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2013

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UNIVERSITY OF CALIFORNIA

Los Angeles

Technically Speaking:

On the Structure and Experience of Interaction Involving
Augmentative Alternative Communications

A dissertation submitted in partial satisfaction of the
requirements for the degree Doctor of Philosophy
in Anthropology

by

Christopher Robert Engelke

2013

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ABSTRACT OF THE DISSERTATION

Technically Speaking:
On the Structure and Experience of Interaction
Involving Augmentative Alternative Communications

by

Christopher Robert Engelke

Doctor of Philosophy in Anthropology

University of California, Los Angeles, 2013

Professor Paul Kroskrity, Co-Chair

Professor Alessandro Duranti, Co-Chair

Technically Speaking: On the Structure and Experience of Interaction Involving Augmentative Alternative Communications examines the ways that communication is structured and experienced by looking at interactions involving augmented communicators – people with severe speech disabilities who use forms of assistive technology in order to communicate with others. Completed in 2013, and drawing on over two years of fieldwork with people who use, design, manufacture, and prescribe augmentative alternative communications (AAC) devices, this dissertation examines the impacts of AAC on interaction and intersubjectivity. Combining

ethnographic methods with forms of close discourse analysis, the chapters explore how the architecture of interaction responds to the nuances of mediated forms of communication, and how individuals experience interactional phenomena of intersubjectivity and ‘voice’. The dissertation begins by looking at the ways that augmented and mouth-speaking interlocutors comport themselves at various points in the unfolding of interaction. Combining insights from the fields of conversation analysis, discourse analysis, linguistic anthropology, and phenomenology, the early chapters explore the role of temporality in the creation and maintenance of intersubjectivity. By showing how and when interlocutors experience breakdowns in the tight temporal attunement and sense of collective engagement that characterize face-to-face conversation, the first part of this dissertation explores the impact of AAC technology design on the structures of interaction and the experience of personhood. The second section of this dissertation interrogates the notion of ‘voice’. The chapters in this section examine the how augmented communicators are able to embody a voice that is being produced by a mechanical device, located outside of their physical body, and how individuals with different forms of speech disability relate to the synthetic voice differently, thereby revealing a great deal about their tacit understandings of their bodies and the world around them. By examining communication through and despite mediating forms, this dissertation expands understandings of the nature of intersubjectivity. Moreover, by bringing divergent fields’ perspectives to bear on the topic of interaction within the context of disability, the dissertation provides new ways of approaching communication, suggesting a new model for understanding the experience of sociality.

The Dissertation of Christopher Robert Engelke is approved.

Charles Goodwin

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University of California, Los Angeles

2013

This dissertation is dedicated first to my parents, whose
love, support, and commitment to helping others
serves as a constant source of inspiration to me.

I dedicate it also to my wife, Christina, and daughters,
Annika and Lorelei. Your patience made this possible
and your love makes every day worthwhile.

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ACKNOWLEDGEMENTS

A doctorate degree, like any other milestone, results from the commitments many people make to one individual. Throughout my years in the university I was fortunate to receive advice and inspiration from some of the finest mentors alive. The reality of learning from, and socializing with scholars of such distinction far exceeded my wildest hopes. I am especially grateful for the opportunity to work with my committee members: Sandro Duranti, Paul Kroskrity, Elinor Ochs, Chuck Goodwin, and Jason Throop. I am truly lucky to have had the opportunity to work with each of you. In the years I have known him, Sandro Duranti never once failed to impress me with his undiluted charm and terrific presence. Sandro met waning motivation with inspiration and insight, vulnerability with humor and praise, and self-pity and sloth with a firm hand. This dissertation would not have been possible without Sandro's empathy, dedication, and encouragement. From the moment I first met him, Paul Kroskrity was a committed mentor, advising and supporting me even before I enrolled at UCLA. Paul's confidence in his students and the academic process was unsurpassed, and his unwavering support allowed me to find the project that became this dissertation without fear of failure. It was Elinor Ochs who gave me the initial opportunity to write about issues of temporality in interactions with people with communications disabilities by allowing me to access a corpus of recordings of children with severe autism. Her guidance and direction continues to be a powerful influence on my thinking and aspirations. Chuck Goodwin and Jason Throop both introduced me to new ways thinking about interaction and intersubjectivity. Chuck Goodwin supplied me with the tools to see those things that were simultaneously nearest to me and furthest away. It is through the lenses he ground that I look upon the unfolding world. Jason Throop is an exciting teacher, a generous mentor, and powerful scholar. I am enormously grateful for his

council and guidance as I worked to understand and apply phenomenological insights to my perspective. I continue to rely heavily on his insights and am inspired by the knowledge, respect, and love of humanity that underpins his work.

In addition to my committee, I have also benefited from the opportunities to work with a number of amazing individuals in the university. Initially it was James Wilce, and his uncanny ability to see the absolute best in a student, and to hold that student to his potential, that drew me to write my MA with him at Northern Arizona University and led me to aspire to writing a Ph.D. at UCLA. I am also particularly thankful to have had the opportunity to work with Candy Goodwin, Manny Schegloff, Sherry Ortner, and Linda Garro, all of whom offered valuable perspectives into what at times appeared to be radically different aspects of the human condition. I am grateful to the participants in UCLA's Discourse Lab ("ling lab") for their comments and feedback on my several presentations.

The research for this dissertation was supported by a Dissertation Fieldwork Grant from the Wenner-Gren Foundation for Anthropological Research as well as grants from UCLA's department of anthropology, and considerations from the Augmentative Alternative Communications Rehabilitation Engineering Research Center (AAC-RERC). Ann Walters masterful navigated the UCLA bureaucracy for me, and Tracy Humbert facilitated the application and delivery of grants with skill. Regina Estrada and Rowan McMullin worked tirelessly to provide help with transcription and copyediting. Working with them also provided invaluable opportunities to talk through ideas.

I have always been extremely fortunate to be surrounded by amazing cohorts of colleagues and friends. I was extremely fortunate to meet Stephen Black early in my time at UCLA. His constant stream of counter arguments to every point I ever made provided us with

innumerable hours of bar talk fodder, and ultimately made me a better scholar. Clint Humphrey, Robin Conley, Jeff Good, Hanna Reiss, Netta Avineri, Heather Lloyd, Anna Corwin, Hanna Garth, Anna Corwin, Jenny Walton-Wetzel and Rachel George all provided feedback, support, and friendship over the years. I owe a great deal to Mara Buchbinder, who continues to be a source of great inspiration as a dedicated scholar and a generous friend. Jesse Summers was welcome addition to our family for several weeks; bringing us great joy through is humor and wit. Paul Connor brought excitement and fame to my house, and entered every project with a smile. I am deeply grateful to Keith Murphy for his friendship, guidance, and the opportunity to work through new ideas during our walks though Long Beach and our many kayak trips.

I am deeply thankful of all the people who allowed me into their lives, and to those who guided and supported me in the field of AAC. I am particularly thankful to John and Sara Feucht, whose insights and honesty were inspirational. I am excited by the prospect of further collaborations. Michael Phillips was a source of insight and strength, the likes of which I have never seen elsewhere. He and Karen Clay have become family to me. Chris Klein's contributions to teaching, mentoring, and community building are prodigious, and I am thankful for his friendship and counsel on everything from access strategies to muffins. Bob Siegelman's work and dedication served as a source of motivation and inspiration to me long before I ever knew him as a man. I count myself luck to have been able to have spent many hours working him and have higher cheekbones from laughing at his jokes. Kevin Williams, Gregg Mozgala, Bac Shelton, and several others from 'The Commune' deserve thanks for their sage advice and influential insights into the field of AAC. In particular it was Kevin Williams who first suggested that I look at the differences between the ways that augmented communicators with different disabilities used their devices and later provided his unique combination of honest

insights and pronounced convictions that helped me to see pieces of what is so often hidden. It was an extreme pleasure getting to know Todd Hutchinson, who kept me from taking my research too seriously and thereby overlooking the important things in life and living. Bruce Baker provided generous support for my interest in learning about Minspeak and contributed greatly to my thinking through our many meetings and telephone conversations. Bruce's generosity is legendary and rivaled only by his intellect and drive to make the communication more efficient for people with speech disabilities.

I owe a tremendous debt of gratitude to my collaborator, mentor, and design partner Jeff Higginbotham. Jeff's personal and academic generosity stretches beyond anything I could have imagined prior to meeting him. I initially approached Jeff with a not yet fully formed idea for a new AAC device. His response was to invite me to visit him and his lab in Buffalo. In the years since, we have worked together on numerous design projects and research initiatives. Jeff's selfless approach creation and enduring dedication to the projects he begins makes him the finest collaborator I have ever known. It was only through the insights that Jeff offered, the introductions he made, the opportunities he manufactured, and enthusiasm he maintained that I was able to plunge as deeply into the field of AAC as I have. Beyond our professional relationship, I am extremely fortunate to count Jeff among my dear friends.

I have been blessed with an exceptional family. My parents, Robert and Susan Engelke, provided unwavering support of my academic pursuits, even when the ends of those pursuits were unclear. It was their work creating technological solutions for people with disabilities that inspired me to take on this project and provided me with the experience and mindset that formed my approach research and design. In all aspects of life, they have set the measure to which I continue to aspire. My children, Annika and Lorelei, deserve my heartfelt thanks for allowing

me to glimpse the world through their eyes and for supplying unending laughter, song, and dance. Finally, I am forever indebted to my best friend and wife, Christina Engelke. Her capacity for love and understanding amazes me, and her commitment and patience is unprecedented. Her presence has enriched every aspect of my being and allowed me to share in joys that I never could have imagined. Christina, words cannot express my love for you nor my appreciation for all you have done!

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in press Looking to Speak: On the Temporality of Misalignment in Interaction Involving an Augmented Communicator using Eye-Gaze Technology. *Journal of Interactional Research in Communication Disorders*.

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2012 Touching Stories: Organizing Orientation to Joint Activity in Interactions Involving a Child with Severe Autism. *In Annual Meetings of the American Anthropological Association*. San Francisco, CA.

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2011 Prompting Sequences: On the Temporal and Sequential Organizations of Intersubjectivity. *In Invited Talk given to the Department of Anthropology at Northern Arizona University*. Flagstaff, AZ.

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2011 Disability and the Embodied Voice. *Annual Meetings of American Anthropological Association*, Montreal, Canada, 2011.

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2008 Temporal Cues: What Children with Severe Autism can Teach us about the Organization of Intersubjectivity. *In SALSA*. University of Texas-Austin.

CH. 1 Blinking, Dwelling, Typing: An Introduction

I began my fieldwork in January of 2011, intending to follow groups of engineers and product designers from multiple companies as they created augmentative alternative communications (AAC) devices – assistive technologies for people with severe speech disabilities. The project, sponsored by the Wenner-Gren Foundation’s Dissertation Fieldwork Grant and Osmundson Initiative, was designed to examine how able-bodied product designers came to understand and address the needs of people with severe speech disabilities. I was also interested in whether designers’ perspectives matched those of the people who would eventually use their products. While investigating these topics, I realized that the use of assistive communications devices in people’s everyday lives uncovered aspects of communication that routinely go unnoticed when all of the parties are able-bodied. The data I was collecting made immediately presented issues related to participation, intersubjective attunement, temporality, and understandings of one’s own body that we take for granted when analyzing the practices of the able-bodied.¹ As I began spending more time with people with severe communications disabilities I came to see the patterns in the ways people used their equipment and the ways that their interlocutors responded. I had started out investigating the ways that able-bodied individuals *saw* the disabled. I ended up seeing the two perspectives as inescapably intertwined. Thus, when the introduction of new consumer technologies shook the assistive technology industry, disrupting my initial plans to work with AAC designers, I gladly refocused my research efforts on the technology users and their everyday interactions.

1.1 Finding the Field

For almost as long as I can remember, my father has run a company that designs and manufactures assistive technologies for people who are deaf and hard of hearing. I have worked in a number of different positions in the company – from soldering circuit boards to helping research and design new products – and participated in meetings, parties, dinners, and other events with my father’s colleagues, friends, and clients, listening to them discuss new products and industry developments. I also attended conferences and conventions dedicated to the many products designed to make people’s lives easier or more enjoyable by mitigating difficulties that stemmed from physical or sensory impairments. What became my “field”, then, was a familiar territory. How I was looking and what I was looking for, however, changed as my project took shape.

