'.

Eleanor's leaning back from the table is an example of a semantic/pragmatic means. Here she is restructuring her attention/awareness, shifting her focus from the tutoring session, to closing the session (as seen in more detail in her subsequent actions). Semantically, this leaning back operates to restructure Eleanor's attention/awareness from being engaged in the tutoring session, to focusing on closing the session. Pragmatically, this leaning back indicates to Sean that Eleanor is losing interest in the session and is ready to close, or move on.

4.4.2.2 Modal configurations

Norris (2009, 2014, 2015b) defines modal configurations as 'the hierarchical configuration of lower-level actions (or their chains) in relation to other lower-level actions (or their chains) within a higher-level action' (Norris, 2015b, p. 6). As pointed out above, lower-level actions are mutually constitutive with higher-

level actions. Analysis of modal configurations requires an analysis of the various lower-level actions that are mutually constitutive of a higher-level action and how they relate to one another. In a sense the notion of modal configurations 'explodes' higher-level actions into their mutually constitutive lower-level action components, and addresses the relationships between them. Modal configurations (Norris, 2009, 2014, 2015b) are highly analytical, in the sense that they are applied by an analyst first to freeze the higher-level action of a social actor, and then differentiate it into mutually constitutive lower-level actions. The relationship between lower-level actions (and/or chains of lower-level actions) is perceived as hierarchical and defined through meaning. The lower-level actions that are most important to meaning are defined as most important to the construction of the higher-level action. Norris (2015) points out that when analysing modal configurations analysts are likely to work backwards, as the meaning of higher-level actions must be determined first. This is an important benefit of collecting video data that can be re-watched. Also analysts must focus on higher-level actions to establish the meaning produced, rather than, for example, attempting to focus on an isolated lower-level action such as a single gesture. While the analysis may eventually come to focus on a single gesture, it must operate within the framework of meaning produced by a higher-level action (Norris, 2004, 2011a).

4.3 Mediational means/cultural tools

Following on from Wertsch (1998) and Scollon (2002), I use the terms mediational means and cultural tools interchangeably. Building on Wertsch

(1998), Scollon (2001) presents the following characteristics of mediational means:

Mediational means are dialectical

Scollon (2001) refers to a dialectic between the material features of a mediational means, and the psychological features of the social actor (internal world). The material features of a mediational means are of the external world. The psychological features of the social actor are developed over time and are present in the historical body (Nishida, 1958; Scollon, 1998; Norris, 2008; Makboon, 2014). The dialectic can be represented on a continuum, from almost totally external, to almost totally internal. Scollon (2001) suggests that the dialectic for a novice user of a mediational means sits at the mostly external end of the continuum. For an expert the dialectic sits mostly at the internal end of the continuum. In this sense, as a social actor becomes more adept with a particular mediational means, their use becomes to rely more on their experience than on the material features of the mediational means.

Mediational means as historical

The psychological features of a mediational means link it to the social actor's history. The material features of a mediational means link it to cultural, economic, political and social histories. Scollon (2001) argues that by embedding a history in society, and in the habitus of a particular social actor, mediational means also embed structures of authority and power from society.

Mediational means as partial

Mediational means are partial in the sense that when social actors act with or through mediational means, the action never fits the mediational means perfectly. At the same time mediational means focus and limit the possibilities of any particular instance of action. Scollon (2001) argues that mediational

means are therefore transformational because they influence the action that is produced with and through them.

Mediational means as connective

Mediational means may link multiple goals of an individual social actor and multiple social actors together. Scollon (2001) uses the example of coins. They serve multiple purposes, allowing him to purchase coffee, which in turn allows him to have a conversation, drink coffee and support his local coffee shop. They also serve different purposes for him and the coffee shop's cashier, and link these different purposes together.

Based on the characteristics identified by Scollon (2001), building on Wertsch (1998), mediational means exist in action. How to refer to the environment and objects when social actors do not act them upon has received less attention in the literature than the notion of mediational means, and is treated differently in different traditions. Here I draw on the work of Geenen (2013) who points out that mediational means are only produced through action, and that without action a mediational means does not exist, rather objects in the environment are just that, objects if not acted with or upon.

4.4 Applications

In this section, I review some recent literature in which researchers apply the theoretical basis and methodological tools of multimodal (inter)action analysis (Norris, 2002, 2004, 2006, 2009, 2010, 2011a, 2011b, 2012a, 2012b, 2013a, 2013b, 2015b). This provides exemplars of the approach I take, to further the utility of the various methodological tools and theoretical underpinnings.

Kuśmierczyk (2013) applies multimodal (inter)action analysis (Norris, 2002, 2004, 2006, 2009, 2010, 2011a, 2011b, 2012a, 2012b, 2013a, 2013b, 2015b) to video data from job interviews to identify how job applicants can facilitate a positive evaluation of themselves in an interview. Where traditional discourse analytical approaches rely on language as the key conduit for establishing trust and mutual understanding, Kuśmierczyk includes other multimodal resources available to the interviewee. She analyses mock interviews organised to prepare students for the job application process, and job interviews with experienced professionals at a recruitment agency. Kuśmierczyk identifies the importance of speech, gesture, gaze and/or referring to a CV through gesture and/or gaze in establishing trust in key moments, especially those where the interviewer checks for clarification. Interviewers commonly seek to summarise the interviewee's answers for their notes, and Kuśmierczyk notes this is an important moment for establishing trust, negotiated multimodally. Interviewees who navigate these moments smoothly can rate more highly on measures such as trustworthiness and authenticity. She advises that interviewees and interviewers can learn from being aware of how speech, gesture, gaze and documents come together during job interviews to establish trust and understanding. Kuśmierczyk's work develops a multimodal understanding of job interviews, and also demonstrates the practical applications of a multimodal (inter)analytic (Norris, 2002, 2004, 2006, 2009, 2010, 2011a, 2011b, 2012a, 2012b, 2013a, 2013b, 2015b) approach to help social actors identify more clearly how they are being perceived, and how they perceive others.

Krystallidou (2014) also applies multimodal (inter)action analysis (Norris, 2002,

2004, 2006, 2009, 2010, 2011a, 2011b, 2012a, 2012b, 2013a, 2013b, 2015b) to help develop the skills of social actors.

Krystallidou (2014) trains medical interpreters, and in her training she uses video of authentic triadic interactions between German or Turkish speaking patients, Dutch speaking doctors and bilingual interpreters. Drawing on the recognised importance of gaze and body orientation (Goodwin, 1981; Kendon, 1990; Robinson, 1998) to social actors' engagement and participation in interaction, Krystallidou directed students to identify the different higher-level actions (Norris, 2004, 2011) that doctor, patient and interpreter were engaged in during a patient visit. She then asked students to apply the modal density foreground-background continuum of attention/awareness (Norris, 2004, 2006, 2011) to determine the different levels of attention/awareness each social actor produced these higher-level actions at. Krystallidou's focus was directed towards helping interpreters identify how patients might be included in the interaction, following a patient centred approach to healthcare. The students' discussion and analysis revealed that when the doctor and interpreter are interacting, they both dedicate part of their attention/awareness to the patient through gesture, gaze and body orientation, thus including the patient in the interaction. After a discussion of their learning outcomes, the students suggested that doctors and interpreters could more actively work to include patients by purposefully directing gestures, gaze and body orientation towards them at times when they needed to engage with each other. These are the moments when the patient is likely to be excluded from the interaction. The study also highlighted the

inadequacy of some role-play approaches to interpreter training that focus on verbal interaction only. This study is unique in that it demonstrates the utility of the modal density foreground-background continuum of attention/awareness (Norris, 2004, 2009, 2011) when taught in a non-academic context. This provides some validity to the tool, as interpreters readily took on the notion of levels of attention/awareness, and modal density (Norris, 2004, 20011a). Furthermore, Krystallidou 's (2014) work emphasises the relevance of an empirically applicable concept of attention/awareness, and moving away from a single focus, and a binary conception of engagement/disengagement.

White (2012) discusses the treatment of billboard design in the marketing literature, and argues traditional marketing theory analyses billboards without any empirical analysis of social actors (inter)actions with the billboards. Two of the dominant marketing texts claim that the message a billboard conveys must be read in an instant, and that large type and few words should be used. It appears that this guidance regarding billboards is based in on the actions of an imaginary social actor. This highlights the potential pitfalls of a social semiotic approach that treats mode as a resource external to the social actor. The traditional marketing textbook approach can be perceived as drawing on the meaning-making potential that the textbook author sees in billboards. White (2011, 2012) presents an analysis of social actors engaging with billboards in a range of different environments. He shows that billboards can transcend the material space within which they are placed through technology. He also shows that social actors at times engage in billboards for long periods of time. Drawing

on the mediated action (Norris, 2004, 2011a; Norris & Jones, 2005c; Scollon, 2001; Wertsch, 1998), and the modal density foreground-background continuum (Norris, 2004, 2009, 2011), White (2011, 2012) demonstrates the value in exploring the mediated actions of social actors, rather than relying only on one's own meaning to produce an analysis of signs and the material environment.

Adams (2015) explores how students construct meaning multimodally in interaction with digital texts and digital devices, linking to work on multiliteracies. Adams recorded two ninety-minute English reading classes with students in Japan. The students were tasked with choosing a digital story and then describing it to a partner. Adams found that students made extensive deictic gestures and related their spoken language to the digital text. Drawing on the notion of modal configurations (Norris, 2009, 2014a, 2015b), Adams shows that modal configurations of hand gestures, gaze and spoken language identified characters on the screen. Adams showed that the composition of the image on the screen influenced the spatial relationship between the screen and the participants' gestures. Thus, the mediation of the computer screen is complex, and includes the composition of the image, as well as its presence. Norris (2014a) also examined modal configurations in educational setting. She carried out an ethnographic study of a private art school in Germany and presents an analysis of teaching moments between a new student, and the teacher. Norris (2014a) identified the practice of stepping back to look at a painting in-progress, and showed that the new student's practice differed from

the practice of more experienced students and the art teacher. The new student stepped back about half the distance of the other class members. Norris links this difference in distance to other modes, and to practices and discourses. The new student draws on different practices from the other class members. For her, stepping back produces practices of school classroom learning, the discourse of politeness and the discourse of results. She steps back to look at her painting, but Norris notes in her fieldnotes that there is something *different* about her looking. Hobson and Hobson (2008) identify a similar importance in the *quality* of a look when studying autistic children in interaction. Norris (2014a) argues that the new student's *looking* is related to the discourse of results and that she seeks the end-point of the painting, rather than engaging in the process of painting. Her stepping back action reproduces discourses of politeness as she tries to not get in the way of other students. In contrast, the other students treat politeness as allowing others to *look* at their paintings, as for them, looking is an important part of the process of painting. Thus, Norris (2014a) argues that these students are painting in different ways, and enacting different practices and discourses. Norris argues that the new student's product orientation is analysable in the modal configuration she produces as she steps back. For the student, the painting is the most important mode, and gaze is only important as it allows her to produce the painting as well as she can. The new student does not treat proxemics to the painting as importantly as the painting itself, and thus does not engage in the practice of *looking* in the same way as the other students do. Rather the student prioritises the practice of politeness learned in school. This practice dictates that she

should not get in the way of others. However, the practice in the art school is one of the *process of painting*. Thus, the art teacher produces a modal configuration that aggregates painting-gaze-proxemics. Thus the proxemics element of this modal aggregate is very important for the art teacher, and the other students, so much so that the practice of politeness has changed to facilitate this kind of *looking*. The connection Adams (2015) and Norris (2014a) draw between teaching and learning, knowledge and modal configurations (Norris, 2009, 2014a, 2015b) are important as they show that a very fine analysis of actions is important to describe how, as Norris points out, 'social actors are part of their physical environment, acting with and through it' (2014a, p. 183).

4.5 Transcription conventions

The transcription conventions for interview transcripts follow Norris (2004, p. 66) and use a mixture of Sacks, Schegloff, and Jefferson's (1974) and Tannen's (1984) conventions for transcribing spoken language. The conventions are shown in Figure 4.7.


- a. Punctuation reflects intonation, not grammar.
- b. Brackets show overlap:
 - Two voices at once
- c. CAPS indicates emphatic stress.
- d. Numbers in parentheses () indicate length of pauses in seconds.
- e. Latching is indicated  by such brackets.

Figure 4.7: Interview transcription conventions

The transcription conventions for the multimodal transcripts include capturing frames from video data as demonstrated in the transcripts in this chapter. The timestamp is placed in the top left corner and indicates mm:ss:ff (minutes, seconds, frames – videos are usually captured at 30 frames per second). Each frame is arranged from left to right in chronological order, and frames are numbered in the top right corner. Spoken language is transcribed and placed over top of the frame. Spoken language is aligned within the frame that it was produced, although utterances do not necessarily begin at the time that the frame is taken. Prosody of spoken language is indicated through the contours of the transcribed utterances, and volume is indicated by the size of the text.

4.6 Conclusion

In this chapter, I have discussed my theoretical and methodological approach, which is multimodal (Norris, 2002, 2004, 2006, 2009, 2010, 2011a, 2011b, 2012a, 2012b, 2013a, 2013b, 2015b). I first reviewed a range of multimodal approaches to interaction, including social semiotics, conversation analysis, and gesture studies and non-verbal communication. I addressed the major features of each approach, and reviewed literature related to my analytical focus on research into tutoring. I introduced the theoretical and methodological tools that I use throughout my analyses, and the mediated action (Norris, 2004, 2011a; Norris & Jones, 2005c; Scollon, 2001; Wertsch, 1998) upon which these tools are based. I then reviewed a range of recent literature applying some of the theoretical and methodological tools that I use in this thesis. These reviews further justified my approach. Lastly, I described the transcription conventions that I follow. The following chapter presents my first analysis, where I develop the notion of primary agency.

5.0 Co-construction and Agency in Higher-level Actions

In this chapter, I address the notion of co-construction in interaction by concentrating on agency in higher-level actions. I introduce a theoretical/methodological tool called primary agency that can be applied to higher-level actions. In order to illustrate how primary agency can be determined, I examine three higher-level actions. The first higher-level action, *conducting research*, is produced by the researcher³, tutor and student; the second higher-level action, *tutoring*, is produced by the tutor and the student; and the third higher-level action, *reading the text*, is produced by the student and the tutor. For each higher-level action I develop an analysis to show that primary agency can be determined by identifying the social actor with ownership over the most relevant mediational means for the higher-level action.

The notion of primary agency requires a shift from co-construction (Coates, 2004; Goodwin, 1979; Goodwin & Heritage, 1990; Holmes, 1997; Jacoby & Ochs, 1995; Sidnell & Stivers, 2012), to co-production (Norris, 2004, 2006, 2011a). As I discuss in chapter three, co-construction lacks the explanatory power to analyse social actors co-producing multimodal higher-level actions on differing levels of attention/awareness. Firstly, in a broad philosophical sense co-construction can be applied to *all* moments of (inter)action and thus cannot

³ For ease of reading I refer to myself as I appear in the data as ‘the researcher’. I use ‘I’ to refer to myself as the writer of the thesis.

be used to analyse higher-level actions in detail. Secondly, when applied to a stretch of talk, taking a sociolinguistic or conversation analytic approach, co-construction does not include a notion of attention/awareness. Thirdly, co-construction is overwhelmingly applied to talk or to talk plus non-verbal actions. Conversely, the notion of co-production offers greater explanatory power as it allows for the analysis of multimodal higher-level actions in which all modes come together (including, but not necessarily primarily, talk), that are produced by social actors at the various (same *or* different) levels of attention/awareness.

In this chapter, moving beyond the often-stated notion of co-construction, I examine higher-level actions (Norris, 2004, 2006, 2011a) and show that in many cases one social actor interacting with others *produces* (Norris, 2004, 2006, 2011a) the higher-level action with primary agency, and in doing so expresses ownership over that particular higher-level action. Primary agency is a global feature of a higher-level action. This notion of ownership has important implications for knowledge communication in general and for tutoring specifically. Eppler (2006, p. 317) argues that knowledge communication has occurred when an 'insight, experience, or skill has been successfully reconstructed by an individual because of the communicative actions of another'. Taking this argument further, the notion of ownership (or primary agency) over action becomes relevant, as successful knowledge communication may rely on a social actor reconstructing an action *with* primary agency. For tutoring specifically, the notion of agency is important as successful tutors may

help students not just learn to produce actions, but to produce actions with primary agency.

5.1 Determining primary agency in higher-level actions

In this section, I analyse higher-level actions (Norris, 2004, 2006, 2011a) produced by two or three social actors. I am interested in determining who has agency when more than one social actor *produces* (Norris, 2004, 2006, 2011a) a higher-level action. I take agency as producing agentive action, drawing on Linell's (1992, p. 271) definition of agency as 'the ability to instigate events or initiate actions (or inhibit impulses for action)'.

The first higher-level action that I analyse comes from the beginning of a tutoring session, as the researcher is setting up recording equipment. I show that the researcher has primary agency over the higher-level action of *conducting research*. The second higher-level action that I analyse is produced during a tutoring session. Here, I show that, the tutor has primary agency over the higher-level action of *tutoring*. The third and final higher-level action that I analyse is also produced during a tutoring session. But this time I analyse the higher-level action of a student reading a text, and I show that the student has primary agency over the higher-level action of *reading the text*.

5.1.1 Primary agency in the higher-level action of *conducting research*

When analysing the higher-level action of *conducting research*, I found that the researcher primarily produces this higher-level action. Certainly, he could not

conduct the research project without the tutor and student, and as a result *conducting research* is a higher-level action that involves three social actors. I analyse an excerpt where the researcher is setting up research equipment to capture a well-framed shot of the tutoring session, with even lighting and authentic audio recording. The set up takes place just prior to the tutoring session. The tutor Didi and student Jackson sit at Jackson's dining room table. Didi and Jackson have organised tutoring materials in front of them. Didi arranged a lesson plan, some paper, some pens, and her phone in front of herself. Jackson has placed his own pens and his own blank notebook in front of himself. On the table, in front of Jackson also lies a model brain in two halves. The researcher has set up the camera and microphone and started recording when the excerpt begins (Figure 5.1). The excerpt that I analyse below lasts about six seconds. It starts moments after the camera has been turned on, and finishes as the researcher moves off camera to take a seat.

Figure 5.1. Image 1 shows the tutor Didi, on the left of the frame, looking at the researcher and asking '*going*'? Jackson sits next to Didi with his arms folded, and gazes at the table. The researcher produces a drawn out '*mmmyeeees*' (yellow text). Image 2 illustrates Didi gazing towards Jackson, moving only her eyes. The researcher says '*yes*', confirming that the video camera is recording. Didi repeats '*yep*'.

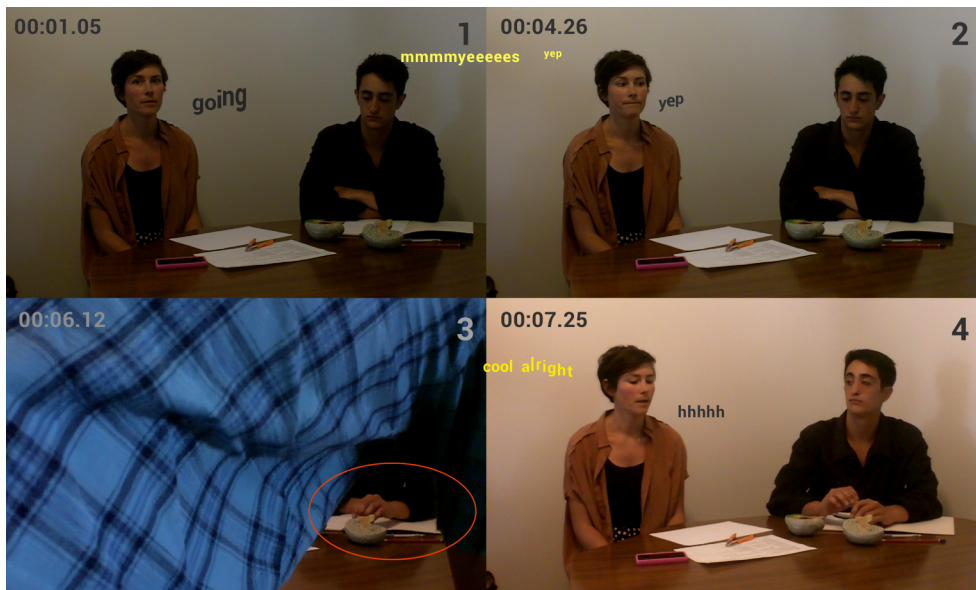


Figure 5.1: The researcher setting up the camera and microphone to record the tutoring session.

Image 3 shows the researcher leaning in front of the camera to adjust the microphone; and Jackson reaching for his pen (circled in red). The researcher says 'cool alright' (Image 4). At this stage the researcher moves off camera to sit out of view of the participants. Jackson rests his pen on his open book, and glances very briefly at the researcher. Didi takes an audible in-breath.

The transcript (Figure 5.1) shows the researcher producing the higher-level action of *conducting research* with the tutor and the student. The researcher has primary agency over this higher-level action, but as pointed out earlier, he could not produce this action without the tutor and student as participants. The researcher established the research project, gained the participants' consent, organised the tutoring topic, and found a suitable time for tutoring. All these actions are part of the higher-level action of *conducting research*. They show

that the researcher has ownership over the higher-level action of *conducting research*, whereas the tutor and student participate in the higher-level action of *conducting research* in a very different way.

Didi produces the higher-level action of *conducting research* through her interaction with the researcher, her proxemics to the researcher, and her proxemics to the research equipment. She interacts with the researcher, addressing him, saying '*going?*' to confirm that the camera is recording. By determining if the camera is recording, she verifies if the mid-grounded higher-level action of *tutoring* can begin. Didi does not produce the higher-level action of *conducting research* in the same agentic sense as the researcher. This difference reflects the ownership that the researcher displays over the higher-level action of *conducting research*. Here, as part of the higher-level action of *conducting research*, the researcher has (to some extent) agency over Didi.

Jackson does not participate extensively in either the higher-level action of *conducting research*, or the higher-level action of *tutoring* at this time. Jackson produces the higher-level action of *conducting research* mostly through his proxemics to the researcher and his proxemics to the research objects. Despite his low level of participation, Jackson is an important part of the higher-level action of *conducting research*. But, he also does not produce this higher-level action in the same agentic sense as the researcher. Rather, he is present and participating, but he takes his lead from the researcher who expresses (to some extent) agency over Jackson, as part of the higher-level action of *conducting research*.

5.1.1.1 Relevant mediational means for the higher-level action of conducting research

For the researcher to capture useful video data that frames the tutor and student, lights the participants evenly and reproduces clear audio, he needs to use a suitably positioned camera and microphone. Figure 5.2 shows the layout of the room at the beginning of the transcript (Figure 5.1), including the position of Didi, Jackson and the researcher. The researcher stands next to the camera, tripod and microphone that he has just finished setting up.

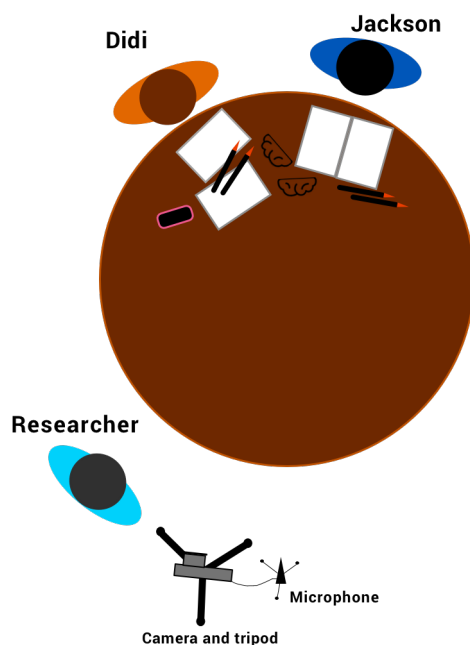


Figure 5.2: Layout of the room showing the position of the social actors and mediational means involved in *conducting research*.

These objects are the most relevant physical mediational means in the higher-level action of *conducting research*; and the researcher has agency over these mediational means, while the other participants do not. Scollon (2002, p. 3) points out that mediated action ‘highlight(s) the unresolvable dialectic between action and the material means which mediate all social action’; and Norris (2004, 2011) emphasises that ‘there is no action that is not mediated’ (Norris, 2011, p. 39). The researcher has sole agency over the cultural tools that mediate the higher-level action of *conducting research*, and therefore, he necessarily has primary agency over this higher-level action.

Next, I analyse the higher-level action of *tutoring*, which includes the tutor and the student.

5.1.2 Primary agency in the higher-level action of *tutoring*

In this thesis *tutoring* involves one tutor working with one student. I analyse an excerpt from a tutoring session where the tutor Emma is working with the student Sarah. They are seated next to each other at a dining room table in Sarah’s home. Immediately prior to the excerpt (Figure 5.3), Emma introduced some past exam questions to align their work with assessment criteria. Working with past exam questions is a common approach in tutoring, as it prepares students for the kind of questions they will face during assessment. The excerpt that I analyse below begins when Emma asks Sarah to choose one question and ends when Sarah starts looking through the list.

Figure 5.3 Image 1 shows that Emma (right of frame) has opened a folder with NCEA assessment criteria and blank papers. On top of these papers she placed a list of past exam questions. She touches this list with her left hand and gazes at it. In her right hand Emma holds a pen. Sarah rests her chin on her left hand, and gazes down at the list.

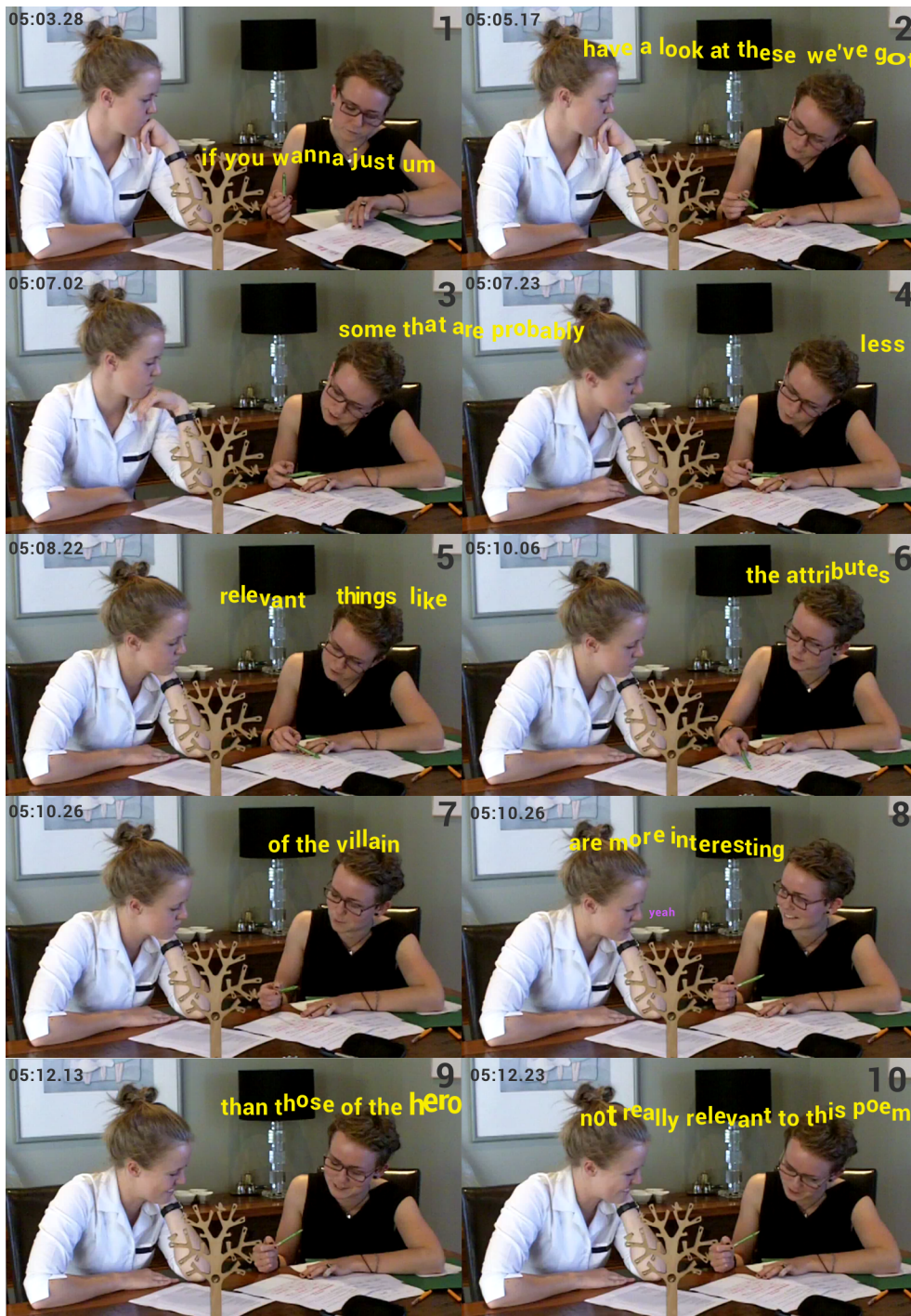


Figure 5.3: Emma asking Sarah to choose a question for them to focus on.

Emma says 'if you wanna just um have a look at these we've got' (Images 1 and 2). Emma pushes the list of past exam questions towards Sarah (Image 2) and points at it with her pen as she drops her head forwards and rotates it slightly

towards Sarah. Emma continues her talk (Images 3 and 4) with '*... some that are probably less...*'; and Sarah leans her head forward, continuing to gaze at the list. Emma continues her talk (Images 5 and 6) saying '*...relevant things like the attributes...*' as she points to a question on the paper with her pen. She then continues her talk with '*...of the villain are more interesting...*', and lifts her pen off the paper (Image 7) and then shift her gaze to Sarah's face (Image 8). Sarah smiles and says '*yeah*'. Emma gazes back down at the list of past exam questions and says '*than those of the hero*' (Image 9), continuing to smile as she says '*not really relevant to this poem*' (Image 10).

Figure 5.3 shows a moment of the higher-level action of *tutoring*. Here, I would like to claim that the tutor, Emma, is the primary actor. But Sarah certainly co-produces (Norris, 2004, 2006) the higher-level action of *tutoring* in this excerpt. She co-produces this higher-level action through proxemics to Emma, proxemics to the tutoring materials, gaze, and posture. Sarah gazes at the list of past exam questions as Emma discusses them; and leans towards the questions as Emma points out specific ones (Image 3).

5.1.2.1 Relevant mediational means for the higher-level action of *tutoring*

The most relevant mediational means for the higher-level action of tutoring in this excerpt is the list of past exam questions. Addressing past exam questions is recommended in leading study guides (Newport, 2011), because when students answer past exam questions they practice producing the type of performance required in exams. This can be quite different to how they are used to preparing

in school. Emma brings the past exam questions with her, and introduces them into the higher-level action of *tutoring* at the moment transcribed here. She has agency over this most relevant cultural tool and with it has primary agency over the higher-level action of *tutoring*.

I now zoom in on an action produced within *tutoring* where the student displays primary agency.

5.1.3 Primary agency in the higher-level action of *reading the text*

An important part of tutoring English is working with texts; and students often are asked to read short texts during a tutoring session. The student primarily produces the higher-level action of *reading the text*, however the tutor is present and co-produces this action as they wait for the student to finish.

The excerpt analysed here comes from a tutoring session held at the student Kate's house. Emma and Kate are seated at the table next to each other. Emma has placed her tutoring materials in front of her. Immediately prior to the excerpt Emma placed a copy of the poem 'Friends' by Hone Tuwhare in front of the student Kate and asked her to read it.

The excerpt is transcribed in Figure 5.4 and lasts about 40 seconds. The student Kate (Image 1, right of the frame) sits with her left elbow on the table gazing down at the poem in front of her. Kate holds this position throughout the excerpt as she produces the higher-level action of *reading the text*. Emma sits

next to Kate, and has her torso rotated towards her. Emma has her arms crossed in front of her chest, and gazes down at her tutoring materials.



Figure 5.4: Kate and Emma producing the higher-level action of *reading the text*.

Emma then reaches up to her face with her right hand (Image 2) and adjusts her glasses, then, crosses her arms again (Image 3). Emma shifts her gaze along her materials towards her right shoulder (Image 4). Then she shifts her gaze further along her materials towards her right (Image 5).

The transcript in Figure 5.4 shows that Kate primarily produces the higher-level action of *reading the text*. Kate produces the higher-level action of *reading the*

text through proxemics to the text, posture and gaze. Precisely how Kate reads the text is entirely up to her. Thus, Kate has primary agency in the higher-level action of *reading the text*.

Emma also produces the higher-level action of *reading the text*, but with a very different sense of agency from Kate. While Kate sits without shifting her posture, or her head, and gazes down at the poem to read it, Emma sits with her arms folded, gazing down at her tutoring materials. She turns her head to her right, and continues to gaze down at her materials. Emma actively occupies herself with her tutoring materials and does not demonstrate attention/awareness of the progress of Kate's reading. Emma co-produces the higher-level action of *reading the text* primarily by waiting. During the higher-level action of *reading the text* Kate has (to some extent) agency over Emma.

5.1.3.1 Relevant mediational means for the higher-level action of *reading the text*

For Kate to produce the higher-level action of *reading the text*, the most relevant mediational means is the text itself. As part of the higher-level action of *reading the text*, Kate has sole agency over the text. Kate produces a very close proxemic relationship with the text and leans over it while gazing at it.

I now return to each of the excerpts from this section in more detail, expanding my analysis from one higher-level action, to the landscape of attention/awareness (Norris, 2004, 2006, 2011a) of each social actor.

5.2 Co-construction, co-production and levels of attention

Co-construction relies on a model of focused upon interactional events that are sequentially produced, and sequentially contingent (Jacoby & Ochs, 1995).

Multimodal interaction analysis (Norris, 2002, 2004, 2006, 2009, 2010, 2011a, 2011c, 2012a, 2012b, 2012c, 2012d, 2013a, 2013b, 2014a, 2014b, 2015a, 2015b), however, problematises this notion by introducing the notion of a continuum of attention/awareness (Norris, 2004, 2006, 2009, 2011a). Rather than taking co-construction as a given, the notion of a continuum of attention/awareness requires an analysis of the multiple higher-level actions social actors produce simultaneously (Norris, 2004, 2006, 2009, 2011a).

Accordingly, Norris (Norris, 2004, 2006, 2009, 2011a) speaks of analytically determined co-production rather than co-construction in her work. In this section, I analyse the multiple higher-level actions that each social actor produces simultaneously in order to build upon the notion of co-production to gain clearer insight into the workings of agency.

5.2.1 Levels of attention in the higher-level action of conducting research

Here I use the notion of modal density (Norris, 2004, 2006, 2009, 2011a) to analyse the attention/awareness of each of the social actors producing the higher-level action of *conducting research*. I start by presenting an analysis of the attention/awareness of the researcher, who has primary agency over the higher-level action of *conducting research*. I then move on to the tutor, and

finally the student. For each social actor involved in producing the higher-level action of *conducting research* I produce a graph of their attention/awareness, showing where in their attention/awareness they produce the higher-level action of *conducting research*, and what other higher-level actions they are producing within the landscape of their attention/awareness.

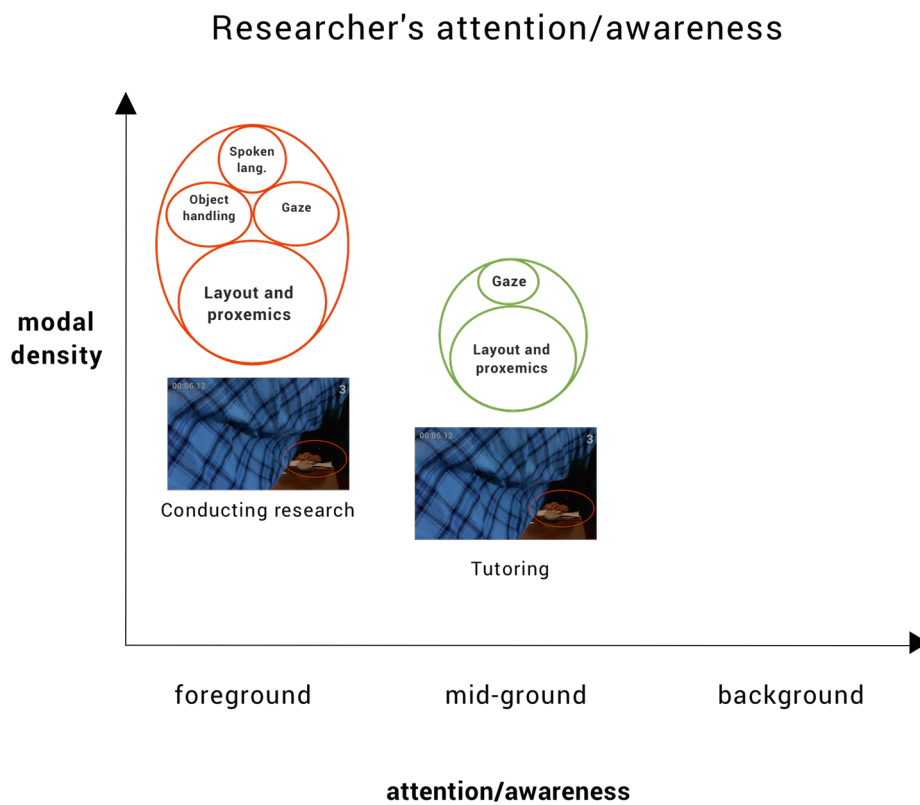


Figure 5.5: The researcher attending to the higher-level actions of *conducting research* and *tutoring* at different levels of attention/awareness.

As I have shown in section 5.1, the researcher has primary agency over the higher-level action of *conducting research*. An analysis of modal density (Norris,

2004, 2006, 2011) shows that he produces this higher-level action at the foreground of his attention/awareness. The researcher is positioned on the other side of the table from the tutor and student, and this produces a proxemic relationship between him, the tutor and student. He sets up the research equipment through object handling, and this establishes a proxemic relationship between himself and the camera, tripod and microphone. Although gaze is not visible in the transcript, we can presume that he gazes at the research equipment, and at intervals at the tutor and student during the set up process. Finally, the researcher responds in the mode of spoken language to the tutor when she checks to confirm that the camera is going, saying '*mmmyeeees yes*'.

The researcher produces the higher-level action of *tutoring* at the midground of his attention/awareness. He is certainly attending to the higher-level action of *tutoring*, as it forms an important part of his data collection. However, at this point, he produces the higher-level action of *tutoring* primarily through layout and proxemics to the tutor and student, and proxemics to the tutoring objects. Also, as mentioned above, we can presume that he gazes towards the tutor and student during the set up process.

Figure 5.6 shows that the tutor also attends to the higher-level action of conducting research at the foreground of her attention/awareness.

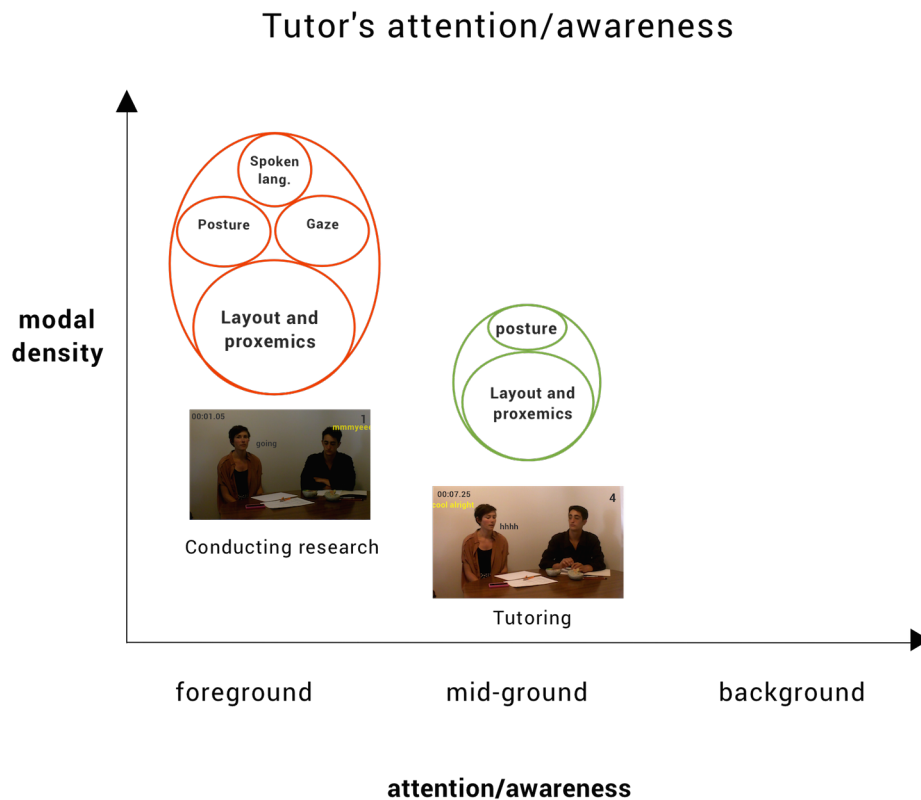


Figure 5.6: The tutor attending to the higher-level actions of *conducting research* and *tutoring* at different levels of attention/awareness.

Didi produces the higher-level action of *conducting research* through layout, and her proxemics to the researcher and the research equipment as he is setting up. She faces the camera and researcher, and gazes in the same direction. Didi also addresses the researcher in the mode of spoken language, saying '*going*', as she checks to confirm if the camera is recording.

At the mid-ground of her attention/awareness Didi attends to the higher-level action of *tutoring*. Didi produces the higher-level action of *tutoring* through layout and her proxemics to Jackson, and to the tutoring objects. Also, although Didi's posture is primarily producing an engagement with the higher-level action

of *conducting research*, her seated posture also produces the higher-level action of *tutoring*. However, as Didi produces the higher-level action of *tutoring* with a lower modal density, it sits further down the continuum of her attention/awareness than the higher-level action of *conducting research*.

Jackson sits quite still during the excerpt and he does not produce any higher-level action at the foreground of his attention/awareness (Figure 5.7).

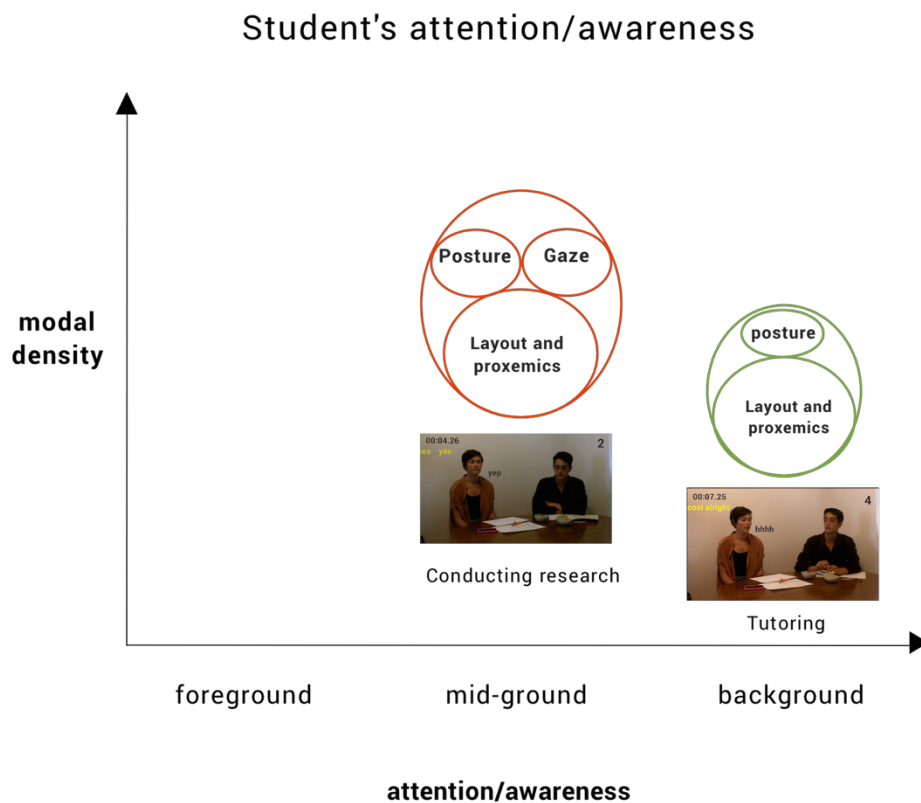


Figure 5.7: The student attending to the higher-level actions of *conducting research* and *tutoring* at different levels of attention/awareness.

Rather he simply waits for the researcher to set up the equipment. Jackson produces the higher-level action of *conducting research* through layout, his

proxemics to the researcher, and his proxemics to the research equipment. He also faces the researcher with his posture, and gazes at the camera and in the direction of the researcher. Jackson also produces the higher-level action of *tutoring*, but this action is produced here with lower modal density than the higher-level action of *conducting research*. The primary difference stems from Jackson's posture. While his posture produces the higher-level action of *tutoring*, similarly to Didi, Jackson's posture is more strongly related to the higher-level action to *conducting research*. Even though Jackson sits close to Didi, and produces the higher-level action of *tutoring* through layout, through his proxemics to Didi, and his proxemics to the tutoring materials, he produces the higher-level action of *tutoring* at a lower level of attention/awareness.

5.2.2 Levels of attention in the higher-level action of tutoring

Here I use the modal density foreground-background continuum (Norris, 2004, 2006, 2011) to analyse the different levels of attention of the social actors producing the higher-level action of *tutoring* from the excerpt in section 5.1.2. I only discuss the tutor and the student as the researcher has now moved outside the view of both of them and out of view of the camera. I start with an analysis of the attention/awareness of the tutor Emma, as she has primary agency over the higher-level action of *tutoring*.

Emma produces the higher-level action of tutoring in the focus of her attention/awareness through layout, her proxemic relationship to the student Sarah, and her proxemic relationship to the tutoring objects (Figure 5.8).