My research proposal began to take shape when I had a chance to spend a few hours talking with Gregg Vanderheiden, an engineer who is credited with many of the most successful developments in assistive technology and universal design. Gregg, who is a professor and director of the TRACE research center at the University of Wisconsin-Madison, told me about a graduate and senior level class he taught in the engineering program. The class was designed to train engineering students to design products for people with disabilities, primarily those associated with the aging process. He said that the class was almost entirely dedicated to helping the students understand the needs, expectations, and everyday experiences of disabled elderly individuals – the target users for whom the students were expected to design. Through a series of lectures, structured meetings with people with various disabilities, demonstrations of existing technology, and an ‘experience lab’ – wherein the students would try on a number of disabling prosthetics and then attempt to perform everyday activities – the students were mentored into a

new way of experiencing the world of design. The goal was to get students to see products in the ways that people with disabilities might see them so that when they became professional engineers or designers they could build a world that would work for everyone.

Gregg agreed to allow me to study the class for a semester in order to examine the ways that the students' perspectives changed over the course of their encounters and how they drew from these newfound ways of seeing to complete their term projects, designing an assistive device of their own. I followed two of the class' design teams over the 16-week semester, conducting regular interviews with many of the group members, video recording each of their meetings, and observing their independent work in the labs. It was soon apparent that the methods these students employed to understand their target users impacted their designs. For example, the students would often borrow one of the disabling prosthetics from the 'experience lab', trying to operate their designs while wearing it. This method often led to problems, however, as the students were unable to tap into the intended user's perspective because they could not track the array of experiences required for completing the task at hand. While a student might disable his fine motor control by donning a special glove, he might then compensate for the loss by relying on his above average strength, thereby replicating only a small element of 'what it's like' to have a disability and playing it out against the background of his own familiar body (cf. Nagel 1974). As such, laptops continued to operate in the standard fashion but were redesigned to be heavier in order to allow normative opening with one hand. Bulky devices were designed to stabilize the hand, allowing someone with tremors to operate a Wii keyboard.

Through these observations, I became interested in what I saw as empathetic understandings in design, that is, in the methods used to take the perspective of people who, by virtue of their disabilities, experienced a world that was different from the one encountered in the

everyday lives of able-bodied designers. I decided to take my study outside of the university setting and look at professionals who designed assistive technologies. By conducting my research among professionals rather than students, I wanted to have the option of following a product from design to distribution and use. This would allow me to see the areas of match and mismatch between the designers' expectations and the users' experiences. Given the complexity of the issues involved, I decided to narrow my research to a particular type of assistive technology that I had been introduced to in Gregg's lab: Augmentative Alternative Communications (AAC) devices.

1.2 The 'Field' of Augmentative Alternative Communication (AAC)

Augmentative alternative communications (AAC) systems are one type of 'communication aid'. AAC refers to "all communication that supplements or augments speech" (Vanderheiden and Yoder 1986:2) including gestures, facial expressions, proxemics and kinesics, sign languages, and writing. However, because people with speech disabilities often lack the fine motor control to use sign languages efficiently or the gross motor skills to move/gesture in meaningful ways, a wide range of devices have been developed to assist users' *production* of intelligible signs, specifically those that afford language. Thus, because AAC devices only augment users' linguistic *output*, they are differentiated from other assistive technologies designed to augment linguistic *input* (e.g. captioned television/telephone²) and services designed to augment *both* input and output (e.g. TTYs/TDDs,³ TRS/VRS,⁴ TXT messaging/two-way pagers). While such devices are less well known than closed captioning services or texting devices, current figures suggest that **over 2 million Americans have a disability that compromises their speech intelligibility** (ASHA 1989; Shane 1986) **and requires them to use a**

special form of assistive technology in order to literally and figuratively have “a voice”
(Vanderheiden and Yoder 1986).

1.2.1 Augmented Communicators

AAC systems are being used by people with an ever-growing range of impairments; however, the field is most commonly associated with speech disabilities resulting from motor impairments (e.g. cerebral palsy, amyotrophic lateral sclerosis (ALS), stroke, and traumatic brain injury), neurodevelopmental disorders (e.g. autism and forms of mental retardation), and language disorders (e.g. aphasia and apraxia of speech) (cf. Hustad and Shapley 2003). As this list demonstrates, the disabilities associated with AAC are highly heterogeneous in that they may be congenital – e.g. CP – (see Mirenda and Mathy-Laikko 1989) or acquired later in life – e.g. aphasia or ALS – (see Beukelman and Mirenda 1992; Robillard 1994; 1999; Shane 1986), and they may appear in isolation or conjunction with other impairments (e.g. cognitive, sensory, motor) necessitating additional considerations (cf. Kovach and Bothwell Kenyon 2003; Mirenda 2008; Rowland and Schweigert 2003).

Although people with a wide range of disabilities use AAC devices, I decided early on to limit my research to adults with non-cognitive impairments. Ultimately, the participants ranged in age from 30 to 68 and represented multiple races and religions. They included individuals who lived independently, those who lived with their parents, and those who lived with their spouses, both able-bodied and disabled.

Despite the demographic variety they represented, all the participants in my study experienced a world in which they could not speak in the same ways that the people around them did (e.g. Creech 1992; Feucht 2004; Fried-Oken and Bersani Jr. 2000). This excerpt written by a

well known augmented communicator, Rick Creech, captures one of the recurrent themes of these accounts:

If you want to know what it is like to be unable to speak, there is a way. Go to a party and don't talk. Play mute. Use your hands if you wish but don't use paper and pencil. Paper and pencil are not always handy for a mute person. Here is what you will find: people talking; talking behind, beside, around, over, under, through, and even for you. But never with you. You are ignored until finally you feel like a piece of furniture.

(reproduced in Beukelman and Mirenda 1992:4)

While this social experiment offers the temporary mute little more than a 'Black Like Me' opportunity, Creech's target with this sort of 'breaching experiment' (Garfinkel 1967; cf. Crabtree 2011) is something that it seems all augmented communicators have experienced. That is, a central component of our 'experience' of being human depends on being recognized and treated as human by other humans. Our being, unlike that of an inanimate object, emerges through our communicative engagement in a pervasively social world. Being an augmented communicator is about interrupting the 'breach' that being unable to speak represents. I address this issue throughout this dissertation in a variety of ways. However, in order to understand the ways that augmented communicators go about engaging with others and fortifying their own humanity in the face of speech disabilities, it is first necessary to understand AAC systems and how they operate.

1.2.2 AAC Systems and Devices

AAC devices are typically divided into two types, and all of the participants in my study used both: low-tech or assisted/aided devices and high-tech or unassisted/unaided devices. Low-tech AAC refers to strategies and tools wherein the user signals letters, words, symbols, etc. to an assistant or interlocutor, who typically voices the signs indicated (Beukelman and Mirenda 1992; Wasson, et al. 1997). The specifics of low-tech AAC systems vary widely depending on the

abilities, skills, and preferences of individual communicators and their partners. For example, participants in my study used a wide variety of low-tech/no-tech systems including modified, manually signed languages, often based on American Sign Language (ASL) and systems of air signing/air writing, wherein the augmented communicator would trace the shapes of letters in the air in order to spell out words and phrases.

Trained interlocutors would then repeat back to the augmented communicator each letter, eventually anticipating the words and phrases. Individuals who could not control their arm movements well enough to use air signs often relied on binary response systems wherein they would answer “yes” or “no” to questions posed to them. Although any manipulanda can be used in such a system, augmented communicators typically used eye or eyebrow movements to produce their binary signs.⁵ For example, augmented communicators would look up or raise their eyebrows to indicate a ‘yes’, look down or close their eyes for ‘no’. This binary system was then harnessed to produce language in a method called ‘alphabetting’. Alphabetting is a process whereby the augmented communicator’s mouth-speaking assistant/interlocutor speaks the letters of the alphabet until the augmented communicator signals him/her to stop, thereby selecting the last letter spoken. The assistant will then often guess at or anticipate words and phrases as they become clear, checking their understanding with the augmented communicator through further yes/no questions.

In addition to these low/no-tech systems, augmented communicators who could produce vocalizations frequently used whatever vocal capacity they had, either instead of, or in addition to other augmented communication methods. Although often severely dysarthric, and therefore independently unintelligible, augmented communicators secured interlocutors’ understanding of their vocalizations by using recognizable pitch contours and prosody, by tying their vocalizations

to prior talk/actions, and by coupling their vocalizations with gestures or gaze to direct interlocutors' attention to objects in their shared environment. As such, vocalizations were often performed as part of larger stance displays, providing what frequently amounted to an affective commentary to a topic that was otherwise nominated (Clarke 2005; 2010; Goodwin in preparation; Wilkinson, et al. 2003; see also Ochs and Schieffelin 1989). Additionally, augmented communicators would often produce iconic vocalizations by means of a particular number of short vocalizations to directly indicate a number – e.g. an amount or a time – or a letter – e.g. three vocalizations for 'C', the third letter in the alphabet.

High-tech AAC devices are computerized tools that produce synthesized speech and can be operated through a range of user interfaces from the common (e.g. keyboard or touch screen) to the exotic (e.g. eye tracking, single manual switch, or neural switch), thereby allowing people with various degrees of motor impairment to access and produce language. The devices themselves range in size and shape from that of a smartphone to that of a desktop computer, with the majority taking the shape of a very thick tablet or laptop computer. In general, the basic design of most high-tech AAC systems is quite similar regardless of what company designed and manufactured the product. In large part this similarity in hardware design stems from the fact that hardware design and manufacturing requires a substantial cost and a potentially risky investment for companies that make AAC devices; however, with the advent of dynamic displays and touch screens, companies can now manufacture a few products and then configure the software to fit most user's needs.

In addition to the 'access method' – i.e. the means by which the individual user physically operates his or her device – augmented communicators who use high-tech AAC devices employ one or more communication strategies – i.e. methods by which language is organized and

accessed on their device. Although there is considerable variation in the forms that these strategies can take, there are effectively three types of strategies currently available.

1) Typing. This is the most common and recognizable AAC strategy. All AAC devices offer the ability to type novel words and phrases, often supporting these endeavors with various tools like lexical and phrasal prediction and expansion – a tool that recognizes what letters have been typed and offers candidate completions.

2) Whole word/phrase selection systems. The AAC device contains several pre-arranged ‘pages’ of words/phrases. Users then navigate through folders of pages to find the desired word or phrase. For users who are illiterate or have trouble seeing small text, words and phrases can be represented with symbols. While this system allows users to compose novel utterances one word at a time, the user is forced to select from a limited vocabulary on any one page or to navigate between several pages to find the preferred words. As a result, most of the augmented communicators who I have seen using this strategy tend to rely on pre-stored (see chapter four) or single word utterances.

3) Semantic compaction. This is the system that most of the users I spent time with relied on most frequently. It allows users to select short sequences of images arrayed on their keyboard in order to access pre-stored words, phrases, or stories. For example, when the user selects a button containing an image of a glass of juice followed by the “verb” button (a picture of a man carrying a hammer and bucket while whistling and walking), the system will produce the word “DRINK.” When the same picture of juice is selected followed by a picture of a paintbrush (the “adjective button”), the word “THIRSTY” is produced. While the system requires considerable learning in order to memorize the hundreds of sequences required to access even the most commonly used words in the English language, neophytes are assisted in this process by sets of

rules and regularities that govern sequential formulas. The benefits of this system are immediately visible, however, when one compares the number of keystrokes required to produce either of the above examples though spelling vs. semantic compaction. Spelling the word “THIRSTY” for example, requires at least 7 character selections, not including the needed spaces to separate it from other, co-occurring words (cf. Higginbotham 1992; Vanderheiden and Harris-Vanderheiden 1976; Vanderheiden and Yoder 1986).