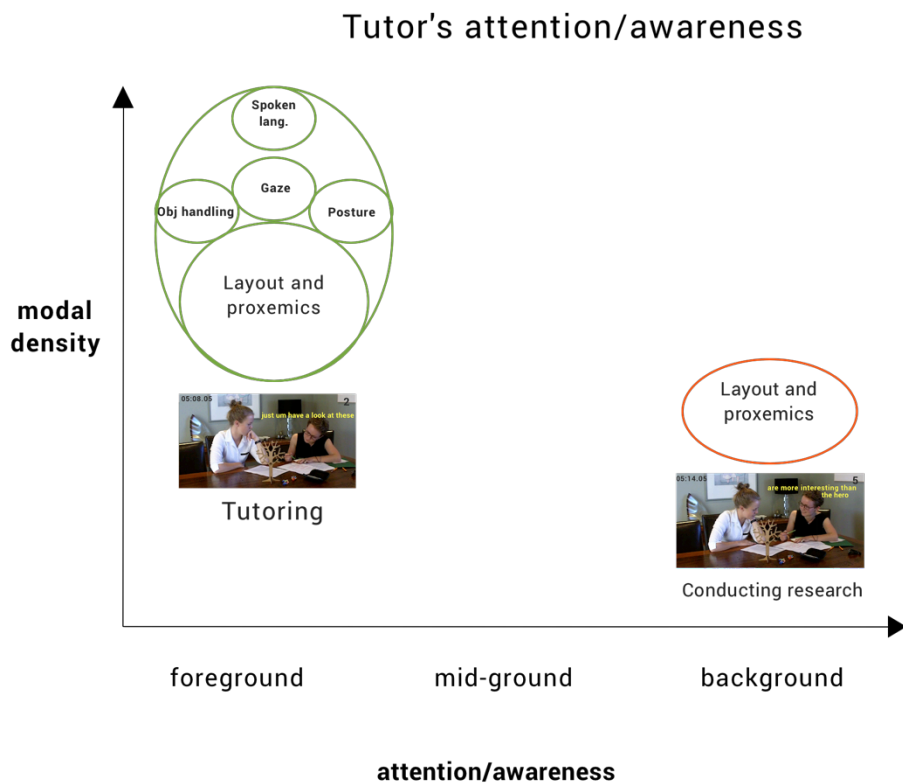


Figure 5.8: The tutor Emma attending to tutoring and conducting research at different levels of attention/awareness.

Emma handles the list of past exam questions, and directs her gaze towards both the list and Sarah. Emma's posture is somewhat hunched over the list of past exam questions, and she moves closer to Sarah as she rotates her torso so that her left shoulder is forward, opening up her posture to Sarah. Emma also speaks about the list of past exam questions, saying *'ok cool so if you wanna just um have a look at these, we've got some that are probably less relevant, like the attributes of the villain are more interesting than the hero, not really relevant to*

this poem'. Thus, Emma produces the higher-level action of *tutoring* with high modal density, visible in the complexity with which she engages with Sarah and the list of past exam questions.

The graph of Emma's attention/awareness in Figure 5.8 shows that Emma also attends to the higher-level action of *conducting research*. However she does so with low modal density. Emma produces the higher-level action of *conducting research* through layout, her proxemic relationship to the camera, and her proxemic relationship to the researcher (seated out of view). While Emma is aware of the higher-level action of *conducting research*, this action is in the background of her attention/awareness.

Sarah also produces the higher-level action of *tutoring* at the foreground of her attention/awareness, although she does not have primary agency. Figure 5.9 shows a graph of Sarah's attention/awareness.

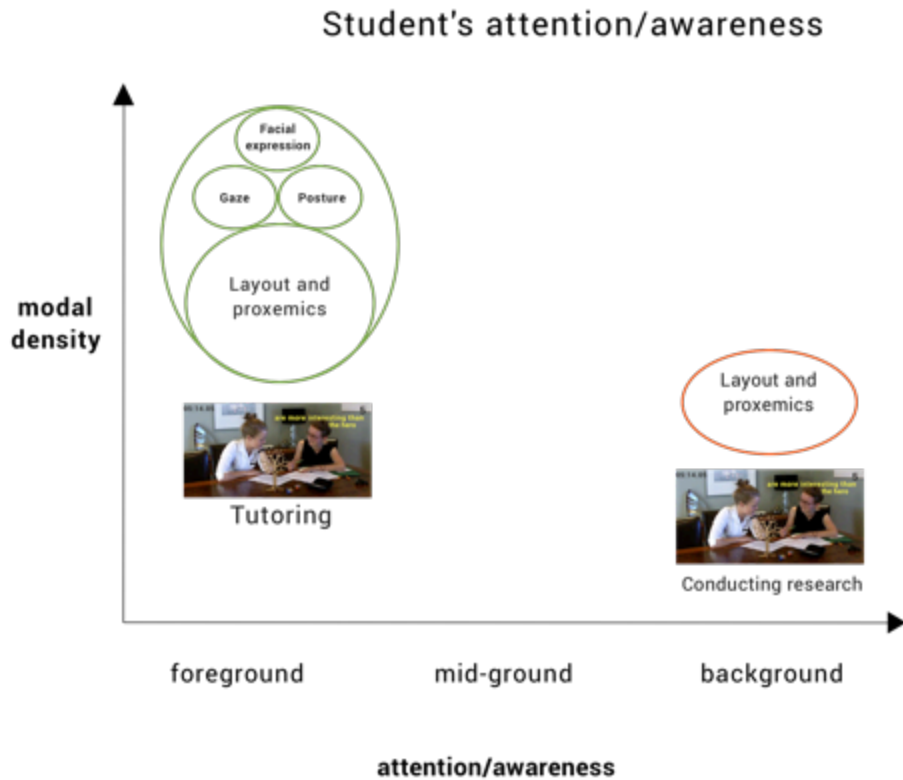


Figure 5.9: The student Sarah attending to tutoring and conducting research at different levels of attention/awareness.

Sarah produces the higher-level action of tutoring through layout, her proxemic relationship to Emma, and her proxemic relationship to the tutoring materials. She leans in towards the list of past exam questions, gazing at it. Sarah listens and responds to Emma's spoken language with a smile. Sarah produces the higher-level action of tutoring with a complex interrelationship of lower level actions, illustrating that she is producing the higher-level action of tutoring at the foreground of her attention/awareness.

Sarah also produces the higher-level action of *conducting research*. She demonstrates attention/awareness of the higher-level action of *conducting*

research through layout, her proxemic relationship to the camera, and her proxemic relationship to the researcher. However, much like Emma, Sarah does not engage further in the higher-level action of *conducting research*, and it is positioned in the background of her attention/awareness.

5.2.3 Levels of attention in the higher-level action of reading the text

Now I analyse the attention/awareness levels (Norris, 2004, 2006, 2009, 2011a) of the social actors producing the higher-level action of *reading the text* from section 5.1.3. Here, the student Kate has primary agency and I begin my analysis with her. Figure 5.10 shows a graph of Kate's attention/awareness.

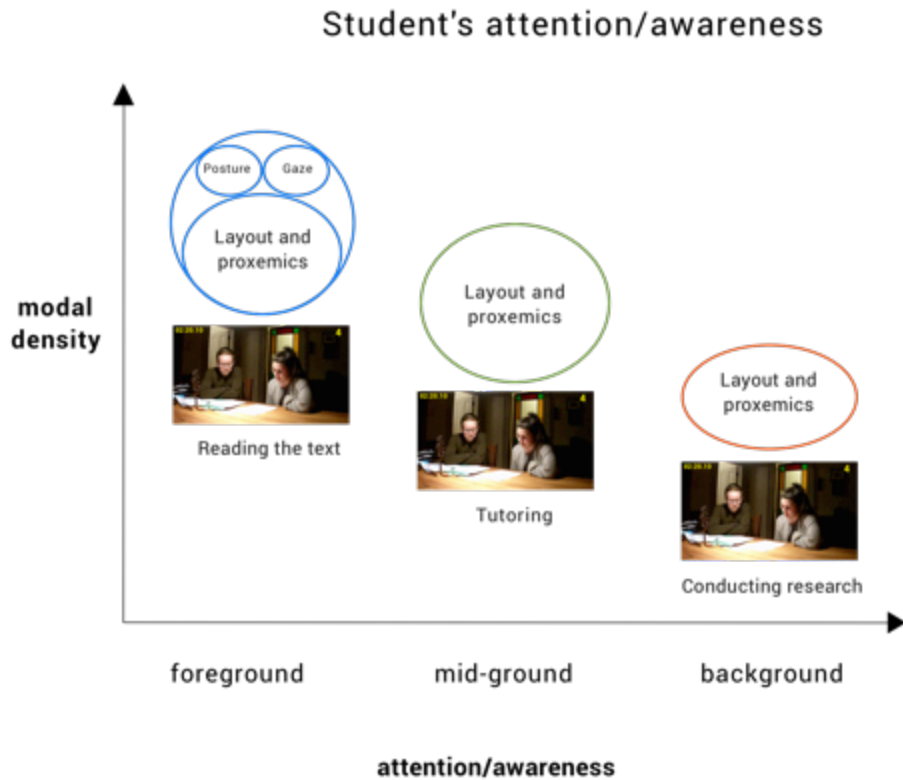


Figure 5.10: The student Kate attending to reading the text, tutoring and conducting research at different levels of attention/awareness.

Kate produces the higher-level action of *reading the text* in the foreground of her attention/awareness. Kate sits quite still, leaning forward over the text as she reads. She produces the higher-level action of *reading the text* with high modal density through the intensity of her gaze, written language, her proxemic relationship to the text, and her posture, which is closely linked with the layout of the table and chair.

Simultaneously, Kate produces the higher-level action of *tutoring* through layout, proxemics to Emma, and her proxemic relationship to the tutoring materials. Primarily due to the proxemic relationships, she produces the higher-

level action of *tutoring* at the mid-ground of her attention/awareness. Lastly, Kate is also aware of the higher-level action of *conducting research*, although paying little attention to it. She produces this higher-level action through layout, her proxemic relationship to the research equipment, and her proxemic relationship to the researcher at the background of her attention/awareness.

As Kate produces the higher-level action of *reading the text* with primary agency at the foreground of her attention/awareness, Emma produces a different action at the foreground of her attention/awareness. Figure 5.11 shows that Emma produces the higher-level action of *tutoring* at the foreground of her attention/awareness. Emma produces the higher-level action of *tutoring* through layout, proxemics to Kate, and proxemics to the tutoring objects, gaze and posture. Emma's higher-level action of *tutoring* here involves waiting for Kate to finish the higher-level action of *reading the text*.

Emma also produces the higher-level action of *reading the text*, although as pointed out in section 5.1.3 she does not have primary agency over this action. Emma produces the higher-level action of *reading the text* through layout, proxemics to Kate, and proxemics to the text.

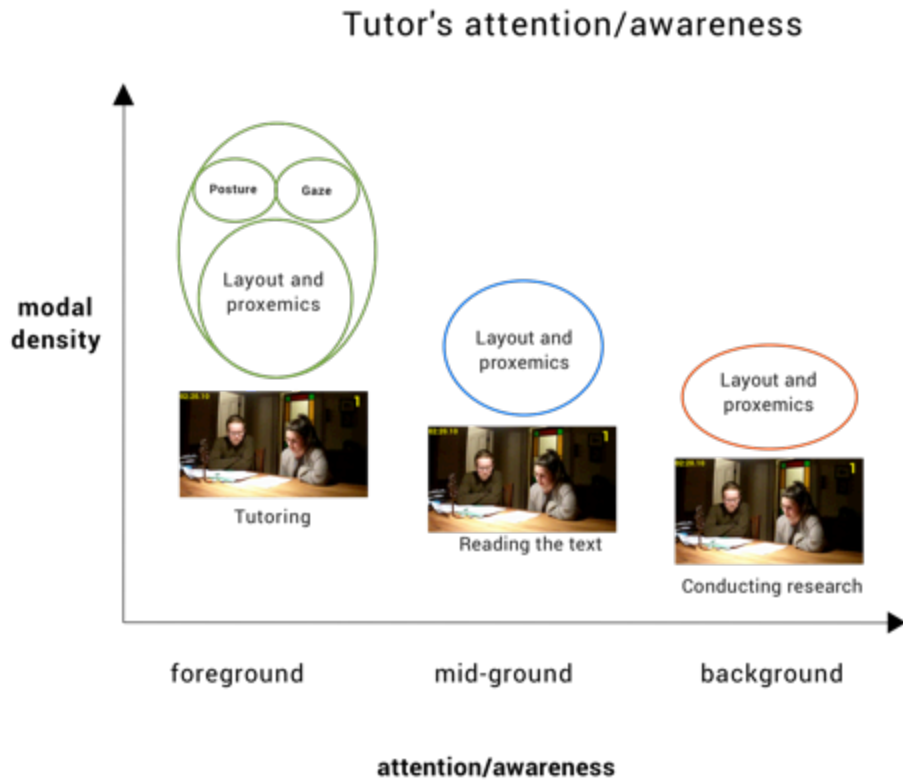


Figure 5.11: The tutor Emma attending to tutoring, reading the text and conducting research at different levels of attention/awareness.

Lastly, Emma produces awareness of the higher-level action of *conducting research* through layout, proxemics to the research equipment, and proxemics to the researcher. Emma produces the higher-level action of *conducting research* with low modal density in the background of her attention/awareness.

5.3 Levels of attention and primary agency in higher-level actions

My analyses show that the social actor with primary agency produces that higher-level action at the foreground of their attention/awareness. Other social actors, co-producing the higher-level action, at times produce the higher-level action at the foreground of their attention/awareness. An example of a coordinated foreground of attention/awareness comes from the higher-level action of *tutoring*. The tutor Emma and the student Sarah both foreground the higher-level action of *tutoring* (Figure 5.12).

The higher level action of *tutoring*

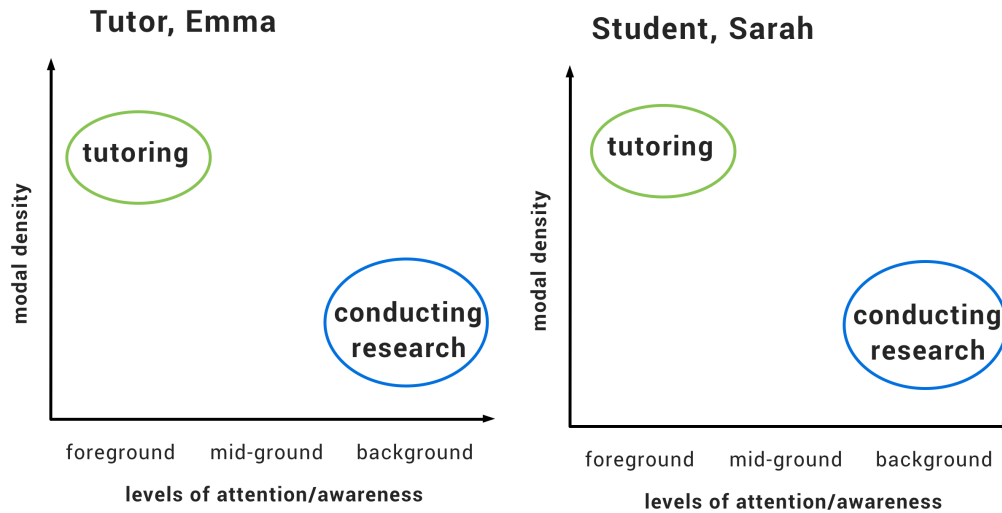


Figure 5.12: The modal density foreground-background continuums for each of the social actors co-producing the higher-level action of tutoring.

Emma has primary agency over the higher-level action of tutoring, the most relevant mediational means of the list of past exam questions, and (to some extent) over Sarah. Figure 5.12 shows that Emma produces the higher-level action of tutoring at the foreground of her attention/awareness. At the background she produces the higher-level action of conducting research. The student, Sarah, produces the same spread of attention/awareness as Emma, with the higher-level action of tutoring at the foreground of her attention/awareness and the higher-level action of conducting research at the background of her attention/awareness.

At other times, as shown by Norris (2011a), social actors co-producing higher-level actions *do not* produce the same spread of attention/awareness as each other. For example, I found in the excerpt focussing on the higher-level action of *conducting research*, that the researcher, the tutor Didi, and the student Jackson all produce the higher-level action of *conducting research*. The researcher has primary agency over the higher-level action of *conducting research*, the most relevant mediational means of the camera, tripod and microphone, and the other social actors (to some extent). Figure 5.13 shows that the researcher produces the higher-level action of *conducting research* at the foreground of his attention/awareness.

The higher level action of conducting research

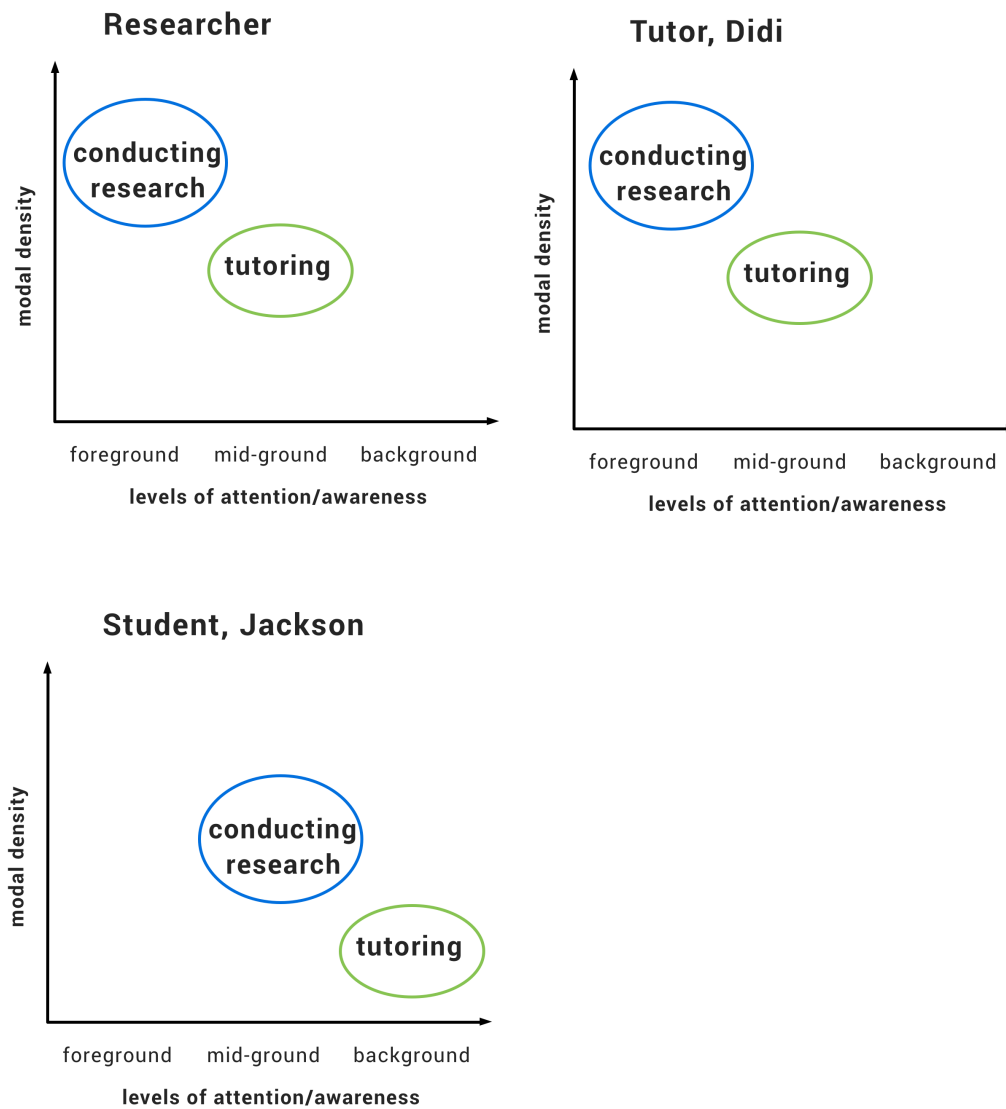


Figure 5.13: The modal density foreground-background continuums for each of the social actors co-producing the higher-level action of conducting research.

The tutor Didi also produces the higher-level action of *conducting research* at the foreground of her attention/awareness. The student Jackson, however, does not produce the same structure of attention/awareness as the researcher and the tutor. He does not produce any higher-level action at the foreground of his attention/awareness, and produces the higher-level action of *conducting research* at the mid-ground.

Thus, the analyses, building upon Norris (2011a), demonstrate that dyadic and triadic interaction is more complex than the traditional notion of co-construction suggests. It is not possible to claim that all social actors are focusing on the same higher-level action, and analysis of co-production draws on a concept of attention/awareness to show that social actors engaged in co-producing higher-level actions do not necessarily share the same landscape of attention/awareness. In addition, to treat interaction as always sequentially produced and sequentially contingent misses the global nature of higher-level actions. Jacoby and Ochs (1995) claim research into co-construction indicates that:

‘...every interactional moment is a unique space for a response to which subsequent interaction will be further responsive, and that interlocutors are processing and responding to the rich flow of unique interactional moments on-line, in real time, at the same time, at the same speed...’

(Jacoby & Ochs, 1995, p. 178)

But this steadfast commitment to a single focus, and an ever unfolding sequentiality does not leave space for higher-level actions that are multiple and simultaneously produced by a social actor, projecting primary agency much further forward than the 'next-turn'.

My analyses show the relevance of the notion of primary agency over higher-level actions for knowledge communication in general, and tutoring specifically. The co-producing social actors *without* primary agency are free to pay more attention/awareness to other higher-level actions. In the example of the higher-level action of *reading the text*, the student Kate has primary agency. Figure 5.14 shows that the tutor Emma, who does not have primary agency over the higher-level action of *reading the text*, produces the higher-level action at the midground of her attention/awareness. Emma produces the higher-level action of *tutoring* at the foreground of her attention/awareness as she gazes down at her tutoring materials. It is not possible to say what is going on in Emma's mind, only what she is paying interactional attention/awareness to (Norris, 2004, 2006, 2011). However, one thing she may use this time for while Kate reads, could be to plan the next parts of the tutoring session.

The higher level action of *reading the text*

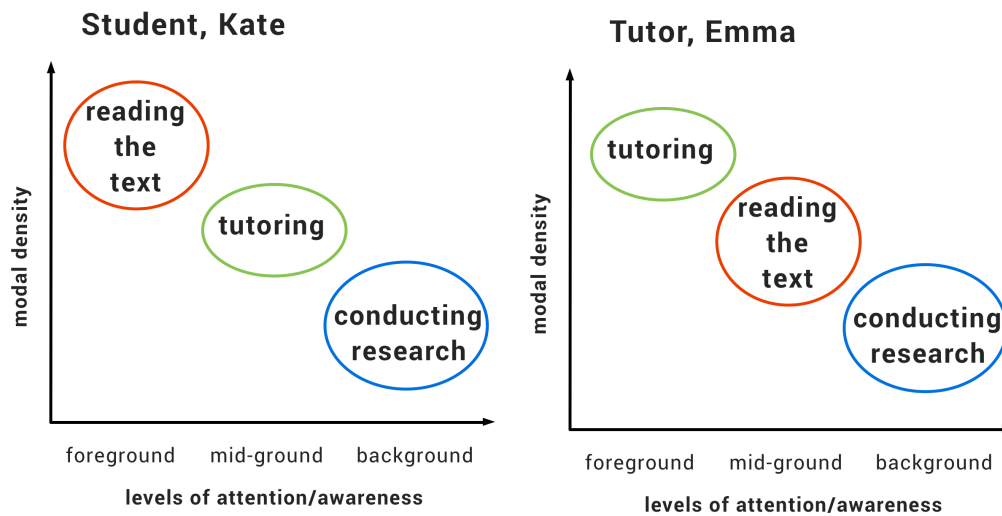


Figure 5.14: The modal density foreground-background continuums for each of the social actors co-producing the higher-level action of reading the text.

In the instance of the higher-level action of *reading the text*, Emma is the social actor with more knowledge. Figure 5.14 shows that Emma does not have to have primary agency throughout the interaction. A knowledge asymmetry (Kastberg, 2011) exists between Emma and Kate, certainly Emma as an experienced English tutor knows much more than Kate about how to read a text. However the knowledge asymmetry does not equate to Emma expressing primary agency over the higher-level action that she is aiming to help the student Kate develop, i.e. *reading the text*. To return to Eppler's measure of successful knowledge communication as occurring when an 'insight, experience, or skill has been successfully reconstructed by an individual because of the communicative actions of another' (Eppler, 2007, p. 317), the notion of primary

agency suggests that handing agency over to a social actor, in a tutoring situation or any knowledge communication situation, may be required for successful knowledge communication.

Handing over agency to another social actor for knowledge communication, tutoring, and more generally, brings up the notion of larger scale and smaller scale higher-level actions (Norris, 2015a). Each of the higher-level actions in this chapter illustrate different scales possible in higher-level action. Moving from larger scale to smaller scale, the higher-level action of *conducting research* embeds the higher-level action of *tutoring*, which in turn embeds the higher-level action of *reading the text*. Primary agency can be 'handed off' from a larger scale action to a lower scale action, and also from a smaller scale action to a larger scale action. In the next chapter I address how one social actor hands off agency to another and what this can explain about tutoring and knowledge communication in general.

5.4 Co-construction and Agency in Higher-level Actions:

Conclusion

In this chapter I used the notion of co-produced higher-level actions (Norris, 2004, 2011a), to investigate participants' modal use (Norris, 2005, 2014) including spoken language (Chafe, 1994; Tannen, 1984), proxemics (Hall, 1959, 1966), posture (Dittman, 1987; Schefflen, 1964), gaze (Goodwin, 1981; Kendon, 1967), gesture (McNeill, 1992, 2005; Kendon, 1990), object handling (Kozma,

2003) and layout (Hall, 1966; Kress & van Leeuwen, 2001). I also examined the multiple cultural tools (Geenen, 2013, Norris, 2014; Scollon, 1998, 2002; Wertsch, 1998) that built an intricate part (Scollon, 1998, 2002; Wertsch, 1998) of the mediated higher-level actions social actors co-produce (Norris, 2004, 2006, 2011). Through this analysis, I showed that at times social actors express ownership (Langan-Fox et al., 2007; Pierce et al., 2003) over the most relevant mediational means for a higher-level action. Because mediational means are created through action (Geenen, 2013; Norris, 2004, 2011; Scollon, 1998; Wertsch, 1998), ownership of mediational means displays primary agency over the higher-level action which is produced.

Next, I used the methodological tool of a modal density foreground-background continuum of attention/awareness (Norris, 2004, 2006, 2011), examining the co-production of the higher-level action of *conducting research*, the higher-level action of *tutoring*, and the higher-level action of *reading the text*. Here, I built upon section 5.1 and illustrated the attention levels (Chalmers, 1996; Norris, 2004) of each participant as they co-produced higher-level actions (Norris, 2004, 2006, 2011). Norris (2004, 2006, 2011) showed that social actors engaged in what has traditionally been termed co-construction, is more aptly referred to as co-production. The term co-production (Norris, 2004, 2006, 2011) problematises the notion of co-construction in dyadic and triadic interaction. Taking the analysis beyond the social actors' focused interaction reveals a more complex picture of (inter)action in which social actors attend to, and are aware of, co-produced higher-level actions in different ways.

Combining the notion of primary agency and co-production reveals that the social actor with primary agency is afforded certain privileges. Specifically, they define what constitutes the higher-level action that they have primary agency over. Social actors with primary agency do this by taking, or expressing ownership over the most relevant mediational means for the higher-level action. As noted above, objects become mediational means through action (Geenen, 2013; Norris, 2004, 2011; Scollon, 1998; Wertsch, 1998), and thus by acting with primary agency a social actor determines in what way an object becomes a mediational means, or what kind of higher-level action the mediational means produces. Focussing on co-produced higher-level actions (Norris, 2004, 2006, 2011) ensures that there is no prior assumption that other social actors must participate in co-producing a higher-level action that another social actor has primary agency over. Indeed, I showed in this chapter that often social actors mid-ground or background a higher-level action that they do not have primary agency over. However, when social actors engage in a higher-level action that another has primary agency over, they enter into the social reality that the social actor with primary agency produces. Rommetveit claims that 'The speaking "I" has the privilege of pointing out the objects, events and states of affairs to enter the field of shared attention' (1979, p. 95). Here, I argued however, that the 'speaking "I"' is more clearly defined as the multimodal social actor with primary agency. In addition, co-production revealed that this privilege is contingent on other social actors entering into co-production at some level of their attention/awareness.

I used primary agency here to show how social actors produce and explore mediational means through higher-level actions that they have primary agency over. A researcher with primary agency determines what constitutes a research session, a tutor with primary agency determines what kind of action a list of questions mediate, and a student determines how they read a particular text. For knowledge communication I showed that a social actor with primary agency over a higher-level action determines the way that objects become mediational means, but in line with multimodal (inter)action analysis (Norris, 2002, 2004, 2006, 2009, 2010, 2011a, 2011c, 2012a, 2012b, 2012c, 2012d, 2013a, 2013b, 2014a, 2014b, 2015a, 2015b) my analysis problematised the common notion of co-construction by utilising the notion of co-production (Norris, 2004, 2006, 2011) to show that other social actors may engage in this higher-level action in complex ways. In the next chapter I investigate these ideas further, showing how social actors hand over, and take on, primary agency over higher-level actions.

6.0 Handing over and Taking on Primary Agency

In this chapter I examine four examples of social actors handing primary agency over to other social actors. I analyse three excerpts from chapter 5, and I expand them to include a moment when primary agency is handed from one social actor to another. The first excerpt shows the researcher handing over primary agency to the tutor, who then begins to produce the higher-level action of *tutoring* as the social actor with primary agency. The second excerpt shows the tutor handing over primary agency to the student, who then begins to produce the higher-level action of *choosing a question*. The third excerpt shows the student handing over primary agency to the tutor. The student is producing the higher-level action of *reading the text*, and when she finishes the higher-level action she returns her focus to the higher-level action of *tutoring*, and the tutor continues to produce the higher-level action of *tutoring* with primary agency.

I also analyse a fourth excerpt that I have not addressed previously. In this excerpt the tutor asks for help from the researcher during the tutoring session. I show that this is an instance where the tutor has not taken on primary agency over the higher-level action of *tutoring*. Instead he is producing a non-authentic tutoring session for the research. As a result, for the tutor, the researcher still has primary agency over the higher-level action of *tutoring* and the tutor orientates to the researcher as the owner of the most relevant mediational

means. Here, it becomes apparent that the tutor is unable to use these mediational means to produce an authentic tutoring session.

6.1 Researcher handing primary agency over to the tutor

As discussed in the previous chapter, the researcher focuses on and has primary agency over the higher-level action of *conducting research*. Here I show the researcher handing primary agency over to the tutor, who takes it on and shifts her focussed attention/awareness to the higher-level action of *tutoring*. The higher-level action of *tutoring* is embedded within the higher-level action of *conducting research* as illustrated in Figure 6.1. The embeddedness of the higher-level action of *tutoring* reflects how it is closely interlinked and dependent upon the higher-level action of *conducting research*. This specific higher-level action of *tutoring* could not have been accomplished in this way without the researcher first wanting to conduct research with these participants.

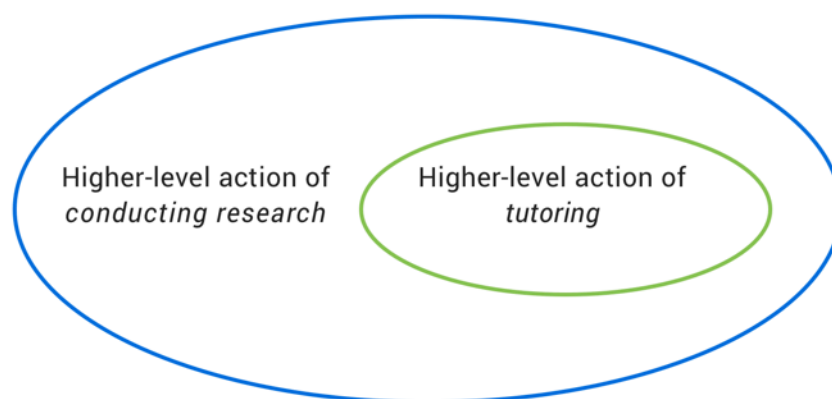


Figure 6.1: The higher-level action of *tutoring* embedded within the higher-level action of *conducting research*.

Norris (2015) refers to larger and smaller scale higher-level actions to indicate embeddedness. The larger scale action in this case is the higher-level action of *conducting research*, and the smaller scale action is the higher-level action of *tutoring*. Therefore, in this excerpt primary agency is handed from a larger scale higher-level action to a smaller scale higher-level action.

6.1.1 Establishing the conditions for the higher-level action of tutoring

I have shown that the higher-level action of *tutoring* is embedded within the larger scale higher-level action of *conducting research*. I now address in more detail how the researcher established the conditions for the higher-level action of *tutoring* in order to show how primary agency can be handed from one higher-level action, to a social actor who then produces a different higher-level action. The researcher provided many of the mediational means required for

the higher-level action of tutoring. These include the lesson plan that structures the session, and the model brain that is used to demonstrate brain anatomy. The tutor Didi takes on these mediational means as her own. She shapes these cultural tools to her own use in a process of appropriation (Norris, 2011; Scollon, 2002; Wertsch 1998). Figure 6.2 shows Didi's lesson plan that she used in each session. Over time she added notations to more closely suit her tutoring approach.

Topic	Group	Date	Duration	
Learning outcomes: Discuss the different functions of the brain, point out some of the different parts of the brain, discuss the evolution of the brain Who for: Student as part of research project Where: Student's home Key concepts/ideas/terminology: Brain, natural selection, genetic drift, migration, niche Resources and handouts: Model of brain or picture of brain, pens and paper, lesson plan				
Tutor activity (what will I do)	Learning task (what will the students do)	Rationale	Time	Resources
Introduce yourself and a brief overview of the session	→ Background, health	Build rapport, show the student what they will be doing in the session	3 min	
Quick fire brainstorm on the functions of the brain	Provide ideas about what the brain does	Find out what the student thinks about the brain and how it works	5 min	Paper and pens - brain → limbs, how?
Point out on the brain model, or image of the brain what broad functions each of the three areas does (brainstem, limbic system, cortex)	Student identifies where the functions they identified might be carried out in the brain	Student starts to differentiate between different types of brain functions, and different areas of the brain	5 min	- pre & postcentral gyrus - motor sensory
Brainstorm different ways that things can go wrong in the brain e.g. concussion, stroke, depression , depression, #, drugs	Student identifies different things that can go wrong with the brain	Student applies their own experience of brain injury or brain issues to the information about different areas of the brain	5 min	
Choose one or two of	Student might try to	Adds a practical aspect to	5min	

limbic system - emotion
- behaviour
- long term memory
- attraction } emotional life
- formation of memories

Figure 6.2: Didi's annotated lesson plan.

In addition to providing some of the most relevant mediational means for tutoring, the researcher also recruited the participants and organised this particular unit for the tutoring session. Didi and Jackson have already agreed to participate in a tutoring session, and this shared past permeates the present moments as the researcher sets up his equipment (Molseed, 1986). Thus, in this

excerpt, the mediational means provided by the researcher, and the previous recruitment and organisational activities produced as part of the higher-level action of *conducting research* establish the conditions for the higher-level action of *tutoring*. These conditions, in the form of mediational means and a shared past, project the higher-level action of *tutoring*.

6.1.2 Researcher hands over, and tutor takes up primary agency

I now analyse specifically how the researcher hands over, and how the tutor takes up, primary agency. Figure 6.3 shows a transcript that slightly overlaps with and continues on from the transcript in Figure 5.1. However, for ease of reading, the images have been re-numbered for Figure 6.3, and the longer transcript can be found in Appendix H.

The researcher has finished setting up the recording equipment and is moving to his seat out of view of the participants (Image 1). The tutor Didi sits next to the student Jackson. Didi is gazing at the table and Jackson is gazing at the researcher. When the researcher says '*cool*' (yellow text), the tutor Didi takes an audible in-breath (Image 2). Jackson refocuses his gaze, looking at Didi as the researcher says '*alright*' (Image 3). Didi then begins to tilt and turn her head towards Jackson (Image 4); she smiles and gazes at Jackson, with her head tilted and rotated towards him (Image 5).

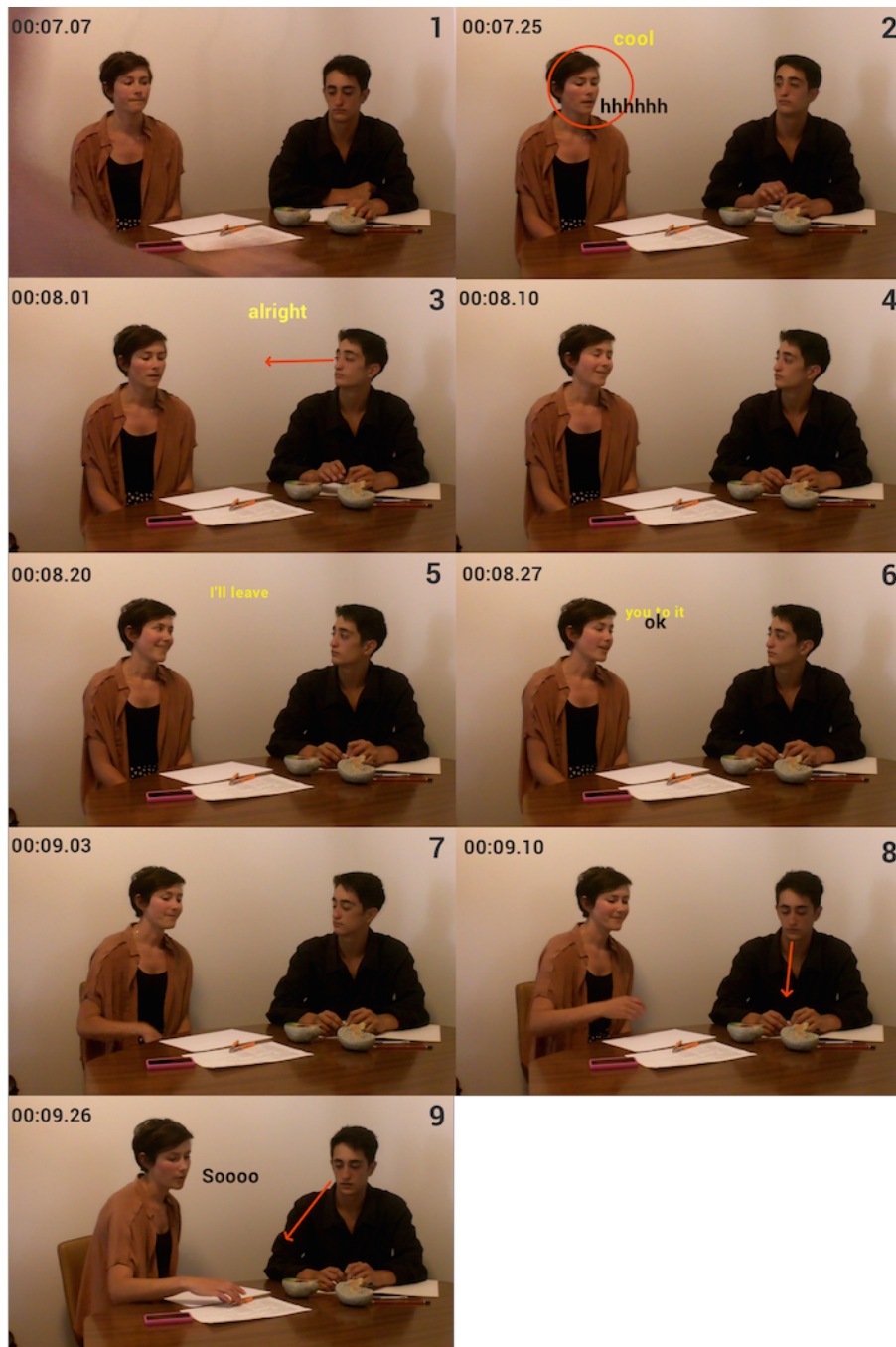


Figure 6.3: Didi initiating tutoring as the researcher sits down.

The researcher says *'I'll leave you to it'*. Didi overlaps his utterance with *'ok'* (Image 6). Didi then begins to reach up towards the table with her right hand, and Jackson drops his gaze to follow her hand. As Didi's hand comes up above the tabletop Jackson gazes down at his hands. Then Didi grasps her pen with her

right hand, and Jackson shifts his gaze back to her hand as Didi says 'soooo' (Image 9).

I would like to suggest that as the researcher moves towards his seat, and says '*I'll leave you to it*', he hands agency over to Didi. He alters the proxemic relationship between himself and Didi (and the student), and this reduces the modal density (Norris, 2004, 2006, 2011a) of the higher-level action of *conducting research* for Didi and Jackson. At the same time the researcher verbally hands primary agency over to Didi by producing the utterance '*I'll leave you to it*'. Didi takes on primary agency from the researcher; however, as pointed out above she takes on primary agency over the smaller scale higher-level action (Norris, 2004, 2011a) of *tutoring*. Didi takes on primary agency by shifting her focussed attention. Earlier, the higher-level action of *tutoring* had been in the mid-ground of Didi's attention/awareness (Figure 5.6), and at this moment, she shifts her focussed attention to the higher-level action of *tutoring*. Norris (2004, 2011) shows that shifts in attention/awareness are marked by pronounced lower-level actions, referred to as semantic/pragmatic means. Figure 6.4 illustrates the semantic/pragmatic means that Didi produces. The images are taken from Figure 6.3, and I have zoomed in on Didi to illustrate more clearly the semantic/pragmatic means.

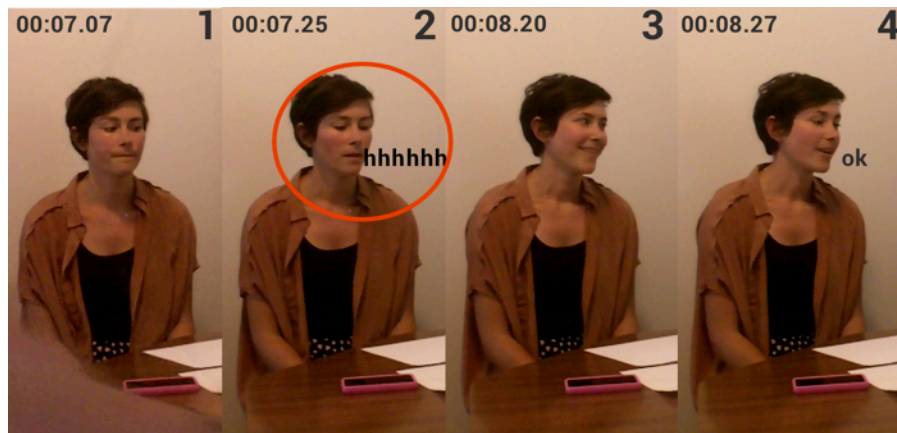


Figure 6.4: The tutor Didi shifting her attention/awareness to the higher-level action of *tutoring*.

Image 1 shows Didi prior to producing the semantic/pragmatic means. Didi begins to take an audible in-breath (circled in red, Image 2). Then, she smiles, gazing at Jackson and tilting and rotating her head (Image 3). Didi then says 'ok'. The means in this instance is produced as an audible in-breath (Image 2). Didi uses this means to semantically shift her focus from the higher-level action of *conducting research* to the higher-level action of *tutoring*, and uses it pragmatically, to communicate to Jackson that she has shifted her focus to the higher-level action of *tutoring*. Image 3, Figure 6.3, reproduced in Figure 6.5, illustrates that Jackson reacts to Didi's audible in-breath by looking directly at her face.



Figure 6.5: Jackson reacting to Didi's pronounced in-breath.

My analysis here shows that by shifting her attention/awareness to the higher-level action of *tutoring*, Didi takes on primary agency from the researcher as she begins to produce the higher-level action of *tutoring*. Figure 6.6 illustrates Didi's attention/awareness levels *before* and *after* her producing the semantic/pragmatic means.

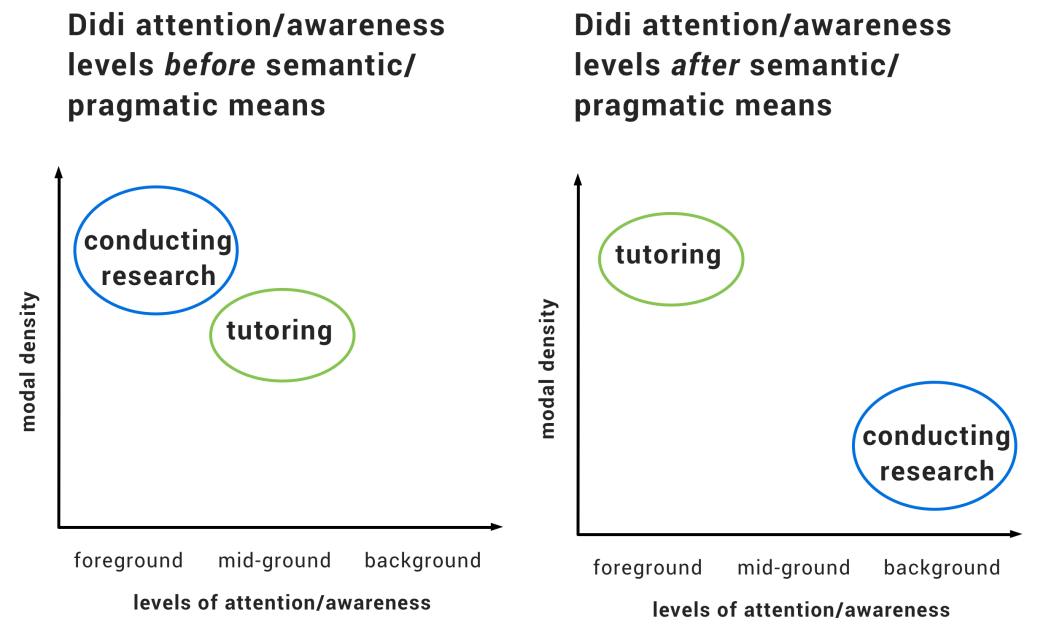


Figure 6.6: Didi's attention/awareness levels before and after semantic/pragmatic means.

Simultaneously, by indicating her shift of attention through her pragmatic means (Norris, 2004, 2006, 2011a), she pulls the higher-level action of *tutoring* into Jackson's focused attention/awareness. Figure 6.7 illustrates Jackson's attention/awareness levels *before* and *after* Didi produced the semantic/pragmatic means.

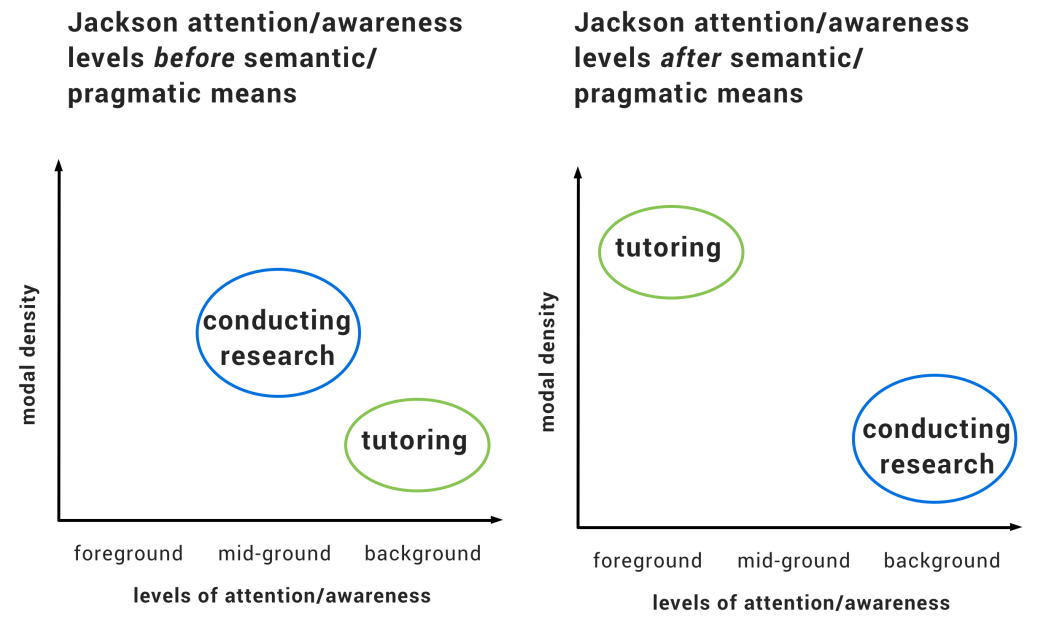


Figure 6.7: Jackson’s attention/awareness levels before and after Didi’s semantic/pragmatic means.

The second graph in Figure 6.7 shows that Jackson is now producing the higher-level action of *tutoring* at the foreground of his attention/awareness, an action that Didi is producing with primary agency. I now move on to show another instance of handing over, and taking on primary agency, where the tutor hands primary agency to the student.

6.2 Tutor handing over agency to student

In chapter 5, I showed that the tutor has primary agency over the higher-level action of *tutoring*. Here, I show the tutor handing over primary agency to the student, who takes on primary agency and produces the higher-level action of *choosing a question*. I draw on the excerpt presented in 5.1.2, where the tutor

introduces a list of past exam questions to align the tutoring session to assessment criteria. The tutor asks the student to choose a question, and the student then begins to produce the higher-level action of *choosing a question*. The higher-level action of *choosing a question* is dependent upon the higher-level action of *tutoring*, since the tutor provides and introduces the list of past exam questions. Thus, the higher-level action of *choosing a question* is embedded within the higher-level action of *tutoring* (Figure 6.8), and the analysis here, similar to the one above, shows handing of primary agency from a larger scale higher-level action to a smaller scale higher-level action.

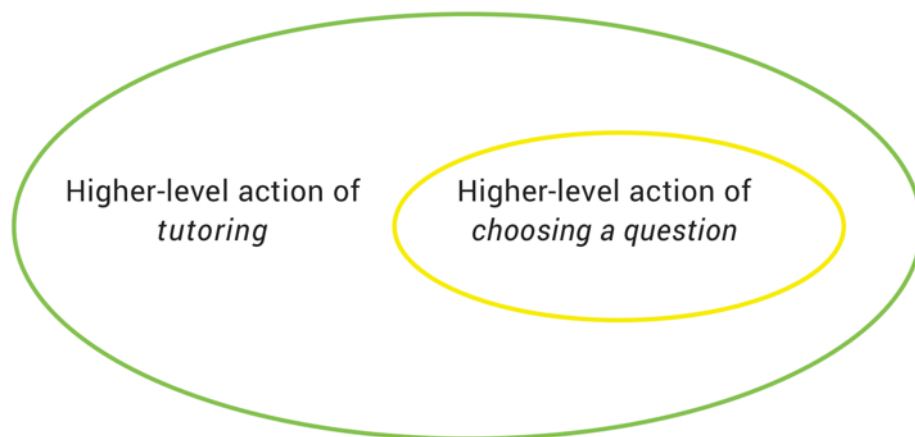


Figure 6.8: The higher-level action of *choosing a question* embedded within the higher-level action of *tutoring*.

6.2.1 Establishing the conditions for the higher-level action of *choosing a question*

In this excerpt the tutor Emma provides the most relevant mediational means for the smaller scale higher-level action of *choosing a question* in the form of a list of past exam questions. Sarah orientates to the list of questions, and to an upcoming higher-level action produced with them. Thus, Emma establishes the conditions for the higher-level action of *choosing a question*, as part of the higher-level action of *tutoring*.

In the prior example of a social actor taking on agency, the tutor produced a semantic/pragmatic means as she shifted her focused attention/awareness (Norris, 2004, 2006, 2011) to the higher-level action of *tutoring*. Here, Sarah also shifts her attention/awareness to the higher-level action of *choosing a question*. However, she shifts her attention/awareness prior to Emma handing over primary agency, and she does so as Emma first introduces the list of questions. Figure 6.9 shows Sarah shifting her attention/awareness to the list, and Emma maintaining ownership over the list.

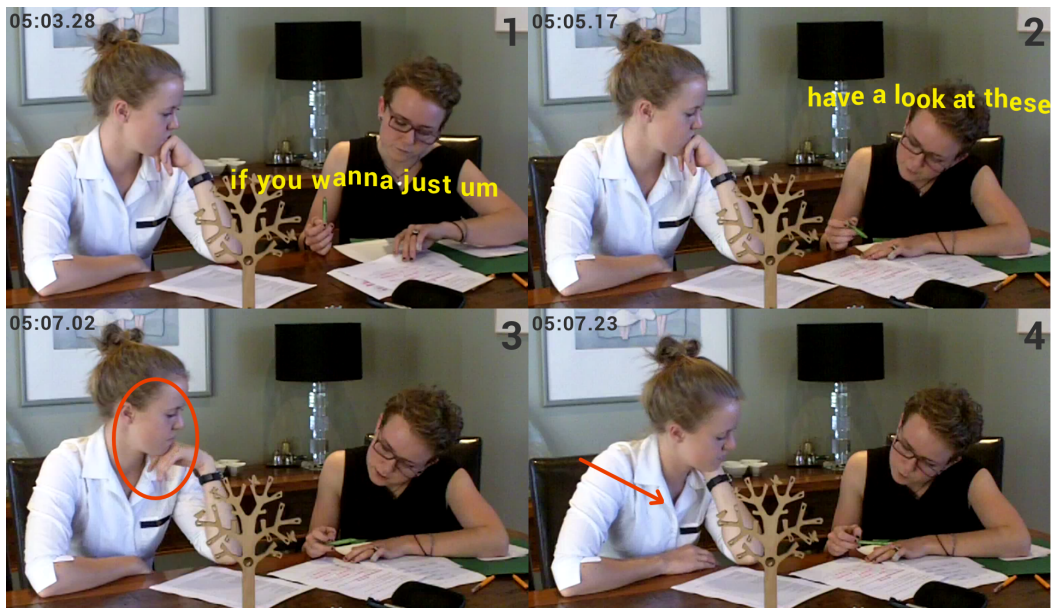


Figure 6.9: Sarah shifting her attention/awareness to the list of questions.

Sarah sits with her head resting on the fist of her left hand, and Emma handles the list of questions with her left hand. Emma moves the list closer to Sarah (Image 2), as she says *'if you wanna um just have a look at these'*. At this moment Sarah shifts her attention/awareness to the list of questions. She produces a semantic/pragmatic means as she brushes her left hand under her chin, and points her left index finger (circled in red, Image 3). She then leans forward over the list of questions (Image 4). This means indicates an upcoming shift in Sarah's attention/awareness, as she starts to focus on the list of past exam questions. Despite Sarah having indicated an upcoming shift in her focus, Emma maintains ownership over the list by maintaining her posture, and proxemics to the list, while resting her hand on it. Sarah continues to produce the higher-level action of *tutoring* in her focused attention. This suggests that without ownership over the list of questions as cultural tool, she is not able to

produce a higher-level action with the list. I now move on to analyse in detail how Emma hands over primary agency, and to show the shift in attention/awareness levels for Sarah before and after she takes on primary agency.

6.2.2 Tutor hands over primary agency

In Figure 6.10 I have transcribed the moment the tutor Emma hands over primary agency to Sarah. The transcript comes 12 seconds after the excerpt from Figure 6.9; it also slightly overlaps with and continues on from the transcript in Figure 5.3. However, for ease of reading, the images have been re-numbered for Figure 6.10, and as previously, the longer transcript can be found in Appendix I.

The student Sarah has finished reading the poem *Friends*, by Hone Tuwhare. The tutor Emma, to the right of the frame, has introduced a list of past exam questions and pointed out that some of the questions are not relevant. Emma leans forwards over the table, with her left hand resting on the list of past exam questions, and her right hand holding a pen. As shown above, Sarah indicated a shift in focus about ten seconds earlier. She sits with her left elbow on the table, and her left hand resting next to her neck. She has placed her right arm along the edge of the table, with her palm flat. Emma says '*but yeah*' (Image 1) and then leans back from the table as she says '*if you wanna choose one*' (Image 2).

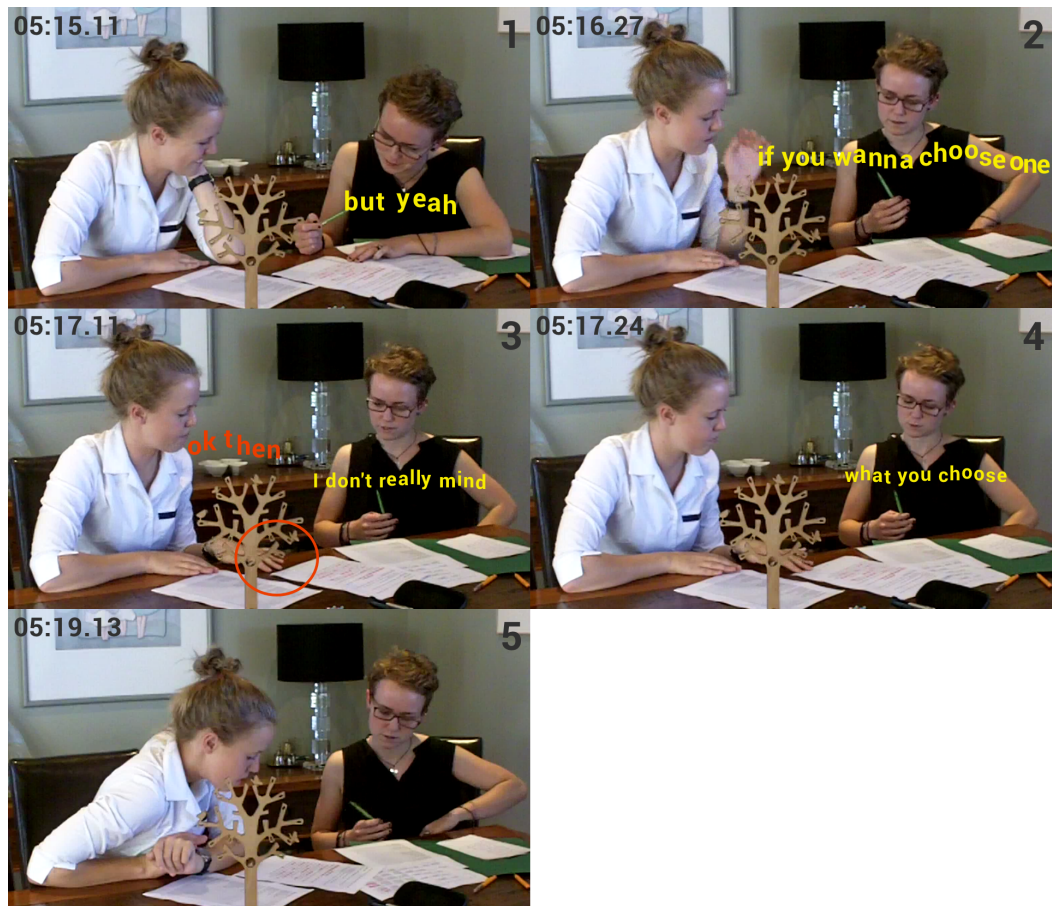


Figure 6.10: The tutor Emma handing over primary agency over the higher-level action of *choosing a question*.

As Emma leans back, Sarah starts to reach down towards the list of questions with her left hand. Sarah lands her fingertips just short of the list (circled in red, Image 3) and responds with 'ok'. Emma says 'I don't really mind what you choose' (Images 3 and 4). Sarah reaches forward with her left hand and grips the edge of the list with her fingertips, pulling the questions towards her, and then leans over the list as she looks down at them (Image 5).

Figure 6.11 shows Sarah's attention/awareness *before* and *after* Emma hands over ownership over the list of questions, and as a result, primary agency over the higher-level action of *choosing a question*.

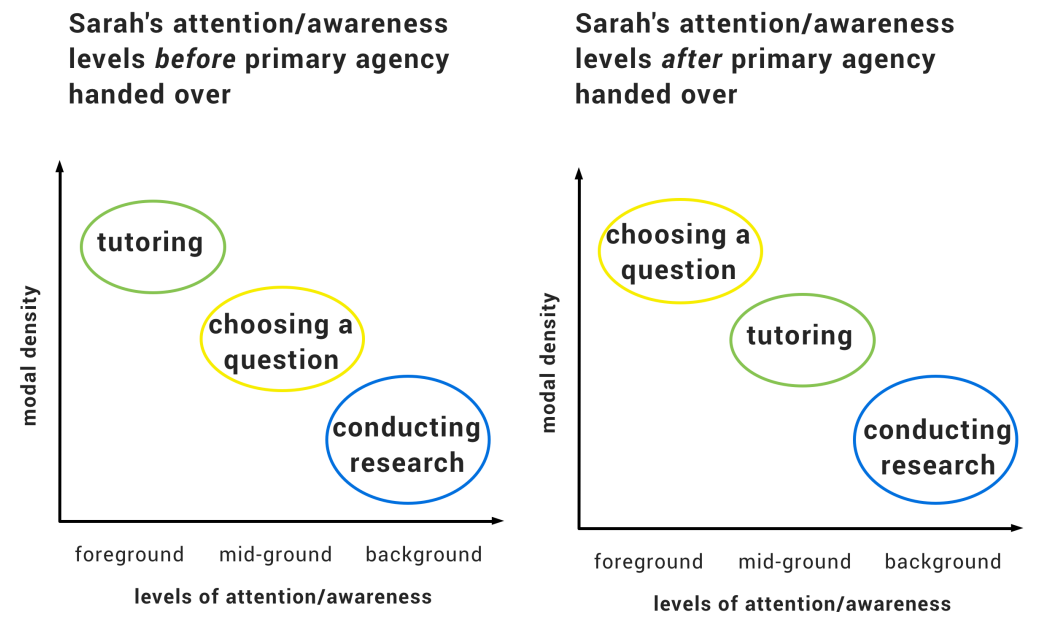


Figure 6.11: Sarah's attention/awareness *before* and *after* Emma hands over primary agency.

The graphs show Sarah beginning to produce the higher-level action of *choosing a question*. The list of questions is the most relevant mediational means to the higher-level action of *choosing a question*, and Emma hands over ownership over the list by altering her proxemic relationship to the questions as she leans back and takes her hand off the list. The analysis suggests that by handing over ownership over the list of questions, Emma makes the higher-level action of *choosing a question* possible. Section 6.2.1 shows that without ownership over

the list of past exam questions, Sarah continued to produce the higher-level action of *tutoring* in the focus of her attention/awareness.

Norris (2004, 2011) points out that there often is a delay between the production of the sematic/pragmatic means and the onset of the newly focused higher-level action. This example of Sarah indicating her shift in attention/awareness before Emma hands over primary agency strongly suggests that there is a link between primary agency and shifts in focused attention/awareness. Before Sarah could shift her attention/awareness to a new higher-level action produced with the list of previous exam questions, Emma had to hand over primary agency to her, by handing over ownership over the list.

6.3 Student handing over agency to tutor

In chapter 5, I showed that the student has primary agency over the higher-level action of *reading the text*. Here, I show the student finish the higher-level action of *reading the text*, and then hand over primary agency to the tutor. The higher-level action of *reading the text* is embedded within the higher-level action of *tutoring*, as illustrated in Figure 6.12. This specific higher-level action of *reading the text* could only be accomplished in this way because the tutor brought the specific text for the student to read, and gave it to them at a particular moment.

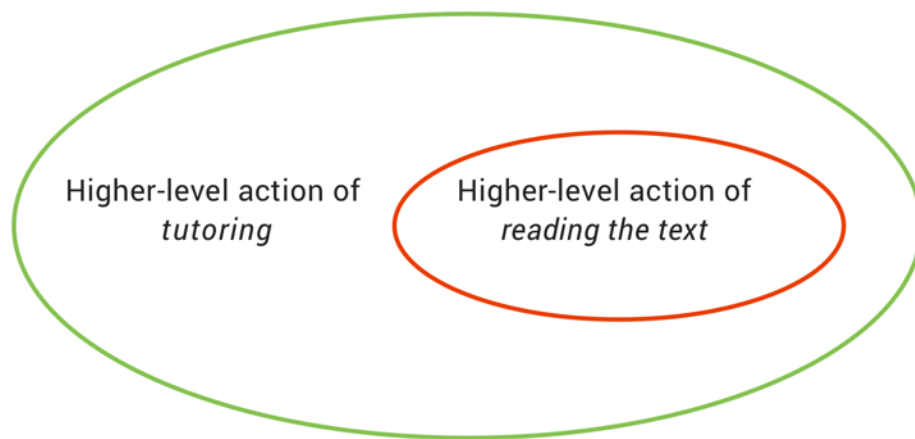


Figure 6.12: The higher-level action of *reading the text* embedded within the higher-level action of *tutoring*.

Therefore, in this excerpt when the student finishes the higher-level action of *reading the text*, she hands primary agency over from a smaller scale higher-level action to a larger scale higher-level action. As the tutor takes on primary agency from the student, she produces the higher-level action of *tutoring* at the foreground of her attention/awareness, and she does not shift her attention/awareness, as she is already producing the higher-level action at the foreground of her attention/awareness (Figure 5.11)

Figure 6.13 shows a transcript that slightly overlaps with and continues on from the transcript in Figure 5.4. As with the other transcripts in this chapter, for ease of reading, the images have been re-numbered for Figure 6.13, and as previously, the longer transcript can be found in Appendix J.

The student Kate (right of frame) has been reading the poem Friends by Hone Tuwhare for about 45 seconds (Image 1). She leans over the text and has her left elbow on the table. The tutor Emma gazes down at her tutoring materials with her arms crossed in front of her. Kate shifts her gaze up the text (Image 2, circled in red). Then, she tips her head upwards in a nodding motion (Image 3) and leans backwards from the table (Image 4).



Figure 6.13: Kate finishes the higher-level action of *reading the text* and hands primary agency over to Emma.

After moving backwards Kate continues to make small nodding movements with her head. Then, Emma turns her head towards Kate (Image 5), while continuing to gaze down at the table, until she is looking at the poem in front of Kate. As Emma reaches the full extent of her head turn, Kate brings her left arm up, touches her ponytail, and says ‘*mnkay*’ (Image 6). She runs her hand

through her ponytail and then brings her left elbow back down to the table and her head to rest on her left fist while she continues to gaze at the text. Emma (Images 7 and 8) says '*so whadda ya think it's about*', and looks at Kate's face.

As Kate finishes the higher-level action of *reading the text*, she hands over primary agency to Emma by indicating that she has finished. Kate nods her head, and leans back from the text. Although Emma is looking away, she perceives these actions, which is evident in her posture shift as turning to Kate. Kate then more clearly indicates that she has finished the higher-level action of *reading the text*, by saying '*mnkay*' and reaching up to touch her ponytail. Kate first marks the end of her foregrounded higher-level action of *reading the text* by nodding her head upwards, which facilitates the organisation of higher-level actions in her own mind, and communicates to Emma that she is shifting her attention/awareness (Norris, 2004, 2011) to the higher-level action of *tutoring*. Figure 6.14 illustrates this semantic/pragmatic means.



Figure 6.14: The student Kate shifting her attention/awareness to the higher-level action of *tutoring*.

First Kate flicks her gaze up to the middle of the text, and then she nods her head upwards (Image 2), and leans slightly back from the table (Image 3). Figure 6.15 illustrates Kate's attention/awareness *before* and *after* her producing the semantic/pragmatic means (Norris, 2004, 2006, 2011), which functions to hand over primary agency to Emma.

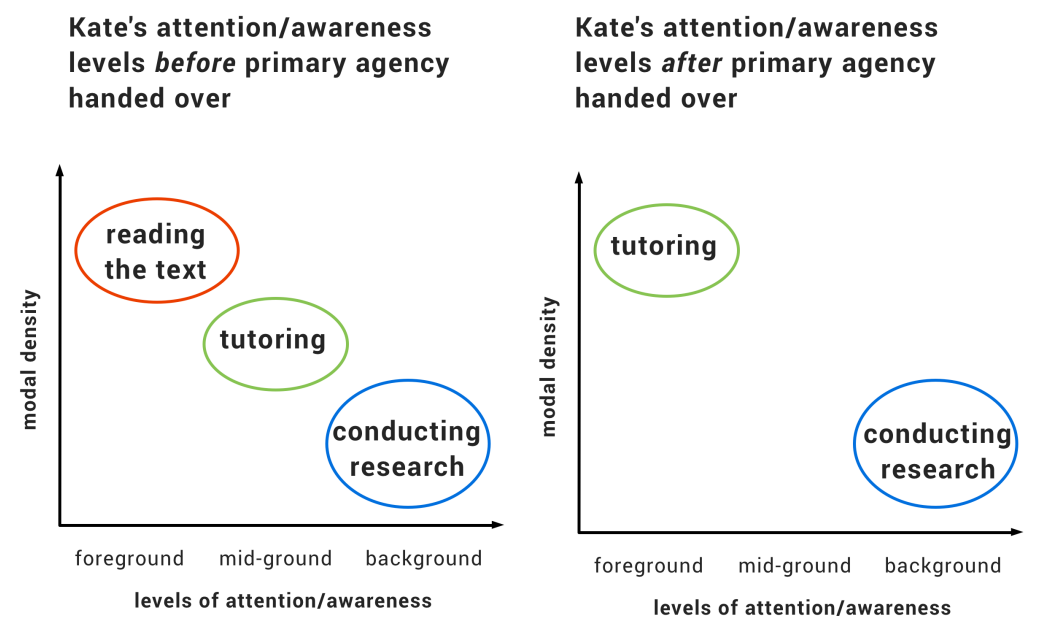


Figure 6.15: Kate's attention/awareness before and after handing over primary agency.

The graph of Kate's attention/awareness after handing over primary agency shows that the higher-level action of *reading the text* dissipates, as she no longer produces it. Kate shifts her focus to the higher-level action of *tutoring*, and indicates this shift to Emma.

However, Emma is looking away from Kate, and it takes Emma about 1 second from when Kate leans back before she turns her head towards Kate. The moment that Emma turns her head, Kate reaches up to her ponytail (Figure 6.13, Image 6), and says '*mnkay*'. When Kate (inter)acts with her ponytail and says '*mnkay*' she signals more strongly to Emma that she has finished reading, and is now focusing on the higher-level action of *tutoring*. Kate hands over primary agency here by both indicating that she has finished reading, and communicating that she has returned her focused attention to the higher-level action of *tutoring*. Emma then takes on primary agency by asking Kate a tutoring question, prompting Kate to analyse the poem. Throughout this excerpt Emma continues to focus on the tutoring session, and busies herself with her tutoring materials while she waits for Kate to finish reading. Now I move on to analyse a tutor producing the higher-level action of *tutoring*.

6.4 Tutor handing over agency to researcher

In this section, I analyse an excerpt from a tutoring session between the tutor Sean and the student Terrese. The excerpt shows a moment when Sean is not sure how to proceed in the tutoring session. He turns to the researcher for assistance. However, rather than handing agency over to the researcher, I argue that in this instance the tutor Sean has never taken on primary agency over the higher-level action of *tutoring*. Instead he produces the higher-level action of *tutoring* without primary agency, considering that the researcher still has primary agency over the higher-level action of *tutoring*.

Figure 6.16 shows a transcript of the tutor Sean turning to the researcher for assistance. Sean sits at the student's dining room table, to the right of the frame. The student Terrese sits next to him. The researcher is seated behind the participants, in an area recessed approximately 30cm below the level that the table sits on. Sean has placed his tutoring materials in front of him. These include a set of problems all related to probability, provided by the researcher. The problems get progressively more difficult. Sean has also positioned three boxes in front of his tutoring materials that can be used to illustrate the first probability question. The excerpt starts after Sean explains the first probability problem to Terrese, and she demonstrates that she can find the answer. Sean turns to the researcher and tells him that Terrese is too smart. Then he turns back to his tutoring materials and begins to look through them. The excerpt starts just as Sean has turned back to his tutoring materials.

Sean picks up a sheet of paper (Image 1) as he gazes down towards his materials. Terrese also looks at Sean's materials. Sean moves the paper he is holding in his left hand, and looks at the sheets underneath it. He says '*well pretend you didn't*', and then laughs (Images 2, 3 and 4). As he finishes this utterance he reaches up with his right hand to grasp another of his papers, and starts to put down the paper in his left hand. Terrese overlaps Sean's laughter (Image 4) with '*ok*'. Terrese then runs her right hand through her hair (Image 5), and Sean says '*didn't understand it*'. Terrese rubs her nose (Image 6), and Sean continues to move his papers around, shuffling one with his right hand.

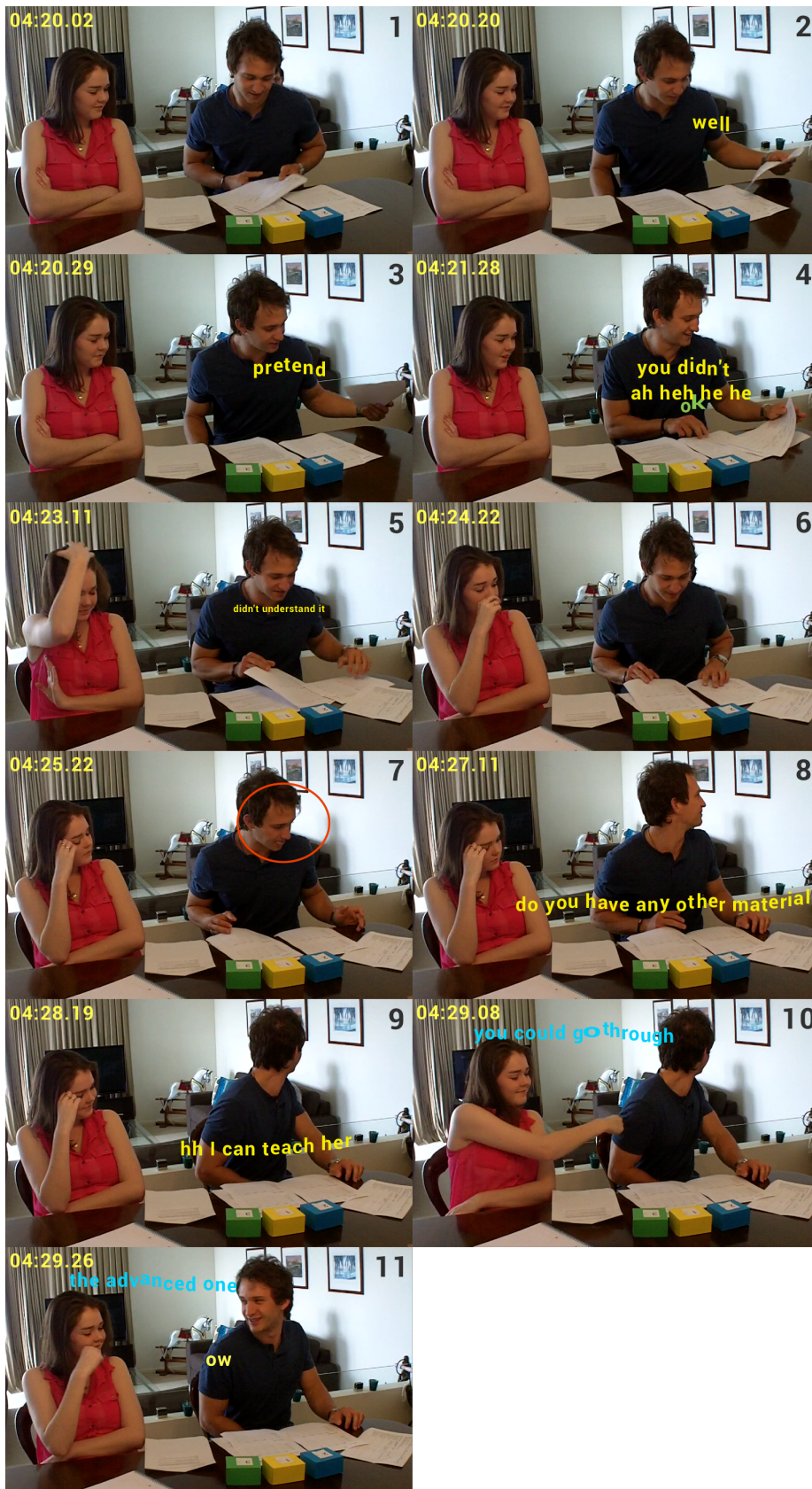


Figure 6.16: The tutor Sean turns to the researcher for assistance

Terrese rests her head on her right hand (Image 7). Sean places the blade of his left hand down on the table with the palm facing his tutoring materials, and pauses momentarily in this position. He licks his lips as he stares down at his papers (circled in red) and bites his bottom lip. Then, Sean turns over his left shoulder to gaze at the researcher as he says '*do you have any other material hh I can teach her*' (Images 8 and 9). Terrese reaches over and punches Sean in the arm with her right hand (Image 10) as the researcher says '*you could go through the advanced one*'. Sean turns back to Terrese and says '*ow*'.

This excerpt shows that Sean never takes on primary agency over the higher-level action of *tutoring*. Firstly, Sean does not treat the tutoring session as authentic; and secondly he never takes ownership over the most relevant mediational means for the higher-level action. When Terrese answers one of the questions provided by the researcher, without any assistance from Sean, he does not know how to proceed. He first suggests that Terrese 'pretend' that she did not know the answer to the question. In an authentic tutoring session Terrese's knowledge would be treated as a success, rather than an issue requiring the student to 'pretend' not to have understood what was asked. In an informal interview with Sean, when asked how he knew if a student had learned material he pointed out that he checks to see if they can apply their knowledge to different questions.

This suggests that for Sean the recorded tutoring session is a form of performance produced for the researcher, where the participants carry out some type of 'tutoring session' for the camera. In connection with treating the

higher-level action of *tutoring* as a production for the researcher, Sean has not taken ownership of the most relevant mediational means for the higher-level action of *tutoring*. In the excerpt here he rifles through his papers, staring at them but not engaging strongly with any. For him the papers do not operate as mediational means for producing the higher-level action of *tutoring* but rather are viewed as mediational means that produce the higher-level action of *conducting research*. Because, for him, these cultural tools do not come together to produce the higher-level action of tutoring, he cannot produce the higher-level action of *tutoring* with these cultural tools. Instead, he turns to the researcher for assistance, asking what he should do next, and the researcher advises that he should use the advanced questions. Turning to the researcher and asking for advice on how to proceed shows that Sean treats the researcher as the social actor with ownership over the materials used in the tutoring session, and thus as the social actor with primary agency over the higher-level action of *tutoring*.

Terrese reacts to Sean producing an inauthentic higher-level action of *tutoring*. She punches him in the arm as he asks the researcher for other material to teach her. By punching Sean in the arm, Terrese treats him more like a peer, rather than as a tutor. Here, I suggest Terrese is engaging with Sean in a way that shows that they are producing the higher-level action of *tutoring* as a performance for the researcher.

6.5 Handing over and Taking on Primary Agency:

Conclusion

In this chapter I built on the notion of primary agency to investigate how social actors hand over, and take up, primary agency. I showed that social actors hand over primary agency by handing over ownership (Langan-Fox et al., 2007; Pierce et al., 2003) over the most relevant mediational means for a higher-level action. Ownership is handed over by altering proxemic relationships (Hall, 1959, 1966), shifting posture (Dittman, 1987; Scheflen, 1964), object handling (Langan-Fox et al., 2007; Pierce et al., 2003), and through spoken language (Chafe, 1994; Tannen, 1984). However, handing over and taking on primary agency is complex. My investigation required an analysis of scales of higher-level action (Norris, 2015) because social actors did not hand over primary agency over a higher-level action that they were currently producing in their own focus. Rather, I showed social actors handing over primary agency from a larger scale higher-level action to a smaller scale higher-level action, or from a smaller scale higher-level action to a larger scale higher-level action.

Handing primary agency to a smaller scale higher-level action first requires the conditions (Molseed, 1986; de Saint Georges, 2005) for the smaller scale higher-level action to be established. Therefore, I have shown analytically how a tutor can firstly establish the conditions for a higher-level action, and then hand over primary agency to a student to produce that higher-level action. Eppler's (2006) measure of successful knowledge communication includes the 'successful

reproduction of an action, insight or experience' (p. 317), and producing the conditions for a higher-level action, and then handing over primary agency is a technique that therefore contributes to successful knowledge communication.

However, handing over primary agency requires sensitive coordination with a social actor taking on primary agency. Using an analysis of attention/awareness (Norris, 2004, 2006, 2011), and the notion of semantic/pragmatic means (Norris, 2004, 2011) I showed that the student Sarah indicated a shift in her attention/awareness towards a list of past exam questions prior to the tutor handing over primary agency. While this shows social actors are sensitive to the conditions (Molseed, 1986; de Saint Georges, 2005) that project an upcoming higher-level action, it also shows that there must be co-ordination between social actors when handing over, and taking on primary agency. I argue that tutors may stifle students by not handing over primary agency when the student has indicated they are ready to produce a higher-level action. This could limit student development of particular mindsets and metacognitive skills that are linked to students exploring their own ideas and learning from their own mistakes (Dweck, 2007; Livingston, 2003; Sternberg, 1998). Handing over primary agency over higher-level actions is one way that tutors can encourage students to explore their own ideas.

Further complexity arises when establishing whether a social actor has taken on primary agency. The tutor Sean appeared to have taken on primary agency, but later demonstrated that he was not able to produce the higher-level action of tutoring with the mediational means that he had been given ownership over,

and therefore he had never taken on primary agency over the higher-level action of *tutoring*. I showed that careful analysis of higher-level actions, focusing on how the social actor produces a higher-level action with and through mediational means is required to avoid incorrect attribution of primary agency. Primary agency, therefore, is a global feature of interaction produced at the level of the higher-level action. Consequently, attributing primary agency to a social actor requires analysis at this level, which moves beyond sequentiality.

In chapters 5 and 6 I have introduced the notion of primary agency, and explored how primary agency can be handed over, and taken up by social actors. Primary agency is established multimodally, and is a globally relevant feature of mediated higher-level actions. In the following chapter I investigate material intersubjectivity, to show analytically how social actors establish and maintain some sense of material intersubjectivity with one another.

7.0 Beginning a tutoring session: Establishing intersubjectivity

In this chapter, I investigate the beginnings of tutoring sessions, focusing on how students prepare themselves and initiate engagement with the tutor. I show that students establish a relatively durable configuration of proxemics, posture and objects that provides a basis for further interaction. I refer to this relatively durable configuration of posture, proxemics and objects as an *interactive substrate*. For example students sit in a particular chair, move objects to certain locations, and position themselves in relation to the tutor. These actions produce a configuration of bodies and objects that is unlikely to change throughout the interaction. I show that the interactive substrate is an important location for students to establish an initial level of material intersubjectivity with tutors.

Intersubjectivity has often been treated as 'shared' or 'mutual' understanding (Linell, 1998; Rogoff, 1990; Rommetveit, 1974). However, Duranti (2010) argues that Husserl's original notion of intersubjectivity referred to the universal condition of human existence as a prerequisite for communication, rather than a result of communication. In this sense, intersubjectivity can be thought of in varying or gradient forms (Duranti, 2010). What I call the *interactive substrate* sits along this gradient of intersubjectivity as a material basis for shared or mutual understanding, not necessarily producing a highly refined

intersubjectivity, but rather providing the material conditions for ongoing interaction, and the possibility of refined intersubjectivity.

In the first section of this chapter, I introduce two excerpts from the beginning of tutoring sessions. I analyse the higher-level actions students produce to determine what students do when they enter into a tutoring session. Using the concept of modal density, I construct an attention/awareness continuum (Norris, 2004, 2012c) for each student to show the higher-level actions at the focus, mid-ground and background of their attention/awareness. In the first excerpt, the student settles herself into the tutoring session, focusing mainly on the higher-level action of preparing herself. In the second excerpt the student also settles herself into the tutoring session but makes a considerable effort to align herself to the actions of the tutor. In both cases the students establish material intersubjectivity through orientating to an interaction with the tutor.

In the second section of this chapter, I analyse more closely how students establish intersubjectivity with their tutors. I show that intersubjectivity does not come about because one social actor produces the same action as the other. Rather, interactions are marked by particular modal configurations (Norris, 2009, 2014b, 2015b). The modal configurations achieve intersubjectivity through three different types of materiality. The first type of materiality is produced through *relevant furniture and relevant person proxemics*. These actions produce durable materiality, through durable aspects of the environment. The second is *posture and relevant objects*. This type of materiality is adjustable as it persists but can be relatively easily changed.

Adjustable materiality is typically achieved through posture and proxemic relations to relevant (movable) objects. The third type of materiality is *fleeting*, produced through actions that do not persist in the environment. Typically fleeting materiality is achieved through gestures, spoken language, gaze, etc.

7.1 Beginning a tutoring session

The beginning of the tutoring session is an important moment for intersubjectivity to be established. In this section I analyse two excerpts from the beginning of tutoring sessions, focusing on how students prepare themselves, and settle into the session. For each excerpt I describe how students settle into the tutoring session, and establish some degree of intersubjectivity with the tutor. I use modal density to construct an attention/awareness continuum for each student (Norris, 2004, 2006, 2011a). Modal density involves an analysis of the lower-level actions produced by the students, their relative density, and how they constitute higher-level actions (2004, 2011a). Utilising the continuum, I illustrate the positioning of these various higher-level actions in the landscape of the student's attention/awareness and show whether each higher-level action is focused on, mid-grounded, or backgrounded. This analysis shows the diverse attention/awareness students produce, as they begin the tutoring session.

In the first excerpt the student Eleanor prepares herself for the tutoring session, primarily focussing on her own actions, while mid-grounding the interaction

with the tutor and backgrounding the interaction with the researcher. In the second excerpt the student Summer also prepares herself for the tutoring session, but focuses on the interaction with the tutor. Each student establishes engagement through a material intersubjectivity as they settle into the tutoring session.

7.1.1 Eleanor: Preparing herself for the tutoring session

Here, I analyse the beginning of a tutoring session between the student Eleanor (right of frame) and the tutor Sean (left of frame). The session takes place in Eleanor's living room, where the table is placed in a corner. Eleanor has just fetched Sean a glass of water and returned to the table with it, placing the glass in front of Sean. The researcher was standing behind the camera speaking with Sean and has now moved into the kitchen out of view of the tutoring session.

The transcript begins with Eleanor sitting down, which brackets the start of a higher-level action. The transcript ends with Eleanor producing a marked sigh, which functions as a semantic/pragmatic means (Norris, 2004, 2011a), indicating a shift in attention/awareness as Eleanor produces a new higher-level action in her focus. Therefore the transcript includes the beginning of a higher-level action, the higher-level action of *preparing herself for tutoring*; and a shift to focus on another higher-level action, the higher-level action of *engaging in tutoring*. I show below that Eleanor focuses on *preparing herself for tutoring*, while also producing two other higher-level actions with less attention/awareness.

Eleanor arrives at the table and reaches out to place a glass of water in front of Sean (Image 1). Sean has placed some papers to his right, and has lined up three boxes in front of him.

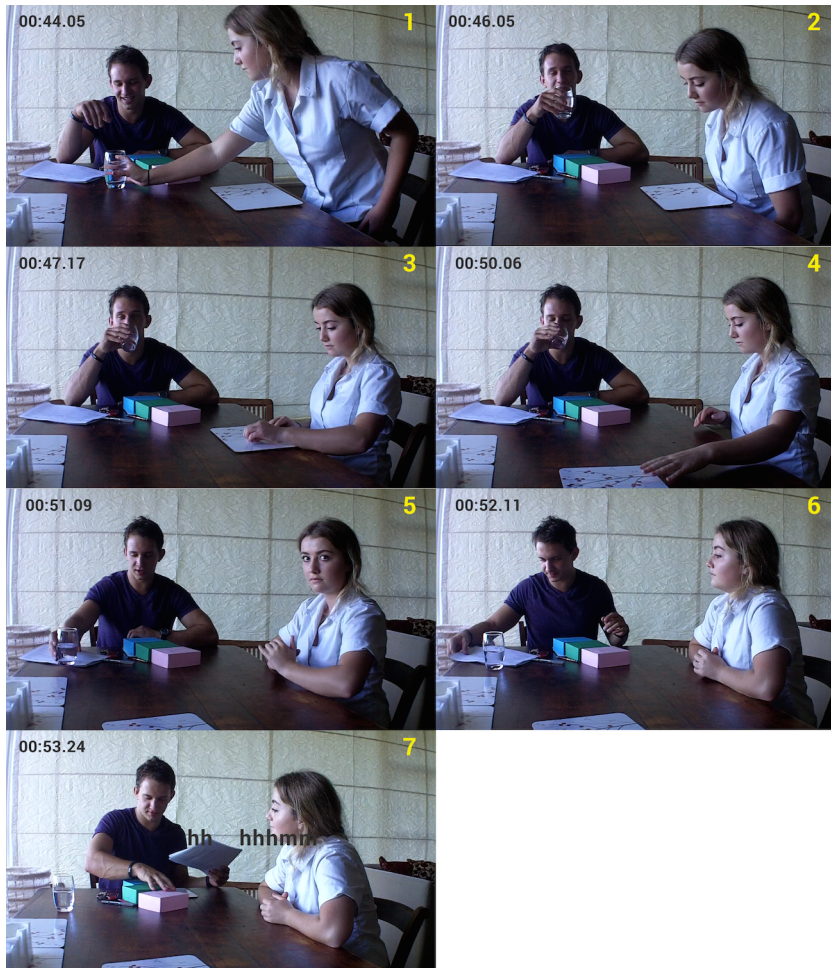


Figure 7.1: Eleanor (right of frame) settling into the tutoring session.

Eleanor takes her seat (Image 2), establishing a proxemic relationship to Sean and to the objects on the table. The table, the chairs and the layout of the room mediate these proxemic relationships. Sean then picks up the glass of water and takes a drink. As Eleanor sits, she gazes at the placemat on the table in front of her. She reaches out and plucks what appears to be a hair off the placemat

(Image 3). Then she pushes the placemat off to her left (Image 4). She glances momentarily at the camera (Image 5) while she folds her arms in front of herself. Then Eleanor looks out of a window (Image 6), which is positioned in front of her. Her posture faces the window and she is positioned perpendicular to Sean. Sean reaches for the papers to his right, picks them up and begins to (inter)act with the boxes in front of him (Image 7). At this moment, Eleanor shifts her gaze in Sean's general direction, without, however, focusing on the interaction with him just yet. She takes an audible in breath and then lets out a marked sigh.

In this excerpt, Eleanor produces three higher-level actions at different levels of her attention and awareness. I have produced a graph in Figure 7.2 to more clearly show the relative attention/awareness Eleanor produces. At the foreground of her attention/awareness Eleanor produces the higher-level action of *preparing self for tutoring*, while in the mid-ground she produces the higher-level action of *attending to Sean*. Lastly, in the background Eleanor produces the higher-level action of *participating in research*. These higher-level actions are produced simultaneously throughout the entire excerpt through Eleanor's lower-level actions, such as gaze shifts, posture shifts, in breaths, sighing sounds, and object handling.

The notion of modal density refers to the density, a combined value of intensity and complexity, of lower-level actions that are mutually constitutive of each of these three higher-level actions. I utilise the foreground-background continuum of attention/awareness and the concept of modal density (Norris,

2004, 2006, 2011a) to determine how much attention Eleanor pays to each particular higher-level action. I now focus on the modal density of each action in more detail.

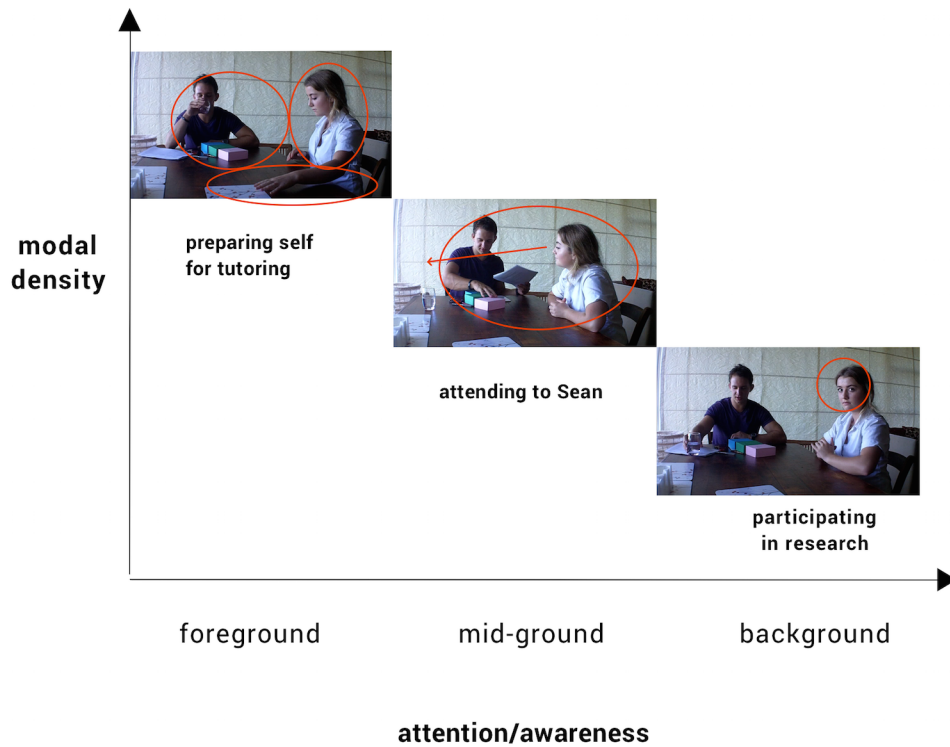


Figure 7.2. Eleanor's attention/awareness as she prepares herself for tutoring.

The higher-level action with the highest modal density is *preparing herself for tutoring*. Here, Eleanor prepares herself for tutoring. In Figure 7.3 I have highlighted a frame from the video that shows many, but of course not all, of the material aspects of this higher-level action.

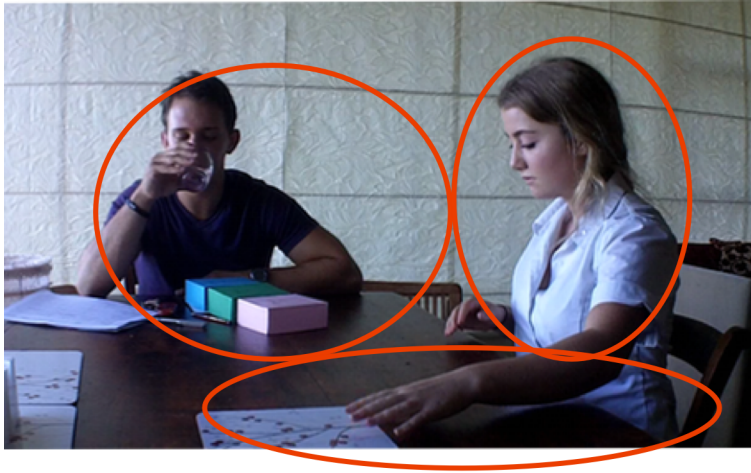


Figure 7.3. Eleanor preparing herself for tutoring.