Dedicated AAC devices cost between \$500 and \$20,000. Prices are standardized by Medicare codes, meaning that devices fall into various categories based on what features they provide. AAC device manufacturers then build devices to meet the Medicare code specifications. As a result, standard, full-sized AAC devices cost around \$7800, regardless of which company manufactures them. This price doubles for devices that allow eye-tracking, a means of accessing the device that relies on the user’s gaze rather than touch. And, although many systems are paid for by a family’s insurance and/or state subsidy programs, funding equipment is always an issue, leading most augmented communicators to work with a person whose primary job is securing funding (Zangari and Wasson 1997). Funding AAC equipment has become an issue large enough to motivate several of the largest AAC developers to create departments within their organization whose only job is to help families navigate bureaucracies at various levels. At least one company has gone so far as to develop software that is specifically designed to help parents seek out sources and apply for funding. Additionally, there are now multiple software applications designed to “streamline the process” speech language pathologists use to complete their clinical evaluation forms, supplying preset language tailored to particular funding agencies’ guidelines.

Regardless of how the augmented communicator accesses language, compared with people who speak through their mouths, who average between 160 and 240 wpm, all of the

systems listed above use are drastically slower. Augmented communicators using high-tech devices can often produce only around 8-15 words per minute (wpm). While some studies have shown that augmented communicators can construct novel utterances more rapidly through low-tech methods (e.g. Higginbotham and Wilkins 1999), this ability is wholly dependent on a well-trained assistant and the manipulanda/access methods the person has available. Moreover, because the faster rates achieved through low-tech systems depend on the assistants' guesswork, increases in speed often come at the cost of full 'control' of the exact wording of an utterance. Although some communicators are able to achieve rates closing in on 30 wpm, this still puts them at almost a full order of magnitude slower than people who speak through their mouths. In my experience, however, augmented communicators tend to prefer using low-tech modes of communication when possible. While this preference may relate to the speed at which the augmented communicator can produce novel utterances, the structure of interaction that each form of message production supports is also an issue. As I discuss in Chapters 2 and 3, the use of high-tech communication devices often leads to a type of **intersubjective slippage**, wherein the interlocutors fall out of the tight temporal attunement that characterizes back and forth of non-augmented interaction. This sort of slippage is not present, however, in low-tech or non-augmented exchanges (see Chapter 2).

1.2.3 SLPs: Perspectives on 'Interaction'

The majority of published work in the field of AAC comes from speech language pathology (SLP), a clinical field dedicated to providing therapy to individuals with a wide range of needs related to speech and the vocal tract – e.g. swallowing, respiration, and feeding. Owing to the clinical nature of the field, research on AAC typically focuses on the “functional limitations” of the individual (e.g. Shane 1986), thereby constructing individuals in terms of their biomedical

impairment (cf. Kasnitz and Shuttleworth 2001). The clinical focus of speech language pathology has influenced SLPs' approach to 'language' in at least two noteworthy respects. In the first place, SLPs typically take an objectifying approach to language, segmenting and quantifying features of interactional exchanges. In practice, this approach relies on measurements of the number and type of turns the augmented communicator takes, length of utterances, means by which the utterances were produced – i.e. spelling vs. other strategies – etc. (e.g. Beck, et al. 2000; Bedrosian, et al. 2003; Beukelman and Mirenda 1992; Harris 1978; Hill and Romich 2002). This approach to language stems from the clinical mandate to supply “evidence based practice.” Evidence based practice refers to a decision making process that relies on a hierarchy of clinical and educational resources in order to prescribe treatments in line with statistical probability and institutionally recognized approaches (Schlosser and Raghavendra 2004). Although evidence based practice approaches to AAC recognize users' accounts and professional opinions, the approach prioritizes experimental designs over non-experimental case studies and qualitative research. As such, the clinical context motivates an approach to language that can be easily adapted to experimental considerations (Schlosser and Raghavendra 2004; von Tetzchner and Jensen 1996).

In addition to impacting the ways that SLPs study language, this approach has also led to particularities in the ways that SLPs interpret their findings. For example, work by SLPs has documented considerable asymmetries between augmented communicators' utterances and those produced by people who use mouth-speech (see Light 1988). This has prompted several authors to argue that these statistics represent asymmetries in “conversational control” (e.g. Dattilo and Camarata 1991; Farrier, et al. 1985; Ferm, et al. 2005; Harris 1978; Light, et al. 1985b; Müller and Soto 2002b), leading designers and therapists to focus on ways to balance the interlocutors'

figures. The mandate that interlocutors *should* produce measureable utterance features with statistical parity represents a powerful metadiscourse among SLPs. At the heart of the metadiscourse is an implicit theory of communicative competence that trades on a notion of equality which conflates *equality* with *sameness* (cf. Collins 1996a; Whyte and Ingstad 1995). According to this vision, ‘participation’ is equivalent to the appearance (viz. presence and quantity) of one person’s speech activity, but neglects the “forms of *social organization* made possible through talk” (Goodwin 1999:178), which is central to an anthropological understanding. Moreover, this type of frequency analysis neglects the diversity of culturally preferred styles of interacting (e.g. Basso 1979; Philips 2001[1970]; Scollon and Scollon 1982) and the range of ways in which individuals participate in interaction by means other than speaking (Goodwin 1979; 1980a; Goodwin 1980b; Hindmarsh and Pilnick 2002).

Within the study of AAC there is also a small, but growing interest in examining the structure of naturally occurring interactions that include augmented communicators (e.g. Clarke and Kirton 2003; Clarke 2005; Clarke and Wilkinson 2005; Clarke and Wilkinson 2006; 2010b; Higginbotham, et al. 1988; Higginbotham and Wilkins 1999; Sweidel 1989; 1992; Wilkinson 1999; Wilkinson, et al. 2011; see also Engelke and Higginbotham in press; Higginbotham and Engelke in press). Although less common, approaches to AAC-mediated talk in interaction have criticized ‘evidence based practice’ approaches, noting that experimental designs that manipulate one or more aspects of the AAC system “are often implemented without considering how they will affect the overall process of communication” (Mathy-Laikko and Yoder 1986:476). Moreover, these critics note that the use of frequency counts to analyze interactional data reduces analysis to *amounts of behavior* and neglects the complex processes by which speakers negotiate

their participation in the interaction (e.g. Higginbotham, et al. 1988; Higginbotham and Wilkins in press).

The second way in which the clinical origins of speech language pathology have impacted the field's view of language can be found in the widespread acceptance of the "sender-receiver model" of communication (e.g. Fuller and Lloyd 1997; Hustad 2005; Hustad, et al. 2003; Hustad and Shapley 2003; Lindblom 1990; Lloyd, et al. 1990). The sender-receiver model" was developed by Shannon and Weaver as part of Bell Labs' work on telephony (Shannon 1948; Shannon and Weaver 1949; cf. Finnegan 2002). The model posited a mathematical explanation for information transfer, wherein the intelligibility of a communicative event was considered as a product of elemental functions. The model finds applicability here through the clinical requirement to identify and isolate the defective or impaired elements of an individual's communication practices, and the need to quantify the effects of therapies in line with the mandates of the evidence based practice approach discussed above. For example, Hustad and colleagues (e.g. Hustad 2005; Hustad, et al. 2003; Hustad, et al. 1998; Hustad and Shapley 2003) performed a number of experiments examining the effects of speech supplementation strategies wherein dysarthric speakers were asked to point to the first letter of each word as they spoke it in order to assist hearers' decoding. In these experiments, speakers were recorded producing individual utterances without conversational context in order to measure the clarity by which they could manipulate particular modalities (i.e. mouth-speech). Other individuals with 'normal' hearing and vision were then asked to decode the speech or speech + supplemental gesture, effectively transcribing the utterance as they understood it. Because this approach to language and interaction produces quantifiable data, it constitutes the highest tier of data within 'evidence based practice' approaches.

1.2.4 Implications for Design and Terminology

As with other models, however, the assumptions, beliefs, and definitions that underpin evidence based practice approaches tend to ‘leak’ into other domains, including the design of objects and interfaces (Dourish 2001; Norman 1990; Papanek and Hennessey 1977; Wartofsky 1979[1968]). For example, recent work on human computer interaction has shown that by taking cultural models and ideologies as ‘natural,’ designers have effectively replicated the cultural world in the physical and virtual worlds (Aneesh 2006; Boellstorff 2008; Dourish 2001; Ihde 2002; Murray and Sixsmith 1999; Suchman 2007). Moreover, despite the fact that virtual worlds are under no strict obligation to imitate the physical worlds from which they are born, designers’ explicit representations and tacit familiarities guide their development of these simulacra (Wartofsky 1979[1968]; 1979[1973]). Thus, in the field of AAC, the sender-receiver approach to interaction can be seen in the basic design of AAC devices and in the ways that researchers and clinicians envision augmented communicators.

The design of AAC devices reflects a strong adherence to the sender-receiver model in a number of ways. A first example of the model can be seen in the ways that the design of high-tech AAC devices privilege the devices’ audio – i.e. speech – output, often to the exclusion of other potentially valuable modalities. This can be seen in the basic design that most AAC devices follow, wherein the user interface and display are oriented to the augmented communicator, while the device’s speaker is oriented away from them – i.e. towards where a prospective interlocutor would be located in standard f-formation arrangements (Kendon 1990). As such, the design of most AAC devices responds to the notion of an individual and autonomous ‘speaker’. Second, the simple fact that dynamic control of pitch and other suprasegmental features is cumbersome to

the point of being largely impossible on AAC devices suggests its low rank on the list of designers' overall priorities (Pullin and Cook 2010; Todman, et al. 2008), and reflects the pervasive Euro-American referential bias wherein the 'text' of an utterance enjoyed an elevated status (Silverstein 1996).⁶ Communication, herein, is understood as a product of information transfer, requiring little more than the uni-modal production of text (cf. Higginbotham, et al. 1988). A third way in which the sender-receiver model finds expression in AAC device design can be found in the design of 'language activity monitoring' (LAM) software included on most AAC devices.⁷ LAM and similar software record everything that the augmented communicator types as well as when and how they type it – i.e. what method they used to access the words. This software is then used to analyze and graph the augmented communicator's communicative practices in order to make the augmented communicator more efficient at using their device. However, by failing to examine the conversational context in which the utterances are produced, including pragmatic or poetic functions, the design of these tools holds all means of production equal against a mathematical model of efficiency, thereby replacing the notion of social competence with an emphasis on operational competence.

Understandings of the ways systems work not only effect the ways that products are designed, but may also impact the ways we use and reflect on the use of designed devices. This is because the designs themselves can evoke responses, which in turn are read within cultural norms and preferences. Citing everyday examples, Verbeek (2006:362) notes that "technologies are able to evoke certain kinds of behavior...[such that] a plastic coffee cup has the script 'throw me away after use,' whereas a porcelain cup 'asks' to be cleaned and used again." As such, these designs afford everyday activities, naturalizing social scripts – e.g. purchasing coffee 'to-go' – in ways that make the script appear 'natural'. In the case of AAC devices, the design features discussed

above seem to naturalize understandings of what it means to be an ‘augmented communicator’. Specifically, by constructing the device in such a way as to respond to the actions and manipulations of only one party, the device seems to naturalize the notion of the augmented communicator as the device’s sole ‘user’, largely obscuring the roles played by interactional partners. As a result, augmented communicators are commonly referred to as “AAC users” (e.g. Bedrosian, et al. 2003; Higginbotham and Engelke in press; Hoag, et al. 1994; Huer and Lloyd 1990; Lloyd, et al. 1990; McCall and Moodie 1998).⁸ Although the designation may be largely benign, it can also be seen as problematic for its tacit incorporation of the sender-receiver model of information transfer. That is, referring to the augmented communicator as “AAC user” selectively highlights the activity of the ‘speaker’, while simultaneously erasing the role of hearer.

The underlying structure of Shannon and Weaver’s sender-receiver model was first articulated in Saussure’s (1983[1915]) speech exchange system for information flow wherein ideas travel through speech from a speaker’s mind into a listener’s receptive mind. In linguistic anthropology and applied linguistics this model has been criticized for the ways it reduces interaction to speaking, emphasizing the transfer of information and excluding the processes of interactive engagement, distributed cognition, and embodied collaboration. For example, work in these fields have shown that there are advantages to thinking about interaction as produced by multiple actors’ fully embodied engagement in a joint activity (e.g. Goodwin 1981; Hindmarsh and Pilnick 2002; LeBaron and Streek 2000). Thus, rather than conceiving of the individual participants in a conversation in terms of active ‘speakers’ and passive ‘hearers,’ this perspective examines all involved parties as ‘participants’ or ‘interlocutors’. Conversation is therefore seen as a collaborative achievement constituted through multiple, overlapping, and mutual modifying semiotic systems, wielded by multiple individuals simultaneously. From this perspective we can

see that although the augmented communicator does *use* the AAC device to produce generally intelligible utterances, the augmented communicator's conversation partners *also use* the device, relying on the signs produced through it to situate and structure their own participation.

In addition to the problems that the term “AAC user” invites through its embedded ideological stance toward communication, the term is also often used to establish augmented communicators as a marked category of communicators, separate and distinct from those who communicate ‘normally’ or ‘naturally’ (e.g. Beukelman 1991; Kraat 1985; Müller and Soto 2002a). I therefore attempt to avoid using the term “AAC user” throughout this dissertation, preferring instead to use the term “augmented communicator” to represent those who ‘speak’ via AAC device. Additionally, I use a term of my own invention – i.e. “mouthspeaker” – to refer to individuals who rely primarily on ‘mouth-speech’ to communicate. Although some anthropologists have noted that the term “mouthspeaker” suggests a derogatory stance, citing similar sounding terms (e.g. ‘knuckle-dragger’ and ‘mouth-breather’), I intend no disrespect towards those who use mouth-speech to communicate.

1.3 Finding my Way Amidst an AAC Revolution

After participating in three different assistive technology conferences around the United States, in January 2011 I set off for a four-week trip to Orlando, FL armed with a small black roll-aboard suitcase and an overstuffed carry-on containing three video cameras, a variety of microphones and audio recording devices, external hard drives, my laptop computer, and a ream or so of informed consent documents. My goal was to gain access to designers and clients from several of the largest AAC manufacturers in the United States by attending talks by industry

representatives and SLPs, conducting interviews with designers and manufacturers, and recording several days of mundane interactions involving augmented communicators.

I spent the first ten days of my initial venture attending a weeklong meeting of the Assistive Technology Industry Association, along with a special two-day pre-conference that hosted talks devoted to AAC design, use, and training. Although the resort that hosted the convention was beautiful, modeled after a tropical oasis, I had little time to see it. In addition to the presentations that lasted from 8am to 5pm, I had arranged meetings with designers and officers from several of the largest AAC manufacturers during every meal. In the evenings, I organized the notes I had typed during various sessions, cross-referencing the recordings I had made of interviews with the technologists.

If there was any one thing that stood out from the conference, separating it from the three similar conferences I had attended previously, it was a general sense of anxiety regarding the introduction of Apple Computers' newest piece of consumer technology, the iPad. Apple released the iPad in the United States in early April, 2010. By the time the device hit the shelves there was already an AAC app waiting to be loaded. I had been introduced to this app, Proloquo2go, at a conference more than a year earlier when I met one of the developers, a graduate student at Penn State University. I remember thinking that he had created something really big, but I had no idea how big it would become or what it would do to the field of AAC as it had existed up to that point. Now, some nine months after the iPad had been introduced, the enormity of his invention was starting to take shape.

The SLPs presenting at the conference had taken up a hard line approach to the app, calling it "junk" and characterizing the developers as 'fly by night' programmers who were simply out to make a quick buck off the unsuspecting. Worse yet, the app developer was

portrayed as someone who could knock out an app over his lunch hour, with no training in AAC or understanding of augmented communicators' linguistic needs. Horror stories circulated about how Proloquo2go was the harbinger of the AAC industry's demise, and with the downfall of the manufacturers would be the downfall of the SLPs. The primary concern being that whereas, as noted above, a dedicated AAC device costs around \$8000, an iPad with an AAC app costs around \$800. The difference in price was so dramatic that it meant the AAC app presented a whole new paradigm – no longer would a family need to endure months of testing only to navigate endless paperwork in order to receive the fragile AAC device of old. Now, with merely a credit card, anyone could own an AAC device, regardless of their diagnosis, regardless of whether or not they *had* a diagnosis. Like the passing of the movie critic, so too was the end of the era of expert relevance in the field of AAC. Moreover, and this was clear to everyone, the clunky, outdated, medicalized look of the dedicated AAC device was no match for the keen style that renowned designer Sir Jonathan Ive created for Apple.

And while this panic has since proved to be both real and imagined, all signs at that moment pointed to the end of the industry. One industry insider told me that in the first quarter that Proloquo2go was introduced on the iPad, it sold more copies than all of the traditional AAC devices combined. And, while this was itself problematic, the big worries were not the app that was out, but the apps that were coming out, the ones they hadn't seen yet. While it is quite beyond the scope of this chapter to document the rise of the AAC app, or to detail what the impact has been for the field of AAC, it is worth noting here that the shockwaves created by this newcomer caused sufficient panic among the major AAC manufacturers to cause them to rescind their invitations and deny me the once promised 'open access' to their design facilities.

News of the companies' decisions did not arrive until a few months after the 2011 ATIA conference; so, at the end of the meetings I rented a car and drove about an hour outside of Orlando to Tampa, where I had arranged to meet with two separate augmented communicators: Kurt and Andy. Although I still planned to focus on the designers and the ways they adopted the perspectives of the people who used their equipment, I had also budgeted a small portion of my time for conducting short but intensive ethnographic data collection sessions with augmented communicators and their families. I had originally anticipated conducting this research during the final four months of my proposed 12-month fieldwork period; however, I had come to know of these two augmented communicators through different channels and both had graciously invited me to come for an extended visit after the conference. Although Andy fell ill and was unable to meet me,⁹ Kurt and I were able to spend a great deal of time together.

1.3.1 Methods and Data

Before introducing Kurt and a few of the other primary participants in my research individually, I will briefly describe the data I collected and the means by which I collected it. In an attempt to approximate the methods for video ethnography in family settings developed at UCLA (Garro and Izquierdo 2003; Garro and Yarris 2009; Ochs, et al. 2006), I recruited augmented communicators to participate in intensive video data collection sessions. These sessions consisted of a minimum of four full days wherein I observed and recorded augmented communicators going about their daily activities. To my knowledge, this is the first research project to investigate the lives of augmented communicators' and their interlocutors in this way. Observations and recordings ran the course of the day; ideally starting at the time that someone was able to let me into the home, and lasting until the augmented communicator went to bed at

night. However, this arrangement was not always possible and I often amended my schedule based on the availability and willingness of the individual.

Over the more than 18 months that I conducted fieldwork, I collected approximately 130 hours of digital video recordings of everyday interactions and events recording approximately 300 pages of field notes, the majority of which focuses on eight primary participants (augmented communicators). These videos are primarily recorded within people's homes; however, there are a significant quantity of recordings of people outside of the home giving presentations, and interacting with storekeepers, assistants, friends, and therapists. During the weeks that I was not physically present with augmented communicators, designers, researchers, or at AAC conferences, I would often spend much of my days interacting with augmented communicators on-line. Thus, in addition to the video data and fieldnotes, I retained several hundred pages of email, IM, Chat, and Text Message correspondence with augmented communicators. In some cases, when my informants were willing to allow me to do so, I made screen recordings of the computer-mediated interaction so as to allow me to examine the real-time properties of the unfolding text stream (e.g. in cases of IM and video chat interactions).

Although, for the most part, I was unsuccessful in collecting video data on designers in companies constructing new AAC devices, I was able to record 13 hours worth of meetings between a speech language pathologist and professional AAC developers during which the parties worked together designing iPad apps. The themes that emerge here overlap in many ways with the almost 20 hours of unstructured interviews and interactions with designers from major AAC manufacturing groups that I was able to record. Additionally, I attended more than 18 conferences, conventions, and seminars on AAC, and took copious notes on the presentations when recording wasn't permitted.

In addition to the more circumscribed activities mentioned above, I also engaged in a number of less conventional forms of fieldwork including playing a supporting role in the first theatrical play to include an augmented communicator who composed his lines in real time (rather than relying on preprogrammed utterances for each line); serving temporarily as the primary personal care attendant for multiple augmented communicators; filling a position on the board of a non-profit startup that both serves and is run by augmented communicators; doing promotional work for a documentary film about augmented communicators; and participating in the ongoing design and development of multiple AAC technologies.

Although I had initially intended to remain largely invisible in the data I collected, it wasn't long before I realized that this was both impossible and undesirable for all parties. Thus, as I engaged in extended conversations with the participants in my study, I began to be recruited for additional involvements as well. For example, I often 'assisted' in personal care activities related to eating, travel, bathing, and toilet. As one might imagine, I developed strong friendships with several of the people in my study, and 'hanging out' or doing other things together often eclipsed my focus on recording. And while I undoubtedly 'missed out' on opportunities to record video of exciting and elucidating moments in the everyday lives of augmented communicators, I gained from the opportunities to participate in my friends' lives, opportunities that ultimately proved far more valuable than any recording I may have produced. The chapters that follow in no way exhaust the insights that I gained in these moments of interaction, in the moments when I was with my 'friends', rather than my 'subjects'. It was in these moments that I came to *understand* them, and felt I could perceive the world along with them.

The analyses provided in this dissertation are based on two main sets of data: my everyday encounters with the participants in my study and the video data that I collected over the course of

my fieldwork. The combination of these two sources addresses an acknowledged gap in the study of disability-in-interaction. As Abberley (1987; 1993) and Finkelstein (1996) have pointed out, work in disability studies tends to rely on personal narratives and accounts rather than empirical data, and thereby often fails to engage the underlying social causes of various experiences. In response to this gap, the methods employed here elucidate the structures of phenomena that manifest in interactions involving augmented communicators, thereby offering insights into both social structures and the individual experiences thereof.

Recognizing the immense variability among augmented communicators, I have resisted most attempts to classify them as a single group. My most pressing concern here relates to a fear of inadvertently ‘summarizing’ or ‘categorizing’ what Throop (2010b), following Levinas, might call the unassumability of individual augmented communicators based on their performance of what are, ultimately, discrete performances. This concern follows Butler’s rebuff of gender categorization, wherein she notes that “gender is in no way a stable identity or locus of agency from which various acts proceede [sic]; rather, it is an identity tenuously constituted in time—an identity instituted through a *stylized repetition of acts*” (Butler 1988:591). Here, Butler and Throop are effectively arguing against the sort of violence enacted through categorizations that fabricate properties of individuals without respect to the temporal qualities of appearance. By staying close to the video data, I have attempted to limit my claims to illuminating aspects of experience, without classifying augmented communicators, or attempting to constitute them within categorical membership.

Tied to this commitment to representation is my continued concern over what we might call the ‘trap of Prägnanz’. Within the Gestalt principles of perception, the ‘law of Prägnanz’ suggests that when we are presented with ambiguous information, we tend to organize and

interpret this information in the simplest way, often by erasing complexities that do not conform with anticipations of minimalism, symmetricallity, and other features of orderly groupings (Koffka 1935). It is this principle that, for example, is behind the ability to see text characters as faces – e.g. seeing “:-)” as a ‘smiley face’ – or to hear the synthesized sounds that emanate from an AAC device as ‘a voice’. In the field of social science research, we might convert the notion of “simplicity” to “familiarity,” thereby suggesting that individuals will be drawn to interpretations *qua* perceptions that most closely resemble those with which they are already accustomed. This principle is anticipated by Husserl’s notion of the ‘natural attitude’, the pre-reflexive stance toward the world that constitutes the objects of our everyday worlds. To quote Husserl, “this world is there for me not only as a world of mere things, but also with the same immediacy as a *world of objects with values, a world of goods, a practical world*. I simply find the physical things in front of me furnished not only with merely material determinations but also with value-characteristics...Immediately, physical things stand there as Objects of use, the ‘table’ with its ‘books,’” (Husserl 1983:53). Moreover, the natural attitude characterizes not only our perceptions of objects, but is what allows us to view other beings/people in terms of our relationship to them: “Naturally, [the natural attitude] applies...also in the case of humans and brute animals belonging to my surroundings. They are my ‘friends’ or ‘enemies,’ my ‘servants’ or ‘superiors,’ ‘strangers’ or ‘relatives,’ etc.” (Husserl 1989:53).