Eleanor *prepares herself for tutoring* through her posture as she sits down (Figure 7.3, Image 1), through handling the placemat on the table in front of her (Figure 7.3, Image 2), through her proxemic relationship to Sean and his boxes and papers (Figure 7.3, Image 3), and finally through her marked sigh. Here, Eleanor settles herself into her chair, organises the space in front of her, and finally indicates that she is ready to begin through a marked sigh. This sigh is a semantic/pragmatic means (Norris, 2004, 2006, 2011), which indicates a shift in Eleanor's focused attention (Norris, 2004, 2011). The semantic aspect of this means helps Eleanor to shift her own focus, and the pragmatic aspect of this means indicates to Sean that Eleanor is beginning to focus on the interaction with him and that she is now ready for the tutoring session.

As illustrated in Figure 7.2, Eleanor produces the higher-level action of *attending to Sean* at the mid-ground of her attention/awareness, with a lower modal density than *preparing herself for tutoring*.

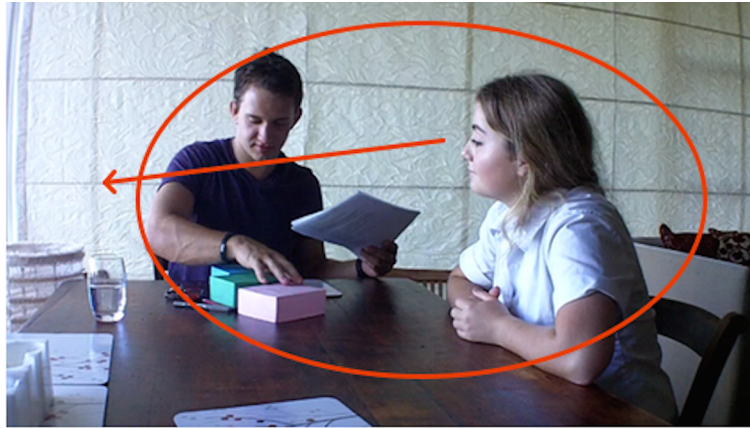


Figure 7.4. Eleanor attending to Sean.

Primarily Eleanor produces attention/awareness of Sean through her proxemics to him, her proxemics to the boxes he has positioned, and through her gaze. However, Eleanor does not gaze directly at Sean, but off towards his shoulder. In addition she does not open her posture widely towards Sean, and rather remains facing the window. These aspects of Eleanor's lower-level actions demonstrate a lesser modal density of the higher-level action, and show that she attends to the interaction with Sean at a lower level of attention/awareness than *preparing herself for tutoring*.

The third higher-level action that Eleanor produces in this excerpt is *participating in research*. She produces *participating in research* with low modal density, primarily through the layout of the room and her proxemics to the researcher and the camera. Eleanor also glances once at the camera after she moves the placemat as shown in Figure 7.5.



Figure 7.5. Eleanor producing the higher-level action of *participating in research* as she glances at the camera.

This glance shows Eleanor briefly increasing her attention/awareness of the research project. However, relative to her other higher-level actions Eleanor produces *participating in research* with low modal density.

Thus far, I have shown how Eleanor begins to establish material intersubjectivity with Sean. She produces a proxemic relationship with him and the tutoring objects as she sits down at the table. However, her interaction with Sean is produced at the mid-ground of her attention/awareness. Eleanor focuses most strongly on preparing herself for tutoring and does not produce a particularly strong interaction with Sean at this stage. Near the end of the excerpt Eleanor indicates that she is ready to focus on the tutoring session as she produces a semantic/pragmatic means and shifts her gaze in Sean's direction.

During this excerpt, Eleanor uses modes such as posture and proxemics in more than one higher-level action: Eleanor's posture produces *preparing herself for*

tutoring, and *attending to Sean*. In addition, her position in her chair sets up proxemic relationships that are implicated in all three of the higher-level actions that she produces. However, it is through these multiple lower-level actions that Eleanor has established some form of material intersubjectivity with Sean, which I address in detail in section 7.2 below. But first, I analyse a second excerpt from the beginning of a different tutoring session to illustrate how a student establishes intersubjectivity by focusing on the interaction with the tutor.

7.1.2. Summer: Focusing on the actions of the tutor

Here, I analyse the beginning of a tutoring session between the student Summer (left of frame) and the tutor Didi (right of frame). The session takes place in Summer's house at a large table in an open-plan kitchen/dining/living area. The researcher was setting up the recording equipment and has moved to the right (out of view). Summer sits just back from the table, and the tutor Didi is taking her seat.

The transcript begins with Summer participating in the research project at the foreground of her attention/awareness, primarily through her interaction with the researcher. At the same moment, she participates in the tutoring session at the mid-ground of her attention/awareness primarily through her interaction with the tutor. As the transcript progresses Summer shifts her position, and the higher-level action of *participating in tutoring* shifts to the foreground of her attention/awareness, while *participating in a research project* shifts to the

background of her attention/awareness. Therefore, the transcript includes Summer restructuring her attention/awareness as she focuses on the higher-level action of *participating in tutoring* and backgrounds the higher-level action of *participating in a research project*.

In Figure 7.6, Summer sits with her chair pushed out from the table, gazing at the researcher (Image 1). Her chair position produces a proxemic relationship with the researcher and the research objects such as the camera. Her chair position also produces a proxemic relationship with Didi and the tutoring objects on the table.



Figure 7.6. Summer shifting her focus to the tutoring session.

Summer's posture is open towards both the tutor and the researcher (out of shot). At the same time, Didi sits down and gazes directly at the camera as the researcher (pink writing) says '*but yeah ok so*' (Image 2). As the researcher speaks, Summer rotates her head slightly towards him. Didi finishes taking her seat and looks over her shoulder to the researcher (Image 3). At this moment she says '*is it on?*'. In response to Didi's spoken language Summer turns her head to gaze at the camera, and the researcher responds with '*yeah*'.

Summer reaches out with her right hand to the table as she gazes towards Didi (Image 4). Summer then pulls her chair into the table, re-organising her proxemic relationships. Summer now produces a closer proxemic relationship to Didi and to the tutoring objects on the table in front of Didi. Didi runs her hand through her hair and says '*oh ok cool*'. The researcher is in the background of the shot saying '*so I'll leave you to it*' (Image 5). The researcher also changes his proxemic relationships to the participants as he walks to the back of the room. Didi continues to groom her hair, and Summer initiates a similar movement. Then Summer says '*ok*' and Didi overlaps with '*yep*' (Image 6). Didi gazes down at the lesson plan she placed on the table prior to the excerpt, and Summer gazes at the tutoring objects.

At the start of this excerpt, Summer produces the higher-level action of *participating in a research project* with more attention/awareness than the higher-level action of *participating in tutoring*. She produces the higher-level action of *participating in a research project* through her open posture towards the researcher, and her gaze, as indicated in Figure 7.7 by the yellow arrow.

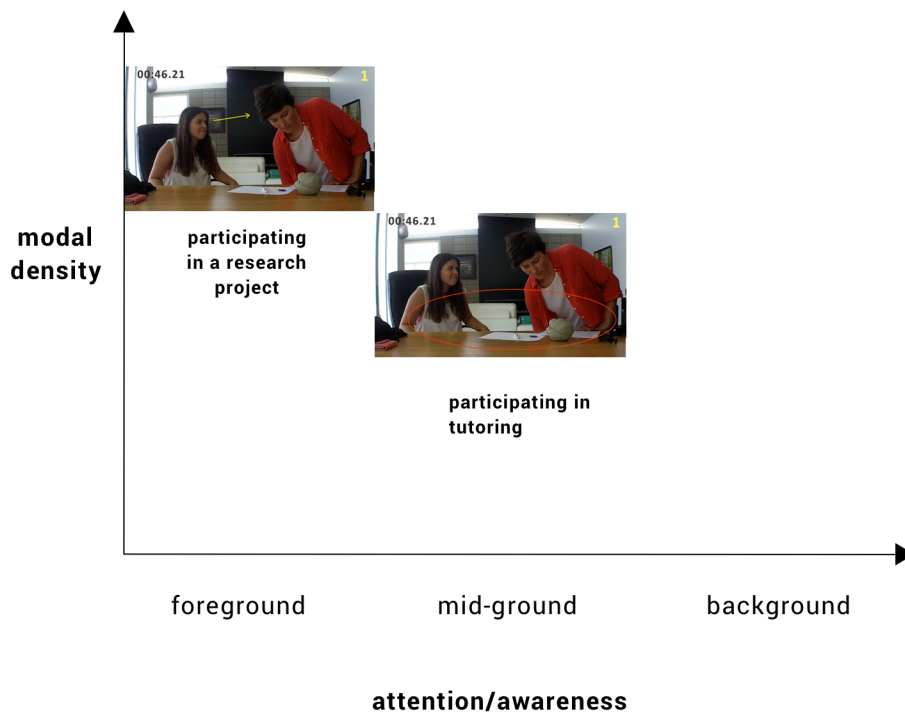


Figure 7.7. Summer’s attention/awareness as she focuses on the research session at the beginning of the excerpt.

Summer’s posture and gaze reinforce the interaction with the researcher that she produces through proxemics and layout, and in turn this shows Summer is producing the higher-level action of *participating in a research project* at the foreground of her attention/awareness.

At the same time Summer produces the higher-level action of *participating in tutoring*. She produces this higher-level action through proxemics to Didi and the tutoring objects, as indicated in Figure 7.7 by the red circle. Summer’s posture is open toward Didi, and this lower-level action is (mutually) constitutive of both higher-level actions, *participating in a research project* and

participating in tutoring. However, at this point Summer produces *participating in tutoring* with lower modal density in comparison with *participating in a research project*. Therefore the higher-level action of *participating in tutoring* can be placed in the mid-ground of the foreground–background continuum, illustrating Summer’s attention/awareness levels (Figure 7.7).

As the excerpt progresses, Summer shifts her focused attention from the higher-level action of *participating in a research project*, to the higher-level action of *participating in tutoring*. She produces a relatively durable change in the materiality by moving her chair in to the table. Through this movement, Summer reconfigures her proxemic relationships. She changes the proxemics between herself, the researcher, and the research objects; and between herself, Didi, and the tutoring objects. At the end of the excerpt Summer sits much closer to Didi, to the table, and to the tutoring objects. Her posture is no longer open toward the researcher, and he has moved behind both participants.

Figure 7.8 shows Summer’s new stable proxemic relationship with Didi and the tutoring objects, as indicated by the red circle. Summer gazes down at the tutoring objects, following the gaze of Didi, as indicated by the red arrow. Also, Summer mirrors Didi’s grooming actions by running her hand through her hair.

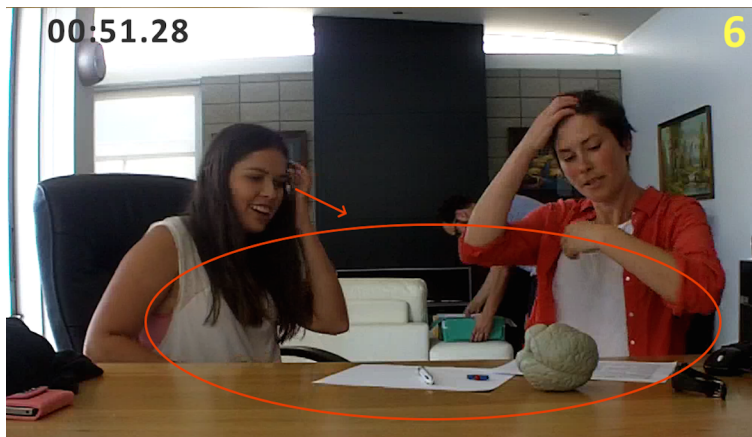


Figure 7.8. Summer’s position at the end of the excerpt, producing focused attention on the tutoring session.

Figure 7.8 shows that Summer has shifted her focus to the higher-level action of participating in tutoring by producing a particular modal configuration that establishes a material intersubjectivity with Didi and the tutoring objects. Simultaneously, Summer displays lower modal density regarding the higher level action of *participating in a research project*.

Summer produces the higher-level action of *participating in tutoring*: she mirrors Didi’s grooming actions and follows her gaze toward the tutoring objects. Through these actions, Summer establishes a material intersubjectivity with Didi. This example contrasts with the previous example in which Eleanor establishes intersubjectivity with Sean. There, Eleanor first produces the higher-level action of *preparing herself for tutoring*, before indicating that she is ready to start the tutoring session.

Throughout each excerpt, students display that they are attending to multiple higher-level actions. This suggests that material intersubjectivity is not necessarily established through a single higher-level action. Summer attends to the interaction with the tutor, and she also attends to the interaction with the researcher. Through her attention towards the tutor and researcher, she takes her lead from them: she engages in the tutoring session in response to the researcher moving to the back of the room, and to the tutor sitting down at the table and preparing herself for tutoring. Summer pulls herself into the table, then focuses her posture and gaze on the tutor and the tutoring objects. Her shift in proxemics establishes material intersubjectivity with the tutor. In contrast Eleanor, in the first example, attends more closely to the higher-level action of *preparing herself for tutoring* than she attends to the higher-level action of *attending to Sean*. She does focus on the interaction with the tutor, but still establishes a material intersubjectivity primarily through proxemics to the tutor and to the tutoring objects, and also through the modes of posture and gaze. It seems that an explicit attempt to establish some sense of material intersubjectivity is not required. Rather, in these excerpts material intersubjectivity emerges through the material changes produced in the course of preparing for tutoring.

I now analyse more closely how students establish material intersubjectivity with their tutors, and consider how more refined instances of intersubjectivity might be produced.

7.2 Establishing intersubjectivity

In this section I analyse more closely the processes through which students establish material intersubjectivity with tutors. I build on the above analysis of modal density and attention/awareness to focus on the material intersubjectivity social actors produce through action. I first provide some background about intersubjectivity and materiality. Here, I emphasise the importance of focusing on the social actor as a producer of (always mediated) action, and address the varying materiality produced through modal configurations (Norris, 2009, 2014, 2015). This varying materiality produces different types of intersubjectivity, and provides the basis for what I call the *interactive substrate*. After that I analyse each of the excerpts already presented, with a focus on the varying materialities produced through particular modal configurations (Norris, 2009, 2014, 2015). I use this analysis to introduce three different types of intersubjectivity that come about through actions that produce materiality varying in scale from durable to fleeting. The two most durable types of materiality produce the *interactive substrate*, as they provide consistency to the ongoing interactions between student and tutor.

Linell (1998) presents the notion of communicative projects as moments of interaction where social actors produce meaning. Linell (1998) refers to communicative projects as goal-directed problem solving. The kinds of problems Linell (1998) identifies include establishing a shared understanding or interpretation of something, doing something (performing an act) through

language, and creating a communicative fact. A communicative project, then, is an instance of talk that solves a problem or is designed to *do* something. Clearly there is a goal orientation here, and the goal is identified by an analyst, based on what social actors orientate to.

The notion of communicative project (Linell, 2008) shares some similarities with higher-level actions (Norris, 2004, 2011). Communicative projects can be nested, with multiple projects appearing within an overarching project. Linell (1998) provides an example of a conversation within which various projects can be identified. However, communicative projects are also very different from higher-level action, and they are different in some very important ways.

The notion of communicative projects (Linell, 1998) embeds a narrow focus on talk, and considers that interlocutors are engaged in one and the same focus – which is the talk. The analyst determines the goal of a communicative project by focusing on the orientations of interlocutors. However, the overarching focus of the analyst is the analysis of the talk, and how each utterance fits into the overall communicative project (Linell, 1998). Talk is prioritised as the primary mechanism through which interlocutors produce a goal orientation with communicative projects. By beginning the analysis with the notion of communicative project, the analyst takes a product orientation. The analyst tries to identify how the communicative project has been achieved, through studying the components and their relevance to one another.

In contrast, the notion of higher-level action (Norris, 2004, 2011a) embeds a focus on the attention/awareness of social actors, and treats this as a landscape with multiple higher-level actions produced at different levels of attention/awareness (Norris, 2004, 2006, 2011a). Treating attention/awareness as multiple has important implications for analysis, the most important being that analysis focuses in the first instance on the *producer* of actions (the social actor) (Norris, 2004, 2011). Because multiple levels of attention/awareness are considered important, the analysis extends beyond the utterance, to the multiple, simultaneous levels of attention/awareness (Norris, 2004, 2006, 2011). Certainly actions are focused on extensively, but always with reference to the social actor producing those actions, through the notion of modal density; or, more clearly, through the notion of lower-level action density (Norris, 2004, 2006, 2011).

Communicative projects (Linell, 1998) are always collectively accomplished and co-constructed by two or more interlocutors, each contributing some talk. Linell (1998) points out that there is often an 'asymmetry of participation' (p. 221) in communicative projects, which results in an asymmetric distribution of epistemic and practical responsibilities. Despite these asymmetries, and the potentially different goals pursued while producing a communicative project, the project itself is the product that is available for study.

Communicative projects (Linell, 1998) embed the notion of studying the products of interaction, while higher-level actions (Norris, 2004, 2011) and the associated notion of modal density embed the study of attention/awareness

levels of individual social actors (Norris 2004, 2006, 2011a). Studying attention/awareness levels of individual social actors immediately problematises collective accomplishment and co-construction (Norris, 2004, 2006, 2011a). This is due to the theoretical position underlying higher-level actions. Social actors are always producing different higher-level actions from one another, even when engaged in focused interaction (Norris, 2004, 2006, 2011). This stems from the differences in modal configurations (Norris, 2009, 2014, 2015a) that social actors produce, and often too differences in modal density (2004, 2006, 2011).

Previously I have shown that the attention/awareness of tutor and student at times converges upon a similar higher-level action, and that this requires some effort (Pirini, 2014c). While this is the case, even when social actors display shared attention and both produce an action such as *tutoring*, for each social actor this action of *tutoring* is *not the same* higher-level action. This raises the question of how social actors develop refined intersubjectivity, given that they do not produce the same higher-level actions. I now revisit each tutoring session excerpt and focus on the varying materialities that social actors produce via the modal configurations (Norris, 2009, 2014, 2015a) of higher-level actions (Norris, 2004, 2011), and the implications these have for material intersubjectivity.

7.2.1 Eleanor: Achieving intersubjectivity

In this section, I describe how Eleanor achieves intersubjectivity with her tutor Sean. I continue to address the same excerpt analysed previously in section 6.2, but here I focus more closely on modal configurations (Norris, 2009, 2014, 2015a) and how they produce material intersubjectivity. Modal configurations refer to 'the hierarchical configuration of lower-level actions (or their chains) in relation to other lower-level actions (or their chains) within a higher-level action' (Norris, 2015b, p. 6). This concept enables me to examine the particular materiality Eleanor produces through her actions and, more specifically, to investigate the different types of materiality.

Materiality can be more durable or more fleeting, and lower-level actions are capable of producing materiality that ranges from durable to fleeting (Norris, 2004). I categorise the materiality that lower-level actions produce into three types:

- Durable materiality: Actions that persist during the interaction. Typically achieved through layout and furniture, to produce stable proxemic relationships.
- Adjustable materiality: Actions that persist but are adjustable. Typically achieved through posture and movable objects.
- Fleeting materiality: Actions that do not physically persist during the interaction. Typically achieved through gestures, spoken language, gaze, etc.

Because modal configuration (Norris, 2009, 2014, 2015b) analytically ‘explodes’ the higher-level action into its various (mutually) constituent lower-level actions, the varying materialities produced by each lower-level action (or chain of lower-level actions) can be revealed. I focus on the higher-level action of *preparing herself for tutoring* that Eleanor produces at the foreground of her attention/awareness. This higher-level action produces material intersubjectivity with Sean by producing material changes. These include, for example, establishing particular proxemic relationships to Sean and the tutoring objects by taking up a particular posture, and producing a noisy sigh. These lower-level actions persist differentially, and I argue that the actions, which produce durable and adjustable materiality, produce an *interactive substrate*. The *interactive substrate* provides a basis for ongoing interaction.



Figure 7.9. Eleanor producing intersubjectivity with Sean through the higher-level action of *preparing herself for tutoring*.

When Eleanor takes her seat at the table (Images 1 and 2) she produces material intersubjectivity with Sean through the proxemic relationships maintained by layout and furniture. This relationship is relatively durable. Focusing first on layout and furniture, both the layout of the room and the furniture in it produce durable and interlinked materiality. Eleanor could move her chair backwards away from the table, or she could slide the chair down the edge of the table to be either closer to Sean or further away from him. These changes would establish a different intersubjectivity with Sean, and would be

quite marked changes, which would then also persist. On a more durable level, Eleanor is unlikely to be able to move the table, and if she did it would be quite a marked endeavour, and this would have a large effect on the progression of the interaction with Sean.

Even more durable features like the floor and walls rely on architectural, practical, geographic, financial and many other influences. Eleanor is very unlikely to change these aspects during her interaction with Sean. Therefore the particular proxemic relationship with Sean that Eleanor produces through layout and furniture is of durable materiality, and is unlikely to change throughout the interaction. Layout and furniture are intimately linked to proxemic relationships, and proxemics is durable in similar ways (Norris, 2010). Eleanor could stand up and move around the room. Indeed when she fetched a glass of water she did just this. However, by doing so she changed the proxemics in such a way that the interaction she produced with Sean was also strongly changed, to the extent that Eleanor was no longer producing the same higher-level action. She had shifted her attention/awareness to the higher-level action of fetching Sean a glass of water.

As Eleanor sits, she takes up a particular posture. She faces forwards and her posture is perpendicular to Sean. Eleanor maintains this posture throughout the excerpt. During the session, however, Eleanor changes her posture: sometimes rotating her torso to face Sean more directly; sometimes leaning back in her chair. The materiality that Eleanor produces through posture is adjustable. She can make changes to her posture, but her posture is always present.

Regardless of *how* a social actor positions their body, they always produce posture, and typically postures are taken up and held for some period of time. Rapid postural changes in a situation such as the one analysed here often indicate some sort of distress or nervousness. Either way, posture is less durable than layout and proxemics because it may change while maintaining material intersubjectivity. Objects are also changeable in a similar way as they can easily be moved around, and once positioned they persist until further acted upon. Social actors produce proxemic relationships with objects like this, and at other times may interact more directly with them, e.g. by moving them or referring to them. For example, Eleanor moves a placemat from in front of her (Image 4). In chapter 6 I show other ways that social actors (inter)act with objects when taking on and handing over primary agency. These include spoken language, gesture and proxemics.

Throughout the excerpt Eleanor shifts her gaze from the glass of water (Image 1) to the placemat (Images 2 – 4), to the camera (Image 5), to the window (Image 6) and to Sean (Image 7). Eleanor's gaze shifts produce much more fleeting changes in materiality than do postural adjustments. Similarly, Eleanor's in breath and sigh (Image 7) produce fleeting materiality because they do not physically persist.

The concept of modal configuration (Norris, 2009, 2014, 2015b) provides a tool to examine the different types of materiality produced by Eleanor's higher-level action of *preparing herself for tutoring*. The modal configuration illustrated to the left of Figure 7.10 shows that Eleanor's higher-level action is comprised of

lower-level actions attributed to the modes of layout and proxemics, object handling, posture, and gaze.

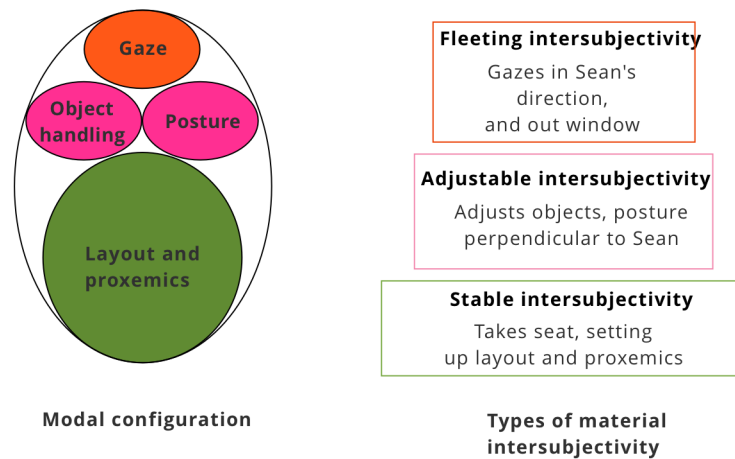


Figure 7.10: Modal configuration of *preparing herself for tutoring* and associated types of material intersubjectivity.

As described above, these concrete actions produce differing materialities. The types of materiality and the associated lower-level actions align with the *tiers of intersubjectivity* illustrated to the right of the modal configuration in Figure 7.10.

Due to the durable and adjustable materialities of lower-level actions, Eleanor's and Sean's higher-level actions exhibit a similarity or constancy. The similarity comes about (from bottom to top in Figure 7.10) in the following ways:

1. Stable intersubjectivity

Produced through proxemics between Eleanor and Sean. This proxemic relationship is relatively stable due to the durability of layout and furniture.

2. Adjustable intersubjectivity

Produced through posture and proxemics to movable objects. Both Eleanor and Sean produce proxemic relationships to objects that become relevant as they are implicated in higher-level actions. Social actors always produce posture and, due to layout and furniture, in the excerpt Eleanor and Sean always produce posture that is at least somewhat open to each other.

3. Fleeting intersubjectivity

Produced through actions that only physically persist for a short time. These actions include, for example, gesture, gaze shifts, head movement, and utterances.

I define two of the material intersubjectivities, the stable and the adjustable types of intersubjectivity, as the *interactive substrate*. This *interactive substrate* consists of materially persistent configurations that permeate all higher-level actions, *providing the basis of a more refined and materially fleeting intersubjectivity*. The *interactive substrate* embeds similarities in higher-level actions produced by both tutor and student. In the analysis above I show that Eleanor focuses on the higher-level action of *preparing herself for tutoring*. Simultaneously, she produces an *interactive substrate* with Sean through her

proxemics to him, her posture, and her proxemics to relevant objects. The material configuration of the *interactive substrate* permeates Eleanor's higher-level actions, producing material intersubjectivity with Sean. Sean also produces an *interactive substrate* with Eleanor through his proxemic relationship with Eleanor, his posture, and his proxemics to relevant objects. The interactive substrate that Sean and Eleanor produce with one another is mutually dependent, although it is not the same. The interactive substrate persists until either Eleanor or Sean substantially changes this material intersubjectivity. In sum, the key aspect of the *interactive substrate* is its relative material durability, which permeates all higher-level actions that social actors produce.

Next, I return to the excerpt from the beginning of the second tutoring session above and analyse in detail the way in which Summer produces material intersubjectivity with Didi.

7.2.2 Summer: Achieving intersubjectivity

I now explicate how the interactive substrate is achieved by Summer and Didi. I again begin with the notion of modal configurations to examine the relationship of lower-level actions, or chains of lower-level actions, to one another as Summer produces the higher-level action of *participating in tutoring*.



Figure 7.11: Summer producing an interactive substrate with Didi through the stable and adjustable types of material intersubjectivity.

Figure 7.11 reproduces the transcript from the beginning of the tutoring session between Summer and Didi. Here (in Image 5), Summer begins to produce the higher-level action of *participating in tutoring* at the foreground of her attention/awareness. Figure 7.12 shows the modal configuration of this higher-level action as shown in the excerpt, and relates each mode to different types of durability.

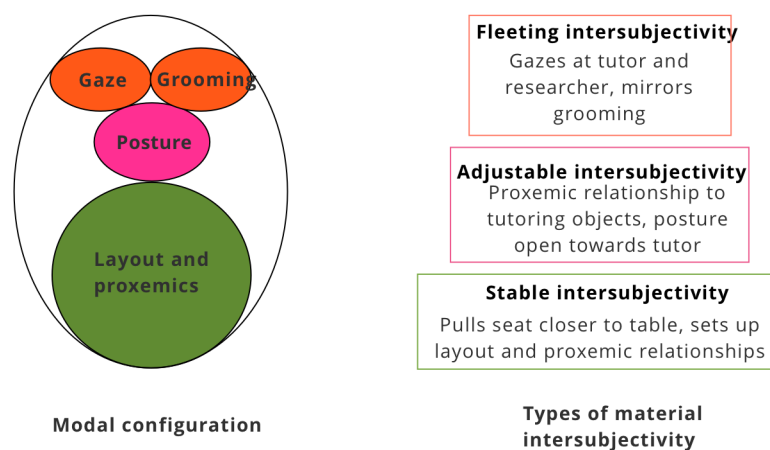


Figure 7.12. Modal configuration of Summer’s higher-level action, and associated types of material intersubjectivity.

In this excerpt, Summer produces a relatively stable interactive substrate with Didi. First, she pulls her chair closer to the table; this produces the most durable material change in proxemics to Didi and the tutoring objects. These relationships are then relatively durable and remain so throughout the tutoring session. At a less durable level, Summer continues to produce an open posture towards the tutor Didi. In the session Summer changes her posture, although it remains within a range of physical comfort, limited by her chair and the table. Finally, at the level of fleeting materiality, Summer produces gaze shifts towards the researcher, the camera, the tutor and the tutoring objects. Similarly, Summer’s grooming actions, which mirror Didi’s, are fleeting. The interactive substrate is produced, as described above, through the durable and adjustable materialities. The interactive substrate consists of the stable and adjustable types of materiality, and in turn makes more fleeting intersubjectivity possible.

The types of intersubjectivity Summer produces are (from bottom to top in Figure 7.12):

1. Stable intersubjectivity

Produced through proxemics between Summer and Didi. This relationship is relatively stable due to the durability of layout and furniture, established as Summer pulls her chair closer to the table.

2. Adjustable intersubjectivity

Produced through proxemics to the tutoring objects on the table and through posture. The tutoring objects become relevant moments after the excerpt. Summer and Didi both produce open postures to one another.

3. Fleeting intersubjectivity

Produced through actions that physically persist for only a short time. These actions include, for example, gesture, gaze shifts, head movement, and spoken language.

Summer produces an interactive substrate, which provides a material basis for fleeting intersubjectivity with Didi. Similarly, Didi produces a mutually dependent interactive substrate, and this persists until either Didi or Summer substantially change the material aspects that sustain the mutually dependent interactive substrate.

7.3 Conclusion: Beginning a tutoring session: Establishing intersubjectivity

In this chapter I used the notions of modal configuration (Norris, 2009, 2014, 2015b) and modal density (Norris, 2004, 2006, 2011) to investigate intersubjectivity at the beginning of tutoring sessions. Using the notion of modal configuration I showed that higher-level actions produced varying materiality in the environment. I categorised this materiality into three tiers. The first was the most materially durable tier, and I showed that social actors produce durable materiality through relevant furniture and person proxemics (Hall, 1959, 1966; Kress & van Leeuwen, 2001). The second tier displayed adjustable materiality, and I showed that social actors produce adjustable materiality through relevant posture (Dittman, 1987; Schefflen, 1964) and proxemics to movable objects (Hall, 1959, 1966; Langan-Fox et al., 2007; Pierce et al., 2003). The third tier exhibited fleeting materiality, and I showed that social actors produce fleeting materiality through bodily movements such as utterances (Chafe, 1994; Tannen, 1984), gaze (Goodwin, 1981; Kendon, 1990) and gesture (McNeill, 1992, 2007; Kendon, 1990).

The literature has primarily addressed intersubjectivity either by focusing on talk, or by investigating how the body and material environment facilitate intersubjectivity through talk. Kendon (1990, 1992) introduced the notion of the F-formation to describe the posture and arrangement of social actors and how this contributes to a shared frame (Goffman, 1974), which in turn provides for a

shared sense of how utterances are to be taken. Rommetveit (1974, 1979a, 1979b, 1986) focused primarily on language and suggested a system of spatio-temporal-interpersonal co-ordinates that produce an architecture of intersubjectivity.

However, prioritising talk can be limiting. Developments in multimodality by Norris (2002, 2004, 2006, 2009, 2010, 2011a, 2011b, 2012a, 2012b, 2013a, 2013b, 2015b) have provided a framework which allowed me to gain insight into a model of intersubjectivity based on different tiers of materiality. Firstly, Norris defines the social actor as acting in, and as forming part of, the world (Norris, 2004, 2011, 2013a, 2013b, 2014a, b, 2015). Secondly, she provides methodological tools based on this theoretical underpinning. Bringing together modal configurations (Norris, 2009, 2014, 2015) and levels of attention/awareness (Norris, 2004, 2006, 2011a), I show that social actors produce a continuum of material intersubjectivity as they produce higher-level actions. I show that material intersubjectivity permeates all the higher-level actions that social actors produce, and that material intersubjectivity establishes a link between the multiple, simultaneous higher-level actions that social actors are engaged in.

Lastly, I referred to the durable and adjustable tiers of intersubjectivity as the *interactive substrate*. I argue that these two tiers act as a basis for more fleeting material intersubjectivity, and that an *interactive substrate* must be established, and maintained, for more refined moments of intersubjectivity to be produced.

8.0 The use of mediational means: Communicating knowledge

In the previous chapter, I introduced the notion of tiers of intersubjectivity, which links together the varying materialities social actors produce through higher-level actions. Material intersubjectivity relates to a common theoretical theme of this thesis, regarding the position of the social actor as part of the world within which they act (Merleau-Ponty, 1962; Norris, 2013, 2014). In this chapter⁴, I continue to address this theme, but here I will examine how social actors communicate knowledge, focusing on the material mediational means that mediate higher-level actions. This chapter addresses the objects that I introduced into the tutoring sessions. I draw on the notions of material intersubjectivity, and primary agency that I developed in the previous chapters to investigate how tutors and students might take up objects, and how objects might be implicated in knowledge communication.

I begin by analysing an interaction between the tutor Emma and the student Pranto. I focus on a moment where Emma uses the models I provided, however, with these cultural tools she produces a higher-level action of *playing*, rather than a higher-level action of *tutoring*. Pranto also begins to play with the models, and I show how material intersubjectivity operates to establish a shared understanding of the higher-level action of *playing*, and how material

⁴ Some aspects of sections 8.1 and 8.2 from this chapter appear in Pirini (2014), see Appendix L for full article.

intersubjectivity can be used to show the influence of different material mediational means on higher-level actions.

Next, I investigate another interaction between Emma and Pranto, but in this analysis I focus on Pranto. Pranto attempts to analyse a passage from Richard III. I show that Pranto uses the mediational means of a modern English version of Richard III to produce the higher-level action of *analysing the passage*.

However, Emma redirects him to use a different mediational means, specifically the original Shakespearean version of the passage. I examine how primary agency operates in this exchange, to show how Emma takes on, and then hands back primary agency to Pranto as she directs him.

Lastly, I analyse an instance of successful knowledge communication mediated by the novel object I introduced. In this excerpt, the tutor Didi establishes the knowledge base of the student Olivia, and she mediates this higher-level action with the model brain. Didi establishes the conditions for an embedded higher-level action, and then hands primary agency over to Olivia. Olivia takes on primary agency and produces some knowledge regarding the orientation of the brain. Didi confirms this knowledge through producing a high degree of material intersubjectivity concerning the orientation of the brain.

The analyses in this chapter, therefore, highlight the utility of the notions of primary agency and material intersubjectivity to the analysis of knowledge communication in high school tutoring. I also illustrate how tutors and students

take up material mediational means, as part of their mediated actions throughout tutoring.

8.1 Playing with models instead of tutoring.

In this excerpt, I show the tutor Emma producing a higher-level action with the models that I provided for her tutoring session with Pranto. Objects become cultural tools through action (Geenen, 2013; Norris, 2004, 2011; Scollon, 1998, 2001; Wertsch, 1998), and the higher-level action Emma produces with and through the models is *playing*, rather than *tutoring*. Emma's lower-level actions during tutoring are very different from her lower-level actions when she interacts with the models, and I show here that Emma does not produce the higher-level action of *tutoring* with these objects. She shifts her attention/awareness from the higher-level action of *tutoring* to the higher-level action of *playing* as she starts to interact with the models.

Emma begins to interact with the models about 20 minutes into the tutoring session with Pranto and does so with primary agency, by taking on ownership over the models. She first produces a semantic/pragmatic means (Norris, 2004, 2011b), which indicates that she is shifting her focus to a higher-level action, and which I have shown indicates taking on primary agency in chapter 6.

Figure 8.1 shows an excerpt taken from the moment Emma shifts her focused attention. Emma and Pranto have been talking about a passage from Richard III but have not been making much progress.

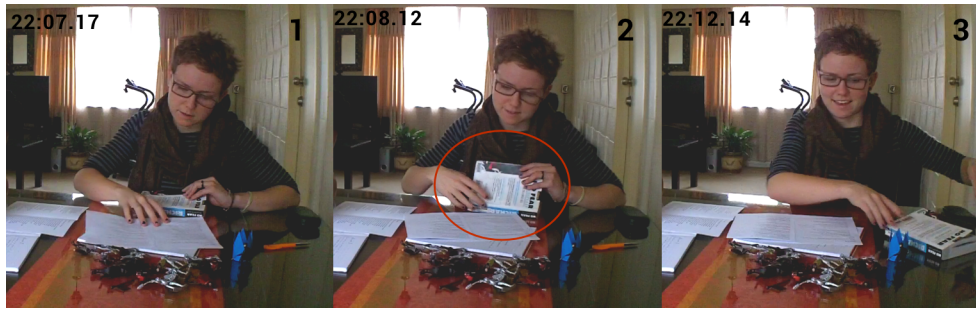


Figure 8.1: Emma shifts her focus to playing with the models.

At the beginning of the transcript (Figure 8.1), Emma pulls her copy of the passage towards herself and looks above it to the models. Then, she begins to smile and to move Pranto’s modern English copy of the play to her left (circled in red, Image 2). She continues to smile as she prepares to reach out for the models. Putting Pranto’s simplified copy of the book off to the side is a semantic/pragmatic means (Norris, 2004, 2011b) and it shows Emma is beginning to produce a new higher-level action in the focus of her attention/awareness. Her facial expression as she shifts her attention/awareness (Image 3) is markedly different from her facial expression during her usual tutoring, which is much more serious (Image 1). Emma’s lower level action of smiling here suggests that the higher-level action she is about to produce is different from that of her higher-level action of *tutoring*. It is not that Emma never smiles as she produces the higher-level action of *tutoring*, my point is that her smile here is very different from how she smiles when she tutors.

Figure 8.2 shows Emma about 16 seconds after she first begins to (inter)act with the models, and shows that she has taken up ownership of the models through

object handling (Norris, 2004), gaze (Goodwin, 1981; Kendon, 1990) and proxemics (Hall, 1959, 1966) to the models. Pranto sits with his hand on his chin, looking down at his copy of the passage while Emma arranges the models (Image 1).

Then, Emma starts to laugh, 'hhhe he he', and smile (circled in red, Image 2) as she continues to handle the models. She says 'whadda you think' and Pranto looks at her face, showing surprise, as Emma's laughter and smiling strongly mark her higher-level action with the models as *playing* (Fridlund, 2014; Fridlund et al., 1990). Pranto then reaches out for one of the model flags as he says 'ah actually' and brings it back to his face, staring at it (Images 3 and 4).



Figure 8.2: Pranto begins to (inter)act with the models after Emma laughs.

Emma's smile and laughter establish material intersubjectivity with Pranto regarding the kind of action that she is producing, i.e. the higher-level action of *playing*. Pranto then engages in the higher-level action of *playing* with the models as he reaches out to examine a flag. Emma slightly overlaps Pranto and says '*sho*', before continuing with '*that could be what they're fighting over couldn't it*', as she continues to arrange the models on the table. Emma and Pranto continue to play with the models for another 18 seconds, but they make little progress towards an analysis of the passage.

Then, Emma's tone of voice changes and she very quickly assigns roles to each of the models and returns her focus to the higher-level action of *tutoring*. Her voice becomes deeper and she talks more quickly. Figure 8.3 shows Emma returning her focus to the higher-level action of *tutoring*. Emma has assigned some roles to the models, and continues to do so. She assigns the flags as the different armies (Image 1) saying '*and these can be the different armies*', while Pranto looks at the models. Then, she places the crown between the flags and says '*this can be victory*' (Image 2).



Figure 8.3: Emma shifts her attention/awareness to the higher-level action of *tutoring*

She crosses her arms, looks down at her copy of the passage, and says ‘*alright so the ghosts have a power*’ (Image 3). Emma’s facial expression changes, from her smiling during play, to the more serious expression she produces during tutoring. In this excerpt Emma’s arm crossing functions as a semantic/pragmatic means (Norris, 2004, 2011a) to help her restructure her attention/awareness to focus on the higher-level action of *tutoring* and to demonstrate this change in focus to Pranto, who in turn begins to look at his text (Image 3). The higher-level action of *tutoring* is now again mediated in part by the copy of the passage that Emma placed in front of her.

8.1.1 Applying material intersubjectivity to the analysis

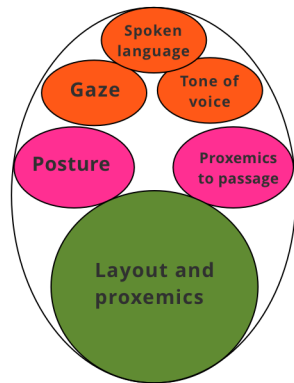
The shift back to the higher-level action of *tutoring* can be described through tiers of intersubjectivity. As Emma sits back, folds her arms, and shifts her gaze

to the passage, she produces a proxemic relationship with the passage more strongly than with the models. The passage now becomes the most relevant mediational means for the higher-level action of *tutoring*. Pranto follows this shift, and also looks back to his copy of the passage. Thus, the tiers of intersubjectivity are very different for the higher-level action of *playing*, than the tiers of intersubjectivity for the higher-level action of *tutoring*. One important difference lies in the most relevant mediational means for the higher-level action.

Figure 8.4 shows the tiers of intersubjectivity produced for each of the higher-level actions, *playing* and *tutoring*. The difference between the two higher-level actions comes about most strongly at the adjustable and fleeting tiers of intersubjectivity since the stable tier of intersubjectivity does not change for each higher-level action. The diagram demonstrates the way that the models, for the higher-level action of *playing*, or the passage, for the higher-level action of *tutoring*, become relevant through the modal configuration (Norris, 2009, 2014, 2015b) of the different higher-level actions (Norris, 2004, 2011a).

Furthermore the diagrams show the influence that changing the material mediational means has on higher-level action, as the change from producing a higher-level action with the passage, to producing a higher-level action with the models permeates the entire modal configuration of the higher-level action.

Modal configuration and tiers of material intersubjectivity in the higher-level action of *tutoring*.



Modal configuration

Fleeting intersubjectivity

Gaze at passage, deeper tone of voice, spoken language

Adjustable intersubjectivity

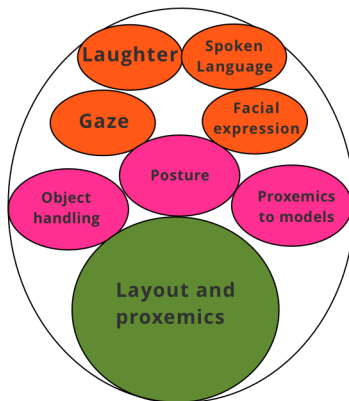
Proxemic relationship to copy of the passage, posture

Stable intersubjectivity

Layout of room, proxemic relationship between Pranto and Emma

Tiers of material intersubjectivity

Modal configuration and tiers of material intersubjectivity in the higher-level action of *playing*.



Modal configuration

Fleeting intersubjectivity

Smiling, laughter, gaze at models, spoken language

Adjustable intersubjectivity

Object handling, proxemics relationship to models

Stable intersubjectivity

Layout of room, proxemic relationship between Pranto and Emma

Tiers of material intersubjectivity

Figure 8.4: Modal configurations and tiers of intersubjectivity for the higher-level actions of *playing* and *tutoring*.

I would like to argue there that Emma communicates to Pranto through laughter and facial expression that she is producing the higher-level action of *playing* with the models. And, in turn, when she returns to the higher-level

action of *tutoring*, she communicates this to Pranto through tone of voice, and posture. Thus the tiers of intersubjectivity show that while the two higher-level actions are different, they share some stable material similarities, and I would argue that these similarities facilitate ongoing stable interaction. Furthermore, shifts from one higher-level action to another are communicated through lower-level actions such as laughter, facial expression, tone of voice and posture. Thus, the intricate interrelationship between modes can be teased apart to show the ways in which intersubjectivity is produced, and maintained throughout knowledge communication.

In this section the analysis highlights how modal configurations and tiers of intersubjectivity can be used to show how social actors come to co-produce higher-level actions (Norris, 2004, 2011a) with some level of intersubjectivity. In addition, I have shown the importance of mediational means to higher-level action (Norris, 2004, 2011a; Norris & Jones, 2005d). The tutor Emma cannot produce the higher-level action of *tutoring* with the models, and ends up producing the higher-level action of *playing*. Emma cannot produce the higher-level action of *tutoring* because she has not acquired the mode (Norris, 2013b) of *model figurines* for tutoring. She has only acquired the mode of *model figurines* for playing. Thus, for Emma, plastic figures mediate the higher-level action of *playing*, and not the higher-level action of *tutoring*.

I have described Emma's playing here as an unsuccessful attempt to incorporate models into tutoring. I would like to point out that this is not an instance of play that contributes to tutoring, which is an approach some tutors might reasonably

be assumed to take. Rather, this is an instance of Emma ‘trying out’ the models, and not being able to tutor with them. An interview with Emma supports this analysis. When asked about the objects I provided her with she responded with the following:

Interview 8.1: Emma

(800) Emma: because,
(801) just because of the nature of,
(802) what we're talking about,
(803) it's quite hard to, (..)
(804) kind of,
(805) v-
(806) it's sort'f,
(807) um,
(808) I guess almost reduce,
(809) something like a,
(810) poem,
(811) to something that's not,
(812) actually just the words themselves.
(813) Jesse: mm hmm.
(814) Emma: apart from,
(815) possibly drawing pictures?
(816) that,
(817) that might be a thing,
(818) that could help,
(819) but,
(820) because,
(821) you're talking,
(822) about, (.)
(823) just the words,
(824) that's,
(825) that's the idea,
(826) you're talking about language features,
(827) metaphors,
(828) that,
(829) that kind of thing,
(830) it's very hard to explain them, (.)
(831) in relation to an object.
(832) Jesse: yeah.
(833) Emma: if,
(834) so,
(835) they didn't really,
(836) they didn't really help.

Emma’s comments here show that for her, the models do not relate to tutoring.

She points out that it is quite hard to ‘*reduce something like a poem to*

something that's not actually just the words themselves', and points out that for language features *'it's very hard to explain them in relation to an object'*. In addition, the excerpts analysed here came from Emma's first tutoring session with novel objects, in the following two sessions she participated in, Emma did not use the novel objects at all.

8.2 Difficulties bringing mediational means together to produce a higher-level action

In this section I show another excerpt from the tutoring session between Emma and Pranto. This excerpt comes from the beginning of the tutoring session, and Pranto is trying to convince Emma that he is able to analyse the passage from Richard III, despite not reading the entire text. On the table in front of each participant sits a copy of the passage that Emma has chosen for Pranto to analyse. Emma has brought along a sheet of paper with some practice exam questions she wrote. Pranto placed a book of Richard III in modern English to his right, and in the centre of the table sits a small collection of models and a paper crown provided by the researcher.