In writing the chapters that follow, my goal has been to both provide insights into the world as it is perceived within the natural attitude common among augmented communicators, and to examine the structures that support these apperceptions. In doing so I have found it useful to draw on the techniques of qualitative video analysis (cf. Derrida 1973; Goodwin 1979; 1980a; 1981; Streeck 2003). Here, techniques of video analysis provide for a measure of remove,

allowing me to look objectively at the organization of action within subjectively constituted acts. Moreover, the techniques developed in the detailed analysis of video allow me to present the nuances of the interaction to the reader, highlighting features of the interaction in ways that may not be possible through other modes of representation (cf. Goodwin 1994).

1.3.2 Kurt¹⁰

I arrive at Kurt's house early in the evening, the once smells of dinnertime still present in the muggy air as I walk to the front door. After introductions, Kurt's mother points me toward the master suite and tells me to "go right in." The room is dimly lit, and made to feel much smaller than it is by walls painted deep reddish purple. As it is now dark outside, the main sources of light come from two large displays. The first is 60-inch plasma television perched atop a tall armoire, which is on but displaying a picture of a Renoir against a black background. The other source of light is an iMac computer suspended above the bed in the center of the room. The computer is mounted to the ceiling and faces down. My eyes adjust to the dim light and Kurt's body takes shape. He lies on the bed, uncovered and dressed in black with his hands crossed over his chest like a corpse. I greet Kurt and made a quick apology for being late; blaming traffic for what was more likely my limited capacity to follow a map while driving. Kurt is motionless, except for a pronounced eye roll and a small smile. His eyebrows are filtering slightly. I watch his eyebrows for several seconds before realizing that text is slowly appearing on the giant television behind me. I grab a seat in a deep and comfortable chair placed next to Kurt's bed, facing the TV.

For the next five days Kurt and I spend several hours in this position, me sitting in the chair next to his bed, speaking; him, laying on his bed, typing. Together we watch my Green Bay Packers defeat his mother's Pittsburgh Steelers in the Super Bowl, we talk politics, love, sex,

philosophy, and about the inherent superiority of Apple computers over all other manufactured goods. Kurt allows me to read some of the poetry he has published, the most memorable of which portrays the ambiguously sexual relationship between a living man and his female zombie consort.

Kurt's room is always dark and always cool, and the chair next to the bed is comfortable. The hours disappear as I sit silently looking up at the television, watching Kurt's letters rhythmically appear, one after the other at rates up to one or two letters per second. Kurt's typing is unhurried, and he acknowledges the downtempo 'rate of production' when he likens himself to an 'ent' – Tolkien's mythical tree people who are famous for their almost geologically slow conversation. I don't mind, and eventually I come to tacitly accept his pace. It fits with the world I sit in: the cool, dark room, the regular hiss of breath from Kurt's ventilator, and the dark, magnificent soundtrack that never, ever rests. Now and again we are interrupted when another mouthspeaker comes into the room: Kurt's mother, brother, or one of any number of friends. When this happens, the slow rhythm of the world is shattered by their talk, which is loud and fast, the first few words always sound 'unnatural'.

Early on, Kurt asks me if I am accustomed to augmented communicators not using the voice output function, and he explains to me how much he hates the sounds the computer makes. Instead, as I discuss in Chapter 5, Kurt communicates almost exclusively through text. The voices in the room, other than mine and those of the visitors, are musical: Elliott Smith, Tori Amos, Nirvana, and others. Occasionally I hear lyrics that I remember from one of Kurt's more than 60 tattoos. The ink stretches up and down his arms, legs, hands, feet, and chest. With the exception of a large hibiscus flower on the back of his hand, Kurt wears very few pictures. Like his 'voice', he favors text. The words are shaped through fonts reflecting stylized handwriting – e.g. *eager*

naturalist or *handwriting* – *Dakota* – or typeset – e.g. century gothic or American

typewriter. The messages confront the reader with sad or disturbing messages. Kurt tells me that these lyrics force people to recon with him as a person, a person who made a decision to put these words on his body. That is, when people read the top of Kurt's foot,

*sometimes I feel like
only a cold still life
that fell down here
to lay beside you¹¹*

or arm,

*God knows, I know I've thrown
away those graces¹²*

they can't get away with saying, "nice flower," and walking away.

After five days I leave Tampa excited to have met a being like Kurt, and knowing that my original plans to spend four days following people through their routines was radically insufficient. In the weeks that follow Kurt and I chat regularly through IM, text messages, and email. After some months, I return to visit with him on three other occasions, staying several days each time. At times, Kurt hires an assistant, which means that he can leave the house without his mother or brother. During those times we go to the mall, the coffee shop, the hospital, and restaurants, sometimes just the three of us, sometimes with Kurt's girlfriend. Kurt enjoys getting his nails painted or getting new tattoos. At some point, Kurt begins collaborating on a new communication system that we end up attaching to a robot 'avatar' that Kurt can control from his computer. As part of this collaboration we take a weeklong trip to Las Vegas, gambling and attending the Consumer Electronics Show. After we design and build our first prototype, Kurt asks me to assist him at an invited presentation at the 2013 ATIA meetings. He is insistent that we wear matching pink ties...and we look fabulous!

1.3.3 Ted

Although Ted features prominently in the next three chapters of this dissertation, a few words are warranted here in order to give the reader a sense of the man behind the moments I examine. My relationship with Ted began in much the same way as my relationship with Kurt: he agreed to allow me to follow him for four or five days in order that I might look at how he used his AAC device. After meeting Ted one afternoon at the university lab (discussed in Chapter 2) he invited me to go out to a few bars with him and his staff. I agreed and got directions to meet him at his apartment. That evening, at Ted's apartment, we chatted while he and his staff readied for an evening on the town – preparations that included slicking Ted's hair back with heavy shellac and mixing bottles of vodka and ice tea that Ted hid in his wheelchair and would drink throughout the night in order to avoid paying the exorbitant bar drink prices. As we chatted, Ted had his staff explain to me what sorts of interactions I could expect and warn me not to be offended. The central thrust of the warning was something like, 'people pick on Ted, and Ted picks on people. It's ok, they're all friends'. The advice was totally inadequate.

A light rain fell as we approached the entrance to the first bar, walking past a line of ten or so people waiting to pay the cover and have their IDs checked. The corpulent bouncer watched us approach and unhooked the velvet rope. As we arrived at the gate, however, the bouncer moved to block Ted's path. Over the thunder of base heavy dance music the bouncer yelled, "Ted, you crippled bitch. You know we don't allow retards in here!" Sweat broke out on my neck and back as an adrenaline-laced panic swept through my body. I readied myself to fight the fat man.

I had been walking directly behind Ted's power wheelchair, but stepped to the side, assuming Ted would slow or stop. This didn't happen. Rather, Ted continued at full pace,

narrowly missing the bouncer who almost fell when he jumped out of Ted's way. Ted stopped in the doorway beside the recovering bouncer; and, with a huge and mischievous smile, shot out his left hand. The hand narrowly missed the bouncer's groin, catching the man's extended stomach squarely. Unruffled, the reprobate, absorbed the hit and laughed, bending over to take a second hit on his chin. Laughing again, he and Ted hugged, and Ted, his staff, and I continued into the club.

All that night and many nights thereafter I witnessed people hurl intolerable insults at Ted, whose responses pulled no punches, both literally and figuratively. I watched him run people down with his chair, drive fists into men's groins, and type the sorts of truths that leave people feeling shattered. After every confrontation, however, the men would sit and chat with Ted, buying him drinks and talking in the way that marks old friends. One night, when a drunken stranger cornered Ted and the situation appeared a bit tense, I watched no fewer than five of the bar's customers swoop in, wordlessly carrying the outsider through the front door and into parking lot where I can only speculate on his humiliation. Ted watched, smiling. After a drink of his homemade tea, he asked me to hold his AAC device so that he could go to the dance floor where a number of women took turns riding around the club in Ted's lap.

Plied with alcohol, the bar patrons nearly lined up to take turns enjoying Ted in their own ways. Some, like the bouncer, used Ted to break the rules of decorum, speaking the unspeakable to the face of the Other. Although this explicit recognition of what we typically count as the misfortune of disability was in every way crass, it made the space safe for the other patrons to embrace Ted by making anything they might say seem mild and appropriate by comparison. All night strangers approached us to satisfy their curiosities, often talking to Ted's staff or me before gathering the courage to speak directly to Ted. For his part, Ted smiled, drank shots, and invited

his interlocutors to read his turns from the display of his AAC device, which, because of the blaring din of dance music, was the most effective communication method being used in the bar.

Ted, like several of the individuals in my study, has a good relationship with the local university, where he regularly volunteers to be part of various projects, experiments, meetings, etc. focused on AAC use and users. Participating in studies contributed to Ted's sense of purpose, fostered by the fact that it is one of the few environments where Ted can feel as though he is giving something to others. This is a rather common response to a situation that is familiar to people with severe disabilities. As one long-time researcher, designer, and personal care attendant once remarked to me, people with severe disabilities often survive by the generosity of others; however, perpetually living in this mindset destroys your sense of connection with people. "When you have a [severe] disability," he told me, "you lose the ability to *give* because you are *always* needing and receiving help. The greatest thing you can do is to give because this empowers you as a human" (TJ personal communication, Aug. 11, 2011). Ted lives generously. He often employs staff in need of a job, even when they are under qualified. On my many return visits to the area where Ted lives, he insisted that I stay for free in his two-bedroom apartment. At one point I learned that Ted had used the entirety of his monthly discretionary income to purchase an inflatable mattress and bedding for me. The moment I offered to pay him back was one of only two times I believe I have ever seen Ted truly insulted.¹³

1.3.4 Jim and Samantha

I introduce Jim and Samantha in Chapter 5, recounting the first time I met the married couple. All told, I spent more than 4 weeks with Jim and Samantha, following them through daily activities, including cooking, cleaning, shopping, banking, work, and even fishing. Both Jim and

Samantha have CP, which prevents them from speaking clearly; however, whereas Samantha retains considerable manual dexterity, allowing her to feed herself, handle small objects, cook, and even tie the knots necessary for Jim's fishing tackle, Jim's CP is more acute. Thus, while he can use his hands to type, many other types of manipulations are beyond his motor abilities. Nonetheless, Jim's limited manual dexterity has not stopped him from pursuing his goals in academia. Among Jim's accomplishments are a Masters Degree in psychology, multiple single author books, and several co-authored peer-reviewed articles. Jim is currently working on his PhD.

I arrived one morning at the couple's home to find Samantha changing the dressings on wounds on Jim's arms and legs. When she finished, Jim explained that he had gone out fishing the previous evening after I left and had accidentally gotten too close to the muddy bank of a river. His wheelchair had slipped and gotten stuck in the mud. Jim was forced to unbuckle himself from his chair and drag his body over the muddy and rough ground to a farmhouse where the residents called the police. How Jim managed to communicate with the police remained a mystery to me, as he was unable to bring his AAC device with him on his long crawl to the farmhouse. We spent the rest of the day fixing what we could on Jim's chair with pieces that we retrofit from the local hardware store. When I returned the next day there was fresh mud on Jim's chair, evidence that he had gone out fishing again the night after we fixed his chair.

1.3.5 Tim

The history of my relationship with Tim is somewhat complicated as Tim was the first augmented communicator I ever contacted over email. At that time, Tim ran a blog that I followed and would often invite discussion on various topics. At one point, I gathered the nerve

to contact Tim by email and propose an idea I had for what I assumed would be a new system for allowing augmented communicators to access pre-stored messages. Tim, kindly, but firmly explained to me that the system would not benefit augmented communicators in the ways I had hoped, largely because it required the augmented communicator to type out the utterances they wanted to access sometime well before they accessed them. That is, rather than typing an utterance on the fly, an augmented communicator could access the pre-stored utterance through a short series of keystrokes. Many systems like this are already in existence, and my idea presented some small modification to a popular approach. Tim, however, rejected the idea, explaining that he could never predict all of the conversations that he would have over the course of a day, and using pre-stored messages would be useless in the face of dynamic conversations.

Some years later, I met Tim at a seminar being held by one of the largest AAC manufacturers. Tim and I stayed up talking one night long after our host had gone to bed. Tim instantly forgave the ignorance of my earlier suggestions and we spoke of many things. Tim, who is a Christian minister, peaked my interest with a notion of ‘brokenness’, which he was developing for his sermons. As Tim explained, by virtue of our human nature, we are all incomplete, defective, or ‘broken’ in at least some way. Some forms of brokenness can be seen at a glance; others only appear in particular contexts or over time. It was this expectation of universal brokenness that seemed to undergird Tim’s sense of humor about human troubles, and especially disability. As a rather modest example, Tim’s CP made his arms flail and hands grip down on themselves so hard that they would rip the flesh from his palms if he were left for even seconds without his protective gloves; however, the impairment had left his feet mostly unaffected. As a result, Tim typed with his feet; he wore his wedding ring on his fourth toe on his

left foot; and he extended his right foot to meet the hands of strangers. Embracing his ability over his affliction, Tim proudly sported vanity plates on his van that read, “MR TOE.”

1.3.6 Dr. Ron

Dr. Ron is a sixty-eight-year-old man with CP who lives independently in an assisted living facility. Dr. Ron is a prominent member of the AAC community, holding two PhD’s for his work developing systems designed to help dysarthric speakers use the telephone by providing them access to a voice interpreter who will help the person they call to interpret the dysarthric speech. The system has been an extremely valuable resource for dysarthric speakers, and has benefited many thousands of users. Recently, however, it appears that new advances in SMS technology, along with the mobile revolution, have seriously diminished the value of services like the one that Dr. Ron promotes. This is because augmented communicators, like mouthspeakers, have begun embracing modes of interaction that leverage modalities and channels other than speech. Perhaps more than anything, this decline of Dr. Ron’s technology demonstrates the changing habitus, wherein individual’s expectations and proclivities for interactional channels have begun to shift, normalizing the use of what were once considered inferior or ‘alternative’ modes of interaction.

Perhaps the best example of this, relative to Dr. Ron’s speech augmentation system, comes from what has become a classic example of ordering a pizza over the telephone. Much like the Turing Test for artificial intelligence, AAC pioneers proposed a test for the value of an augmentative device. The test consisted of asking someone who couldn’t speak to order a pizza over the phone without giving prior warning to the pizza place. John Eulenberg and his team at the Artificial Language Laboratory at Michigan State University accomplished the test in the mid-1970s (Vanderheiden 2002). Since this time several AAC manufacturers have attempted to

improve on the results, often posting videos to Youtube as both proof and promotion.¹⁴ However, more recently still, a number of AAC users have begun creating their own videos of themselves ordering pizza through the websites created by national pizza franchises such as Papa John's. In these videos, the user simply navigates his web browser to the desired page, inputs the required information, and waits 30-40 minutes for the delivery to arrive. No speech required.

1.3.7 'The AAC Ninjas'

The term, "AAC ninja" was developed by Kevin Williams, an augmented communicator whom I introduce briefly in Chapter 5. As I understand the term, an "AAC ninja" is someone who has developed substantial skills in multiple forms of augmented communication. Comparing the conversation to combat, Williams once explained to me that a 'ninja' is

a warrior specializing in unorthodox arts of war. War is a battle or a conversation between two sides. So, if speaking is the war of having [to] understand you, AAC ninjas use all tools available. Just like ninjas use all tools available versus samurai, which had strict rules of engagement to follow.¹⁵

Although Williams reserves the right to define the term, I want to use this explication to introduce a final point about the people who agreed to participate in my study and the relationship we developed. In brief, many of the augmented communicators I have come to know through this project envision interaction as competitive. Such competition, as Williams points out, occurs between the interlocutors; however, competition also arises between augmented communicators in other ways.

One example of this sort of inter-augmented communicator competition was brought home for me when I was at a conference that featured several augmented communicators giving presentations. From where I sat in the audience I regularly heard other augmented communicators in the audience critiquing the styles of the augmented communicator on stage. At

one point an augmented communicator friend of mine turned so that I could read his display, a way of sharing his utterance with me without having to voice it and risk being overheard. The display criticized the rate at which the speaker was composing his on-the-fly response to an audience member's question, calling it "SLOW." When I followed up with my friend about this some time later, he explained that augmented communicator he had critiqued was often heralded as being among the fastest real-time communicators in the world, a designation that my friend was at least somewhat jealous of.

Some time later I encountered this notion again, but this time as the target of evaluation. In the process of conducting my research, several AAC developers suggested that I spend some time learning to use the AAC devices, occasionally offering to loan me a device for a few months so I could try it out. Thinking that learning to walk a mile in the other's language would help me fulfill some anthropological imperative, I agreed to learn how to operate several different devices. However, once I demonstrated a rudimentary understanding of the device, I noticed that many of the augmented communicators I knew who were at one point enthusiastic to see me use a device, were notably less excited by the idea. Eventually an augmented communicator friend of mine suggested that I give up on the plan to try using an AAC device exclusively for any period of time, citing the fact that my physical abilities gave me an unfair advantage over augmented communicators who needed to use the device because of motor disabilities. Although many of the augmented communicators I knew denied personally sharing in this perspective, all of them understood how my attempt at a 'Black Like Me' moment could be interpreted negatively. That is, while none of the augmented communicators I spoke with about this suggested that my dalliance with empathetic tourism was offensive, all could grasp the sense of envy at the speeds I might be able to achieve as a fully able-bodied augmented communicator.

1.4 Summary of Chapters:

1.4.1 Chapter 2: Not Growing Older Together

In one of his seminal works on the public nature of culture, Clifford Geertz (1973) set out to demonstrate one of the core operations of cultural mechanisms by examining the ways that the people of Bali conceptualized and perceived individual persons. Here, Geertz argues for an approach to understanding culture through the patterns of public symbolic engagement through which individuals attend to one another and engage others in everyday activities. Using the case of Balinese temporal experience as an example, Geertz illustrated how symbolic systems are employed in order to maintain highly formalized relationships even between individuals who encounter one another on a daily basis. This formalistic distance is accomplished, Geertz argues, through technologies that detemporalize the person, downplaying the particular present moment any individual action or encounter occupies, and highlighting the stereotypic relations that exist between the idealized roles that each individual inhabits.

Motivated by Geertz's insights into the unique temporality that characterizes Balinese relationships and pervades other dimensions of Balinese cultural being and experience, Chapter 2 explores issues of temporality in the perception and experiences of AAC users and their mouth-speaking interlocutors. Here, I am concerned with both the experience of time reflected in the augmented communicator's observable actions, as well as with the public expressions of attention and orientation that point toward mouthspeakers' *experiences* of being-with the augmented communicator in interaction. By examining actions and utterances as temporal objects of attention, I demonstrate how augmented communicators and their mouth-speaking interlocutors are often unable to maintain tight temporal attunement over the course of their conversations.

Specifically, I argue that the structure of high-tech AAC devices do not afford the types of synchronized temporal attunements to objects and actions that are necessary for mutual attunements within what phenomenologist Alfred Schutz called, “the we-relationship.”

In order to demonstrate the way that this sort of ‘intersubjective slippage’ occurs in naturally occurring conversations that include an augmented communicator, I perform a close analysis of the initial portion of an interaction I recorded between Ted, an augmented communicator, and three mouthspeakers. Over the course of several seconds, Ted and his mouth-speaking interlocutors can be seen moving in and out of states of mutual attunement. In particular, the group displays tightly coordinated complementary displays of attention and participation during the moments when the mouthspeakers are talking; however, while Ted composes his response to a question that Mary, the mouthspeaker sitting directly across from him, asks, the group falls into a protracted silence. Moreover, although Mary and the other mouthspeakers initially display a sustained orientation to Ted as (next) speaker, they soon begin to become preoccupied with other matters, suggesting a ‘lapse’ in the conversation. Although the conversation is recovered once Ted completes his utterance, I argue that the experience of being-with, or more precisely, being-engaged-with an Other is fractured in the moments when Ted composes his response. Ultimately, I argue that the design of contemporary AAC devices often precludes their operation within what Schutz (1972[1932]:163) referred to as “a community of space and a community of time.”

1.4.2 Chapter 3: Vulnerable Moments & Repairing the “We”

Throughout anthropology it is widely accepted that the ability to speak to—and be understood by—others is a necessary quality for the complete performance of personhood, and that the inability to do so often results in the individual’s loss or incomplete achievement of

‘human’ status within his or her own society (cf. Desjarlais 1997; Lovell 1997). This notion finds resonance in the work of anthropologist James Wilce (e.g. 1998; 2004a; 2004b) as well as psychologists Louis Sass (1992) and Robert Barrett (1996) whose works on madness in a range of societies suggest that it is the individual’s capacity to interpret and be interpreted by others in line with local social expectations that is quintessential to the recognition of ‘personhood’. Here, language (*qua* speech) is credited as the mode of recognition par excellence, leading Sass (1992:7) to note that the uninterpretable individual constitutes what appears to be “an important limit-case of the human condition.”

Thus, as I show throughout this dissertation, augmented communicators and their mouth-speaking interlocutors are indeed vulnerable in the face of interactional breakdown. However, this does not mean that the participants are impotent or without recourse to salvage their own personhood and the *being* of their interlocutors. Exploring the means by which interlocutors safeguard their being and the being of their interactional partners is the central concern of Chapter 3. Here I follow an interaction that took place primarily between Ted and Mary beyond the moments introduced in Chapter 2. In so doing, I examine the ways that mouthspeakers may intercede in the moments of intersubjective slippage, thereby protecting both the augmented communicator’s full personhood, and fortifying their own.

Specifically, Chapter 3 examines points where the conversation between Ted and Mary seems to be in jeopardy, such as when Mary asks Ted a second question before Ted has had an opportunity to complete his response to an earlier question. In this instance, the move risks sequentially deleting the relevance of the response that Ted is in the midst of composing, and thereby compromising his position within the interaction. After examining the ways that this and other moves may leave augmented communicators vulnerable, I go on to examine the

complementary perspective of the mouth-speaking interlocutor. That is, I suggest that in the moments when Ted is typing his response, the lack of clear and unambiguous displays of ‘responsiveness’ leave Mary exposed and potentially vulnerable.

The chapter concludes by suggesting that Mary’s vulnerability may arise from her conflation of two aspects of ‘responsiveness’: the act of *saying*, and what is *said* therein. That is, in mouth-speech the *meaning* of a communicative act is often experienced ‘immediately’ with the *performance* of the act itself. This regularity leads mouthspeakers to expect that the communicative content – the ‘said’ – of communicative acts will be transparent in the moments of their production – the ‘saying’. By examining the decoupling of the ‘saying’ and the ‘said’ as it occurs in augmented communication this chapter exposes the depths to which our experiences of full personhood are tied to our experiences with the Other, and the role temporality plays in our sense of being-with Others.

1.4.3 Chapter 4: Embod^y-ing the Voice

Chapters 4 and 5 are meant to complement one another in a way similar to Chapters 2 and 3. These two chapters present different aspects on the relationship augmented communicators have with their voices. In Chapter 4: Embod^y-ing the Voice, I examine three ways that Ted, whom I introduced in the previous chapters, can be seen to actively embody his device’s voice within a given moment of telling a narrative. This chapter recounts an episode when Ted played an approximately 7 min. narrative for me that had been pre-programmed (pre-stored) into his device. Despite the fact that the narrative had been programmed into his device several days earlier, Ted incorporates the sonic voice that emanates from his device into the multi-modal sign complex of *his* performance, his immediate presentation of self. While such multi-modal

measures are perhaps more obviously necessary in cases where the augmented communicator is performing a pre-stored text, I also demonstrate how augmented communicators who compose in real-time use similar strategies to embody the text from their devices, even when it means replaying an utterance that their audience heard them compose.

1.4.4 Chapter 5: Embodiments of Voice: Vocal Reflection, Vocal Potency

My approach to anthropology is informed by phenomenology. In Chapter 5, I make this connection explicit by engaging with the concept of ‘embodiment’. Here the individual’s bodily relation to the world is interrogated as a means of exploring action and perception as structured by social relationships and shared preferences rather than as simple responses to physical objects and biological faculties (Husserl 1989; Merleau-Ponty 1962b). Much of the work in phenomenology and the anthropology of embodiment suggests that the body is the basis of familiarity with the world at both the individual and collective levels (Heidegger 1962; 1985; Levin 1999; Merleau-Ponty 1962b; Streeck 2003; Todes 2001). Frank (1986:189) writes, “Experiences of the world presuppose an embodied consciousness habituated to the biological endowments of the species; these in fact constitute the way that the environment is perceived and experienced.” In the context of human cultural systems the body mediates action in/experiences of the cultural landscape (Csordas 1990; Hallowell 1955), and does so in regularizable ways that encourage communities to plot habitual trajectories through various activities.