Figure 8.5 shows a higher-level action that starts in Image one with Emma moving from her resting position, with her hands steepled in front of her chest and elbows on the table. This higher-level action closes in Image four as Emma looks to Pranto and says *'no?'* In the excerpt Emma checks if Pranto has read the entire passage, which is important for the session to continue.

Emma looks down towards her papers on the table (Image 1). Pranto is rifling through the pages of a copy of the play written in modern English. Emma's elbows are resting on the table and her hands are held in front of her chest. Emma says '*Kay so did you get to the end...*' Emma reaches her left hand out (Image 2) and begins to handle her copy of the passage that sits on the table in front of her. Her gaze shifts along to the paper to her left.



Figure 8.5: Emma asking Pranto if he has read the text.

Emma continues her utterance with '*...of the passage*' (Image 3) she looks from the passage, up to Pranto's face. Simultaneously Pranto shifts his gaze from the book he is handling to Emma's left hand as she handles her copy of the passage. Pranto then looks down to his own copy of the passage directly in front of him (Image 4) and makes a soft sound in his throat while mouthing a '*no*' with a slight smile while bringing his left arm up to rest on the table. Emma then says '*no*' with a very clear rising inflection as she continues to gaze at Pranto.

Pranto's response to Emma's question may indicate some embarrassment and a lack of confidence due to not completing his reading of the passage.

Figure 8.6 follows the higher-level action illustrated in Figure 8.5. Emma and Pranto overlap their speech (Image 1). Emma suggests Pranto read to the end of the passage, stating 'ok so why don't you do that first'. Pranto argues that he already knows what the passage is about, stating 'I didn't but I I get the I get the idea that basically...' Emma brings her right hand down to her copy of the passage (Image 1) while also looking down at it. She lifts up the edge of the passage using her left hand (Image 2). Pranto is looking through his modern English version of the play.



Figure 8.6: Pranto arguing that he knows what the passage is about.

Pranto shifts his gaze and his left hand back to his copy of the passage as he begins to describe his understanding of the passage (Image 3). Pranto says '*Um saying oh you killed me and then he goes they they go to Richmond and he's like*' (Images 3 and 4). Emma looks from Pranto's face to his copy of the passage while he speaks. Emma also places her copy of the passage back down on the table and she holds her hands in front of her chest, with some space between them, and her fingers curled into her palms. While he speaks, Pranto looks at his copy of the passage and holds his hands still.

Pranto continues to describe his understanding of the passage, saying '*oh don't worry I'm supporting you...that's that's basically it*' (Images 5 and 6). Pranto shifts his gaze from his copy of the passage to Emma (Image 6), and brings up his left fist, performing a beat gesture to emphasise his utterance '*supporting you*' (McNeill, 2007; Norris, 2004). In this excerpt Pranto presents his knowledge of the passage. He tries to demonstrate that despite not reading it, he knows what it is about.

This higher-level action of *analysing the passage* is produced with the modern English version of the play as the most relevant mediational means. Pranto flips through the pages of this book, gazes at it, and holds his hand on it throughout his analysis. There is a clash here between Emma and Pranto. Emma expects Pranto to read the entire original passage, and then use the passage for his analysis. She emphasises this practice here. Pranto uses the wrong mediational means for the higher-level action, and the wrong understanding of what it

means to analyse a passage. He seeks to get the overall 'gist' of the passage, where Emma emphasises reading the actual text and analysing it.

Emma then convinces Pranto to read the whole passage, by pointing out a part that he has missed. I have transcribed this excerpt in Figure 8.7, which continues on 3 seconds after the previous excerpt. Emma looks at Pranto and points to his copy of the passage (Image 1). She says '*mm hmm but did you read what Richard says*'. Pranto looks down at where Emma is pointing and says '*no that's*'. Emma takes her pointing finger away, and then Pranto reaches out and grasps the passage. Emma says '*kay that that bit's key*' and Pranto then pulls the passage towards him and leans over it (Image 3). He brings his left hand to his chin (Image 4) and Emma quietly says '*why don't you just read that first*'. Pranto's hand movement



Figure 8.7: Emma convinces Pranto to read the whole passage

Pranto looks down at where Emma is pointing and says '*no that's*'. Emma takes her pointing finger away, and then Pranto reaches out and grasps the passage. Emma says '*kay that that bit's key*' and Pranto then pulls the passage towards him and leans over it (Image 3). He brings his left hand to his chin (Image 4) and Emma quietly says '*why don't you just read that first*'. Pranto's hand movement

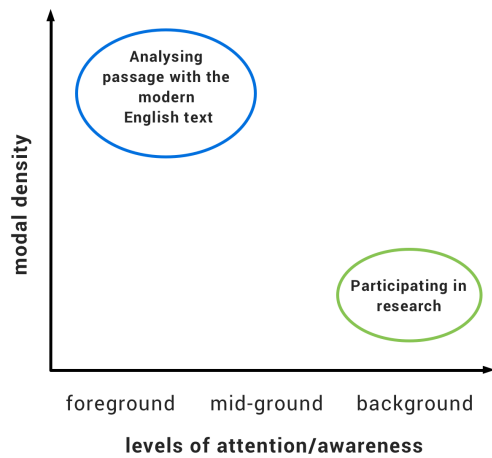
to his chin is a semantic/pragmatic means that facilitates Pranto's shift in focus to reading the passage, and indicates to Emma that he has shifted his focus.

8.2.1 Applying primary agency to the analysis.

In the excerpt in Figure 8.7 Emma (inadvertently) takes primary agency over Pranto's higher-level action. She makes the mediational means of the modern English version of the play irrelevant, since it does not present the original text. With her pointing gesture, and utterance, Emma points out the relevant mediational means for Pranto, and then uses spoken language to emphasise that his analysis of the passage will hinge on 'that bit' (Images 2 and 3). She then immediately hands back primary agency to Pranto by removing her pointing finger. Pranto then takes on primary agency over the higher-level action of *reading the passage*, as he pulls the passage towards himself and indicates a shift in attention/awareness.

The modal density foreground/background continuum (Norris, 2004, 2006, 2011) graphs shown in Figure 8.8 demonstrate Pranto's attention/awareness before Emma makes the modern English version of the play irrelevant, and after she directs him to the appropriate mediational means.

Pranto attention/awareness levels *before* Emma takes primary agency.



Pranto attention/awareness levels *after* Emma hands back primary agency.

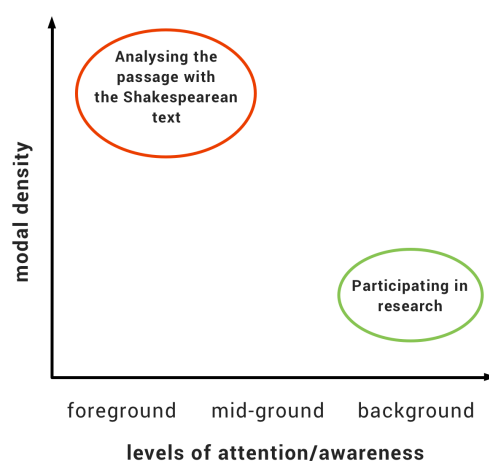


Figure 8.8: Pranto’s attention/awareness before Emma takes away primary agency, and after she hands it back.

The first graph to the left illustrates that Pranto is focusing on producing the higher-level action of *analysing the passage with the modern English text*. Once Emma makes the modern English text irrelevant, and directs him to use the original text Pranto begins to produce a new higher-level action at the foreground of his attention/awareness of *analysing the passage with the Shakespearean text* (illustrated in the second graph).

In comparison with the analysis in section 8.1, which emphasised the importance of mediational means to mediated actions, the excerpt here emphasises the contribution of the social actor to mediated actions. Pranto has the material objects he requires to produce an analysis of the passage. He has a copy of the passage, a modern English version of the play, a workbook and

pens. But, as Emma points out, Pranto is not able to produce an analysis of the passage with these mediational means. I would like to argue that the primary influence on Pranto's unsuccessful higher-level action of *analysing the text*, resides in Pranto's experience, or historical body (Nishida, 1958; Scollon, 1998, 2002) as he views the higher-level action of analysing a passage as *knowing about the passage* rather than knowing *what is written in the passage*. As a result, he is not able to bring together the objects he has available in such a way that produces a higher-level action of *analysing the text*, and he mistakenly relies of the modern English version of the play. Emma, takes on primary agency over Pranto's higher-level action to direct him to use the correct mediational means, through which he will (eventually) be able to produce an analysis of the passage.

8.3 Establishing a knowledge base using a model brain

In this section I analyse a tutoring session carried out at the dining room table in the student Olivia's home. Her home is open plan style with the kitchen, dining and living area combined. The tutor Didi introduces the plastic model of the brain, provided by the researcher, to help describe brain anatomy. Figure 8.9 shows some of the objects present in the tutoring session. Didi has placed a piece of paper on the table, and Didi and Olivia have produced a brainstorm on the paper describing the functions of the brain. Didi has placed a lesson plan to her left (attached as Appendix B) that she is gazing at.

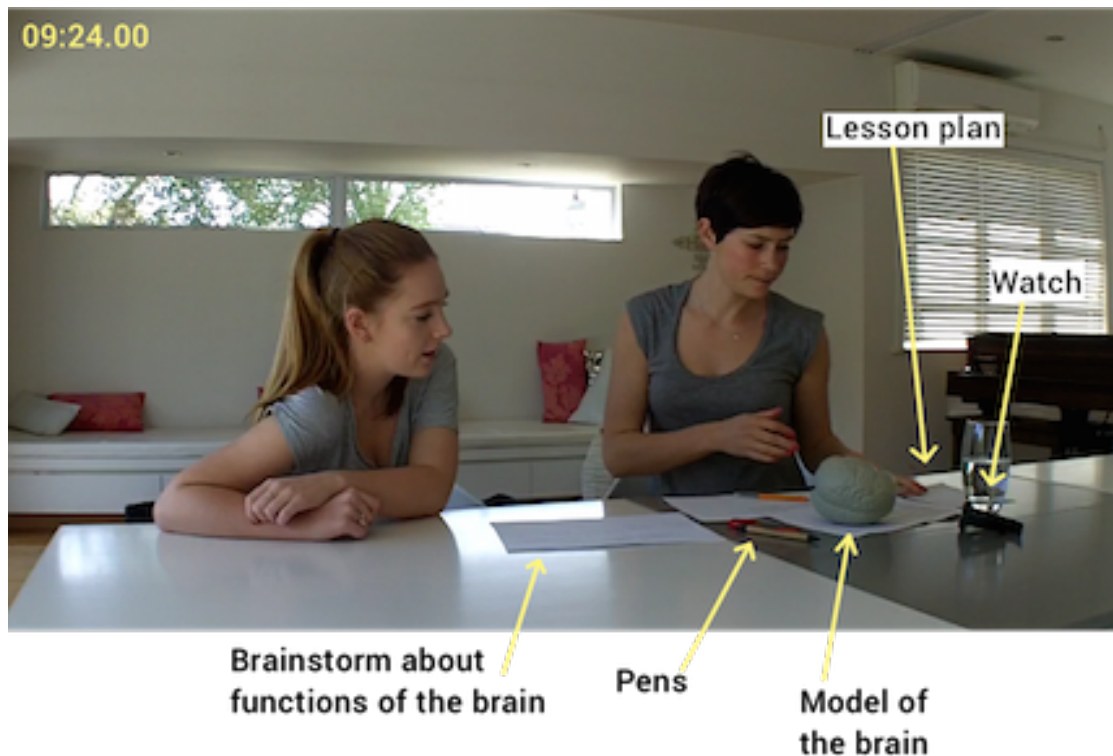


Figure 8.9: Objects in the tutoring session

Didi also placed a watch in front of her to keep track of time in the session.

Further, she laid out some pens and blank paper, as well as the model of the brain.

The excerpt here shows Didi and Olivia producing shared meaning (Linnel, 1992; Rommetveit, 1979) regarding the orientation of the brain. I present the transcript in two parts, each following immediately after the other. The first part shows Didi introducing the model brain by asking Olivia a question about its orientation. Here, Didi begins to establish Olivia's knowledge base (Angelo and Cross, 1993) about the brain through interaction with the model as a

mediational means. The second part of the transcript shows Olivia answering Didi's question, and Didi then assessing her response.

8.3.1 Establishing the knowledge base through (inter)action with the model brain

Olivia's knowledge base is substantially different from Didi's. However, it is very difficult to determine the nature of these differences (Kastberg, 2011). Didi needs to establish a practical starting point to expand on Olivia's knowledge base. The transcript (Figure 8.10) illustrates the moment when Didi picks up the model brain and presents it to Olivia, while asking her if she can identify the front and back of the model. Didi produces a question in the mode of spoken language, coupled with handling and presenting the model brain to Olivia. This draws Olivia into producing some knowledge regarding the brain.

Didi looks down to the brain as she grasps it and says '*umm*' (Image 1). Olivia briefly adjusts her t-shirt, pulling it up at the shoulders. Didi picks up the brain with her left hand (Image 2), and reaches up to touch it with her right hand. Her gaze is fixed on the brain and she rotates it first with one side facing her, and then the other (Image 3).



Figure 8.10: Didi asking Olivia about the orientation of the brain

Didi asks Olivia ‘*do you know which is the front and which is the back?*’ Didi shifts her gaze from the brain to Olivia (Image 4) and holds the brain out towards her. This utterance is produced with a rising inflection, marking it as a question. Olivia continues to look at the model brain throughout the excerpt.

The model brain is a mediational means for Didi, mediating the higher-level action of *tutoring*. Didi has primary agency, as described in chapter 5, over the higher-level action of *tutoring*, and expresses ownership over the model brain. As she brings the model up to her eye level, and presents it to Olivia, various modes can be identified that produce this higher-level action. These include object handling (Norris, 2004), gaze (Goodwin, 1981; Kendon, 1990) and proxemics to the brain (Hall, 1959, 1966). As Norris (2013b) points out, all modes form one system, and as an experienced tutor and osteopath in training Didi has acquired a highly developed system of mediated action (Norris, 2013b)

regarding anatomy, including relating anatomical models to the body. Through Didi's interaction with the brain this system of mediated action is implicated in her actions, and continues to develop as she produces concrete actions with the model brain.

Didi uses the brain here to mediate the higher-level action of exploring Olivia's knowledge of brain anatomy. Didi uses a relatively simple questioning strategy to determine what Olivia knows about the brain, starting with the most basic of anatomical distinctions. This is important as Olivia has a much less developed system of mediated action regarding anatomy, having had far less experience with anatomy, anatomical instruction, and educational instruction in general. This is the source of the knowledge asymmetry between them (Kastberg, 2011).

8.3.2 Realising shared meaning through assessment and material intersubjectivity

As Kastberg (2011) points out, knowledge, when treated as the product of a knower, is very hard to measure. Therefore Didi faces a challenge to establish the nature of the knowledge asymmetry, i.e.: What is the nature and extent of Olivia's knowledge about the brain?

The second excerpt I present follows on immediately after the first, and shows Didi and Olivia realising a moment of shared knowledge about the brain. By finding a moment of congruence in their knowledge about the brain Didi can begin to explore Olivia's knowledge base. In this excerpt (Figure 8.11) I analyse the moment shared knowledge is arrived at, and characterise it as developing

out of an assessment in the form of an embedded higher-level action, where Didi establishes a higher level action within which Olivia expresses knowledge of the brain.



Figure 8.11: Didi assessing Olivia’s knowledge of the brain.

Here, Olivia responds to Didi’s question and reaches out to the brain (Image 1). She says ‘*is that the front*’ and her hand reaches the brain as she says ‘*that*’. She also tips her head to her left shoulder, and gazes towards the front of the brain. Using her grasping hand Olivia begins to rotate the front of the brain towards herself. Didi also tilts her head as she shifts her gaze to the front of the brain, shifting her posture also as she lowers her right shoulder.

Here Didi has asked Olivia to utilise the material features of the model, and create meaning from them, i.e.: the orientation of the brain. Olivia produces her knowledge multimodally. She responds with a question ‘*Is that the front?*’ while

simultaneously indicating the ‘front’ through grasping, rotating and gazing. This forms a modal aggregate (Norris, 2009, 2015b) of object handling, gaze, head position and spoken language, which realises Olivia’s knowledge regarding the orientation of the brain. To put it another way, in this moment Olivia produces the notion of ‘front of the brain’, through this modal aggregate.

In Image 2, as she produces this modal aggregate Olivia takes the brain, and Didi hands it to her. Didi then points to the brain with her left hand and says ‘*this one?*’ Didi also continues to produce a head tilt that mirrors Olivia as she directs her gaze at the same position on the brain. There is very strong congruence in the multiple modes through which both Didi and Olivia realise the meaning ‘orientation of the brain’ here. Both Didi and Olivia, at this moment, are producing the meaning ‘front of the brain’.



Figure 8.12: Didi and Olivia showing strong modal congruence as they produce the meaning ‘front of the brain’.

In this excerpt Didi and Olivia reach a state of shared knowledge, realised multimodally in the moment highlighted in Figure 8.12. This could be referred

to as knowledge *symmetry*, where both social actors are in a mutual relation of similarity. Note that this relationship has been established through the course of the interaction, building up to this moment. While there is a relationship of reciprocal expectations about knowledge in the form of a *double double* contingency (Kastberg, 2011), the specific nature of the knowledge *asymmetry* is constructed multimodally. It is not spontaneous, and must be uncovered or established.

8.3.2.1 Applying primary agency and material intersubjectivity to the analysis

I would like to point out here that the moment depicted in Figure 8.12 can be analysed using the notion of *tiers of intersubjectivity*. At the most durable tier, produced through relevant layout and person proxemics, Didi and Olivia are seated next to each other at the dining room table, which produces a proxemic relationship between the two of them. This materiality provides a basis for the adjustable tier of material intersubjectivity, produced through their proxemics to the tutoring objects on the table, their proxemics to the model brain, and their postures, both angled towards one another. These two tiers of intersubjectivity produce the *interactive substrate*, which provides a basis for more fleeting moments of intersubjectivity. Through object handling (Norris, 2004), gaze (Goodwin, 1981; Kendon, 1990), gesture (Kendon, 1990; McNeill, 1992, 2005) and talk (Chafe, 1995; Tannen, 1985) Didi and Olivia produce this fleeting moment of intersubjectivity, as they produce a 'shared island of understanding' (Linell, 1998) regarding the orientation of the brain.

When Olivia produces the meaning ‘front of the brain’, this action is embedded within Didi’s larger scale higher-level action, that is, it occurs within, and with reference to Didi’s question about the brain (Figure 8.13). Here, then, is an instance of handing over primary agency. Didi initiates Olivia’s higher-level action by asking her about the orientation of the brain. Didi produces this initiation through gaze, body position, and object handling (presenting the brain to Olivia). At this moment, Didi hands over ownership over the model brain to Olivia for her to produce her answer with. Thus the brain becomes a mediational means in a different way for Olivia than it was previously, and she now engages with it through object handling and touch.

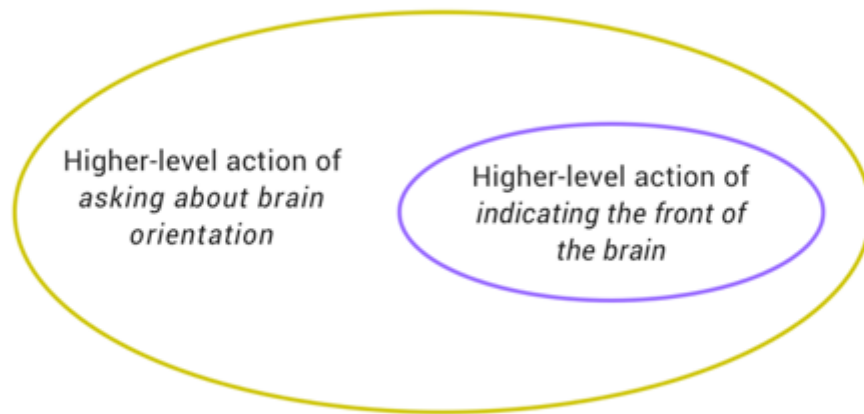


Figure 8.13: Olivia's higher-level action of *indicating the front of the brain* embedded within Didi's higher-level action of *asking about brain orientation*.

Olivia takes on primary agency, by reaching for the brain and producing the meaning 'front of the brain' through the modal aggregate described above. Didi then assesses this meaning by confirming Olivia's meaning, and in doing so produces strong modal congruence with her, producing material intersubjectivity. Didi and Olivia have achieved a shared knowledge base, visible through their material intersubjectivity, and the actions leading to this modal congruence. Didi has established a shared point to begin investigating the location of brain functions through this basic piece of knowledge; where is the front and where is the back.

8.4 Conclusion: The use of mediational means:

Communicating knowledge

In this chapter, I have used the notions of primary agency and material intersubjectivity to investigate how tutors and students use mediational means in knowledge communication. In the first excerpt, I utilised semantic/pragmatic means (Norris, 2004, 2009, 2011a) and primary agency to show Emma transitioning into and out of producing different higher-level actions (Norris, 2004, 2011a). Emma took on primary agency over the models I provided, and through analysis of the modes of facial expression (Fridlund, 2014; Fridlund et al., 1990), object handling (Norris, 2004) and spoken language (Chafe, 1995) I showed she produced a higher-level action of *playing*. Drawing on mode as a system of mediated action (Norris, 2013b) I attributed this to her acquiring a relatively limited mode of *model figurines*. This suggests the importance of a tutor having a transferable system of mediated action, or prior experience when working with novel objects in tutoring.

In the second excerpt I showed that Pranto analysed a text incorrectly due to drawing on the incorrect mediational means, including the wrong version of the text, and the wrong understanding of the task. Pranto's understanding of the task is a cognitive mediational means, and corresponds somewhat with Wertsch's (1984) notion of situation definition, which defines the way in which a context or setting is represented. However, here I showed that Pranto's understanding of the task forms part of a complex mediational means (Geenen,

2013) including (among others) his copy of the modern English version of the play. Rather than describing Emma as producing a hybrid-situation definition (Wertsch, 1984) somewhere between her own situation definition and Pranto's, I suggested that Emma redirected Pranto to produce a different higher-level action (Norris, 2004, 2011). This higher-level action was produced with different mediational means (both material and cognitive). Thus, I suggest one approach tutors take to knowledge communication involves helping students produce higher-level actions with the correct mediational means (Norris & Jones, 2005d; Scollon, 1998; Wertsch, 1998), which over time helps them to develop the correct complex mediational means (Geenen, 2013). This excerpt showed that the tutor took primary agency, redirected the student to use the correct the mediational means available for an embedded higher-level action (Norris, 2015a), and then handed back primary agency with the conditions established with new mediational means.

In the final excerpt I used the notion of a knowledge asymmetry (Kastberg, 2011) to show the tutor Didi exploring the student Olivia's knowledge base. I showed Didi producing a higher-level action with the model brain as mediational means through object handling (Norris, 2004), gaze (Goodwin, 1981; Kendon, 1990) and proxemics to the brain (Hall, 1959, 1966). Using the notion of primary agency developed in the previous chapters, I showed how Didi produced the conditions for an embedded higher-level action (Norris, 2015a) of *determining the orientation of the brain*, and then handed over primary agency to Olivia, by handing over ownership over the model brain. I

then showed that Didi and Olivia produced a knowledge *symmetry* through modal congruence, in the modes of posture (Schefflen, 1964, 1974), gaze (Goodwin, 1981; Kendon, 1990), gesture (McNeill, 1992; Kendon, 1990), spoken language (Chafe, 1995; Tannen, 1985) and object handling (Norris, 2004, Norris, 2011c). In contrast to Emma, Didi displayed a highly developed system of mediated action (Norris, 2013b) regarding models and education. This contrast suggests that tutors require a system of mediated action (Norris, 2013b) that is already acquired to successfully incorporate objects into their tutoring sessions.

Taken as a whole the analyses in this chapter support two findings regarding novel objects as mediational means. Firstly, tutors and students need to acquire well-developed systems of mediated action (Norris, 2013b) to produce rich higher-level actions with novel objects (which become mediational means). Secondly, taking on primary agency, preparing the conditions for an embedded higher-level action (Norris, 2015a), and handing back primary agency over a higher-level action, is one way that tutors can communicate knowledge by helping students to acquire these rich systems of mediated action (Norris, 2013b) through producing concrete actions in the world.

9.0 Discussion: Research into tutoring: Exploring agency and intersubjectivity

In this chapter I discuss my findings regarding my explorations into agency and intersubjectivity, using research into tutoring as my examples. I first discuss research into tutoring and outline the similarities and differences between my findings and the literature. My findings align well with the literature regarding the efficacy of tutoring (Anania, 1983; Burke, 1983; Chi, Roy, & Hausmann, 2008; Cohen, Kulik, & Kulik, 1982; Ireson & Rushforth, 2005), and the reasons people take up tutoring. I present some data from interviews to show that the comments of tutors and students align with the metaphor of scaffolding (Rogoff & Wertsch, 1984; Wertsch, 1984; Wood, Bruner, & Ross, 1976; Wood, Wood, Ainsworth, & O'Malley, 1995; Wood & Wood, 1996). However, I argue that primary agency provides insight into tutoring that is not captured in scaffolding. I then address the literature regarding agency (Ahearn, 2000, 2001b; Malafouris, 2008, 2013; Norris, 2005; Norris & Jones, 2005a; van Lier, 2008b; Wertsch et al., 1993) and intersubjectivity (Crossley, 1996; Duranti, 2010; Mortimer & Wertsch, 2003; Rommetveit, 1974, 1979a, 1979b, 1986; Zlatev et al., 2008) and position my findings within it. I show that both the notion of primary agency, and material intersubjectivity provide contributions to empirical analysis of interaction. After that I address knowledge communication (Bischof & Eppler, 2011; Engberg, 2010; Eppler, 2006, 2007; Kastberg, 2007, 2010, 2011, 2014; Kastberg & Ditlevsen, 2011; Mengis & Eppler, 2008), and

focus on the contribution my findings make to the field. Drawing on Norris's (2013b) definition of mode as a system of mediated action, I suggest that knowledge can also be defined as a system of mediated action. Defining knowledge as a system of mediated action provides a way to unify the disparate definitions of knowledge within the field.

9.1 Research into Tutoring: Similarities and differences in relation to the literature

In this section I discuss the literature regarding the growth and efficacy of tutoring (Anania, 1983; Burke, 1983; Chi, Roy, & Hausmann, 2008; Cohen, Kulik, & Kulik, 1982; Ireson & Rushforth, 2005). My interviews with tutors and students echo the findings in the literature regarding student outcomes from tutoring (Anania, 1983; Burke, 1983; Ireson & Rushforth, 2005), the reasons that students take up tutoring (Ireson & Rushforth, 2005), and to some extent what makes tutoring effective (Chi, Roy, & Hausmann, 2008). I then consider the scaffolding literature (Rogoff & Wertsch, 1984; Wertsch, 1984; Wood, Bruner, & Ross, 1976; Wood, Wood, Ainsworth, & O'Malley, 1995; Wood & Wood, 1996) and show that my interviews with students and tutors also align well with the metaphor of scaffolding. After that I discuss the literature on agency that takes a sociocultural approach (Ahearn, 2000, 2001; Malafouris, 2008, 2013; Norris, 2005; Norris & Jones, 2005b; van Lier, 2008; Wertsch, Tulviste, & Hagstrom, 1993), and position my findings regarding the notion of primary agency within the field. Finally I discuss the intersubjectivity literature (Duranti, 2010; Linell,

1998; Mortimer & Wertsch, 2003; Rommetveit, 1974, 1979, 1986), and show how the notion of tiers of material intersubjectivity contributes to the literature. I also expand this discussion to suggest that the notion of higher-level actions (Norris, 2004, 2011b), and states of mind (Hobson & Hobson, 2008) can perhaps be brought together. Overall this section positions my findings regarding agency and intersubjectivity within the literature.

9.1.1 Growth and Efficacy of tutoring

The literature shows that the use of tutoring around the world is growing, and supports the observed growth of the tutoring industry within New Zealand.

Informal semi-structured interviews with students align well with the findings reported in the literature. Ireson and Rushforth (2005) identify three reasons parents seek tutoring for their children. These reasons are: increased understanding of the subject, improved self-confidence, and higher academic grades. Drawing on student responses during informal interviews I show here that students are seeking tutoring for similar reasons, and achieving these outcomes.

Pranto reports seeking tutoring for English because of his low grades in the Cambridge curriculum.

Interview 9.1: Pranto

(437) Jesse so why did you,
(438) get tutoring initially,
(439) Pranto: umm,
(440) well,
(441) I would get quite low grades,
(442) in,
(443) English?
(444) Jesse: yep.
(445) Pranto: I would get like,
(446) um,
(447) cuz they were all essays,
(448) and I'd get,
(449) Ds and Es,
(450) Jesse: right, --
(451) Pranto: /-- mostly, (.)
(452) and um,
(453) I did NCEA Level 2 as well,
(454) and I only got Achieved in that?

Pranto points out '*...cuz they were all essays, and I'd get Ds and Es...mostly*'.

Thus for Pranto tutoring was a way to increase his grades. Pranto was taking the Cambridge curriculum, which is based on essays, and is fully assessed in exams at the end of the school year. Pranto reports that this is one reason for his difficulties with English. I recorded in my field notes during discussions with Emma, Pranto's tutor, that he was trying hard to get into university to study medicine (and was successful). This supports Bray's (2006) findings that parents seek higher educational outcomes for their children through tutoring to improve the student's chances of entry into tertiary study.

Pranto also reported that his grades increased as a result of tutoring.

Interview 9.2: Pranto

(210) Pranto: I was quite happy with that.
(211) and um,
(212) you know,
(213) after I started,
(214) um,
(215) you know,
(216) getting lessons from her,
(217) my grades also went up,
(218) I,
(219) Jesse: [(xxx)
(220) Pranto: [I went from getting,
(221) Ds and Es to,
(222) Bs,
(223) I got,
(224) consistent Bs,
(225) throughout all the essays I wrote,

He states that he started to consistently get B grades for all his essays. Emma reported that Pranto was an excellent science and maths student, but that he struggled with English. Moreover, as he points out, for him a B in English was a good result:

Interview 9.3: Pranto

(228) Pranto: which is,
(229) I'm,
(230) I'm quite proud of that,
(231) [like,
(232) Jesse: [yeah yeah yeah.
(233) Pranto: m-m-me getting Bs,
(234) in English,
(235) it's, (.)
(236) it's not easy.
(237) Jesse: yuh-,
(238) yeah ye[ah.
(239) Pranto: [so,
(240) I was,
(241) I was quite happy,
(242) getting Bs.

Pranto's results mirror those found in studies of tutoring efficacy showing significant effects of tutoring on student achievement and student attitudes towards subject matter (Anania, 1983; Burke, 1983; Cohen et al., 1982).

The efficacy of tutoring has been attributed to the interaction between the tutor and the student (Chi et al., 2008), rather than the actions of the tutor alone, or the student alone. Discussions with the students Sarah, Pranto and Kate support these findings. Sarah mentions the benefits of having a one-to-one tutor, rather than work in a group setting with tutors 'roaming around'. Sarah notes that:

Interview 9.4: Sarah

(558) Sarah: no well we,
(559) I went to,
(560) um,
(561) this kind of,
(562) it was another tutoring company,
(563) this free,
(564) kind of,
(565) one off,
(566) one hour thing,
(567) Jesse: mm hmm,
(568) Sarah: and it was,
(569) completely different to Pencilcase,
(570) it was like,
(571) done in,
(572) it was,
(573) group tutoring?
(574) so there were,
(575) um,
(576) just tutors wandering around,
(577) it was just for Maths and English,
(578) Jesse: ah[hh,
(579) Sarah: [and there were like,
(580) um,
(581) maybe,
(582) seven of us,
(583) in a room,
(584) with computers and stuff?

(585) and we were kinda all set,
(586) different things,
(587) it was really weird,
(588) cuz,
(589) coming from Pencilcase tutoring,
(590) and going to that,
(591) it was [just,
(592) Jesse: [mmm,
(593) Sarah: really odd?
(594) so I definitely think that,
(595) the one on one is,
(596) better,
(597) than that kind of,
(598) roaming,
(599) teachers,
(600) kinda thing.

Kate notes that working one-to-one was beneficial, and reports that her tutor throughout the year helped her by going at her own pace, and being ‘there for her’.

Interview 9.4: Kate

(421) Kate: most unique.
(422) um, (...)
(423) I guess, (.)
(424) like,
(425) cuz they're there for you,
(426) so you don't feel, (.)
(427) bad about asking questions,
(428) or like,
(429) more than one,
(430) you know?
(431) but,
(432) sometimes at school,
(433) after you've asked one question,
(434) and if you still don't get it?
(435) Jesse: mm hm[m
(436) Kate: [you kinda think,
(437) well,
(438) I'm holding the th'rest of the class up?
(439) Jesse: mmm.
(440) Kate: but,
(441) with,
(442) having Steve,

(443) it was,
 (444) if I didn't get it,
 (445) I could kind of, (.)
 (446) say aw,
 (447) I don't actually get that yet?

Pranto also emphasises the importance of the type of approach a tutor takes. He discusses working with a different tutor who did not provide the kind of support he wanted.

Interview 9.5: Pranto

(109) Pranto: and,
 (110) it was just,
 (111) irrelevant stuff.
 (112) Jesse: right.
 (113) Pranto: yeah. (.)
 (114) it wasn't really, (..)
 (115) um, (..)
 (116) I dunno,
 (117) he'd just talk about the paper.
 (118) like what's in the paper today.
 (119) Jesse: yeah-[eah-eah
 (120) Pranto: [(xxx),
 (121) ih-would it would,
 (122) just be irrelevant,
 (123) I would just,
 (124) be wasting my time.

These interview data support findings from the literature (Anania, 1983; Burke, 1983; Chi, Roy, & Hausmann, 2008; Cohen, Kulik, & Kulik, 1982; Ireson & Rushforth, 2005) regarding outcomes from tutoring including greater understanding, improved confidence and increased grades. Students also appreciate the one-to-one interaction with the tutor, and Pranto suggests that the tutor's approach is important and needs to be relevant to what the student

wants. Many of the comments also suggest students have agency, for example, Pranto is very aware of what sort of help he would like, and did not continue working with his previous tutor. Kate's phrasing also, when she refers to '*having Steve*', suggests students treat the tutor as a service provider, and recognise the business relationship present in the interaction. Almost all students and tutors also mentioned the financial element of tutoring. This business relationship is clearly an aspect of tutoring, even though students themselves are not usually paying, and tutors do not collect money off the student or their parents directly since they are paid through Pencilcase tutoring.

Despite the relevance of the interview data to the literature (Anania, 1983; Burke, 1983; Chi, Roy, & Hausmann, 2008; Cohen, Kulik, & Kulik, 1982; Ireson & Rushforth, 2005) regarding the growth and efficacy of tutoring, they do not explain how tutoring is enacted, or what makes tutoring effective. Kate suggests she did not like group tutoring with tutors '*roaming around*', and Pranto did not like the '*irrelevant*' approach of his previous tutor. Using video, and taking a multimodal (inter)action analytic approach (Norris, 2002, 2004, 2006, 2009, 2010, 2011a, 2011b, 2012a, 2012b, 2012c, 2012d, 2013a, 2013b, 2014a, 2014b, 2015a, 2015c) I was able to conceptualise the intricacies of naturally occurring tutoring sessions.

9.1.2 Scaffolding

During data collection and analysis, I noted that many of the tutoring interactions can be modelled by the metaphor of scaffolding. Since scaffolding

developed partly from research data collected from tutoring interactions, this was to be expected. Wood and Wood (1995) identify five key functions of scaffolding in adult/child interaction, and I observed tutors carrying out many of these functions. Tutors engaged especially in establishing orientation towards task relevant goals, highlighting critical features of the task, and demonstrating how to achieve goals (Wood and Wood, 1995, p. 5). Student interviews support this metaphor of scaffolding described in the literature (Rogoff & Wertsch, 1984; Wertsch, 1984; Wood et al., 1976, 1995; Wood & Wood, 1996).

In an interview with Nikora, he noted how the tutor helped him to prepare for exams by going over a past exam paper. Before focussing on the way that the tutor used the exam paper, it is important to note that at Pencilcase, bringing an exam paper to the session is an important function of tutoring. However, Newport (2011) points out that going through exam papers can be very difficult, and this may discourage students, even though working through past exam papers is a method of exam preparation. Nikora noted that the tutor helped him learn how to approach an exam.

Interview 9.6: Nikora

(319) Nikora: um, (.)
(320) I mean it went kind of alright,
(321) we went through,
(322) we went through an exam paper,
(323) Jesse: mm hmm,
(324) Nikora: um,
(325) aw yeah,
(326) we went through an exam paper,
(327) and it's like,
(328) practicing,
(329) um,

(330) learning how to answer the questions?
(331) in the exam conditions,
(332) um,
(333) aw like um,
(334) like,
(335) you know you don't,
(336) if you're,
(337) stuck,
(338) don't know what to do,
(339) Jesse: mm hmm,
(340) Nikora: um,
(341) he'd like,
(342) aw,
(343) the tutor he'd like,
(344) um,
(345) tell you what,
(346) he'd,
(347) give you the options? (.)
(348) he'd give you options of what,
(349) you could do,
(350) so that you didn't have to worry,
(351) aw so I didn't have to worry,

Nikora points out the the tutor would '*...give you options of what you could do so that you didn't have to worry...*'. Here Nikora orientates to the tutor helping him to understand the task of sitting exams, and to develop a range of options to draw on when he is not sure how to proceed. Nikora goes on to discuss how exams made him nervous, and that the tutor solved this problem for him by giving him options.

Interview 9.7: Nikora

(354) Nikora: and like,
(355) be nervous about it,
(356) and,
(357) and it's like,
(358) cuz there were those questions,
(359) where I just didn't know,
(360) anything (xxx),
(361) like I didn't know,
(362) what I was doing at all,
(363) Jesse: mmm,
(364) Nikora: but he,
(365) he'd clear it up,
(366) so that it,
(367) um,

(368) what d'you call it,
(369) so that it was,
(370) stuck in my mind and,
(371) like,
(372) it was easy to,
(373) easy to understand,
(374) Jesse: mm hmm,
(375) Nikora: rather than just like,
(376) understanding,
(377) those,
(378) key words,
(379) Jesse: mm hmm,
(380) Nikora: it's like,
(381) understanding the whole,
(382) concept of it,

Another scaffolding function that Wood and Wood (1995) describe is helping to control frustration. I would like to suggest that Nikora's answers here suggest that the tutor helped him move beyond feeling nervous and as if he *'didn't know anything, I just didn't know what I was doing at all'*. This emotional regulation aspect of tutoring is also an important part of scaffolding (Wood & Wood, 1995). Nikora refers to the deeper level of understanding that his tutor facilitated, when he says that *'it's like understanding the whole concept of it'*. Wertsch (1985) refers to working in the zone of proximal development, as developing a hybrid situation definition. Nikora's different sense of conceptual understanding here resonates with working in the zone of proximal development (Vygotsky, 1979; Wertsch, 1984; Rogoff & Wertsch, 1984), where the student reaches a higher level of development while collaborating with someone more capable.

Data from interviews with tutors show that the experience of tutors also aligns with the metaphor of scaffolding.

Interview 9.8: Emma

(106) they think that they're bad at it,
(107) they think that it's,
(108) in a kind of foreign language or something,
(109) Jesse: yeah ye[ah,
(110) Emma: [and so,
(111) they're kind of,
(112) their attitude is not nice,
(113) they're kind of like,
(114) they look bored,
(115) they don't,
(116) seem,
(117) engaged,
(118) their body language is all,
(119) kind of like uhhhhh,
(120) [it's a session on poetry,
(121) Jesse: [yeh-yeah,
(122) Emma: and they,
(123) blugh,
(124) bleh,
(125) they're just not happy,
(126) um, (.)
(127) but then they get it,
(128) it's like their whole attitude changes,

The tutor Emma points out what she enjoys about tutoring and how the student's '*whole attitude changes*' when they come to understand how poetry analysis works. She also points out the notion of student progress using a metaphor of moving from place to place.

Interview 9.9: Emma

(43) Emma: I guess I,
(44) I really enjoy,
(45) umm,
(46) the kind of,
(47) the successful bit?
(48) where you've managed to get,
(49) to get them from somewhere,
(50) to somewhere,
(51) somewhere better,

This notion of moving from *'somewhere to somewhere'* also reflects Wertsch's (1984) conceptual discussion about the zone of proximal development. He suggests an adult helps a child develop their situation definition to one that is not quite the same as the adult's, but which is a hybrid of their original situation definition and the adult's situation definition. Emma does not suggest that she discusses the poem with the student as she would with a student as an equal, but rather she helps them make some transition, from where they were to *'somewhere better'*.

Through analysis of interviews with students and tutors it is possible to describe participation in tutoring drawing on the metaphor of scaffolding (Wertsch, 1984; Wood et al., 1976, 1995; Wood & Wood, 1996). The interviews show that students appreciate the guidance of the tutors and respect their higher level of knowledge about being successful at school. The emotional support that tutors provide reverberates as a sense of confidence expressed in the students' responses. However through analysis of interviews alone, all I can access is the metaphor of scaffolding (Wood et al., 1976, 1995) or working in the zone of proximal development (Rogoff & Wertsch, 1984; Wertsch, 1984; Wood & Wood, 1996).

I also collected video data and observed tutoring sessions, and in the analyses in chapter five and six I outlined in detail a concept of ownership and agency over action that scaffolding (Rogoff & Wertsch, 1984; Wertsch, 1984; Wood, Bruner, & Ross, 1976; Wood, Wood, Ainsworth, & O'Malley, 1995; Wood & Wood, 1996) does not describe. In chapter five, I showed that students take ownership

over tutoring materials and produce actions with primary agency. It is likely that the experience Nikora speaks about in his interview, where he worked through an exam paper with his tutor, involved instances of Nikora producing higher-level actions (Norris, 2004, 2011a) with primary agency. Without an analysis that delves deeply into how Nikora co-produces (Norris, 2004, 2009, 2011a) (with his tutor) higher-level actions (Norris, 2004, 2011a) with and through the mediational means (Norris, 2004, 2011a; Norris & Jones, 2005c; Scollon, 1998; Wertsch, 1998) of a past exam paper, it is not possible to precisely describe how the social worlds of Nikora and the tutor intersect to help Nikora produce a new level of conceptual understanding. In chapter six I further develop the notion of primary agency, to show the ways in which social actors hand primary agency to others, and the implications of producing a larger scale higher-level action with primary agency, as compared to a smaller scale higher-level action. In one example the student Kate produces the higher-level action of *reading the text*, before handing primary agency back to the tutor. This example shows the student determining how they will produce the action, and when the action is complete. These notions are not explored through scaffolding (Rogoff & Wertsch, 1984; Wertsch, 1984; Wood, Bruner, & Ross, 1976; Wood, Wood, Ainsworth, & O'Malley, 1995; Wood & Wood, 1996), which places much more control over the task with the more experienced social actor who has a theoretical model of the task which they compare against the performance of the student (Wood et al., 1976). Exploring the notion of primary agency, and how social actors hand primary agency over, and how social actors take up primary agency provides insight into tutoring that is not captured through the

metaphor of scaffolding (Rogoff & Wertsch, 1984; Wertsch, 1984; Wood, Bruner, & Ross, 1976; Wood, Wood, Ainsworth, & O'Malley, 1995; Wood & Wood, 1996).

9.1.3 Agency

Throughout this thesis I take a sociocultural perspective of agency (Ahearn, 2000, 2001a; Lillis, 2013; Malafouris, 2008, 2013; Norris, 2005; Norris & Jones, 2005a; van Lier, 2008a; Wertsch & Rupert, 1993; Wertsch et al., 1993) by taking the mediated action (Norris, 2004, 2011a; Norris & Jones, 2005b; Scollon, 1998; Wertsch, 1998) as my unit of analysis. One of the significant findings to emerge from this perspective is my analysis of primary agency. Primary agency develops from the notion of co-production. Co-production (Norris, 2004, 2011a) shows that social actors engaged in interaction are *not* co-constructing the *same* higher-level action. Rather they produce *different* higher-level actions, often at different levels of attention/awareness (Norris, 2004, 2006, 2009, 2011a). Co-production (Norris, 2004, 2011a) contrasts with the treatment of co-construction (Goodwin, 1979; Goodwin & Heritage, 1990; Jacoby & Ochs, 1995; Sidnell & Stivers, 2012) as a given in the literature. Co-construction (Goodwin, 1979; Goodwin & Heritage, 1990; Jacoby & Ochs, 1995; Sidnell & Stivers, 2012) operates at the shared focus of social actors, and often relies on sequentiality as an analytical approach (Goodwin, 1979; Jacoby & Ochs, 1995; Sacks, Schegloff, & Jefferson, 1974).

The most important difference between social actors engaged in co-production (Norris, 2004, 2011a) is the extent to which one social actor has ownership over the most relevant mediational means (Norris, 2004, 2011a; Norris & Jones, 2005c; Scollon, 1998; Wertsch, 1998) for the co-produced higher-level action. Lillis (2013) touches on the link between ownership and agency. She argues that certain modes and technologies of writing 'afford writers some sense of control over a semiotic space for meaning making' (p. 146). She suggests that part of this sense of control relates to ownership over necessary material means. Lillis (2013) provides the example of a notebook as a semiotic space that a writer has control over, through a sense of ownership, and their writing actions produced with and through the notebook. However, I would like to point out that Lillis's discussion does not go further than suggesting the relationship between ownership over material means and agency. In my analysis of agency I applied multimodal (inter)action analysis (Norris, 2002, 2004, 2006, 2009, 2010, 2011a, 2011b, 2012a, 2012b, 2012c, 2012d, 2013a, 2013b, 2014a, 2014b, 2015a, 2015c), and the methodological tools of lower- and higher-level actions to show social actors producing higher-level actions with ownership over the most relevant mediational means for the higher-level action. Ownership over a notebook invokes long-term ownership, development and appropriation of a mediational means. My analysis showed social actors produce ownership over a much wider variety of mediational means, and how social actors produce ownership throughout interaction. These mediational means include a camera and microphone, and various tutoring materials such as papers, pens, and texts. Social actors produce ownership during interaction through proxemics (Hall,

1959, 1966), posture (Dittman, 1987; Scheflen, 1964) and object handling (Norris, 2004). Furthermore, in two cases tutors either brought their own mediational means along to tutoring sessions, or altered the mediational means I had provided. Ownership is therefore intricately linked to action. I required the multimodal (inter)action analytical framework (Norris, 2002, 2004, 2006, 2009, 2010, 2011a, 2011b, 2012a, 2012b, 2012c, 2012d, 2013a, 2013b, 2014a, 2014b, 2015a, 2015c) that incorporates the multiple modes social actors act through to produce this analysis, and define primary agency because no other framework has established such a coherence of modes.

The notion of ownership has been addressed within psychological literature (Langan-Fox, Cooper, & Klimoski, 2007; Pierce, Jussila, & Cummings, 2009; Pierce, Kostova, & Dirks, 2003), and somewhat by Hall (1966) with regards to territoriality. Pierce et al. (2003) develop a construct of ownership defined as a cognitive-affective state that permeates humans socialised in Western society. Ownership manifests as a relationship between the individual and an object, and through ownership, material objects become part of the extended self (Dittmar, 1992). One way this relationship is suggested to develop is through the effectance motive, which refers to a desire to interact 'effectively' with the environment. Pierce et al. (2003) state that 'exploration of, and the ability to control, one's environment gives rise to feelings of efficacy and pleasures, which stem from "being the cause" and having altered the environment through one's control/actions.' (p. 9). The effectance motive relates closely to Ahearn's (2001) sociocultural definition of agency as 'the socioculturally

mediated capacity to act' (p. 112), and widely shared definitions of agency that include some sense of responsibility for one's actions and the effects of these actions (Duranti, 2004; Malafouris, 2013; van Lier, 2008b). The relationship between the agency literature (Ahearn, 2000, 2001a; Lillis, 2013; Malafouris, 2008, 2013; Norris, 2005; Norris & Jones, 2005a; van Lier, 2008a; Wertsch & Rupert, 1993; Wertsch et al., 1993), and the ownership literature (Hall, 1996; Langan-Fox, Cooper, & Klimoski, 2007; Pierce, Jussila, & Cummings, 2009; Pierce, Kostova, & Dirks, 2003) supports the notion of primary agency as ownership over the most relevant mediational means for a higher-level action. The ownership literature also offers an approach that references the relationship between individual and object (Dittmar, 1992; Pierce et al., 2003), although this is not defined specifically as sociocultural.

Numerous authors argue for a sense of responsibility or choice related to agency (Ahearn, 2001b; Lillis, 2013; Malafouris, 2013; Norris, 2005; van Lier, 2008b), and Pierce et al. (2003) suggest exploring one's environment with ownership provides feelings of efficacy and pleasure. This suggests that some emotive and social benefits accrue from taking on ownership, and expressing agency. In addition, I have suggested in this thesis that a social actor without primary agency, engaging in co-producing a higher-level action, must take on to some extent the social world of the social actor with primary agency. My position here problematises Rommetviet's (1979b, p.95) argument that the speaker 'has the privilege of pointing out the objects, events and states of affairs to enter the field of shared attention'. Primary agency, as a global

feature of higher-level action, indicates that social actors *do not* hand over primary agency when they are not speaking. Although I showed that social actors can and do hand over primary agency, social actors do not hand over primary agency simply by virtue of not speaking. Social actors need to explicitly hand over ownership over the most relevant mediational means to hand over primary agency. I suggest that my position problematises Rommetveit's (1979b) argument because primary agency requires an analysis beyond identifying a speaker. In addition, the privileges of primary agency are likely to be contingent on the extent to which other social actors engage in interaction with the social actor that has primary agency, through co-production.

9.1.4 Intersubjectivity

Duranti (2010) argues for a notion of intersubjectivity that he suggests is substantially different from the current dominant interpretation wedded to shared or mutual understanding. Duranti (2010) promotes conceiving of intersubjectivity that:

'...ranges from acts in which one is minimally aware of the presence of an Other to acts in which one actively works at making sure that the Other and the Self are perceptually, conceptually, and practically coordinated around a particular task'

(Duranti, 2010, p. 17).

This approach to intersubjectivity includes participation in the material world that does not rely on social interaction in the dominant sense of two or more social actors producing shared understanding. Duranti's (2010) approach also parrots Norris' (2004) approach to various attention levels in interaction, where a social actor is more or less aware when interacting with others or the material world, as explicated in detail in chapter four. While Duranti details the need for what Norris has outlined before, Norris (2004) provides methodological tools that can be used to gain a deeper understanding into the workings of how others and the self are perceptually, conceptually and practically co-ordinated around a particular task. But Norris (2011a) moves beyond this conception as well as she refers to *(inter)action*, rather than the more common *interaction*. She argues that:

'(inter)action potentially encompasses each and every action that an individual produces with tools, the environment, and other individuals. Thus...even when one individual acts with objects, acting within the environment, these actions are viewed as (inter)actions...'

(Norris, 2011a, p. 1)

These approaches to (inter)action (Norris, 2004, 2011a) and intersubjectivity (Duranti, 2010) contrast with the work of Rommetveit (1974, 1979b, 1986) and conversation analytic approaches to intersubjectivity (Schegloff, 1992; Sidnell, 2014) with a focus on talk that always includes other social actors.

In this thesis I develop a conception of intersubjectivity that draws on the approach of Norris (2004, 2011a) to (inter)action and attention/awareness levels, taking each and every action to be social and to be co-produced on a continuum from foreground to background of attention/awareness. The most important aspect of my work on intersubjectivity has been to link intersubjectivity to Norris' (2009) modal configuration, and to the materiality that this encompasses. Modal configuration (Norris, 2009, 2014a, 2015b) explodes the higher-level action into its (mutually) constituent lower-level actions (Norris, 2004, 2011a). As I show in chapter seven, these lower-level actions produce materiality of varying durability in the environment. The varying material durability of lower-level actions can be categorised into *tiers of material intersubjectivity*. With this, I developed a methodologically applicable tool that allows for the analysis of intersubjectivity, spanning (inter)actions where one is minimally aware of others, to ones where social actors engage in co-producing higher-level actions with one or more social actors. By drawing on modal configurations (Norris, 2009, 2014, 2015b) *tiers of intersubjectivity* maintains the social actor's ongoing engagement in the material world, without reducing intersubjectivity to only spoken language, or consigning the more durable aspects of materiality, such as posture, to a supporting role for talk. Simultaneously the level of *fleeting intersubjectivity* provides for an analysis of spoken language and other more fleeting modes.

Focusing on higher-level actions (Norris, 2004, 2011a), through modal configurations takes a co-production (Norris 2004, 2011a) perspective. This

perspective problematises the notion of co-construction (Norris, 2004, 2011a), and I have shown in chapter six that co-production needs to be carefully analysed, rather than simply assuming co-construction at all times. Furthermore, higher-level actions bring with them multiple levels of attention/awareness (Norris, 2004, 2006, 2009, 2011a). Thus *tiers of intersubjectivity* allows analysts interested in intersubjectivity to maintain the complexity of (inter)action (Norris, 2004, 2011a) and show social actors not just engaged in focused interaction, but rather show social actors with multiple levels of attention/awareness (Norris, 2004, 2006, 2009, 2011a) engaged in complex acts of co-production (Norris, 2004, 2006, 2011a) and with it, intersubjectivity. In chapters five and six, for example, I show tutors and students co-producing higher-level actions at different levels of their attention/awareness. Analyses of intersubjectivity that rely on spoken language, or an F-formation that supports a focused interaction, do not provide for the *mind* of the social actor, and the multiple levels of attention/awareness produced.

I would like to take this focus on the *mind* (Norris, 2004, 2011a, 2013b) of the social actor one step further. Higher-level actions provide an (inter)actional phenomenological expression of the mind of the social actor (Norris, 2004, 2006, 2011a). This approach provides the material environment with a 'crucial enactive and constitutive role' (Malafouris, 2015, p. 44) in the ongoing experience and cognition of social actors, captured in the mediated action. I would like to suggest here that there is some crucial correlation between what

are often termed *states of mind* (Hobson & Hobson, 2008), and *higher-level action* (Norris 2004, 2011a), that perhaps has not been explored as deeply as it deserves. Hobson and Hobson (2008) in their work with autistic children and intersubjectivity argue that:

‘...there needs to be a capacity to register the attitudes expressed through another person’s body in such a way that they can be experienced in relation to one’s own state...This natural propensity not only to respond to, but also to assume (in part) another person’s feelings, gives motivational impetus to what we have referred to as being moved by others.’

(Hobson & Hobson, 2008, p. 82)

If taken seriously, the notion of higher-level actions and levels of and attention/awareness (Norris, 2004, 2006, 2009, 2011a) can show social actors registering the higher-level actions produced in the attention/awareness of others. One method identified by Norris (2004) is the production of a semantic/pragmatic means, which demonstrates a shift in focus. I show an example of a semantic/pragmatic means in chapter six where the student Jackson responds to the tutor Kate’s shift in focus to the higher-level action of *tutoring* as she produces a marked in-breath (Figure 6.4). There is, however, more to it. I have shown through *tiers of material intersubjectivity*, and the *interactive substrate*, that the durable materiality produced by higher-level actions provides a material substrate for sharing the attention/awareness of

others. I argue the *interactive substrate* relates the higher-level actions produced by others, to those that social actors produce themselves. The attitudes people express through their bodies are mediated not just by the body, but also by the material environment. Social actors are, as Norris (2004, 2011a, 2013b) points out, part of the world. Thus those material features of the world that persist, produce with more durability the states of mind (captured in the higher-level action) of a social actor. Those material features of the environment that are important for social actors to 'register the attitudes expressed through the other persons body' (Hobson & Hobson, 2008, p. 82) are produced through higher-level actions (Norris, 2004, 2011a), and can be analysed through modal configurations (Norris, 2009, 2014, 2015b), and *tiers of intersubjectivity*. Aligning oneself to the materiality produced through the higher-level actions of another social actor through co-production, similarly aligns oneself to the mind of the social actor, and provides a methodological tool to examine how social actors experience (to some extent) the world of other social actors.

9.2 Research into tutoring: Defining knowledge

In this section, I would like to argue that defining knowledge as a mode, namely as a system of mediated action with regularities, will provide a unified approach to knowledge and preserve the inherent tension between social actor and mediational means. Defining knowledge as a system of mediated action that comes about through concrete lower-level actions that social actors take in the

world embeds explanatory capabilities that can be applied to knowledge communication.

In order to show how the explanatory capabilities of a system of mediated action can be applied to knowledge communication, I discuss my findings from the thesis and relate them to the literature (Alavi & Leidner, 2001; Drucker, 1989; Eppler, 2006; Kastberg, 2007, 2011; Ragab & Arisha, 2013; Zack, 1999) .

9.2.1 Knowledge as a system of mediated action

Authors at times treat knowledge as something people do (e.g. Eppler, 2006; Kastberg, 2007, 2011) and at other times as a relationship between data, information and knowledge (Ragab & Arisha, 2013). Further definitions focus on knowledge as an object to be captured, stored and managed (Alavi & Leidner, 2001). The variety of definitions for knowledge makes it difficult to examine knowledge communication, and indeed knowledge management, in a unified way. Zack (1999) points out the range of definitions, and suggests that for an organisation's purposes defining knowledge as object can be useful. I would like to suggest that defining knowledge as a system of mediated action provides a definition that unifies different approaches to knowledge, which will be even more useful to an organisation and other areas of knowledge communication. I argue that the extent to which knowledge operates through and with objects always needs to be combined with the contribution of social actors.

9.2.1.1 Explanatory capabilities of knowledge when defined as a system of mediated action

Norris (2013b) defines three explanatory capabilities of mode when defined as a system of mediated action. Here I apply the three explanatory capabilities that Norris (2013b) identifies for a system of mediated action to knowledge. I introduced the three explanatory capabilities as they relate to mode in chapter four; and here, I illustrate the usefulness of these concepts when applied to knowledge:

1. Knowledge as a system of mediated action defines knowledge as regularities residing on a continuum somewhere between the social actor(s) and the mediational means.
2. Knowledge as a system of mediated action embraces individual, sociocultural and historical characteristics.
3. With its regularities, knowledge as a system of mediated action is transferable to other concrete lower-level actions. i.e.: knowledge as a system of mediated action is not limited to the same type of actions.

(Adapted from Norris, 2013b, p. 165)

These explanatory capabilities address three issues in the literature regarding knowledge. These issues are: 1. The lack of clarity regarding defining knowledge as action, or knowledge as object; 2. The need for an empirically applicable definition of knowledge acquisition; 3. The heterogeneity and congruity of knowledge. I now address each of these issues, discussing how defining

knowledge as a system of mediated action may contribute to our understanding of knowledge communication.

Firstly, defining knowledge as a system of mediated action allows knowledge to be understood as a feature of objects *and* the environment *and* the social actor. Knowledge can therefore be investigated as regularities lying somewhere along a continuum from the social actor(s) to the mediational means. For example Zack (1999) discusses the success that McDonald's Restaurants had by carefully documenting their food production processes so they could expand their restaurants worldwide, while maintaining the same quality of product. Here he suggests knowledge can be usefully treated as an object to be managed. I would like to suggest that knowledge as a system of mediated action would place many of the regularities in the process of producing McDonald's Restaurant food within the mediational means, such as the layout of the kitchen, the machinery used, the pre-prepared ingredients and the training programs for staff. By doing so the required experience and skill of the social actor is relatively low and variations in output can be reduced. Therefore, defining knowledge as a system of mediated action makes it possible to treat a higher-level action, such as knowing how to make a burger, as a continuum between the social actors operating the kitchen, and the mediational means that make up the kitchen. Along this continuum knowledge regarding how to make a Big Mac, for example, is situated much more strongly towards the material aspects of the mediational means, rather than within the social actor. Thus, this approach provides a richer understanding of the inputs involved in a

McDonald's Restaurant, while still allowing for extensive management of knowledge in a material sense.

Drucker (1989) points out the shift to a knowledge economy represents a shift in value from the means of production (e.g. factories) to the knowledge worker (e.g. social actor's skills and experience). Defining knowledge as a system of mediated action allows this shift to be described as a shift of regularities from residing primarily in the mediational means, such as a McDonald's kitchen, to residing in the social actor, i.e. the knowledge worker. Therefore occupations that are not considered knowledge work can be characterised as occupations where knowledge resides more strongly in the regularities of the material mediational means used to produce the outcomes of the work. In contrast, for knowledge workers the regularities of knowledge as a system of mediated action reside more strongly in their historical body (Nishida, 1958; Scollon, 1998) and their cognitive mediational means (Wertsch, 1998). Indeed, Drucker (1989, p. 175) argues that for the knowledge worker 'the institution they work for is not primary; their knowledge, their craft is...their employer as a business is not too important to them'.

Knowledge defined as a system of mediated action also provides an empirically applicable notion regarding how knowledge is acquired, and in turn how acquiring knowledge influences a social actor's experience of the world. Boisot and Canals (2004) introduce the agent in the world model of knowledge. They define data as 'originating in discernible differences in physical states-of-the-world – that is, states describable in terms of space, time, and energy' and

information as ‘those significant regularities residing in the data that agents attempt to extract from it’ (Boisot & Canals, 2004, pp. 46-47). Knowledge contrives the ‘individual dispositions’ that make regularities in discernable data significant. The model is cyclical, and as agents develop their knowledge, in turn, different regularities in data become significant to them. As I point out in chapter three, it is not clear *how* different regularities in data become significant through developing knowledge. In addition, Boisot and Canals (2004) model does not incorporate a notion of mediation (Vygotsky, 1978), and therefore knowledge is treated primarily as internal to the agent, and developed through producing actions in the world. Thus, the model clearly defines the agent as separate from the world and acting upon the world.

While systems of mediated action is a theoretical notion, Norris developed the notion through empirical work using methodological tools (Norris, 2002, 2004, 2006, 2009, 2010, 2011a, 2011c, 2012a, 2012b, 2012c, 2012d, 2013a, 2013b, 2014b, 2014c, 2015a, 2015b). In chapter eight I used mode (Norris, 2013b) and multimodal (inter)action analysis to tease apart the differences in object use between the tutor Didi and the tutor Emma. I showed that the tutor Emma had not acquired a rich system of mediated action (mode) of *model figurines*, and therefore she was only able to produce the higher-level action of *playing* with these figurines. In contrast, the tutor Didi had acquired a rich system of mediated action (mode) of *anatomical models*, which she drew upon to produce the higher-level action of *determining the orientation of the brain*. Defining knowledge as a system of mediated action provides a theoretical

notion to explain the differences between the tutor Emma and the tutor Didi in terms of knowledge. I would like to suggest that using knowledge in this way allows us to refer to Emma as *not* knowing how to tutor with models, and Didi as knowing how to tutor with models. Furthermore, these explanations are based on the concrete actions that Didi and Emma have taken in the world with models in a range of settings, leading to each of them acquiring different systems of mediated action. Therefore each has acquired different knowledge regarding tutoring with models. Using the explanatory capabilities of the notion of systems of mediated action allows a rich description of Emma and Didi's knowledge:

1. Their knowledge resides somewhere along a continuum from themselves as social actors, to the mediational means they produce their higher-level actions with and through.
2. Their knowledge incorporates historical, individual and sociocultural aspects. For example, for Didi, aspects of her experiences using anatomical models with her teachers and lecturers are present in her tutoring.
3. They draw upon their knowledge to produce higher-level actions in tutoring with model figurines, or anatomical models, and as they do so, their knowledge simultaneously develops.

These examples from chapter eight show that defining knowledge as systems of mediated action embeds an empirical focus on understanding concrete

instances of social action. Norris argues that 'a social actor develops a system of mediated action...through real time actions taken in connection with and through the world and objects within' (Norris, 2013b, p. 157). In turn, she suggests that without a well-developed system of mediated action, social actors are limited in their ability to perceive difference in the world. This suggestion aligns somewhat with Boisot and Canals' (2004) model where the significant regularities that social actors extract from data are affected by developing knowledge. However, Boisot and Canals' (2004) notion of data is based on physical perceptual structures. They define data as discernable differences, and their notion of discernable is based on the acuity of a person's particular sensory systems. Using the example of smell, Norris (2013b) argues that social actors who have acquired different systems of mediated action experience the quality and depth of smell in different ways.

The difference in approaches appears subtle, but is important. Boisot and Canals' (2004) model suggests that within a physical range all social actors experience roughly the same discernable differences in the world, and then from these extract significant regularities. A systems of mediated action approach (Norris, 2013b) argues that without acquiring a well-developed system of mediated action, differences in the world are not discernable. Thus, systems of mediated action (Norris, 2013b) embed a sociocultural, historical, and an acquisition aspect into social actors experiences of the world. Pink (2011) similarly makes a strong argument against relying on Westernised notions of 'the five senses', and emphasises the sociocultural contribution to

experience. Pink (2011) argues that ‘the cultural categories represented in the modern western and other sensoria are only culturally constructed resources that we use to enable us to communicate about human sensory perception’ (Pink, 2011, p. 266). I would like to suggest that models of knowledge seeking to understand complex social interaction require a sociocultural, historical and acquisition aspect due to the ways in which experience is permeated by these aspects.

Overall, the primary difference between Boisot and Canals (2004) model, and systems of mediated action (Norris, 2013b) is where the social actor is positioned in relation to the world. Boisot and Canals (2004) position the social actor *apart* from the world, where systems of mediated action (Norris, 2013b) position social actors *as part* of the world. I would like to suggest that more work in knowledge communication applying a definition of knowledge as systems of mediated action may allow us to better discern the contribution to understanding knowledge that comes from positioning the social actor within the world. In this thesis I have used systems of mediated action (Norris, 2013b), to describe some of the differences in object use between the tutor Emma, and the tutor Didi. Mode, defined as a system of mediated action provides a theoretical basis to tease apart the differences in the way that Didi and Emma took up novel objects in tutoring, while maintaining the complexity of the social situation. Similarly, I suggest that defining knowledge as a system of mediated action may allow researches to explore the wide range of areas where knowledge communication is relevant, including decision making (Eppler, 2006),

innovation (Souto, 2014), sharing expertise (Kastberg, 2011) and coordinating teams (Jones & McKie, 2009).

The final aspect of knowledge that I would like to address with systems of mediated action is the heterogeneity and congruity of knowledge. Kastberg (2011) notes the importance of differences in knowledge to knowledge communication, arguing that some form of knowledge asymmetry is always present (Kastberg, 2011) and becomes communicatively salient through interaction. The individual, sociocultural and historical characteristics of knowledge as a system of mediated action contribute to describing the origin of knowledge asymmetries. I would like to suggest also that systems of mediated action describe the origin of knowledge *symmetries and asymmetries*. In chapter eight I analysed a moment of shared meaning produced between the tutor Didi and the student Olivia. Olivia and Didi produced this moment through concrete actions taken in the world, and they produced the meaning 'front of the brain'. Didi and Olivia have very different sociocultural histories, and Didi has much more experience interacting with anatomical models. This experience is the source of the knowledge asymmetry, and indeed the reason that Didi is able to tutor biology to Olivia. Over time, through many tutoring sessions, Didi and Olivia are able to develop more congruity in their systems of mediated action (Norris, 2013b).

Congruity and heterogeneity of knowledge can therefore be described as residing in the individual, sociocultural and historical differences and similarities of social actors. Bischof and Eppler (2011) suggest that 'organizations need to

pay particular attention to the clarity of conveyed knowledge in order not to create confusion, misunderstandings, or misapplication of knowledge' (p. 1455). Bischof and Eppler (2011) develop the CLEAR model, which defines characteristics of knowledge that may help 'knowledge transfer' The CLEAR model can be applied to knowledge repositories, and knowledge communication activities such as presentations to ensure that they achieve maximum clarity.

I would like to propose that Bischof and Eppler (2011) focus too strongly on the notion of knowledge as object, and neglect the importance of shared experiences for developing shared knowledge. Returning to the example of Didi and Olivia in chapter eight, the model brain may score more or less highly in terms of clarity in relation to knowledge about the brain. However, what is of most importance is what Didi and Olivia do with the brain *together*. Acting together with objects produces shared experiences, and therefore through acting together social actors acquire (to some extent) similar systems of mediated action (Norris, 2013b). Overemphasis on capturing knowledge in knowledge repositories represents a misdirection of resources. I suggest that taking a systems of mediated action (Norris, 2013b) approach to knowledge returns the balance, and does not prioritise knowledge as residing in objects, nor in social actors. Therefore, this richer definition of knowledge may lead to achieving more effective knowledge communication.

9.3 Conclusion: Discussion: Research into tutoring:

Exploring agency and intersubjectivity

In this chapter, I have considered my findings regarding agency and intersubjectivity in knowledge communication in light of existing research. First, I analysed some of the data from student and tutor interviews in order to critically engage with the literature. I showed that the perceptions students have of tutoring aligns with findings in the literature regarding the efficacy of tutoring (Anania, 1983; Burke, 1983; Chi, Roy, & Hausmann, 2008; Cohen, Kulik, & Kulik, 1982), and the reasons that people hire the services of tutors (Ireson & Rushforth, 2005). Then, I showed that tutor and student perceptions align with the metaphor of scaffolding (Rogoff & Wertsch, 1984; Wertsch, 1984; Wood et al., 1976, 1995; Wood & Wood, 1996). However I argued that the notion of primary agency goes beyond scaffolding, due to its multimodal nature, the notion of complex mediational means, and co-production.

Next, I examined the notion of primary agency more closely with regards to the sociocultural literature that engages with agency (Ahearn, 2000, 2001; Malafouris, 2008, 2013; Norris, 2005; Norris & Jones, 2005b; van Lier, 2008; Wertsch, Tulviste, & Hagstrom, 1993). I discussed how ownership has been related to agency to some extent (Lillis, 2013; Pierce et al., 2003), and argued my approach both aligns with, and extends this work. My finding of primary agency provides an empirical theoretical/methodological tool to further explore

acting with ownership over mediational means, and to explore the implications of acting with ownership.

Then, I related my theoretical/methodological tool of *tiers of intersubjectivity* to the literature (Duranti, 2010; Linell, 1998; Mortimer & Wertsch, 2003; Rommetveit, 1974, 1979b, 1986). I suggested that my approach to intersubjectivity addresses a gap in the literature that emerges from the focus on language as the primary mediator of intersubjectivity (Linell, 1998, 2009; Mortimer & Wertsch, 2003; Rommetveit, 1974, 1979b, 1986). My approach aligns with a focus on social actors acting as part of the world (Norris, 2004, 2011, 2013b; Duranti, 2010). The theoretical/methodological tool *tiers of intersubjectivity* extends these discussions by analysing intersubjectivity along a continuum that is grounded in materiality that is somewhat shared. I brought literature from psychology (Hobson & Hobson, 2008) into my discussion in an effort to begin to draw some connections between the notion of states of mind (Hobson & Hobson, 2008), and higher-level actions (Norris, 2004, 2011b). I argued that if levels of attention/awareness (Norris, 2004, 2006, 2011b), and the notion of social actors as part of the world (Norris, 2004, 2011b, 2013b) are to be taken seriously, then social actors aligning themselves materially with others represents sharing states of mind.

Lastly, I proposed defining knowledge as a system of mediated action in order to unify disparate, and at times conflicting, definitions of knowledge in the literature (Alavi & Leidner, 2001; Drucker, 1989; Eppler, 2006; Kastberg, 2007, 2011; Ragab & Arisha, 2013; Zack, 1999). I suggested that knowledge as a

system of mediated action addresses three issues that up until now have been difficult to address. These are: 1. The lack of clarity regarding defining knowledge as action, or knowledge as object; 2. The need for an empirically applicable definition of knowledge acquisition; 3. The heterogeneity *and* congruity of knowledge. Overall, I suggested that exploring knowledge from the perspective of social actors acting as part of the world might provide fruitful outcomes for improving the effectiveness of knowledge communication (Bischof & Eppler, 2011; Engberg, 2010; Eppler, 2006, 2007; Kastberg, 2007, 2010, 2011, 2014; Kastberg & Ditlevsen, 2011; Mengis & Eppler, 2008). In the next chapter I highlight the original contributions this thesis makes, comment on limitations, and then look towards the future.

10.0 Conclusion: Research into Tutoring: Exploring Agency and Intersubjectivity

In the previous chapter I explored my findings in light of existing research, positioning my work within the academic literature. In this chapter, I highlight the original contributions that the thesis makes to the field of knowledge communication (Bischof & Eppler, 2011; Engberg, 2010; Eppler, 2006, 2007, 2007; Kastberg, 2007, 2010, 2011, 2014; Kastberg & Ditlevsen, 2011; Mengis & Eppler, 2008) and multimodal (inter)action analysis (Norris, 2002, 2004, 2006, 2009, 2010, 2011a, 2011b, 2012a, 2012b, 2012c, 2012d, 2013a, 2013b, 2014a, 2014b, 2015a, 2015c). First I describe the two theoretical/methodological tools I developed to analyse agency in social action. Then, I discuss the theoretical/methodological tool I developed to analyse how social actors produce material intersubjectivity. After that I describe my findings regarding object use in tutoring, and discuss how the theoretical/methodological tools I developed facilitated these findings. Subsequently, I outline the limitations of the thesis, before considering future research directions. Lastly, I provide some concluding remarks to the thesis.

10.1 A multimodal approach to agency and intersubjectivity in knowledge communication

Agency and intersubjectivity are central notions in (inter)action (Norris, 2004, 2011a), and communication (Linell, 1998, 2009; Rommetveit, 1974). At the beginning of the thesis, I established a research gap, arguing that much of the research into agency (Ahearn, 2000, 2001; Lillis, 2013; Malafouris, 2008, 2013; Norris, 2005; Norris & Jones, 2005a; van Lier, 2008; Wertsch & Rupert, 1993; Wertsch, Tulviste, & Hagstrom, 1993) and intersubjectivity (Crossley, 1996; Duranti, 2010; Mortimer & Wertsch, 2003; Rommetveit, 1974, 1979a, 1979b, 1986; Schegloff, 1992; Sidnell, 2014; Zlatev, Racine, Sinha, & Itkonen, 2008) is difficult to apply empirically. Importantly, the work that is empirically applicable (Ahearn, 2001; Kendon, 1990, 1992; Mortimer & Wertsch, 2003; van Lier, 2008) prioritises the mode of language. Through my discussion of this research gap, I identified a need for theoretical/methodological tools for the study of agency and intersubjectivity, which go beyond a focus on language.

In chapter one, I justified my decision to utilise multimodal (inter)action analysis (Norris, 2002, 2004, 2006, 2009, 2010, 2011a, 2011b, 2012a, 2012b, 2012c, 2012d, 2013a, 2013b, 2014a, 2014b, 2015a, 2015c) for the following reasons: 1. multimodal (inter)action analysis embraces the notion of the social actor acting as part of the world through mediation; 2. multimodal (inter)action analysis offers a cognitive/psychological component; and 3. multimodal (inter)action analysis is a theoretical/methodological framework with strong methodological

tools, such as the modal density foreground-background continuum, which allows for the analysis of different levels of attention/awareness (Norris, 2004, 2006, 2009, 2011a).

10.2 An empirically applicable approach to agency

As noted above, there is a need for empirically applicable, theoretical/methodological tools for the analysis of agency. It is also important that these tools take a multimodal approach, since social actors produce many more actions beyond their use of language. In chapter one, I introduced my experience in business training, business coaching and tutor training, which established my interest in the notion of agency. Reviewing the literature (Ahearn, 2000, 2001; Lillis, 2013; Malafouris, 2008, 2013; Norris, 2005; Norris & Jones, 2005a; van Lier, 2008; Wertsch & Rupert, 1993; Wertsch et al., 1993), I showed that a sense control over one's actions goes beyond Wood, et al.'s (1976) notion of scaffolding, and is more appropriately captured in the notion of agency. Therefore, I posed two research questions regarding agency, which asked the following:

1. What does a multimodal analysis of research into tutoring as knowledge communication contribute to an understanding of agency?
2. What do levels of attention/awareness, and intersecting higher-level actions contribute to understanding agency in research into tutoring?

I collected data to answer these questions from nine one-to-one, in-home high school tutoring sessions using audio-video recording, participant observation, and follow-up interviews. My analysis included the triadic interactions between the researcher, the tutor and the student; and the dyadic interactions between the tutor and the student. Regarding my investigation of agency, I theorised that both the triadic and dyadic interactions in research into tutoring would be important. I addressed research questions one and two in analysis chapters five and six. In these chapters I developed two theoretical/methodological tools: 1. primary agency; and 2. handing (or taking on) primary agency.

In chapter five, I demonstrated that often one social actor expresses primary agency over a co-produced higher-level action. Primary agency is recognisable through an identification of ownership over the most relevant mediational means and thus can be applied to empirical data. In order to elucidate this finding I analysed three higher-level actions, and showed that a different social actor had primary agency over each of the actions. The three higher-level actions were: 1. The higher-level action of *conducting research*, 2. The higher-level action of *tutoring*; and 3. The higher-level action of *reading the text*.

I identified primary agency through first investigating the modal use (Norris, 2005, 2014) of each of the social actors co-producing these higher-level actions (Norris, 2004, 2011a). The modes social actors produced included spoken language (Chafe, 1994; Tannen, 1984), proxemics (Hall, 1959, 1966), posture (Dittman, 1987; Scheflen, 1964), gaze (Goodwin, 1981; Kendon, 1967), gesture

(McNeill, 1992, 2007; Kendon, 1990), object handling (Kozma, 2003) and layout (Hall, 1966; Kress & van Leeuwen, 2001).

I also examined the way that participants acted with and through the multiple cultural tools (Geenen, 2013, Norris, 2014; Scollon, 1998, 2001; Wertsch, 1998) that built an intricate part (Scollon, 1998, 2001; Wertsch, 1998) of the co-produced mediated higher-level actions (Norris, 2004, 2006, 2011a). Through this analysis, I showed that at times social actors express ownership (Langan-Fox et al., 2007; Pierce et al., 2003) over the most relevant mediational means for a higher-level action. I argued that since mediational means are created through action (Geenen, 2013; Norris, 2004, 2011; Scollon, 1998; Wertsch, 1998), ownership of mediational means displays primary agency over the higher-level action which is produced.

In summary, primary agency is analytically determined through an analysis of the modal use of social actors (Norris, 2005, 2014), and the multiple cultural tools (Geenen, 2013, Norris, 2014; Scollon, 1998, 2001; Wertsch, 1998) that build an intricate part (Scollon, 1998, 2001; Wertsch, 1998) of a co-produced higher-level action (Norris, 2004, 2006, 2011a). Through this analysis, the social actor with ownership over the most relevant mediational means (Geenen, 2013, Norris, 2014; Scollon, 1998, 2001; Wertsch, 1998) for the co-produced higher-level action can be identified, and attributed with primary agency.

In chapter six I developed the theoretical/methodological tool of handing primary agency from one social actor to another. I expanded on my analysis

from chapter five to show that at times social actors hand over primary agency to others. However, this notion of handing is complex, as social actors taking up primary agency produce a different higher-level action. Handing primary agency therefore provides a tool for teasing apart how social actors encourage, or prepare the conditions for (Molseed, 1986; de Saint Georges, 2005) others to produce a higher-level action (Norris, 2004, 2011a) with particular mediational means (Geenen, 2013, Norris, 2014; Scollon, 1998, 2001; Wertsch, 1998).

I showed that social actors hand over primary agency by handing over ownership (Langan-Fox et al., 2007; Pierce et al., 2003) over the most relevant mediational means (Geenen, 2013, Norris, 2014; Scollon, 1998, 2001; Wertsch, 1998) for a particular higher-level action (Norris, 2004, 2011a). However, as mentioned above, social actors do not hand over primary agency over the action they are currently producing. Instead, they hand over primary agency over a different higher-level action. When social actors hand primary agency over a smaller scale higher-level action (Norris, 2015), they first prepare the conditions for that higher-level action. Preparing the conditions includes providing relevant mediational means for the smaller scale higher-level action. In my data social actors provided material and cognitive mediational means (Wertsch, 1998), and in one instance redirected a social actor's attention/awareness (Norris, 2004, 2006 2011a) to the appropriate mediational means. Ownership over these mediational means is then handed over by altering proxemic relationships (Hall, 1959, 1966), shifting posture (Dittman, 1987; Schefflen, 1964), object handling (Langan-Fox et al., 2007; Norris, 2004;

Pierce et al., 2003), and through spoken language (Chafe, 1994; Tannen, 1984).

It is, of course, likely that modes beyond those identified in my data are used to hand over ownership over mediational means in other settings and situations.

The notion of handing primary agency becomes the theoretical/methodological tool of handing (or taking up) primary agency, when linked to Norris's (2004, 2011a) work identifying semantic/pragmatic means. Use of handing (or taking up) primary agency involves analysing social actors handing over, or taking up, ownership over mediational means, coupled with the production of semantic/pragmatic means (Norris, 2004, 2011a). Handing primary agency must be linked to semantic/pragmatic means because a social actor, when taking on primary agency, shifts their attention/awareness to focus on the new higher-level action.

Taken together, both primary agency, and handing (or taking up) primary agency make an original contribution to multimodal (inter)action analysis (Norris, 2002, 2004, 2006, 2009, 2010, 2011a, 2011b, 2012a, 2012b, 2012c, 2012d, 2013a, 2013b, 2014a, 2014b, 2015a, 2015c), and to the field of knowledge communication (Bischof & Eppler, 2011; Engberg, 2010; Eppler, 2006, 2007, 2007; Kastberg, 2007, 2010, 2011, 2014; Kastberg & Ditlevsen, 2011; Mengis & Eppler, 2008). In chapter eight I demonstrated the utility of these theoretical/methodological tools in an analysis of object use in tutoring. I would like to suggest that the empirical applicability of the notions of primary agency, and handing (or taking up) primary agency are also likely to be much broader than tutoring, due to the wide ranging utility of multimodal

(inter)action analysis (Adams, 2015; Geenen, 2013; Kjær, 2014; Krystallidou, 2014; Kuśmierczyk, 2013; Makboon, 2013; White, 2011, 2012). In the next section I discuss my contributions in a more theoretical light, considering the implications of producing higher-level actions with primary agency.

10.2.1 The implications of producing higher-level actions with primary agency

I introduced the notion of primary agency to describe a difference between social actors engaged in co-producing a higher-level action. As Geenen (2013) building on Norris (2004, 2011a, 2013b) points out, objects become mediational means through action. In addition, mediational means are always multiple (Geenen, 2013; Norris, 2004, 2011a, 2013b; Scollon, 1998; Wertsch, 1998), and Geenen (2013) suggests focusing on the development of complex mediational means. I would like to propose that the social actor with primary agency determines in what way objects become mediational means, and in what way objects build an intricate part (Scollon, 1998, 2001; Wertsch, 1998) of the co-produced mediated higher-level actions (Norris, 2004, 2006, 2011a). Thus, primary agency has implications for *how* a particular higher-level action is produced.

When the social actor with primary agency is taken to have some influence over the 'shape' or 'form' of a particular higher-level action (Norris, 2004, 2011a), strong links are built with notions of intersubjectivity in the literature.

Rommetveit (1979a), when discussing an architecture of intersubjectivity,

suggests that the ‘speaking “I” has the privilege of pointing out the objects, events and states of affairs to enter the field of shared attention’ (p. 95). For example, the speaker determines what ‘this’, ‘that’, and ‘there’ refer to. However, based on my analyses in this thesis, I would like to propose that it is *the social actor with primary agency* who has this type of privilege. The social actor with primary agency has influence over what constitutes the higher-level action that they have primary agency over, in a way that social actors without primary agency do not.

In chapter nine, I proposed defining knowledge as a system of mediated action to unify disparate definitions of knowledge in the literature. I argued that acting with primary agency requires social actors to draw upon their systems of mediated action, in a way that is different from acting without primary agency. Certainly, this point requires more exploration, however the findings in this thesis suggest this would be a fruitful area for further research. Building on Eppler’s (2006a) measure of successful knowledge communication as the reconstruction of an insight, experience or skill, I suggested that successful knowledge communication may rely on acting *with* primary agency, for precisely these reasons, i.e. a social actor acting with primary agency draws upon their own systems of mediated action and is thus likely to be able to reproduce the higher-level action in another setting, due to the transferability of systems of mediated action. In contrast, a social actor producing a higher-level action without primary agency relies more on the directions of another to determine the form of the higher-level action. Therefore, the extent to which

this social actor who only produces a higher-level action without primary agency, could reproduce that higher-level action in other settings would be unclear.

10.3 A multimodal concept of intersubjectivity

Intersubjectivity is an important notion for knowledge communication (Crossley, 1996; Duranti, 2010; Mortimer & Wertsch, 2003; Rommetveit, 1974, 1979a, 1979b, 1986; Schegloff, 1992; Sidnell, 2014; Zlatev et al., 2008), and wider studies of interaction, because it refers to how social actors achieve moments of shared understanding (Duranti, 2010; Linell, 1992; Rommetveit, 1974, 1979a, 1979b). In chapter three I established a research gap regarding intersubjectivity, since intersubjectivity is often focused on as primarily language based (Mortimer & Wertsch, 2003; Rommetveit, 1974, 1979b, 1986). While Kendon's F-formation (Kendon, 1990, 1992), considers posture and body position, he focuses on maintaining a 'frame' (Goffman, 1974). Frame analysis as an approach emerged from practice theory, and somewhat separates the agent from the world (Reckwitz, 2002). In contrast, I take an approach here that theoretically positions the social actor acting as part of the world (Merleau-Ponty, 1962; Norris, 2004, 2011a, 2013b). Furthermore, the F-formation indicates an ongoing orientation that supports continued talk (Kendon, 1990, 1992), and thus, prioritises talk. Therefore, I posed the following research question, which asked:

1. Can a multimodal analysis of research into tutoring broaden current understandings of intersubjectivity?

I addressed this question in chapter seven, where I showed how students establish material intersubjectivity with their tutor. I analysed interactions from the beginning of two tutoring sessions, focusing on the varying materialities social actors produce through higher-level actions (Norris, 2004, 2011a). I theorised that social actors in interaction first establish what I have termed stable and adjustable intersubjectivity, before they proceed with more fleeting intersubjectivity. Using the notion of modal configuration (Norris, 2009, 2014, 2015) I showed that students produce three types of material intersubjectivity, along a scale from durable, to fleeting. In order to illustrate these notions and make them applicable for further research, I developed the methodological tool that I call *tiers of material intersubjectivity*, which directly links to the notion of modal configuration (Norris, 2009, 2014, 2015a). First, I used modal configuration to determine the lower-level actions that (mutually) constitute a higher-level action (Norris, 2009, 2014, 2015a). From these lower-level actions the *tiers of material intersubjectivity* can be determined, based on the materiality produced by lower-level actions.

Using this tool, I showed that higher-level actions can be usefully delineated into three tiers of material intersubjectivity. These tiers are: *durable intersubjectivity*, *adjustable intersubjectivity*, and *fleeting intersubjectivity*. The durable and adjustable tiers establish what I call an *interactive substrate* that

permeates all other higher-level actions that are attended to simultaneously by the social actor(s). The *interactive substrate* persists until social actors make some substantial change to the materiality in the environment. Also, the *interactive substrate* establishes a basis for social actors to produce more fleeting intersubjectivity.

The notion of intersubjectivity is central to knowledge communication (Bischof & Eppler, 2011; Engberg, 2010; Eppler, 2006, 2007, 2007; Kastberg, 2007, 2010, 2011, 2014; Kastberg & Ditlevsen, 2011; Mengis & Eppler, 2008), and thus the notion of material intersubjectivity can be applied in many situations where knowledge is communicated. This might include, for example, staff meetings, performance reviews and informal workplace interactions. Researchers interested in knowledge communication can analyse modal configurations (Norris, 2009, 2014b, 2015c) and apply *tiers of material intersubjectivity* as a methodological tool to examine firstly how an *interactive substrate* is developed, and beyond that, how more refined fleeting moments of intersubjectivity are produced.

10.4 A richer understanding of objects in tutoring

I introduced novel objects into tutoring sessions to investigate the extent to which they would be taken up, and how they might be embedded within experienced tutors' systems of mediated action (Norris, 2013b). In chapter three I reviewed a study by Kozma's (2003) where he explored the differences

between experts and novices. Kozma showed that experts moved freely between different forms of representation, e.g. from diagram to model, while novices focused on the material features of a single representation. Kozma's (2003) findings support Geenen's (2013) argument that experts produce different complex mediational means from novices. Thus, I theorised that introducing novel objects would require tutors and students to establish some shared meaning, due to the more developed system of mediated action (Norris, 2013) acquired by the tutor when compared with the student.

Introducing novel objects relates to research question four, which asks:

4. How do tutors and students use, or not use, objects provided by the researcher in their tutoring sessions as part of knowledge communication?

I addressed this question in chapter eight, where I used the notions of primary agency and material intersubjectivity to analyse three excerpts where tutors and students used objects in tutoring. I showed that taking up objects for knowledge communication is complex. One tutor, Emma, was not able to produce the higher-level action of *tutoring* using model figures, and in subsequent tutoring sessions she did not introduce the novel objects into her tutoring at all. As part of my research design, Emma was involved in choosing which objects I provided for her sessions. Yet, despite her involvement, she did not use the objects for tutoring. I suggested that Emma had not acquired a rich system of mediated action, or the mode of *model figures*, to the extent that she

could mediate higher-level actions other than *playing*, with or through model objects.

Another tutor, Didi, used the model brain extensively throughout her tutoring sessions. I argue that tutors must have already acquired a system of mediated action to take on novel objects in tutoring. This system of mediated action must be rich enough to mediate educational activities with objects. In Didi's case, I suggested that her extensive experience learning with anatomical models resulted in a rich system of mediated action, which was transferable the higher-level action of *tutoring*. These findings are useful for knowledge communication (Bischof & Eppler, 2011; Engberg, 2010; Eppler, 2006, 2007, 2007; Kastberg, 2007, 2010, 2011, 2014; Kastberg & Ditlevsen, 2011; Mengis & Eppler, 2008) in general, and for tutoring, when considering how objects are treated in communication and (inter)action. There is a growing body of multimodal research into the introduction of iPads, and other devices into educational settings (Adams, 2013; Crescenzi, Jewitt, & Price, 2014; Marshall, 2007). One important consideration for this type of research is the notion of mediation, and systems of mediated action (Norris, 2013b). I have shown in this thesis that the extent to which social actors take up objects as mediational means relies on the object *and* the social actor as an intricate part of a higher-level action.

10.5 Limitations

The first limitation I experienced in this study came about due to my camera positioning. It was at times impossible to tell what participants were attending to as they interacted with papers and objects. There was some possibility to take still photos of their papers after the session, but this proved difficult to manage in practice. At times also participants modified resources throughout the session and only the final version was available for analysis. As Luff and Heath (2012) point out, in these cases it was possible to tell that the participants were collaborating, but I was missing a level of detail that may have been salient analytically.

In chapters five and six, I introduced the notion of primary agency and handing primary agency. While my data show that primary agency is a relatively stable concept within each particular higher-level action, I only examined primary agency within research and tutoring sessions. Based on the wide application of multimodal (inter)action analysis (Geenen, 2013; Kjær, 2014; Krystallidou, 2014; Kuśmierczyk, 2013; Makboon, 2013; Norris, 2002, 2004, 2006, 2009, 2010, 2011a, 2011b, 2012a, 2012b, 2012c, 2012d, 2013a, 2013b, 2014a, 2014b, 2015a, 2015c; Pirini, 2013, 2014; White, 2011, 2012), and the coherence between the theoretical/methodological tools I developed in this thesis, the tools are likely to be applicable in other contexts. However, the notion of primary agency needs to be tested in other settings and situations, across different scales of higher-level action (Norris, 2015a), to determine how robust

it is, and to further develop an understanding of how social actors produce actions where they have primary agency.

In chapter seven, I theorised that social actors establish different levels of intersubjectivity, based on the material durability of their actions. I developed the methodological tool *tiers of intersubjectivity* based on modal configurations of higher-level actions. While I believe that these concepts are useful for many different types of interaction, I only examined tutoring sessions and therefore, these concepts need to be tested in other situations, especially those where other durable material configurations are present and possible.

In chapter eight I considered how tutors and students interacted with novel objects in tutoring. While I have some knowledge of the tutors' backgrounds, I can only make some suggestions regarding their experience with objects as educational tools. In addition it is possible that the subjects the tutors worked with (English and biology) were more or less suited to object use. Thus, further exploration of object use in tutoring, applying the theoretical/methodological tools of primary agency, handing (or taking up) primary agency, and tiers of intersubjectivity is required to provide more insight into object use in tutoring.

10.6 Future directions

In this thesis I have developed three empirically applicable theoretical/methodological tools, grounded in multimodal (inter)action analysis (Norris, 2004, 2006, 2009, 2012c, 2013a, 2013b, 2015a, 2015b, 2015c). I would

like to explore the notion of primary agency further, in educational and non-educational contexts. I have suggested that primary agency is related to metacognition, and particular mindsets that are beneficial to learning. However more research is required to explicitly link primary agency to developing metacognition, and particular mindsets. The potential is great, as while there is much interest in concepts such as a growth mindset (Dweck, 2007) and metacognition (Livingston, 2003), until now there have been no tools available to empirically assess the contribution of agency to action *as it is produced*.

Additionally, primary agency is applicable in workplaces, and positioning this thesis within knowledge communication (Bischof & Eppler, 2011; Engberg, 2010; Eppler, 2006, 2007, 2007; Kastberg, 2007, 2010, 2011, 2014; Kastberg & Ditlevsen, 2011; Mengis & Eppler, 2008) may contribute to researchers applying primary agency in organisational settings. The definition of knowledge as a system of mediated action has potential to broaden the understanding of where knowledge resides in organisations, and therefore how knowledge can be strategically managed. While the knowledge communication literature represents a shift away from treating knowledge as an object to be managed, much of the work in knowledge management and knowledge communication is still highly conceptual and does not rely on empirical methods (Serenko et al., 2010).