Chapter 5 explores the complex relationships between voice and body that manifest among members of two different groups of augmented communicators: those with congenital disabilities and those with acquired disabilities. I suggest that the relationships augmented communicators have with their voices are informed by habitual bodily engagements, and

therefore manifest differently for people who have lost their ability to speak vs those who were borne with speech disabilities. This difference between the ways that people with congenital and acquired disabilities reflect on their disability has been examined in other domains of disability. For example, Rick Creech, an augmented communicator, writes “I would like to walk, run, play the piano, talk with as little effort as most people, and everything other people do. I would like to be able to, but I don’t miss not doing them, because I never have. So I have not had the trauma of accepting physical limitations which were the result of an accident of illness, which left me “handicapped” (Creech 1981:550; Beukelman and Mirenda 1992:5). In considering the ways ‘voice’ is experienced differently by augmented communicators with congenital and acquired disabilities, I find it useful to draw on the distinction between ‘body image’ and ‘body schema’ (Gallagher 2001; 2005; Gallagher and Cole 1998[1995]). Following this distinction, Chapter 5 examines the ways that augmented communicators from both groups *reflect* on the synthetic voice and *pre-reflexively use* their voices within everyday social engagements.

Chapter 2: Not Growing Older Together

I FOUND A GREAT USE FOR MY I PAD.IT'S CALLED "THE ARGUMENT SOLVER" THE OTHER DAY MY WIFE WAS ARGUING ABOUT SOMETHING. THE MORE I TRIED TO TALK THE WORSE MY SPEECH BECAME. I GRABBED MY I PAD ANSTARTED TO TYPE. BECAUSE I TOOK MY TIME TYPING, SHE CALMED DOWN AND WENT AWAY. I THINK EVERY MAN SHOULD HAVE ONE JUST FOR ARGUMENTS.

(Excerpt from an email sent by an augmented communicator to AAC researcher/developer)¹⁶

2.0 Introduction – Vignette

Before seeing that he had arrived at the lab, I heard the familiar squeak of the misaligned rubber tires on Ted's wheelchair as he rolled across the linoleum floor in the hallway. I got up and walked to the hall to greet him, opening my arms wide as if anticipating a hug, saying, "hey dude, glad you finally made it." Ted rolled up next to me and stopped his chair, causing me to turn ninety degrees to face him. As I turned Ted shot out his left arm and hit me square in the groin. Doubled over in pain, I managed to ask, "What the hell was that for?"

Ted moved his hand back to his device and began typing a response. Ted typed, and as he did so I gradually recomposed myself, stretching and breathing through the waves of subtle nausea. I tried to maintain my cool and regain my dignity. I moved a step back, repositioning myself just outside of Ted's arm reach and around a corner from the several people in the lab that had witnessed the attack in stunned silence. I was embarrassed and confused, and these feelings were exacerbated by the fact that I was now forced to sit and wait for Ted's account. I leaned against the wall beside Ted, watching his hand move from button to button on his device and

thinking back on events leading up to that moment, trying to imagine some possible justification he might offer for his action. I imagined that perhaps Ted would apologize for a joke that went too far or for an accidental spasm that occurred at an extremely unfortunate moment. Maybe I had unwittingly triggered Ted's startle reflex with something I did just prior to his blow. Maybe Ted was simply being a jerk. With these thoughts I fantasized about how I might respond: I imagined hitting him back, but where? His face seemed too severe. His shoulder seemed too lenient...

The longer I stood waiting, the more the 'jerk hypothesis' seemed plausible. I remembered an incident two days earlier when Ted punched me in arm while I was driving his van. When I punched him back he threw himself against the car window and yelled to a nearby police officer for help. I remembered my humiliation at that moment, seeing Ted yell in a dysarthric voice and imagining having to explain why I just punched an obviously and severely disabled person. My anger with Ted grew. I continued to wait for Ted's response. Soon, however, I began to think about what this pattern of action might *mean*. I imagined myself writing about the incident in my fieldnotes and dissertation. I thought about how Ted regularly played dumb (played "retarded," as he called it) when it would suit his needs and how his punches could be some sort of extension of that. I imagined Ted as some sort of evil genius, playing me for his amusement by acting out real life Garfinkelian breaching experiments. I wondered if this all some way for him to gain the upper hand, playing on both the masculinity of violence and the fear people have of the disabled.

Half a minute or so after he hit me, Ted invited me to look at the display of his device; it read, "SHOWER ON." Although it took me a moment to recall the context for which the utterance was designed I quickly understood what had happened and why he had hit me. I

apologized, and laughed. We then went into the lab together and recounted the events to an eager audience in the lab.

I will explain the motivation behind Ted's assault below,¹⁷ but this chapter is not about the punch Ted delivered or even what occasioned it. Rather, in this chapter I focus on how the interactional structure that is created by the use of AAC devices motivates moments of dis-attunement, or incomplete attunement between the participants. An example of the sort of dis-attunement I am interested in can be seen in my narrative above: during the many seconds while I was doubled over, and then recomposing myself, Ted was typing a response to my question, "what the hell was that for?" However, as evidenced by the nature of the thoughts and fantasies I indulged during this time, my mind was elsewhere, far from sharing the in unfolding of Ted's utterance production, and at times distant from the encounter itself. All the while Ted was engaged in his response, intently oriented to each of the necessary actions involved in typing, and all the while controlling his muscular spasms in order to manipulate his defiant left arm. Although I was silent and awaiting Ted's turn, our co-presence could be considered incomplete at best. Of course this sort of relationship is not unique to interactions with augmented communicators, as any one of us may recall similar instances when, as 'hearers', we withdrew from a conversation and escaped into a world of private reverie. However, as I will show in this chapter, this phenomenon is a regularity in interactions with augmented communicators and can be traced to the methods by which Ted and other augmented communicators produce turns at talk.

In this chapter I am particularly concerned with examining the moments when an augmented communicator is in the midst of composing his/her utterance and the ways that "normal" forms of co-presence can be seen to 'slip' as the participants fall out of the types of

tight temporal attunement that characterize ‘normal’ (i.e. mouthspeaker) face-to-face encounters. At one level, the cause of this slippage can be traced to the comparatively slow speed at which augmented communicators compose their utterances (~6-12 WPM). Augmented communicators’ turns at talk unfold at more than a full order of magnitude slower than their mouth-speaking interlocutors are used to, causing augmented communicators’ audiences to experience protracted delays as a regular part of interaction. During the delay the augmented communicators’ audience members can often perceive *that* the augmented communicator is typing, but often find it impossible to understand *what* s/he is typing until the utterance is complete.¹⁸ Moreover, this ‘delay’ is one-sided, since the augmented communicator, in the midst of typing, experiences each moment as filled and oriented to the conversation at hand. The situation creates a regular and recurring mismatch in temporal orientations between the augmented communicator and his/her interlocutors (cf. Atkinson and Heritage 1984; Higginbotham and Wilkins 1999; Robillard 1999). The use of AAC devices in conversation thereby contributes to a unique form of co-presence characterized by oscillations between the participants’ experiences of mutual/reciprocal attunement and dis-attunement.

In order to explore this phenomenon I draw on the notions of temporality and intersubjectivity as incorporated in Alfred Schutz’s concept of “the mutual tuning-in relationship”—a form of co-presence wherein the participants’ streams of consciousness flow side by side,¹⁹ allowing them to reciprocally share in the flux and flow of each other’s vivid, temporalized experience (cf. Schutz 1971[1964]:177). I show that because of the protracted delays that occur when augmented communicators are composing their messages, the interlocutors’ timestreams intersect only intermittently and mutual attunement is not sustained throughout the conversation. Whereas this chapter introduces a type of ‘intersubjective slippage’

or fracture through close examination of a short segment of conversation, the next chapter will further this analysis by examining interlocutor's responses to moments of silence *qua* 'gaps'—as apposed to 'pauses' or silences characteristic of states of 'continuing states of incipient talk' (Schegloff and Sacks 1973)—in order to further explore the underlying phenomenon of intentional/temporal slippage and its causes.

2.1 Data for Close Analysis

In order to examine the phenomenon at hand more closely than my fieldnotes and memories will afford, I will now turn to examining a segment of video data taken from a single conversation between Ted, the augmented communicator featured in the opening vignette, and three mouth-speaking strangers. Examining the interaction through a microanalytic lens will allow us to see the ways that the participants in the interaction move in and out of the sorts of tight temporal-intentional coordination that is typical of face-to-face interaction.

2.1.1 The Participants and Background

In the excerpt examined below, Ted, Mary, Frank, and John are sitting around a conference table in the university lab where they all worked on different projects. The group had agreed to test a newly developed piece of technology called inTra, which was designed to further augment Ted's existing communication device in several ways. Most important for the purposes of this chapter was the inTra device's second display that allowed Ted's audience to read what he had typed without maneuvering to look over his shoulder. Although Ted's device *could* speak the utterances he typed, he rarely used this feature. I have chosen this extract from among many others because it provides several examples of both the fractures in intersubjective attunement

discussed above and the strategies used by participants to repair states of attunement (see chapter 3).

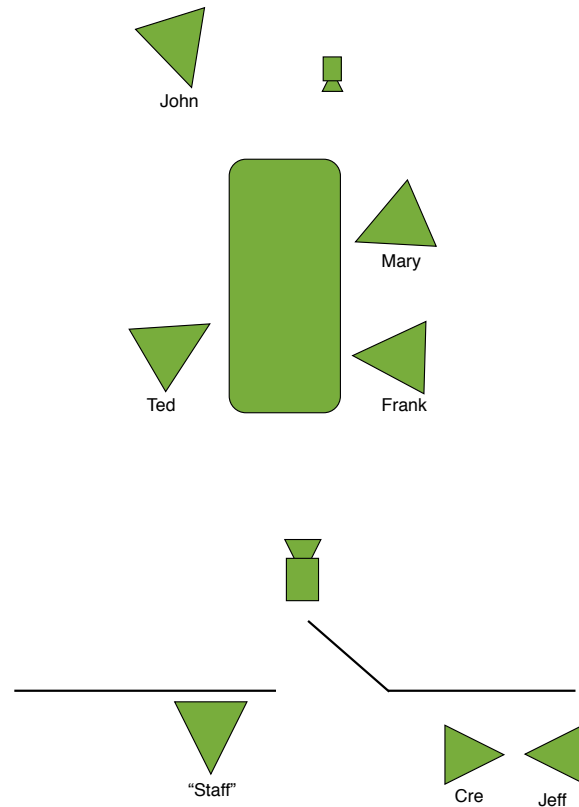


Figure 2.1.A: Room Schematic

2.1.2 Ted (Augmented Communicator):

At the point at which this interaction took place, I had known Ted for almost a year, and had lived with him in his apartment for several weeks. While living with Ted I regularly provided him with various forms of assistance such as feeding him, helping him drink, and driving him places in his van. As his friend/assistant/live-in anthropologist, I frequently accompanied Ted to restaurants, bars, movies, shopping malls, and the University at Buffalo's lab for Excellence in Augmented Communication, where Ted participated in weekly meetings on AAC design and assisted with whatever experiments the lab happened to be conducting at the

time.

Ted has spastic cerebral palsy, which causes him to nod and sway arrhythmically and upsets his motor control and balance.²⁰ Ted's CP also prevents him from speaking clearly by compromising his ability to control the diaphragm muscles and those of the vocal tract.

Although Ted, like most augmented communicators, prefers to use low-tech strategies (Wasson, et al. 1997) when communicating with friends and family, he is proficient at using his high-tech AAC device, having used the same language system (Minspeak®) for more than 20 years. When generating novel utterances through word-by-word or letter-by-letter composition, Ted averages around 6-10 WPM.