10.7 Concluding remarks: Research into tutoring: Exploring agency and intersubjectivity

This thesis is based on the assertion that actions are produced multimodally. In practice, this refers to an intricate relationship between movements of the body, internal (psychological) aspects of the social actor, and material features of the environment (Norris, 2004, 2011a, 2013b). A central notion underpinning this thesis has been the notion of social actors acting as part of the world (Merleau-Ponty, 1962; Norris, 2013b). Through this investigation I have teased apart the cognitive, sociocultural and material contributions to action and experience (Norris, 2004, 2011a, 2013b; Scollon, 1998; Vygotsky, 1978; Wertsch, 1998). I have begun to explore the cognitive aspect of multimodal (inter)action analysis (Norris, 2004, 2011a, 2013b) more deeply, while maintaining a steadfast commitment to the notion of mediation (Norris, 2004, 2011a; Norris & Jones, 2005b; Scollon, 1998, 2001; Wertsch, 1994, 1998) due to its utility in maintaining the complexity that social (inter)action exhibits.

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Appendix A: Probability lesson plan

Topic	Group	Date	Duration
<p>Learning outcomes: Discuss the probabilities behind the Gameshow problem, and present an argument for whether you should switch doors, or not</p> <p>Who for: Student as part of research project</p> <p>Where: Student's home</p> <p>Key concepts/ideas/terminology: Probability, Odds,</p> <p>Resources and handouts: Gameshow model, trials sheet, lesson plan</p>			

Tutor activity (what will I do)	Learning task (what will the students do)	Rationale	Time	Resources
Introduce yourself and a brief overview of the session			3 min	
Introduce the gameshow problem, and ask the student what they should do	The student will decide whether to change or stay	Draw on the student's intuitive response to the problem	5 min	Pens, paper, gameshow model
Discuss the logic behind changing from one door to the other. Check for student understanding			5 min	
Use pen and paper, and the trial sheet to demonstrate the probability of changing. See what different ways you can describe the logic of the problem			5 min	
Move on to extended problems if you have time and the student has a strong enough understanding of the initial problem				

Appendix C: Probability questions

Monty Hall, Monty Fall, Monty Crawl

Jeffrey S. Rosenthal

(June, 2005; appeared in *Math Horizons*, September 2008, pages 5–7.)

(Dr. Rosenthal is a professor in the Department of Statistics at the University of Toronto. His book “Struck by Lightning: The Curious World of Probabilities” is being published by HarperCollins Canada.)

1 Introduction

In 1990, vos Savant [3] introduced the infamous *Monty Hall problem*. Her asserted answer set off a storm of controversy in which she received thousands of letters [4]. Numerous professional mathematicians and others insisted that she was wrong, some using rather strong language (“you are utterly incorrect”; “I am in shock”; “you are the goat”). Vos Savant had the last laugh, when she called upon “math classes all across the country” to estimate the probabilities using pennies and paper cups, and they reported with astonishment that vos Savant was correct [4].

Despite all the publicity, most people have at best a vague understanding of why vos Savant’s answer is correct, and the extent to which it does or does not also apply to variants of the problem. In this paper, we discuss the Proportionality Principle, which allows this and many related problems to be solved easily and confidently.

2 The Monty Hall Problem and Variants

The original Monty Hall problem may be summarised as follows:

Monty Hall Problem: A car is equally likely to be behind any one of three doors. You select one of the three doors (say, Door #1). The host then reveals one non-selected door (say, Door #3) which does *not* contain the car. At this point, you choose whether to stick with your original choice (i.e. Door #1), or switch to the remaining door (i.e. Door #2). What are the probabilities that you will win the car if you stick, versus if you switch?

Most people believe, upon first hearing this problem, that the car is equally likely to be behind either of the two unopened doors, so the probability of winning is $1/2$ regardless of

whether you stick or switch. However, in fact the probabilities of winning are $1/3$ if you stick, and $2/3$ if you switch [3]. This fact is often justified as follows:

Shaky Solution: When you first selected a door, you had a $1/3$ chance of being correct. You *knew* the host was going to open some other door which did not contain the car, so that doesn't change this probability. Hence, when all is said and done, there is a $1/3$ chance that your original selection was correct, and hence a $1/3$ chance that you will win by sticking. The remaining probability, $2/3$, is the chance you will win by switching.

This solution is actually correct, but I consider it "shaky" because it fails for slight variants of the problem. For example, consider the following:

Monty Fall Problem: In this variant, once you have selected one of the three doors, the host slips on a banana peel and *accidentally* pushes open another door, which just *happens* not to contain the car. *Now* what are the probabilities that you will win the car if you stick with your original selection, versus if you switch to the remaining door?

In this case, it is still true that originally there was just a $1/3$ chance that your original selection was correct. And yet, in the Monty Fall problem, the probabilities of winning if you stick or switch are both $1/2$, not $1/3$ and $2/3$. Why the difference? Why doesn't the Shaky Solution apply equally well to the Monty Fall problem?

Another variant is as follows:

Monty Crawl Problem: As in the original problem, once you have selected one of the three doors, the host then reveals one non-selected door which does not contain the car. However, the host is very tired, and *crawls* from his position (near Door #1) to the door he is to open. In particular, if he has a choice of doors to open (i.e., if your original selection happened to be correct), then he opens the *smallest number* available door. (For example, if you selected Door #1 and the car was indeed behind Door #1, then the host would always open Door #2, never Door #3.) What are the probabilities that you will win the car if you stick versus if you switch?

This Monty Crawl problem seems very similar to the original Monty Hall problem; the only difference is the host's actions when he has a *choice* of which door to open. However, the answer now is that if you see the host open the higher-numbered unselected door, then your probability of winning is 0% if you stick, and 100% if you switch. On the other hand, if the host opens the lower-numbered unselected door, then your probability of winning is 50% whether you stick or switch. Why these different probabilities? Why does the Shaky Solution not apply in this case?

3 The Proportionality Principle

To deal with these and other problems, we introduce a simple rule (see e.g. [2]; a mathematical discussion is presented in the Appendix):

The Proportionality Principle: If various alternatives are equally likely, and then some event is observed, the updated probabilities for the alternatives are proportional to the probabilities that the observed event *would* have occurred under those alternatives.

Consider some examples:

Sister in the Shower: ([2]) Either Alice or Betty is equally likely to be in the shower. Then you hear the showerer *singing*. You know that Alice always sings in the shower, while Betty only sings $1/4$ of the time. What is the probability that Alice is in the shower?

Solution. By the Proportionality Principle, since Alice is four times as likely to sing as Betty, therefore the showerer is four times as likely to be Alice as Betty. The probabilities must add up to 1, so this means that the probability is $4/5$ that Alice is in the shower, and $1/5$ that Betty is.

Nebulous Neighbours: Your new neighbours have two children of unknown gender. From older to younger, they are equally likely to be girl-girl, girl-boy, boy-girl, or boy-boy. One day you catch a glimpse of a child through their window, and you see that it is a girl. What is the probability that their other child is also a girl?

Solution. The probabilities that a glimpsed child will be a girl for each of the four possibilities (girl-girl, girl-boy, boy-girl, and boy-boy) are respectively 1, $1/2$, $1/2$, and 0. Since the probabilities must add to 1, the probabilities of these four possibilities are respectively $1/2$, $1/4$, $1/4$, and 0. Hence, the probability is $1/2$ that the other child is also a girl.

Three-Card Thriller: (e.g. [2]) A friend has three cards: one red on both sides, one black on both sides, and one red on one side and black on the other. She mixes them up in a bag, draws one at random, and places it on the table with a red side showing. What is the probability that the other side is also red?

Solution. The probability that a randomly-chosen side will be red for each of three possible cards (red-red, black-black, and red-black) are respectively 1, 0, and $1/2$. So, the updated probabilities for these three possible cards must be $2/3$, 0, and $1/3$, respectively. That is, the probability is $2/3$ that the card's other side is also red. (If you're not convinced, then consider that your friend chose one of the six possible card *sides*. Three of those sides are red, and two of the three also have a red side opposite.)

Die-controlled Coin: You roll a single six-sided die, and then flip a coin the number of times showing on the die. The coin comes up heads every time. What are the probabilities that the die showed 1, 2, 3, 4, 5, and 6, respectively?

Solution. The probabilities that the coin came up heads every time, if the die showed 1, 2, 3, 4, 5, and 6, are respectively $1/2$, $1/4$, $1/8$, $1/16$, $1/32$, and $1/64$. The probabilities for what the die showed are therefore proportional to this, namely $32/63$, $16/63$, $8/63$, $4/63$, $2/63$, and $1/63$.

4 Monty Hall Revisited

The Proportionality Principle makes the various Monty Hall variants easy. However, first a clarification is required. The original Monty Hall problem implicitly makes an **additional assumption**: if the host has a choice of which door to open (i.e., if your original selection was correct), then he is equally likely to open either non-selected door. This assumption, callously ignored by the Shaky Solution, is in fact crucial to the conclusion (as the Monty Crawl problem illustrates).

With this additional assumption, the original Monty Hall problem is solved as follows. Originally the car was equally likely to be behind Door #1 or #2 or #3, and you selected Door #1 (say). The probabilities of the host then choosing to open Door #3, when the car is actually behind Door #1, Door #2, and Door #3, are respectively $1/2$, 1, and 0. Hence, the updated probabilities of the car being behind each of the three doors are respectively $1/3$, $2/3$, and 0. That is, your chance of winning the car is $1/3$ if you stick with Door #1, and $2/3$ if you switch to Door #2.

In the Monty Fall problem, suppose you select Door #1, and the host then falls against Door #3. The probabilities that Door #3 happens not to contain a car, if the car is behind Door #1, #2, and #3, are respectively 1, 1, and 0. Hence, the probabilities that the car is actually behind each of these three doors are respectively $1/2$, $1/2$, and 0. So, your probability of winning is the same whether you stick or switch.

In the Monty Crawl problem, suppose again that you select Door #1. The probabilities that the host would choose to open Door #3, if the car were behind Door #1, #2, and #3, are respectively 0, 1, and 0. Hence, if the host opens Door #3, then it is certain that the car is actually behind Door #2. On the other hand, the probabilities that the host would choose to open Door #2 are respectively 1, 0, and 1. Hence, if the host opens Door #2, the probabilities are now $1/2$ each that the car is behind Door #1 and Door #3.

Finally, here is a generalisation:

Monty Small Problem: In this variant, the host is only *somewhat* tired. If he has a choice of doors to open, then he has a small probability p of opening the *largest number* available door, otherwise (with probability $1-p$) he opens the *smallest number* available door. What is the probability that you will win the car if you then switch to the third door? (The case $p = 1/2$ is the original problem, while $p = 0$ is Monty Crawl.)

In this case, if you select Door #1, the probabilities that the host will open Door #3 are respectively p , 1 , and 0 . Hence, in this case, the probability of winning if you switch is $1/(1+p)$. [Exercise: If the host had instead opened Door #2, this probability would instead be $1/(2-p)$.]

5 Appendix: Mathematical Discussion

In mathematical terms, the Proportionality Principle says the following: If $\mathbf{P}(A_1) = \mathbf{P}(A_2) = \dots = \mathbf{P}(A_n) > 0$, and $\mathbf{P}(B) > 0$, then

$$\mathbf{P}(A_i | B) = K \mathbf{P}(B | A_i),$$

where $K > 0$ does not depend on i .

This equation is essentially a re-statement of Bayes' Theorem (e.g. [1], p. 21). Indeed,

$$\mathbf{P}(A_i | B) = \frac{\mathbf{P}(A_i \cap B)}{\mathbf{P}(B)} = \frac{\mathbf{P}(A_i) \mathbf{P}(B | A_i)}{\mathbf{P}(B)} = K \mathbf{P}(B | A_i),$$

where $K = \mathbf{P}(A_i) / \mathbf{P}(B)$, which does not depend on i since $\mathbf{P}(A_1) = \mathbf{P}(A_2) = \dots = \mathbf{P}(A_n)$.

References

- [1] Michael J. Evans and Jeffrey S. Rosenthal, *Probability and Statistics: The Science of Uncertainty*. W.H. Freeman, New York, 2003.
- [2] Jeffrey S. Rosenthal, *Struck by Lightning: The Curious World of Probabilities*. Harper-Collins Canada, 2005.
- [3] Marilyn vos Savant. *Ask Marilyn* column. Parade Magazine: Sept. 9, 1990, p. 22.
- [4] Marilyn vos Savant. *Ask Marilyn* columns. Parade Magazine: Dec. 2, 1990, p. 26; Feb. 7, 1991, p. 12; and July 7, 1991, pp. 28–29.

Appendix D: Friend by Hone Tuwhare

Friend,
Do you remember
that wild stretch of land
with the lone tree guarding the point
from the sharp-tongued sea?

The boat we built out of branches
wrenched from the tree, is dead wood now.
The air that was thick with the whir of
toetoe spears succumbs at last to the
grey gull's wheel.

Oyster-studded roots
of the mangrove yield none finer feast
of silver-bellied eels, and sea-snails
cooked in a rusty can.

Allow me
To mend the broken ends
of shared days:
but I wanted to say
that the tree we climbed
that gave food and drink
to youthful dreams, is no more.
Pursed to the lips her fine-edged
leaves made whistle—now stamp
no silken tracery on the cracked
clay floor.

Friend,
in this drear
dreamless time I clasp
your hand if only for reassurance
that all our jewelled fantasies were
real and wore splendid rags.

Perhaps the tree
will strike fresh roots again:
give soothing shade to a hurt and
troubled world.

Appendix E: Research information sheet

25 February 2014

page 1 of 3

Appendix A

Student participant information sheet



Date Information Sheet Produced:

6 August 2013

Project Title

Communicating knowledge: Mediation in high school tutoring

An Invitation

Hi, my name is Sigrid Norris and I am an Associate Professor at AUT University. One of the students I supervise, Jesse Pirini, is doing a research project that looks at different ways of learning, and how these affect the ways that students talk about what they have learned. Jesse is interested in understanding *how* you learn about things. Jesse is also the Director and Head Tutor at Pencilcase Tutoring.

I'd like to invite you to participate in this research as a student receiving tutoring. You can find out more information below about what this involves. It will take about one to one and a half hours of your time, and will involve you having a one-to-one tutoring session about a specific topic. It's totally up to you if you want to be involved or not, and whether you choose to participate or not will not advantage or disadvantage you in any way.

What is the purpose of this research?

Jesse is doing this research to understand more about how people learn to do things. This includes learning in school, but is also relevant to how people learn in a more general sense. He'll collect data during 2013, and spend 2014 analysing it. In the end he will have written a PhD thesis, and published journal articles and book chapters. He might also do presentations about what he's learned at conferences and to other academics.

How was I identified and why am I being invited to participate in this research?

You've been asked to participate because you are getting tutoring with Pencilcase Tutoring, or you were referred by a friend or colleague involved in the research. The subjects that Jesse is looking at are all at L2 or L3 for NCEA and include maths, English, physics, biology and chemistry. We are recruiting 20 students in total to participate.

What will happen in this research?

If you participate in the research you will have a 45-minute tutoring session with a tutor focussing on maths, English, physics, biology or chemistry. This will all happen in your own home, where you normally have your tutoring sessions.

Two weeks later Jesse will give you a call for about 10 minutes talking about how you found the tutoring session.

Jesse won't be the person giving you the tutoring, but he will be present. The tutor will be an experienced high school tutor. They might be the tutor you currently work with, or a similarly experienced tutor.

Jesse will videotape the tutoring session, and the record the phone discussion two weeks later. He also might collect any notes you or the tutor make or photograph them, and he may take notes during the tutoring session. He'll only use this data for the specific purposes of this research project, and if you want

This version was last edited on 23 April 2013

to participate you can choose to have your face blurred in the videos, and use a pseudonym. You can also withdraw any time up until data collection is completed. In that case Jesse will delete or destroy any data that you are involved in.

What are the discomforts and risks and how will these discomforts and risks be alleviated?

You should be aware that you might feel a little uncomfortable around the video camera.

However, the camera is quite small, and the tutor and Jesse will make sure you are comfortable. Of course, if you want to stop at any time you can. You may also like to ask for the video camera to be stopped and restarted again later, or you might like for certain sections to be deleted. That is also fine.

Also your parents or caregivers are welcome to be present during the tutoring session, and follow up phone call.

What are the benefits?

You will be likely to learn something new during this research about the topic that you get tutoring for. You'll also learn a bit about how you learn, and Jesse will give you a copy of his research findings.

Once Jesse has written up the findings satisfactorily he'll receive a PhD. He'll also publish what he finds out. This research will form part of the worldwide knowledge about learning, and social interaction.

How will my privacy be protected?

To protect your privacy you can choose to use a pseudonym, and to have your face blurred in publications. Screenshots of short sections of the tutoring sessions will be used in publications, and it's here that you might like to have your face blurred. Also, Jesse may share short video clips at conferences and during presentations, here also you might like to have your face blurred.

When Jesse refers to you in the research he can use a pseudonym so that you can't be identified. This keeps your identity confidential.

What are the costs of participating in this research?

Your time is the primary cost for you in this research. The tutoring session, and follow up discussion will take from between 60 to 90 minutes of your time in total.

There is no charge for the tutoring session.

What opportunity do I have to consider this invitation?

You have about seven days to consider this invitation. I'll be in touch after that by telephone to see if you would like to be involved. If so, you just need to fill out the consent form, and I'll pick it up and organise a time that suits you to have the tutoring session.

You can always text, call or email me with any questions. My details are below.

How do I agree to participate in this research?

As mentioned above you just need to fill out the consent form, and I'll pick it up and organise a time with you for the tutoring session to happen.

Will I receive feedback on the results of this research?

Yes. You will get a report about the findings of the research, and if you like you can receive a PDF version of the final thesis.

What do I do if I have concerns about this research?

Any concerns regarding the nature of this project should be notified in the first instance to the Project Supervisor, Sigrid Norris, sigrid.norris@aut.ac.nz, 09 921 9999 ext. 6262

Concerns regarding the conduct of the research should be notified to the Executive Secretary of AUTEK, Kate O'Connor, ethics@aut.ac.nz, 921 9999 ext 6038.

Whom do I contact for further information about this research?

Researcher Contact Details:

If you have any questions you can call or email me using the details below.

Sigrid Norris

09 921 9999 ext 6262

sigrid.norris@aut.ac.nz

Project Supervisor Contact Details:

Associate Professor Dr Sigrid Norris

Approved by the Auckland University of Technology Ethics Committee on 22/08/13 AUTEK Reference number 13/186

Appendix F: Student consent form

Appendix D

Student Consent Form



Communicating knowledge: Mediation in high school tutoring

Project Supervisor: Associate Professor Sigrid Norris

Researcher: Jesse Pirini

- I have read and understood the information provided about this research project in the Information Sheet dated 6 August 2013
- I have had an opportunity to ask questions and to have them answered.
- I understand that the tutoring sessions I am involved in will be videotaped and transcribed, and that notes may also be taken.
- I understand that I may withdraw myself or any information that I have provided for this project at any time prior to completion of data collection, without being disadvantaged in any way.
- If I withdraw, I understand that all relevant information including tapes and transcripts, or parts thereof, will be destroyed.
- I wish to have my face blurred in the published data
(please tick one): Yes No
- I wish to be given a pseudonym in the published data
(please tick one): Yes No
- I agree to take part in this research.
- I wish to receive a copy of the report from the research
(please tick one): Yes No

Participant's signature :

Participant's name:

Date:

**Approved by the Auckland University of Technology Ethics Committee on 22/08/13
AUTEK Reference number 13/186**

Note: The Participant should retain a copy of this form.

Appendix G: Full sample interview transcript

Interview with student Kate:

(455) Kate: hi Jesse.
(456) Jesse: hey Kate,
(457) how's it going?
(458) Kate: good,
(459) how are you?
(460) Jesse: I'm good,
(461) thanks (.)
(462) how,
(463) how's your weekend going?
(464) Kate: it's alright,
(465) bit busy,
(466) but yeah,
(467) no,
(468) good.
(469) Jesse: yeah,
(470) um,
(471) cool,
(472) so,
(473) yeah,
(474) thanks for doing that,
(475) um,
(476) session earlier this week,
(477) um, --
(478) Kate: /-- aw no that was fine,
(479) yeah.
(480) Jesse: yeah,
(481) cool.
(482) I just wanted to do a quick,
(483) umm,
(484) interview with you,
(485) about,
(486) like,
(487) tutoring in general,
(488) and also maybe a little bit about,

(489) the session that you had.
(490) Kate: okay.
(491) Jesse: um,
(492) I guess first off,
(493) can you tell me about the tutoring,
(494) that you have had,
(495) previously?
(496) Kate: (.) with Steve.
(497) Jesse: yeah.
(498) Kate: yeah,
(499) um,
(500) d'you wanna know how successful it was,
(501) or.
(502) Jesse: yeah,
(503) just,
(504) I guess,
(505) I guess,
(506) like what what,
(507) what made you start the tutoring,
(508) um,
(509) yeah,
(510) what made you start with Steve.
(511) Kate: um,
(512) well,
(513) I,
(514) hh,
(515) I was,
(516) k- struggling with Chem,
(517) Jesse: yeah.
(518) Kate: and I guess,
(519) I-I found it hard,
(520) like,
(521) with Chem in particular like,
(522) in a class,
(523) environment like,
(524) it was quite (.)
(525) like it,
(526) we went quite quickly and,
(527) some of the concepts were quite hard?
(528) and then,
(529) Sarah,
(530) who,
(531) the girl who sat next to me,

(532) she was being tutored by,
(533) Steve?
(534) Jesse: mm hmm. --
(535) Kate: /-- and she w-
(536) yeah,
(537) she said he was like,
(538) really helping?
(539) Jesse: mmm.
(540) Kate: so then I kinda thought,
(541) well I may as well have a go,
(542) cuz (.)
(543) yeah,
(544) I wasn't,
(545) yeah.
(546) and then,
(547) yeah,
(548) Steve was really good.
(549) it was like,
(550) really helpful to,
(551) like,
(552) just go over,
(553) after learning it in class,
(554) going over it with him,
(555) and,
(556) yeah.
(557) Jesse: mmm.
(558) cool.
(559) ummm,
(560) cool,
(561) okay,
(562) so,
(563) and then what'd,
(564) I guess d-
(565) what did you expect from,
(566) tutoring when you started.
(567) Kate: um,
(568) I just,
(569) I guess what I expected was (.)
(570) someone who could (.)
(571) who if I had like,
(572) questions about any of the problem sheets,
(573) or anything like,
(574) he,

(575) or,
(576) they would be able to,
(577) help me get through them.
(578) Jesse: mm hmm.
(579) Kate: just someone who,
(580) could (...)
(581) yeah,
(582) probably go at my pace,
(583) I guess that was my (.)
(584) biggest thing.
(585) Jesse: yeah,
(586) right,
(587) so class was a bit fast,
(588) Kate: yeah.
(589) Jesse: mmm (..)
(590) um,
(591) cool,
(592) and so how did,
(593) how did it go,
(594) umm,
(595) like what,
(596) what did you do in your sessions,
(597) and then,
(598) did you find,
(599) you got better results,
(600) in the end?
(601) Kate: yeah,
(602) I actually did,
(603) cuz,
(604) um,
(605) we did something,
(606) I can't remember (..)
(607) what the website was called,
(608) but (.)
(609) we would go through that,
(610) um (..)
(611) des-smart?
(612) it w-
(613) it was some,
(614) Jesse: aw [like,
(615) Kate: [tutoring with,
(616) Jesse: no brain too small?
(617) Kate: no brain too small,

(618) yeah.
(619) Jesse: aww,
(620) great.
(621) Kate: aw,
(622) was it?
(623) yeah.
(624) it was one of those ones,
(625) that had like,
(626) online quizzes?
(627) Jesse: aw[ww
(628) Kate: [and stuff?
(629) Jesse: okay.
(630) Kate: and then,
(631) with,
(632) you'd kind of,
(633) it would have like,
(634) the notes,
(635) Jesse: mm hm[m,
(636) Kate: [it would be like,
(637) kind of a slide show?
(638) and it would have like,
(639) the notes,
(640) Jesse: mm,
(641) Kate: and then you go on a few pages,
(642) after,
(643) like,
(644) kind of,
(645) discussing it,
(646) Jesse: mm hmm,
(647) Kate: like,
(648) the concepts,
(649) and then we'd
(650) go,
(651) through the,
(652) like,
(653) a quiz,
(654) just,
(655) and that would be,
(656) about,
(657) the previous information?
(658) Jesse: ahhh.
(659) Kate: and like,
(660) I could do that,

(661) when I (.)
(662) like,
(663) when Steve wasn't here,
(664) Jesse: mm hmm,
(665) Kate: and then,
(666) he'd come back and ask,
(667) how the like,
(668) quizzes had gone?
(669) and,
(670) yeah,
(671) it was quite,
(672) good that way.
(673) Jesse: ahhhh,
(674) cool.
(675) Kate: (.) I can't remember,
(676) what it was called though.
(677) Jesse: I don't,
(678) think it was no brain too small,
(679) Kate: no cuz,
(680) is that the one with notes?
(681) I think?
(682) Jesse: yeah,
(683) that has notes s- --
(684) Kate: /-- yeah
(685) no,
(686) I don't think it was that,
(687) actually.
(688) Jesse: (.) hmm,
(689) interesting,
(690) I'll have to ask Steve.
(691) Kate: (.) yeah,
(692) cuz that was really useful.
(693) and then we did like,
(694) he'd bring past,
(695) um,
(696) exams,
(697) too.
(698) Jesse: (..) great --
(699) Kate: /-- that we did (.)
(700) and then,
(701) cuz I have my mocks,
(702) like,
(703) when I,

(704) like, (.)
(705) started tutoring with him,
(706) I had,
(707) we were,
(708) building up to the mocks?
(709) Jesse: mm hmm. --
(710) Kate: /-- and so then,
(711) after that,
(712) we went over my mocks,
(713) and that was quite useful.
(714) Jesse: mm hmm.
(715) Kate: (.) cuz it,
(716) was,
(717) especially because, (..)
(718) I eh-(..)
(719) like,
(720) sometimes when you get test results back,
(721) you kind of just look at them,
(722) like,
(723) cuz I think I got like,
(724) Achieveds,
(725) Jesse: yeah,
(726) Kate: and so I probably,
(727) would have just looked at them,
(728) and like,
(729) just thrown them to the side,
(730) y'know,
(731) I wouldn't have like,
(732) read into them?
(733) Jesse: mmm,
(734) Kate: but,
(735) I went over them with Steve,
(736) and he kinda like, (.)
(737) told like,
(738) me that I actually,
(739) some of the questions I hadn't,
(740) (xxx),
(741) bombed out on?
(742) Jesse: yeaah.
(743) Kate: but like I,
(744) just hadn't quite got there?
(745) yeah.
(746) Jesse: ah,

(747) right. (.)
(748) cool,
(749) is there um,
(750) is that something that you would do,
(751) now,
(752) more often?
(753) Kate: (..) because,
(754) of,
(755) the tutoring with him. --
(756) Jesse: / -- yeaah.
(757) Kate: (.) um,
(758) I guess,
(759) (.) the main thing I learned was,
(760) the importance of going over,
(761) exam questions?
(762) cuz,
(763) he kinda showed me how,
(764) (..) like,
(765) (..) t-
(766) how similar they are?
(767) really,
(768) that it's always the same thing,
(769) Jesse: mmm.
(770) Kate: umm,
(771) but,
(772) (.) not really sure,
(773) cuz Chem was quite,
(774) I don't really do many subjects like,
(775) Chem,
(776) and,
(777) I think it was,
(778) (.) like I,
(779) the other subjects I do are like,
(780) English and,
(781) History and,
(782) w-,
(783) they all,
(784) they all kinda like,
(785) not similar to Chem?
(786) so.
(787) Jesse: yeah,
(788) yep.
(789) Kate: yeeah.

(790) Jesse: right,
(791) so d'you think,
(792) some of those skills,
(793) aren't,
(794) as transferrable.
(795) Kate: (.) umm,
(796) (..) well I guess they're different,
(797) cuz like with Chem,
(798) a lot of it was memorization,
(799) Jesse: mm h[mm
(800) Kate: [and,
(801) (.) I,
(802) think that,
(803) probably also,
(804) what was good about having,
(805) Steve because,
(806) for at least,
(807) one hour,
(808) a week,
(809) I would have to sit down and,
(810) do some Chem and like,
(811) work towards,
(812) memorizing some of the things,
(813) you know?
(814) but, --
(815) Jesse: /-- mmm.
(816) Kate: with,
(817) my other subjects it's about like,
(818) sitting down and writing an essay or,
(819) so,
(820) I guess it's been,
(821) useful,
(822) in that way like,
(823) (xxx),
(824) I dunno,
(825) Jesse: (.) mmm.
(826) Kate: I'm not really sure,
(827) yeah,
(828) I can, (..) yeah.
(829) yeah.
(830) it wasn't,
(831) a good time really so,
(832) h[h

(833) Jesse: [hh --
(834) Kate: /-- I don't really think about it,
(835) that often. --
(836) Jesse: / -- yeah,
(837) yeah,
(838) no,
(839) that's fine.
(840) umm,
(841) yeah,
(842) was that,
(843) was that Kate Wilkinson (SARAH?),
(844) you were sit[ting next to.
(845) Kate: [yeah.
(846) Jesse: ahhh,
(847) okay,
(848) yeah yeah [no,
(849) Kate: [ye[ah.
(850) Jesse: [I was just talking to her.
(851) Kate: yeah,
(852) no,
(853) we're like,
(854) best friends.
(855) Jesse: ahh,
(856) cool.
(857) Kate: ye[ah
(858) Jesse: [um,
(859) aw that's really interesting,
(860) yeah.
(861) um so,
(862) you're both not doing Chemistry anymore?
(863) Kate: yeah,
(864) hh.
(865) Jesse: yeah,
(866) h.
(867) Kate: yep.
(868) Jesse: um,
(869) cool,
(870) so what ah-ehh,
(871) what would you say is,
(872) um,
(873) most unique about tutoring,
(874) compared with school.
(875) Kate: most unique.

(876) um, (...)
(877) I guess, (.)
(878) like,
(879) cuz they're there for you,
(880) so you don't feel, (.)
(881) bad about asking questions,
(882) or like,
(883) more than one,
(884) you know?
(885) but,
(886) sometimes at school,
(887) after you've asked one question,
(888) and if you still don't get it?
(889) Jesse: mm hm[m
(890) Kate: [you kinda think,
(891) well,
(892) I'm holding the th'rest of the class up?
(893) Jesse: mmm.
(894) Kate: but,
(895) with,
(896) having Steve,
(897) it was,
(898) if I didn't get it,
(899) I could kind of, (.
(900) say aw,
(901) I don't actually get that yet?
(902) Jesse: yeah,
(903) right,
(904) yep.
(905) Kate: cuz that's what I did,
(906) a lot in Chem,
(907) last year,
(908) I just kind of, (.
(909) yeah,
(910) I ju- I j-
(911) and I,
(912) it kinda caught up with me?
(913) cuz,
(914) it didn't matter,
(915) while we're in the class,
(916) but when it came to tests and stuff,
(917) I realised,
(918) I couldn't, (.

(919) revise anything?
(920) cuz I didn't actually understand it,
(921) in the first place?
(922) Jesse: yeah,
(923) like you didn't understand enough,
(924) to actually,
(925) Kate: ye[ah,
(926) Jesse: [do,
(927) mmm.
(928) Kate: be able to do anything with it,
(929) yeah.
(930) Jesse: mm.
(931) do you,
(932) if you were to imagine,
(933) the class had some sort of,
(934) general,
(935) understanding of chemistry,
(936) um --
(937) Kate: / -- yeah.
(938) Jesse: where would you position yourself.
(939) would you say you had,
(940) less of that?
(941) or more of that?
(942) or you were,
(943) you were the same as,
(944) the class.
(945) Kate: yeah,
(946) well,
(947) I don't,
(948) I think I was,
(949) about the same as the class,
(950) like I don't,
(951) I think everyone struggled,
(952) Jesse: mmm.
(953) Kate: like I,
(954) cuz,
(955) our year got like,
(956) the worst Chem results,
(957) th- ever,
(958) Jesse: [wow.
(959) Kate: [like,
(960) I think, (.)
(961) some ridiculous,

(962) percentage failed,
(963) Jesse: [wow.
(964) Kate: [so,
(965) I think, (..)
(966) it was just, (..)
(967) like, (.)
(968) I dunno,
(969) yeah,
(970) I definitely think,
(971) and there's like,
(972) Sarah,
(973) too,
(974) like,
(975) neither of us are really,
(976) like,
(977) dumb,
(978) Jesse: mmm.
(979) Kate: I guess,
(980) it was just the environment,
(981) it was quite hard to,
(982) like,
(983) ask a question,
(984) cuzzz,
(985) also the way the classroom was set out,
(986) like,
(987) we were right at the back?
(988) Jesse: mm hmm.
(989) Kate: and,
(990) it's in like a lab,
(991) and so,
(992) a- it was just like,
(993) really difficult t-
(994) to like,
(995) get the teacher's attention sometimes,
(996) and, (.)
(997) yeah,
(998) I don't think,
(999) I think I was kind of average.
(1000) Jesse: mmm.
(1001) Kate: yeah.
(1002) Jesse: right,
(1003) so there was ki,
(1004) yeah yeah yeah,

(1005) okay,
(1006) that's interes[ting
(1007) Kate: [there was just kind of,
(1008) general like,
(1009) misunderstanding,
(1010) like,
(1011) no,
(1012) one understand (xxx) ever,
(1013) I feel.
(1014) Jesse: yeah, (.)
(1015) yeah yeah,
(1016) ahh okay.
(1017) so was it nice to have,
(1018) weh y',
(1019) when you had this tutoring session,
(1020) you y-
(1021) you could get,
(1022) y'take your level of understanding,
(1023) and,
(1024) and kind of, (.)
(1025) um,
(1026) interact with,
(1027) with Steve,
(1028) to get, (.)
(1029) I guess clarify things and,
(1030) Kate: yeah,
(1031) Jesse: move [it forward
(1032) Kate: [cuz,
(1033) often,
(1034) yeah,
(1035) when you're doing something?
(1036) you might have like,
(1037) one little question,
(1038) and it kind of,
(1039) stops you, (.)
(1040) from, (.)
(1041) kind of getting into the question,
(1042) and if you do it,
(1043) if you're doing it in class,
(1044) you might like,
(1045) just kinda give up at that point,
(1046) because you kind of have,
(1047) one little question that you can't,

(1048) get answers,
(1049) so then you kinda do like a,
(1050) not very good answer or whatever?
(1051) Jesse: mm hmm.
(1052) Kate: but like, (.)
(1053) when um,
(1054) like when S-,
(1055) Steve was here I could,
(1056) yeah,
(1057) ask him anything an,
(1058) yeah.
(1059) mm,
(1060) [(xxx),
(1061) Jesse: [yeah,
(1062) yeah.
(1063) and then you can move forward.
(1064) Kate: yeah,
(1065) like,
(1066) continue and you don't,
(1067) kind of feel,
(1068) like,
(1069) you know?
(1070) you're hitting all these hurdles,
(1071) cuz you can,
(1072) instantly,
(1073) like, (.)
(1074) get someone to clarify,
(1075) any questions you have or anything? --
(1076) Jesse: / -- mm hmm.
(1077) Kate: and also,
(1078) it was good like,
(1079) in class,
(1080) if I,
(1081) wasn't understanding something,
(1082) I didn't feel so deflated,
(1083) cuz I'd kinda think,
(1084) aw well I can at least kah,
(1085) like,
(1086) ask Steve.
(1087) Jesse: mmm.
(1088) Kate: (.) so that was quite,
(1089) yeah.
(1090) Jesse: ahh right,

(1091) so while you were in class,
(1092) you could also think,
(1093) aw well,
(1094) I don't get this now but,
(1095) Kate: (.) yeah,
(1096) like,
(1097) I kind of wouldn't switch off,
(1098) cuz I'd think,
(1099) well,
(1100) I may as well,
(1101) like,
(1102) try,
(1103) my very hardest to understand this but,
(1104) I mean, (.)
(1105) it wuh-,
(1106) cuz some days you're just,
(1107) like,
(1108) I dunno,
(1109) I just would kinda feel a bit like,
(1110) hopeless?
(1111) you know,
(1112) like,
(1113) oh my god,
(1114) I really don't get this,
(1115) like it,
(1116) but,
(1117) then,
(1118) you know,
(1119) when I got Steve it was,
(1120) I kind of thought,
(1121) well I don't get this now,
(1122) but I prob,
(1123) I hopefully I will,
(1124) when,
(1125) you know,
(1126) at least I've got some questions,
(1127) to ask Steve?
(1128) Jesse: yeah right,
(1129) so you should,
(1130) may as well build,
(1131) some kind of base,
(1132) even if it's, --
(1133) Kate: / -- yeah, (.)

(1134) I mean like I wasn't,
 (1135) completely hopeless,
 (1136) but, (.)
 (1137) it was just I really,
 (1138) d- I just wasn't,
 (1139) into the subject,
 (1140) and so,
 (1141) that it wasn't coming,
 (1142) easily either was just, (.)
 (1143) there was no like,
 (1144) enthusiasm?
 (1145) Jesse: mmm. --
 (1146) Kate: / -- I think that's,
 (1147) yeah cuz,
 (1148) I mean I,
 (1149) yeah.
 (1150) Jesse: yeah [yeah,
 (1151) Kate: [mmm.
 (1152) Jesse: yep,
 (1153) cool.
 (1154) cool,
 (1155) um,
 (1156) and so how did you find,
 (1157) the tutoring session with,
 (1158) Emma,
 (1159) Kate: (.) yeah,
 (1160) it was really fun,
 (1161) I actua-yeh,
 (1162) it made me kind of want to,
 (1163) get her as a tutor,
 (1164) for hh,
 (1165) for English, --
 (1166) Jesse: / -- hh[h,
 (1167) Kate: [yeah.
 (1168) Jesse: what,
 (1169) what did you like about,
 (1170) her approach,
 (1171) Kate: (.) um, (...)
 (1172) I guess she,
 (1173) it just felt like a discussion?
 (1174) like,
 (1175) you know,
 (1176) like it didn't feel, (..)

(1177) like, (.)
(1178) yeah,
(1179) it just felt like we were talking.
(1180) Jesse: mm hm[m.
(1181) Kate: [I guess it,
(1182) if,
(1183) and then,
(1184) it felt really like,
(1185) satisfying to,
(1186) have, (.)
(1187) you know once,
(1188) we had,
(1189) it just seemed so easy?
(1190) how she like,
(1191) wrote down the structure,
(1192) and then,
(1193) we had like,
(1194) this structure that I,
(1195) felt like I could,
(1196) do something with it,
(1197) and,
(1198) yeah,
(1199) I guess I,
(1200) enjoyed that,
(1201) Jesse: mm[m.
(1202) Kate: [like,
(1203) seeing,
(1204) progress,
(1205) Jesse: mmm,
(1206) so that,
(1207) she wrote down the structure of, (.)
(1208) an answ[er.
(1209) Kate: [yeeah,
(1210) of,
(1211) of,
(1212) yeah of,
(1213) like,
(1214) a way that we could answer the qu-
(1215) like,
(1216) an,
(1217) um,
(1218) one of the exam questions,
(1219) Jesse: mm hmm. --

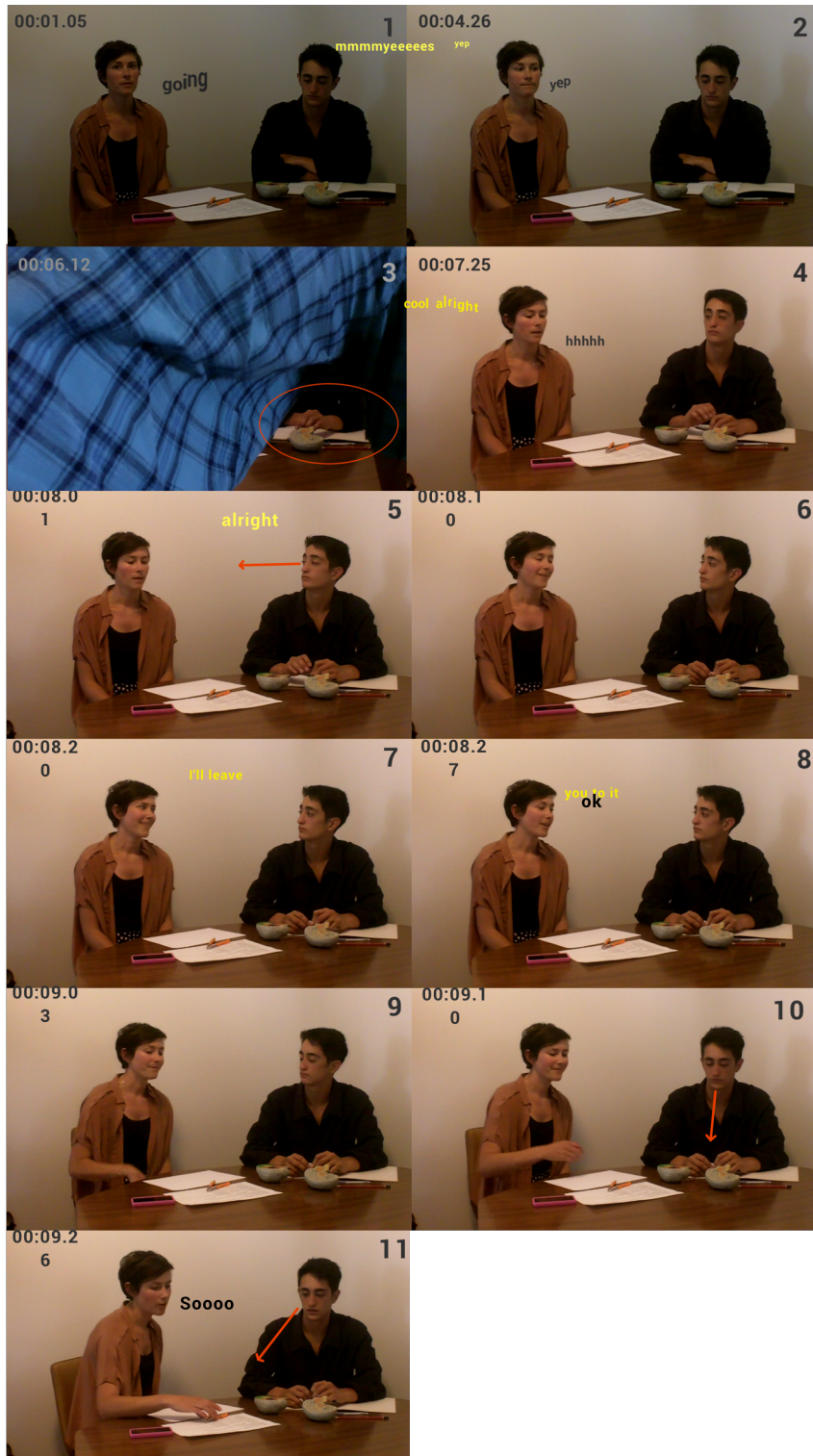
(1220) Kate: / -- to this poem, (.)
(1221) yeah,
(1222) and she was just really like,
(1223) approachable and quite ea-,
(1224) you know?
(1225) like easy to talk to.
(1226) Jesse: mmm,
(1227) mmm. (.)
(1228) cool,
(1229) how do you think,
(1230) as a ch-,
(1231) as a,
(1232) as a student,
(1233) the tutor can understand,
(1234) like,
(1235) where you're at,
(1236) and how much you know,
(1237) and what you don't know,
(1238) Kate: (.) umm, (.)
(1239) well,
(1240) I guess,
(1241) if you're having a tutor, (.)
(1242) maybe from student feedback?
(1243) like,
(1244) you know that,
(1245) hopefully the person would feel,
(1246) comfortable enough to,
(1247) kind of say where they're at?
(1248) Jesse: mmm.
(1249) Kate: (.) um, (.)
(1250) or maybe they'd,
(1251) like,
(1252) quizzes or something?
(1253) Jesse: mm,
(1254) mmm.
(1255) cool.
(1256) cool,
(1257) um,
(1258) we had,
(1259) in that session,
(1260) d'you remember the tuh-,
(1261) the the,
(1262) model of the tree,

(1263) and the,
(1264) the, --
(1265) Kate: / -- yea[h,
(1266) Jesse: [the people?
(1267) Kate: ye[ah,
(1268) Jesse: [umm,
(1269) what'd you think of that,
(1270) Kate: (..) I wasn't sure,
(1271) I was wondering,
(1272) what,
(1273) where it was gonna come in.
(1274) Jesse: hhh hye[ah
(1275) Kate: [hh I was,
(1276) staring at it,
(1277) thinking I wonder,
(1278) how that's gonna be integrated,
(1279) ahh h.
(1280) Jesse: yeah,
(1281) I don't think yuh,
(1282) I don't think you guys ever used it,
(1283) did you.
(1284) Kate: no,
(1285) we didn't. --
(1286) Jesse: / -- yeah.
(1287) um, (.)
(1288) yeah no,
(1289) that's interesting,
(1290) it's just something we were,
(1291) um,
(1292) interested in seeing,
(1293) if it was useful or not.
(1294) Kate: ahh,
(1295) okay.
(1296) Jesse: um,
(1297) we've had other sessions,
(1298) for Maths,
(1299) and,
(1300) uh,
(1301) Biology,
(1302) where we've used different,
(1303) objects like that?
(1304) and they have been,
(1305) a little bit more useful?

(1306) Kate: ahhh,
(1307) hhh.
(1308) Jesse: um,
(1309) yeah,
(1310) yeah.
(1311) umm,
(1312) cool,
(1313) okay,
(1314) so that's pretty much,
(1315) um,
(1316) I think that's pretty much everything.
(1317) ahyeh-,
(1318) anything else,
(1319) that,
(1320) that you have,
(1321) comments about tutoring,
(1322) or any other thoughts,
(1323) Kate: umm,
(1324) no I don't think so,
(1325) no,
(1326) Jesse: cool.
(1327) [cool,
(1328) Kate: [cool,
(1329) Jesse: okay well,
(1330) thanks for that,
(1331) um, --
(1332) Kate: / -- no worries, --
(1333) Jesse: / -- I will send,
(1334) that stuff to you that I,
(1335) that I mentioned,
(1336) um, --
(1337) Kate: / -- aw yep.
(1338) Jesse: just forms,
(1339) and,
(1340) uhhh,
(1341) that,
(1342) that voucher,
(1343) um[mm,
(1344) Kate: [mm hmm,
(1345) Jesse: and,
(1346) yeah,
(1347) I'll,
(1348) I'll let you know how things,

(1349) how things go,
(1350) so I'll send you like,
(1351) the final report,
(1352) and that sorta thing,
(1353) Kate: cool,
(1354) Jesse: um,
(1355) so you can have a look at that,
(1356) and um,
(1357) yeah,
(1358) best of luck for this year,
(1359) and,
(1360) an[d
(1361) Kate: [ah [thanks,
(1362) Jesse: [for whatever,
(1363) you decide to do next year.
(1364) Kate: yeah,
(1365) well you too,
(1366) good luck with the rest of your research.
(1367) Jesse: yeah,
(1368) thanks Kate,
(1369) cheers.
(1370) Kate: okay,
(1371) see you.
(1372) Jesse: okay,
(1373) see ya later.
(1374) Kate: bye,

Appendix H: Extended transcript from section 6.1



Appendix I: Extended transcript from section 6.2



Appendix J: Extended transcript from 6.3



Appendix K: Extended transcript from section 8.2





Appendix L: Copy of Pirini (2014)

Some transcripts from chapter 8 appear in this article published in *Multimodal Communication*, (2014), (3)2. The full article is reproduced here.

Article

Jesse Pirini*

Producing Shared Attention/Awareness in High School Tutoring

Abstract: During the activities of everyday life social actors always produce multiple simultaneous higher level actions. These necessarily operate at different levels of attention and awareness. Modal density is a methodological tool that can be used to analyse the attention/awareness of social actors in relation to higher level actions they produce, positioning actions in the foreground, midground and background of attention. Using modal density to analyse an opening and a closing in high school tutoring sessions, I show social actors transitioning into and out of producing the same higher level actions at the foreground of their attention/awareness. Through this analysis I identify two potentially unique aspects of one-to-one tutoring. Firstly I show one way that a tutor helps a student take on the practices of being a good student, and secondly I show the influence that students have over tutoring. I argue that movements into and out of a shared focus of attention are potentially useful sites for analysis of social interaction.

Keywords: attention/awareness, multimodality, modal density, tutoring

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Introduction

During an interaction people exhibit different levels of engagement (Goodwin, 1981) and can take many different orientations towards the interaction (Goffman, 1964). In this article I focus on the attention and awareness of social actors. Attention and awareness is implicated when considering how engaged someone is in an interaction and what form that engagement takes. Transitions into and out of various activities provide fertile ground for the study of the attention and awareness of social actors. However in studying transitions there is usually one stream of activity in play in the form of sequential movements from one phase to the next (Drew and Heritage, 1993; Robinson and Stivers, 2001). The focus is on how social actors negotiate this stream of activity to achieve, for example, a business meeting or doctor's examination, and the notion of multiple loci of attention is not addressed in detail (e.g. Modaff, 2003; Mondada, 2006; Pasquandrea, 2012).

Norris (2004, 2011) introduces modal density as a methodological tool for analysing the attention/awareness of social actors, showing that different actions regularly shift into and out of the focus of social actors. Those actions not focused on are not necessarily ignored and do not by default become irrelevant, rather Norris presents a rich landscape with actions populating a foreground, midground and background of attention/awareness. Modal density allows the researcher to expand their analytical lens from the foreground of a social actor's attention/awareness, to the higher level actions simultaneously produced at multiple levels of attention/awareness, often with multiple social actors.

In this article I analyse the attention/awareness of tutors and students in high school tutoring sessions. The data come from videotaped one-to-one tutoring sessions, and I focus on one opening and one closing.

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Using modal density, I show social actors converging upon producing the same higher level action with focused attention and diverging into producing different higher level actions with focused attention. In the first extract the tutor directs the student to read a section of a play, and in the second the student closes the tutoring session.

This analysis reveals a rich landscape of attention/awareness and shows convergence and divergence of focused attention (Norris, 2011). I illustrate the potential of analysing attention/awareness to uncover the unique features of one-to-one tutoring. Initial findings show the influence the student has over the session, and one way in which a tutor imparts a beneficial practice to the student. These findings suggest that movement both into, and out of, shared focused attention is a potential site of fruitful investigation for both tutoring and social interaction in general.

Background literature

Social actors transitioning from one action to another provide a site for the study of attention/awareness. As a new action is opened, or a previous action is closed, the attention/awareness of social actors changes. There are phenomenological aspects to the structure of attention/awareness that can be perceived (Norris, 2004, 2006, 2011). Prior work in discourse analysis, conversation analysis and multimodality has examined shifts in focus.

A seminal paper by Tannen and Wallat (1987) uses Goffman's (1979) notion of "footing" to show how a doctor manages an examination of a child with the mother present, while being recorded for training purposes. The doctor therefore has to juggle between examining the daughter, talking with the mother and presenting their thought processes for the video recording. Tannen and Wallat (1987) show the doctor shifting footing through altering her register. To the child she speaks "motherse", to the mother she uses a conversational register, and for the future audience of trainee doctors she uses a dry reporting voice.

This chopping and changing of focused attention and style of presentation is not unusual, and social actors engage regularly in shifting focus. Consider something as mundane as visiting a café with friends. There are many different actions in play, including talking with friends, deciding where to sit, ordering and paying for drinks and so forth. Throughout this interaction there are many shifts in focus, as social actors engage in various actions.

In their analysis Tannen and Wallat (1987) concentrate on the transitions that the doctor makes as she focuses on the child, the mother and the training video. Other social actors are considered only as they are acted upon or interacted with by the doctor. For example they observe "the pediatrician keeps one arm outstretched to rest her hand on the child while she turns away to talk to the mother, palpably keeping the child 'on hold'" (p. 210). Further research has broadened analysis to multiple participants.

Transitions focusing on multiple participants have been studied in diverse settings, including doctor/patient interactions (Modaff, 2003; Pasquandrea, 2012; Robinson and Stivers, 2001), business meetings (Mondada, 2006) and requests for directions (Mondada, 2009). These studies show that within ongoing interaction transitions are coordinated, negotiated and interactionally achieved through multimodal resources.

Mondada (2006) examines the ways in which people project their next action while interacting with others. She presents transcripts from a meeting in an architect's office between three people discussing the development plans of a luxury hotel. Mondada shows that a next turn or next activity phase is projected and collectively achieved. She concludes that signals of impending next action, or a desire to shift action, are systematically displayed and exploited by participants to sequentially organise their interaction. These signals are multimodal and include spoken language, gesture, body movements and object handling.

Prior research clearly demonstrates rich multimodal coordination between social actors. However, while the focus of social actors during transitions has been studied quite widely, the emphasis is on progressing through the stages of an activity such as a patient/doctor examination (Drew and Heritage, 1993; Robinson and Stivers, 2001) or a business meeting (Mondada, 2006). The notion of multiple actions and multiple loci of attention has not received as much analytical focus.

Goodwin (1981) begins to explore the idea of multiple levels of engagement, showing people shifting their orientation during interaction. He shows that transitions from engagement to non-engagement are negotiated, through displaying preparation for another activity. Thus there is the possibility for a lowering of engagement, rather than a binary switch from one activity to the other. Norris (2004, 2006, 2011) takes this notion further with the introduction of modal density, to show a more rich exposition of attention/awareness.

Norris (2006) reports on a study with an accountant in his office interacting with a visitor, his assistant and the researcher. She shows the accountant interacting with all three social actors simultaneously at different levels of his attention/awareness. Rather than simply switching focus from one social actor to the next and ignoring the others, Norris (2006) shows that the accountant co-constructs higher level actions with each social actor simultaneously. Norris (2004, 2006) introduces modal density as a methodological tool to show that these actions are simultaneously constructed through multiple modes at different levels of attention/awareness.

Here I use modal density to explore the attention/awareness of a tutor and a student, showing social actors shifting into and out of converging attention/awareness upon higher level actions.

Methodology

I utilise multimodal (inter)action analysis (MIA) (Norris, 2004, 2011, 2013) as a methodological framework. MIA focuses on action, treating all actions as potentially important. The unit of analysis is the mediated action (Norris, 2004; Wertsch, 1998), which takes all actions as mediated by psychological tools and material objects (Scollon, 1998, 2001; Wertsch, 1998). MIA builds on mediated discourse analysis (Scollon, 1998, 2001) and was initially developed by Norris (2004) to explain her observations regarding identity. MIA has since been applied in diverse areas including extreme sports (Geenen, 2013), business settings (Kuśmierczyk, 2013), classroom interaction (Adams, 2013), religious belief, religious belief (Makboon, 2013), and marketing and marketing (White, 2011).

The mediated action is a theoretical notion, referring to social actors acting through mediational means. Norris (2004) delineates the mediated action into higher and lower level actions. A lower level action refers to the smallest meaning unit of a mode, for example a single gesture from start to finish, or an utterance. A higher level action is constructed by chains of lower level actions and has a beginning and an end (Norris, 2004). Neither higher nor lower level actions are logically prior to one another. Lower level actions produce higher level actions, as higher level actions produce lower level actions. Several higher level actions are always embedded within one another. In the transcripts I present here, I focus on higher level actions lasting roughly 10s, and these are embedded within many other ongoing higher level actions.

Attention/awareness is constructed multimodally, incorporating the full spectrum of body movements, including the “wagging tongue” (Goffman, 1964) but also gesture, posture, touch, object handling, gaze and so forth.

A higher level action exhibits modal density based on the intensity and complexity of the modes present in the action. For example, a social actor reading a paper with high modal density might be hunched over, gazing at the paper with one hand resting on it. In this example high modal density comes mostly from the intensity of the gaze, but also from the complexity of multiple modes constructing the higher level action of reading the paper. This social actor may be constructing other higher level actions with lower modal density.

By tracking modal density, through the perceivable lower level actions produced by and producing higher level actions it is possible to track the various higher level actions a social actor performs, and crucially the levels of attention at which these actions sit (see Norris, 2004, 2011 for further introduction and use of modal density).

Data

The extracts presented here come from a wider research project into high school tutoring. Nine one-to-one tutoring sessions were recorded in student's homes, with three different tutors. Each session lasted for 35–60 minutes and was recorded using a Kodak Zi8 video camera with an external microphone. The researcher was present taking field notes throughout. Each participant was interviewed after his or her involvement. These three data sources (videos of sessions, field notes and interviews) are triangulated (Patton, 2003) to ensure conclusions are valid and reliable.

Tutors have received training in delivering one-to-one tutoring and currently work or have worked as professional tutors. Students were receiving or had previously had one-to-one tutoring, although not necessarily with the tutor they worked with during the research. Here I present two extracts with two student–tutor pairs taken from the full body of data. One of the pairs has worked together previously, while the other has not.

Analysis

This article analyses the attention/awareness of tutors and students during one-to-one tutoring. The two extracts presented here are roughly 30 seconds in duration. The first is taken from the opening of a tutoring session. It is presented in three multimodal transcripts. The first two transcripts (1A and 1B) are to be read together and show the tutor and student focusing most strongly on *different* higher level actions. The third transcript (1C) shows the tutor and student coming to produce the *same* higher level action.

The second extract is taken from the closing of a different tutoring session and is also split into three transcripts. All three transcripts (2A, 2B and 2C) are to be read sequentially and show the student shifting her attention from the tutoring session to closing the session, followed by the tutor also focusing on closing the session.

The transcription methods outlined by Norris (2004, 2011) have been followed. Relevant video frames are captured, and the mode of spoken language is overlaid, taking intonation into consideration through wave form and loudness of the utterances through their size.

Extract one: session opening: focusing on divergent higher level actions

The tutor here is Emma (in the right of the frame), and Pranto is the student. Emma and Pranto have had tutoring together for about six months, and focus on English. In this session they analyse a passage from Richard III by William Shakespeare. The researcher has just turned on the camera to start recording, and the focus of the tutor and student has shifted from the researcher, to each other and the tutoring session.

On the table in front of each participant is a copy of the passage that Emma has chosen for Pranto to analyse. There is also a sheet of paper with some practice exam questions Emma has written, a book of Richard III in simplified English owned by Pranto, a small collection of plastic toys and a paper crown provided by the researcher. (See video 1 for the video of this extract.)

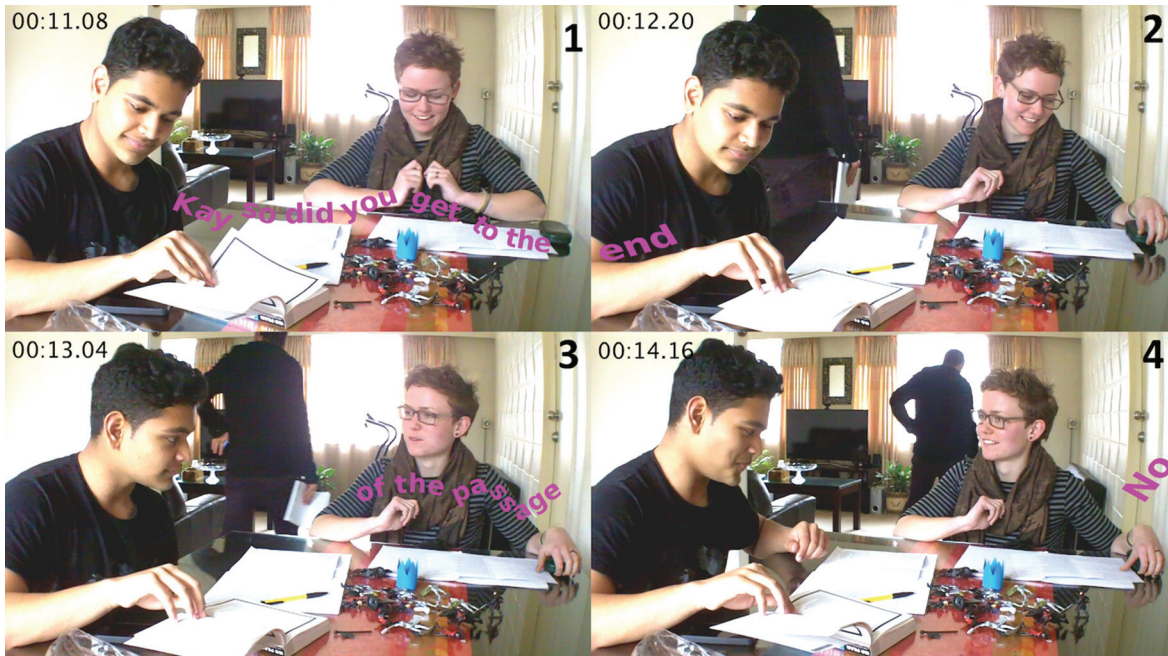


Figure 1 Transcript 1A: Emma and Pranto opening
Video 1* Emma and Pranto extract

Transcript 1A: description and analysis

Transcript 1A shows a higher level action that starts in frame one with Emma moving from her resting position, with her hands steepled in front of her chest and elbows on the table. It closes in frame four with Emma's gaze to Pranto and her utterance "no?" This higher level action serves to confirm if Pranto has read the passage that will be worked on in the session. It indicates to Emma whether or not Pranto is sufficiently prepared for the session to continue.

In Figure 1 at 00:11.08 in frame one Emma's gaze is directed towards the papers on the table. Pranto is rifling through the pages of a book to his right. Emma's elbows are resting on the table, and her hands are held in front of her chest. Emma's initial utterance starts with:

Kay so did you get to the end

In frame two at 00:12.20 Emma has reached her left hand out and has begun to interact with her copy of the passage that sits on the table in front of her. Her gaze shifts along to the left of the paper.

In frame three at 00:13.04 as Emma continues her utterance with "...of the passage" her gaze shifts from the passage, up to Pranto's face. Simultaneously Pranto shifts his gaze from the book he is handling to Emma's hand as it interacts with her copy of the passage.

At 00:14.16 in frame four Pranto's gaze has shifted down to his own copy of the passage directly in front of him and he has made a soft sound in his throat while mouthing a "no" with a slight smile and bringing his left arm up to rest on the table. Emma then says "no" with a very clear rising inflection as she continues to gaze at Pranto. Pranto's response to Emma's question may indicate some embarrassment and a lack of confidence due to not completing his reading of the passage.

It is clear here that Pranto has not read the entire passage, and he realises that Emma expected him to have done so.

*Video available online: <http://dx.doi.org/10.1515/mc-2014-0012>.

Transcript 1B: description and analysis

Transcript 1B carries on directly from the higher level action completed in transcript 1A. In the first frame we see Emma and Pranto overlapping their speech. Emma suggests Pranto read to the end of the passage, stating “ok so why don’t you do that first”. Pranto suggests that he already knows what the passage is about, stating “I didn’t but I I get the I get the idea”.



Figure 2 Transcript 1B: Emma and Pranto opening

Emma brings her right hand down to her copy of the passage in frame one at 00:15.27 while also shifting her gaze to it. She lifts up the edge of the passage using her left hand shown in frame two at 00:16.28.

As Pranto speaks in frames one and two he shifts his gaze from his copy of the passage to the book to his right, and he also brings his left hand over to the book.

Frame three shows Pranto has shifted his gaze and his left hand back to his copy of the passage as he begins to describe his understanding of the passage. Pranto says:

I get the idea that basically um saying oh you killed me and then he goes they they go to Richmond and he's like

Throughout these utterances Pranto’s gaze remains on the passage and his hands hold their position. During this time Emma’s gaze returns to Pranto and flicks between his copy of the passage and his face. Emma also places her copy of the passage back down on the table, and she holds her hands in front of her chest, with about 20;cm of space between them, and her fingers curled into her palms.

In frames five and six Pranto continues speaking with:

oh don't worry I'm supporting you ... that's that's basically it

In frame six Pranto shifts his gaze from his copy of the passage to Emma and brings up his left fist, performing a beat gesture to emphasise his utterance “supporting you” (McNeill, 2007; Norris, 2004).

In this transcript Pranto presents his knowledge of the passage, in an attempt to mitigate the negative effects of not reading the entire passage. He tries to demonstrate that despite not reading it, he knows what it is about. It may be possible that he has read the simplified version, as we see him continue to interact with the book to his right throughout.

Analysis of attention/awareness: divergent higher level actions

There is a clash here between Emma and Pranto. Emma expects Pranto to read the entire passage, and we see her emphasising this practice here. Pranto is aware of this expectation and tries to explain that he actually understands what the passage is about, despite not completing the reading. In this section I analyse the attention/awareness of both social actors.

Modal density provides a tool for analysing how the higher level actions that Pranto and Emma are engaged in are ordered at different levels of attention. Here I focus specifically on the actions performed in transcripts 1A and 1B.

Figure 3 shows three of the higher level actions that Emma is engaged in. In the foreground is “reading the passage”. This higher level action displays high modal density. Emma gestures towards the passage, touches her own copy of the passage, gazes at her copy and Pranto’s copy and tells Pranto to read it.

Simultaneously Emma is engaged in the higher level action of Pranto expressing his knowledge of the passage. She attends to his description and waits for him to finish. This action is primarily constructed through gaze and sits at the midground of her attention, with a lower modal complexity than “reading the passage”.

At the background level of attention is Emma’s participation in a research project, which is evident in the proxemics between herself, Pranto and the researcher seated behind them both.

Pranto is interacting with Emma, but he is not producing the same higher level actions at the same levels of attention. This is the source of the clash between them.

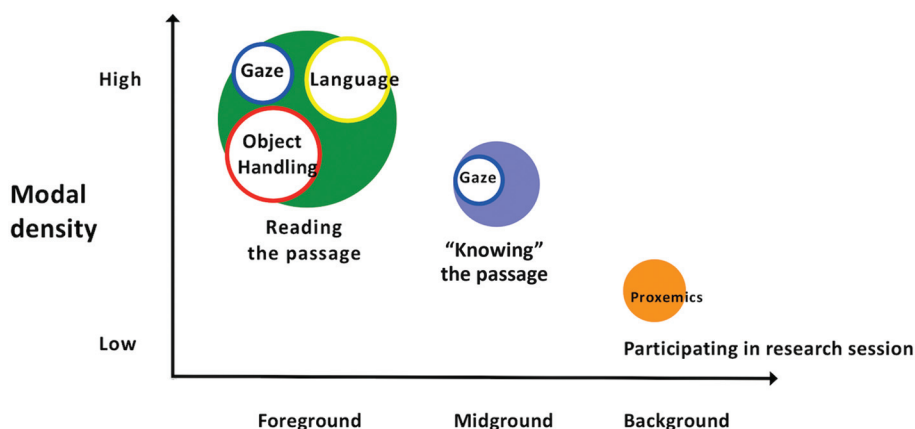


Figure 3 Graph of Emma’s attention/awareness

Figure 4 shows a graph of the relevant actions Pranto is simultaneously engaged in. At the foreground of Pranto’s attention is his knowledge of the passage. This displays high modal density primarily through language, and also through gaze and gesture. In transcript 1B Pranto details what he understands from the

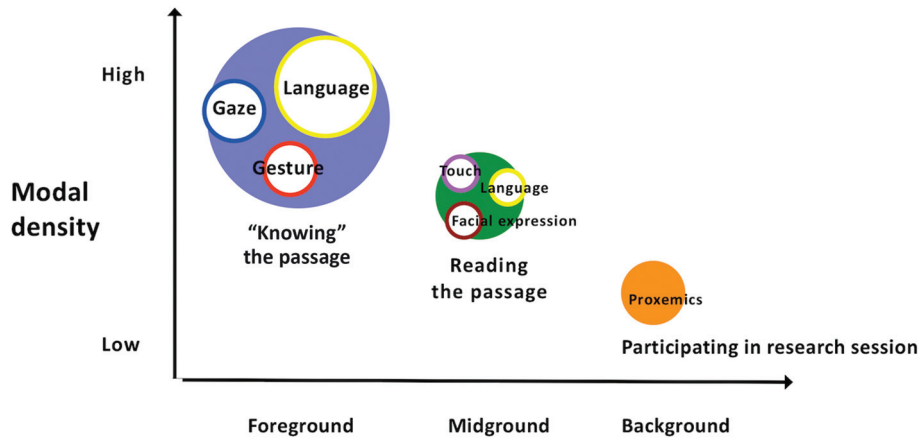


Figure 4 Graph of Pranto's attention/awareness

passage using the mode of spoken language, gesture and gaze. Touch may also be implicated here as Pranto continues to hold his simplified version of the play with his right hand.

At the midground of Pranto's attention/awareness is reading the passage. Pranto touches his copy of the passage, and puckers his lips as he utters a breathy no when asked if he has read it. He also gazes at Emma as she asks if he has read it.

Finally, at the background of Pranto's attention/awareness is his participation in the research session, structured similarly to Emma's.

Transcript 1C: focusing on the same higher level action

Transcript 1C carries on directly from the higher level action completed in transcript 1B. This transcript shows Emma directing Pranto to a salient portion of the passage, which his explanation in transcript two



Figure 5 Transcript 1C: Emma and Pranto opening

demonstrates he has not read. Emma's higher level action opens with her utterance "mm hmm" and pointing her finger to Pranto's copy of the passage.

Frame one at 00:29.29 shows Emma uttering "mm hmm" in response to Pranto's explanation in transcript 1B. She points using the first finger on her right hand at a section of his copy of the passage. She continues with her utterance asking "but did you read what Richard says". This is phrased as a question, but ends with a falling intonation, referencing Emma's awareness Pranto has not read the whole passage, and strongly indicating that he should read it. Pranto responds with "no that's" as his gaze shifts down to where Emma is pointing.

In frame two at 00:31.04 Pranto reaches his left hand out to grasp the passage with the pads of his fingers while leaning in and engaging with it showing a high level of modal density through the intensity of his gaze and posture. Emma withdraws her finger and utters "kay that that".

In frame three Emma finishes her utterance with "...bit's key". She withdraws her left hand. Pranto pulls the passage towards his chest.

In the final frame at 00:32.13 Pranto brings his left hand up to rest open palmed upon his chin and lower lip. Emma utters very quietly "why don't you just read that first". She finishes withdrawing her left hand, and it comes to rest in front of her chest in the same resting position that she was in when this extract began in transcript 1A, frame one.

Converging higher level actions

Transcript 1C shows Emma directing Pranto to read the passage, convincing him by pointing out that he has missed an important aspect of it by *not* reading the whole passage. This causes Pranto's action of "knowing the passage" to dissipate. He utters "no that's..." and then engages in reading the passage with high modal density. He leans forward, pulls the passage to himself and places his hand on his chin.

Figure 6 shows the new configuration of higher level actions for both Emma and Pranto. The act of reading the passage is at a high level of attention for both. They are now producing the same higher level action at the foreground of attention/awareness. Pranto, though gaze, gesture and posture, and Emma through taking her resting posture, with hands in front of her and gazing silently at her own copy of the passage.

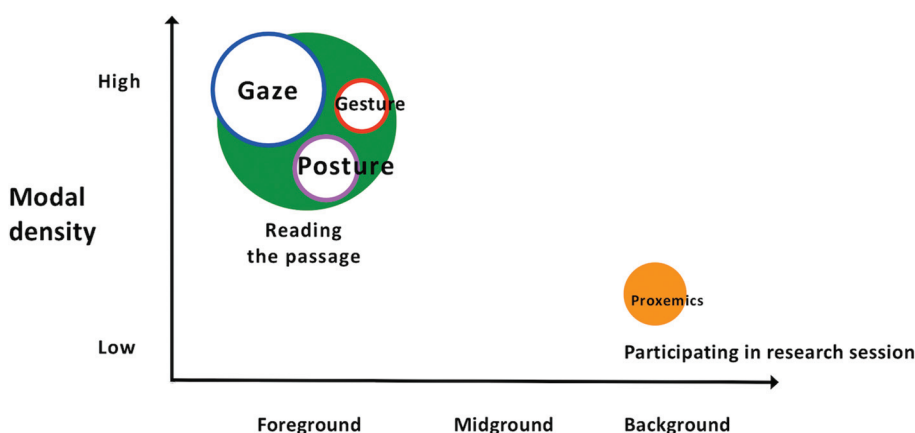


Figure 6 Graph of modal density for Emma and Pranto showing co-produced higher level action of reading the passage at the foreground of attention

Extract two: shifting from convergent focused attention to a new higher level action

This extract comes from the end of a tutoring session between Sean and Eleanor. Sean is the tutor and Eleanor is the student, and they have never worked together previously. This session covers a range of probability problems, based on the proportionality principle. In front of Eleanor (in the right of the frame) is a sheet of paper with some problems listed on it. The session has been going for just under 40 minutes, and Eleanor has recently started to demonstrate that she understands the main idea of proportionality in probability by solving some problems.

In this extract Sean continues to explain the proportionality principle, and Eleanor shows again that she understands it. Throughout the course of the interaction presented here she negotiates closing the tutoring session. Extract two is split into three higher level actions, each transcribed in a separate transcript, described and analysed below. (See video 2 for the video of this extract.)

Transcript 2A: description and analysis

As with Emma in transcript 1A this extract opens with Sean in a resting position. Sean has both elbows and forearms on the table, and his hands stacked one on top of the other, flat in front of his chest. This posture demonstrates high modal intensity and engagement in the tutoring session. Both Sean and Eleanor have their gaze directed to the paper which has proportionality problems written on it. Eleanor has her left hand flat on the table, while she holds a pencil in her right. Sean opens a higher level action with his utterance “and that’s what you’ve done here”, reaching out his right hand to interact with the paper in front of Eleanor.

Sean’s utterance continues into frame two with “...so these are your total number of events right”. Simultaneously Sean reaches out with this right arm and uses his thumb to indicate a section of the paper in front of Eleanor. Eleanor responds with “mm hmm”. Sean’s explanation continues into frame three with “if you have five times you hear somebody singing in the shower...”

In frame four Eleanor rotates her pencil around and points at the same section of the paper as Sean. As she points she says “I could do it to anything I wanted to I could do...” Her utterance is latched onto Sean’s and comes before Sean has finished. Sean overlaps, continuing his utterance, with “...four out of five...” while shifting his gaze to Eleanor’s face.

In frame five Eleanor initiates a posture shift, leaning back in her chair. She rotates her left hand outwards and her right hand withdraws the pencil from the paper. She completes her utterance from frame four with “forty and ten...” Sean maintains his body position, with his arm extended and finishes his utterance with “...of those times”, which continues to overlap with Eleanor’s speech.

In frame six Eleanor completes her posture shift coming to lean back in her chair, with her head tilted slightly forward. She releases her pencil onto the table. Her left hand comes off the table also and rests down by her left hip. She says “or whatever yeah”. As Eleanor leans back Sean rotates his right palm outwards, his utterance “yeah” overlaps with Eleanor’s.

Frame seven shows Sean bringing his right hand back up towards his head until the forearm is perpendicular to the table. As he begins his utterance “yeah or any of those” he opens his hand with the palm facing his head. Sean’s gaze is still directed at Eleanor. Eleanor withdraws her right hand from the table until the tips of her fingers rest on the table edge. She utters “yeap” with a flat intonation.

Here Sean is continuing to explain the proportionality principle, which Eleanor has recently demonstrated she understands. Eleanor responds in the mode of spoken language and gestures with her pencil to again demonstrate her understanding. Her interjection and overlap with Sean’s utterance in frames four and five is a strong demonstration from Eleanor that she understands, and therefore that Sean’s continued

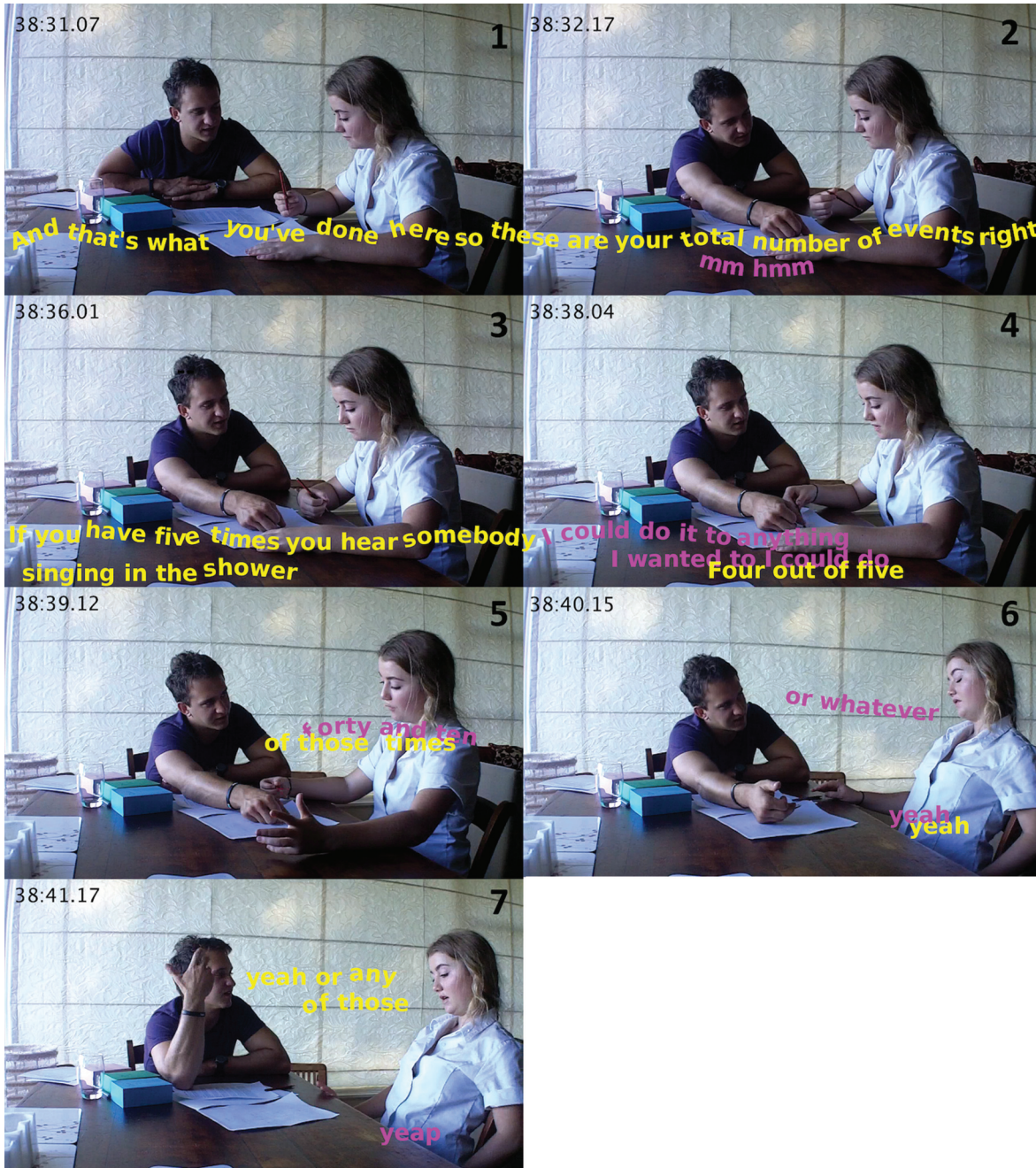


Figure 7 Transcript 2A, Sean and Eleanor closing
Video 2* Sean and Eleanor extract

description is not required. This is further demonstrated in frames six and seven as Eleanor leans back, placing her pencil down on the table, and saying “or whatever” with a falling intonation.

In this transcript Sean and Eleanor are producing an action in their focused attention. The higher level action could be termed “learning statistics”. However, Eleanor is beginning to disengage from this action. Leaning back and dropping her pencil functions as a semantic/pragmatic means (Norris, 2004) allowing her to structure her attention onto her next action, and demonstrating this to Sean.

*Video available online: <http://dx.doi.org/10.1515/mc-2014-0012>.

Transcript 2B: description and analysis

Transcript 2B continues on immediately after transcript 2A. This transcript opens with Sean initiating another higher level action where he elaborates on the proportionality principle. He begins in the same way he begins in transcript one, with an utterance and extending his right hand to interact with the piece of paper in front of Eleanor.

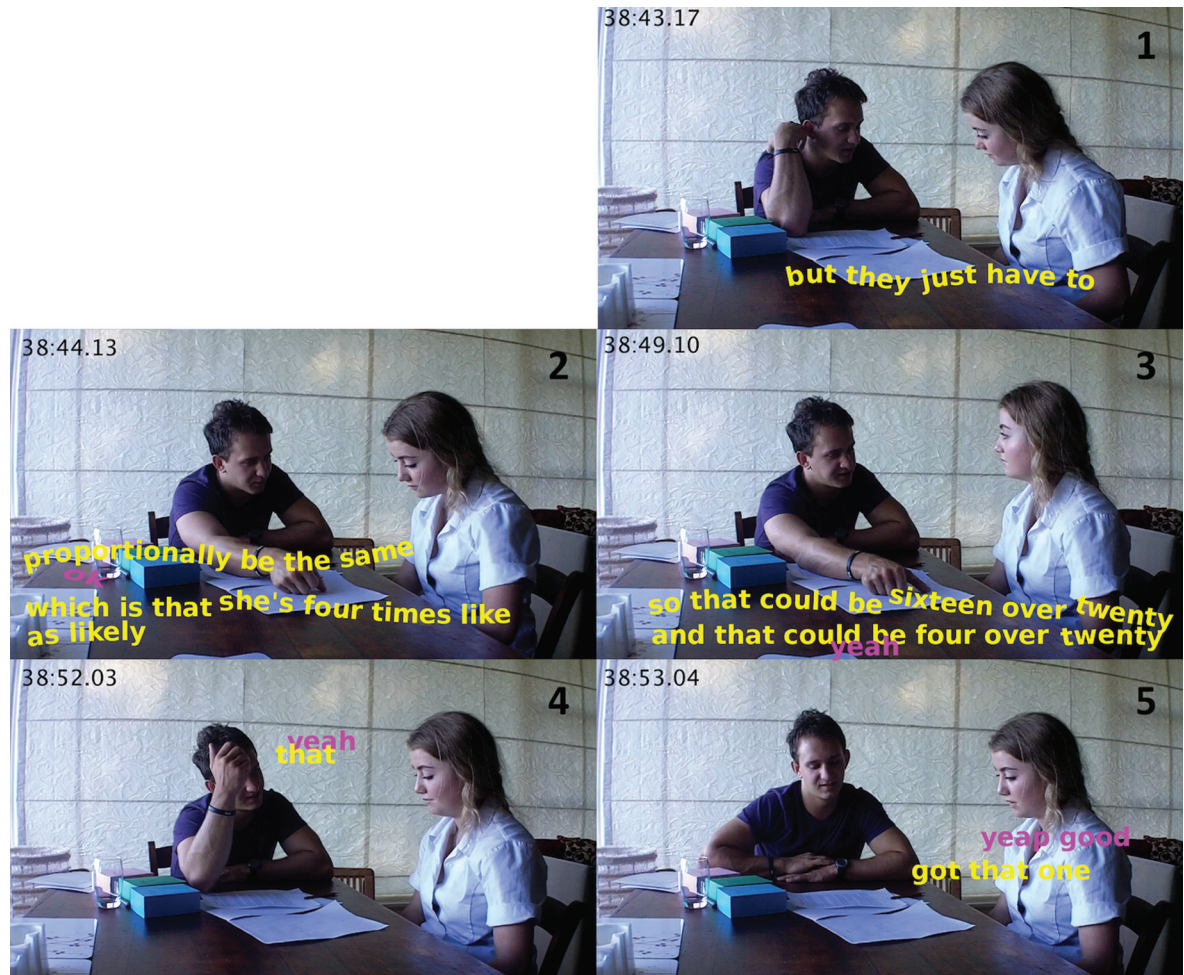


Figure 8 Transcript 2B, Sean and Eleanor closing

Sean says “but they just have to proportionally be the same” as he continues his explanation. Frame one shows Eleanor has leaned forward, and her gaze remains on the paper in front of her. The video data shows she completed this posture shift just prior to Sean beginning his utterance. In frame two Eleanor utters “ok”, and Sean continues on with “...which is that she’s four times like as likely...”

Frame three shows Eleanor’s gaze shift to Sean’s face as he continues his utterance with “so that could be sixteen over twenty and that could be four over twenty”. Eleanor nods her head and overlaps Sean’s utterance with “yeah”.

Frame four shows Sean’s gaze shift also to Eleanor’s face as he withdraws his arm, and Eleanor again utters “yeah”, while Sean overlaps with an unclear sound.

In frame five Sean returns his hands to the resting position from the beginning of the extract with both elbows and forearms on the table, and hands stacked flat one upon the other. Eleanor says “yeah good” while Sean says “got that one”. Both direct their gaze to the paper in front of Eleanor.

Transcript 2C: description and analysis

The final transcript of extract two carries on immediately from transcript 2B and opens with Eleanor asking Sean “do you want this paper” and picking up the sheet with her right hand. Sean remains in his resting position with his gaze directed at the paper. In frame two Eleanor picks up the paper and turns it over gazing at the reverse side. She says “what’s this oh that’s the ok”. Sean remains in his resting position with his gaze directed at the paper. In frame three Sean responds with “that was the game we were doing” he then continues with “I don’t know”. Eleanor has placed the paper back down and is reaching for her pencil with her right hand. Frame four shows Sean gazing down at his watch on his left wrist as he says “I’m not sure how much longer we have left”. Eleanor’s gaze follows to Sean’s watch. In frame five Sean returns his hands to the resting position from the beginning of the extract with both elbows and forearms on the table, and hands stacked flat one upon the other. Eleanor says “yeah good” while Sean says “got that one”. Both direct their gaze to the paper in front of Eleanor.



Figure 9 Transcript 2C, Sean and Eleanor closing

In frame three Sean responds with “that was the game we were doing” he then continues with “I don’t know”. Eleanor has placed the paper back down and is reaching for her pencil with her right hand. Frame four shows Sean gazing down at his watch on his left wrist as he says “I’m not sure how much longer we have left”. Eleanor’s gaze follows to Sean’s watch.

Frame five shows Eleanor raise her gaze to the middle distance while handling her pencil as she says “when did we start”. Sean continues to stare at his watch and says “uummm”. Eleanor then replies “I think we’re finished”.

Diverging and converging higher level actions

Extract two shows the tutor and student diverging from producing the same higher level action at the foreground of their attention awareness. At the beginning of the extract Eleanor and Sean are both producing the action “learning statistics” at the foreground of their attention. However as Eleanor drops her pencil and leans back she perceivably disengages in this action. Not entirely, but it shifts to the midground of her attention/awareness. Figure 10 shows a graph of the attention awareness of Sean and Eleanor before she drops her pencil and leans back.

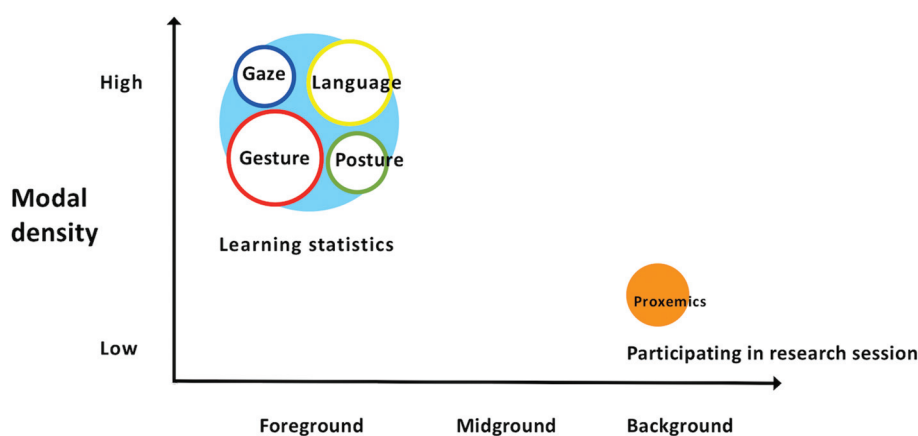


Figure 10 Graph of Eleanor and Sean’s attention/awareness

Transcript 2B shows Eleanor continuing to engage in learning statistics, but with markedly lower modal density. Her verbal responses are minimal, and she does not bring her arms back onto the table, keeping them at her side. She does however lean in and gaze at Sean and the paper on the table. Sean continues to produce “learning statistics” at the foreground of his attention/awareness.

In transcript 2C Eleanor starts to perceivably produce another higher level action at the foreground of her attention/awareness. This action is “closing the session”. Eleanor picks up the paper that they have been working on, asking if Sean wants it. This alters the “contextual configuration” (Goodwin, 2000) by reorganising the space that they are working within on the table. It also contributes to high modal density of the action “closing the session”.

In this extract we see Sean also begin to focus on “closing the session”. He gazes down at his watch and utters “I’m not sure how long we have left”, orientating clearly to the closing of the session. Eleanor then asks when they started and finally directly closes the session in the mode of spoken language with her utterance “I think we’re finished”. Note the extensive buildup to this explicit statement, and that it comes from Eleanor only once Sean is also focused on closing the session.

Figure 11 shows a graph of the attention/awareness of Sean and Eleanor, with the higher level action of “closing the session” produced at the foreground of their attention awareness. “Learning statistics” has dissipated, with Eleanor’s “deconstruction” of the site of embodied action (Robinson and Stivers, 2001) and Sean’s focus on closing the session.

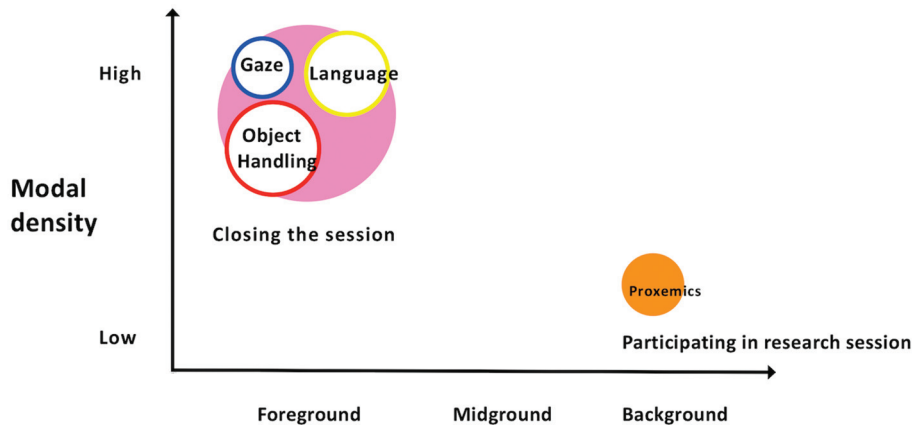


Figure 11 Graph of Sean and Eleanor attention/awareness

Conclusions

During tutoring students and tutors are engaged in dyadic interaction. Tutor and student transition between various higher level actions as the session progresses. The analysis shows that participants do not focus on the same higher level actions by default. Rather the focused attention/awareness of both social actors converges at times on the same higher level action, and at times diverges, as each focuses more strongly on producing *different* higher level actions. This landscape of attention also includes higher level actions at the midground and background of attention/awareness.

In extract one the tutor convinces the student to focus on reading the passage by pointing out that he has not entirely understood it. This is achieved multimodally, drawing upon the copy of the passage, spoken language, gaze and gesture. Prior to this the student and tutor are focusing on different higher level actions, while still displaying full engagement to each other (Goodwin, 1981). In extract two the session is closing. The student demonstrates they understand the main point of the session. We see a shift in the student's attention through a lowering of modal density, and a marked semantic/pragmatic means (Norris, 2004) as she places her pen on the table, leaning back. The student then moves to close the tutoring session, and the tutor eventually joins her in focusing on "closing the session" at a high level of attention/awareness.

These analyses reveal one way that tutors support students to begin developing effective practices and the influence that the student has over the tutoring session. Specifically, the first example shows the way the tutor helps the student to develop the practice of reading the entire passage, which is required for the activities Emma wants to carry out later in the session. Note that Emma makes no reference to a particular style of reading, whether close reading or skim reading and so on. She has simply noted that Pranto has not read to the end of the passage. Here I identify the practice Emma promotes as "reading the entire text". Elaboration of what kind of reading this might involve is outside of the scope of this article. Pranto had not read the entire passage, and his explanation of it misses a key point. Emma directs Pranto to read the passage by attending to his explanation, while continuing to focus on strongly encouraging him to read the whole passage. She then illustrates how his description is incomplete. This is artfully done and shows respect for the student, allowing him to make a mistake and learn from it.

The second example shows the influence a student has during tutoring. Eleanor shows quite clearly when she understands the topic and is able to close the session through directing the focused attention of the tutor to closing.

These extracts show social actors demonstrating a rich landscape of attention/awareness, engaging simultaneously in multiple actions at the foreground, midground and background of their attention/awareness. As discussed above some important aspects of tutoring occur during the instances when the

focused attention of both social actors is diverging away from the same higher level action, or converging upon the same higher level action. Indeed it seems likely that important things happen when social actors display a restructuring of their attention/awareness. This has implications for the study of tutoring, and I have shown one way that a tutor promotes a specific activity, and the influence that the student has over a tutoring session.

More broadly, researchers interested in social interaction in general will benefit from examining the multiple foci of attention/awareness engaged in by social actors. Breaking away from a dichotomous view of attention opens up many avenues of study. I demonstrate here that even while displaying full engagement in each other (Goodwin, 1981), social actors can focus on performing different higher level actions. The movement both into, and out of, shared focused attention is a potential site of investigation for various outcomes of interaction in contexts other than tutoring.

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Bionote

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