In order to operate his device, Ted directly selects from among the 144 possible buttons on the device, touching them with the index finger of his left hand. Because of the difficulty he has in controlling the muscles of his shoulder, arm, and hand, Ted's device is fitted with a key-guard—a thick plastic frame that sits above the keyboard on his device, allowing him to press against the surface of his device without activating any of the buttons. The key-guard has small holes into which Ted must insert his finger in order to activate the button underneath. Because of Ted's ataxia, typing involves something like throwing his arm towards the general area of the

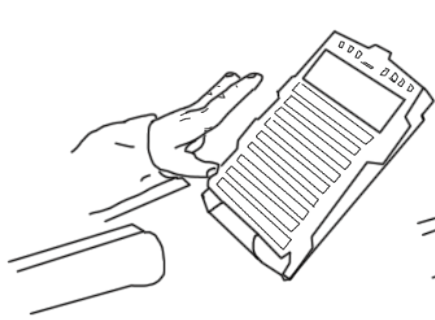


Figure 2.1.B: Ted aims hand at area of device

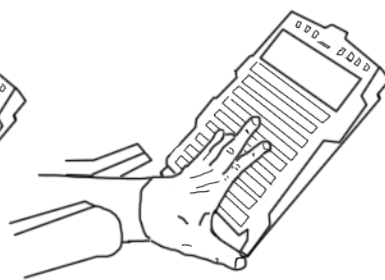


Figure 2.1.C: Ted 'hits' device in area of target



Figure 2.1.D: Ted finds specific target through key-guard

keyboard where the target button is located and then carefully maneuvering his hand into position where he can insert his index finger into the proper hole in the key-guard (see Figures 2.1.B-2.1.D). Because of his limited fine motor control, Ted's hand arrives at the key-guard with considerable force, often making a loud crashing sound as the key-guard contacts the device underneath it. The sound is quite noticeable and is an obvious indication that Ted is typing.

2.1.3 Other Participants (Mouthspeakers)

Along with Ted, 5 other participants can be observed in the transcript presented below: John, Mary, Frank, Jeff (off camera), and myself (also off camera). John is an engineering student, interning at the lab and helping to set up and maintain devices for the various experiments conducted there. In the stretch of interaction presented below, John may be considered a bystander or possibly an unaddressed recipient (Bell 1984; Goffman 1979) in that he is a recognized member of the audience, but is seated away from the other participants and supposedly consumed by maintaining operations of the various devices. Mary and Frank are both graduate students affiliated with the lab who have agreed to come help with the experiment in exchange for a \$10 pre-paid gas card. They are seated side-by-side, across the table from Ted. Neither Mary nor Frank have regular contact with augmented communicators, but assist with lab projects such as transcription (Mary) and software development (Frank). Figuring minimally into the excerpt below are Jeff (the lab director) and myself.

2.1.4 The Data

The transcript begins as the lab director (J) asks me (C) to step into the hallway for a private conversation. After sitting in silence for a few seconds, Mary (M) begins by asking Ted (T) a question about the woman who accompanied him to the lab, who turns out to be his

aide/staff. Ted begins typing immediately after Mary finishes her question, and outputs his response for Mary and Frank to see 18 seconds later.

Transcript 2.1

J = Lab Director and Co-Creator of inTra; C = Ethnographer; M = Mary; T = Ted; F = Frank

01 J: let's practice for five minutes and then we'll do it

02 C: ok

03 J: c'n I talk to you for a second

04 C: yep

05 (3)

06 M: so::.

07 (1)

08 M: ((Sniffles))

09 (.7)

10 M: um .. who's the girl thats with you?

11 (18)

12 T: ‡ |My Staff|

13 M: cool what's her name?

2.2 Starting in Sync

A close examination of the video shows that Ted and Mary demonstrate a tight temporal coordination over the course of Mary's turn at lines 6-10. Here, Ted and Mary display both responsive and (appropriately) anticipatory actions, as well as recognition that the other has attended to their actions as expected (cf. Goodwin 1979; 1980; 1981). Specifically, as Mary produces her initial utterance (*so:*) in line 6 (see Figure 2.2.A), Ted's gaze appears unfocused as his head, which tends to 'bounce' and 'sway' arrhythmically because of his CP, is turned and moving to his lower left. However, as Mary begins speaking in line 6, Ted brings his gaze to meet Mary's, arriving at the precise moment that Mary concludes her utterance (*so:*) – (see Figure 2.2.B). In order to facilitate this synchrony, Mary can be heard to extend her word, "*so:*," slightly. Coordinating her word's conclusion with mutual gaze achievement suggests that Mary has recognized Ted's display of engagement and the orientation to, and cooperation in her communicative project that it suggests. Similarly, upon, meeting Mary's gaze, Ted produces a

broad smile (see Figure 2.2.C), which Mary immediately copies with a smaller smile of her own (see Figure 2.2.D).²¹



Figure 2.2.A: Line 6



Figure 2.2.B: Line 7



Figure 2.2.C: Line 8



Figure 2.2.D: Line 9

A split second later, Ted moves his gaze from Mary to his device where he is in the process of relocating his hand to the upper left corner of his typing grid (Figure 2.2.E). At this moment, Mary (who seems to have a cold) pauses, and produces a loud snuffle. Maintaining her gaze at Ted who continues gazing at his device and repositioning his hand, Mary then starts her utterance again, producing the discourse marker ‘*um*’ along with a large pointing gesture in the space just in front of her and below her face (Figure 2.2.F). Mary produces the speech and the gesture while Ted is still looking down at his device; however, during the brief pause that follows Mary’s utterance – coinciding with return of her hand to ‘home position’ (Sacks and Schegloff 2002) – Ted looks up to meet Mary’s gaze (Figure 2.2.G). Having secured Ted’s gaze, Mary continues her talk in line 10. While rather unremarkable in many ways, Mary’s multimodal sign complex of speech (‘*um*’) and gesture (pointing) serves to interactionally establish her as the ‘next speaker’ and indicates something about how she has tacitly interpreted

Ted's embodied displays. That is, while the use of the discourse markers in turn initial position (e.g. 'um') have been shown to entice hearers to engage in mutual gaze with the speaker (see Goodwin 1979; Goodwin 1980a; Goodwin 1981), Mary's gesture further demonstrates her intention to speak as, to quote Sacks and Schegloff (2002), "Speakers gesture, non-speakers don't gesture" (see also Hindmarsh and Heath 2000; Kendon 1997). Moreover, by placing her gesture immediately in front of her own body, and just below her face, Mary positions the stroke and apex of her pointing movement in the space where a demonstratively engaged interlocutor *should* be looking, and thereby solicits Ted's gaze (cf. Goodwin 1986:30-1). Thus, after having lost Ted's gaze after her opening utterance, "so:::", it appears that Mary's actions at the beginning of line 10 seem to be directed toward reestablishing shared gaze with Ted and the mutual attention it is taken to imply. As such, Mary's talk and gesture suggest a tacit understanding of Ted's gaze and movement as indications of his disengagement from their



interaction and his disattention to her as speaker.



Figure 2.3.G: Line 9+

Ted's arm movement and associated gaze are therefore significant on multiple levels

since the interlocutors' access to and understanding of the actions being performed seems to differ in substantial ways, thereby creating a first point of interactional asynchrony between them. Along these lines, in order to understand Ted's movement we must understand something about the way his and most other, AAC devices are organized. Ted uses a device called an Eco 2®, which allow him to select among 144-locations arrayed as a grid. Although, for the most part, the images arrayed on Ted's grid do not map to words or utterances in a one-to-one manner, there is a logic to their general distribution on the 'page'/display. As is common to both word-based and symbol-based AAC device 'pages', Ted's primary page is divided into sections representing 'parts of language'. While a full discussion of this organization is beyond the scope of this chapter, it is useful here to note that the images that allow Ted to produce pronouns are located to the far left of his display. In many cases, AAC devices are organized such that common subjects, objects, and verbs, are arranged from left to right, thereby allowing users to construct a simple sentences by traversing their pages in a single direction. The layout is thereby indexically iconic of printed English text in that it both mirrors the established SVO structure and tacitly prescribes it upon the instance of talk being generated through the Augmented communicator's engagement (see Patel, et al. 2006).



Figure 2.2.H: Sample Minspeak© Display

By organizing the page in this way, designers inscribe into the device local preferences for the linguistic encoding of thought. That is, in line with Slobin’s (1996) proposal that the forms of thought are not singular, but rather, that we rely on a diverse series of cognitive formats for various purposes, the design of the AAC device grid layout provides a physical manifestation of what are otherwise intangible grammatical prescriptions. The device layout thereby serves as a sort of **cultural amplifier**, that is, as a technology that “transform[s] the nature of culture and thought, increasing (amplifying) the products of human labor” (Cole and Griffin 1980). Because the arrangement leverages regular, linear movement patterns (left to right) to motivate the organization of thought in a way predicated on English linguistic structure, this layout can be considered as promoting something like what Slobin (1996) calls “thinking for speaking,” but at a corporeal level. In this way, the static array of options presented on the device display represents an externalization of the structural organization of what would otherwise be considered a largely, if not entirely, internal function of *mind*. Thus, the relationship between the physical world harnessed in interaction and the structure of individuals’ communicative

intentionality sheds light on an understanding of ‘mind’ as constituted through its active engagements, particularly through the structure and affordances of forms of semiosis (cf. Goodwin in preparation).

Returning then to the meanings Ted’s movements held for the participants, we find that for Ted, looking away from Mary and repositioning his hand/arm on his device was likely performed in preparation of producing a forthcoming turn. By relocating his hand on the left side of his device, Ted seems to be preparing himself to produce an utterance. However, because Ted makes no immediate attempt to type on his device, we might posit that in actuality his movement is performed in anticipation of taking the next turn. As such, Ted demonstrates both his attention to the back-and-forth organization of conversation and his acceptance of Mary’s projected utterance.

Ted’s use of eye contact and initiation of his response immediately at the close of Mary’s turn, or even slightly before, not only demonstrate that he has been an ‘attentive’ recipient of Mary’s turn, but effectively allow the cooperative achievement of the turn taking structure to unfold. That is, Ted’s gaze and turn initiation are designed with reference to Mary’s action, and therefore achieve their meaning only within the context of the structure of their interaction. That Mary interprets Ted’s interruption of eye contact to being typing his turn as the ‘initiation’ of an interactionally relevant next action is demonstrated by continued treatment of Ted as next speaker/actor despite his withdrawal of gaze and silence. That is, regardless of the protracted delay between when Mary finishes her question and when Ted produces his response, at no point does Mary attempt to repair her talk or otherwise treat it as having been problematic for her intended recipient, Ted. As Goodwin (1981:103) points out, even in the absence of an immediately subsequent utterance, just-prior speakers may rely on their hearers’ visible displays

of orientation that co-occurred with the talk as a means of interpreting the talk as ratified and in pursuit of the shared interactional project.

2.3 “Who's the Girl that's with You?”

Mary's opening question in line 10, *um, who's the girl that's with you?*, is asked with more than a hint of impishness. Ted had arrived at the lab several minutes before this interaction took place, having been driven to the campus from his home by one of his personal care attendants or “staff” as he called them. Most of Ted's “staff” were young, attractive women, whom Ted hired more for their looks than for their résumés or abilities to perform many of the services he required. While this led to a rather high turn-over rate among Ted's staff, he was insistent in his preference for attractive assistants because being seen with them contributed to his cultural capital. On this particular day, Ted's staffer was Shari, an attractive, blond woman in her late 20s who always waited outside the door to the lab when Ted was working there.

While Mary's question as to the young woman's identity might well have been intended as an innocent inquiry, her performance seems to suggest a connection to deeper American beliefs regarding the incompatibility between the categories of disability and sexuality. For one, this was the first question Mary asked Ted, who until this moment was a total stranger. Locating a question such as this in the opening of a conversation between strangers suggests the sort of gross informality one might expect from an adult interacting with a child or is reminiscent of behavior that male superiors can often be seen to inflict on their female co-workers (Goffman 1979). Moreover, Mary's use of the term “girl” invites a particular interpretation of her utterance. While the term “girl” merely points to one of almost infinite qualities that Shari presents, feminist scholars have argued that selecting gender over other categories of

identification trades on the types of sexual classification that summarizes the individual in terms of their corporeality and, particularly, the reproductive role of the body (Butler 1988; De Beauvoir 1953). Thus, Mary's classification of Shari as "girl" not only invokes Shari's displayed gender, but also classifies her in terms of her age and the presumably sexual qualities that go along with it.

In this light, Mary's question can be seen to trade on the common practice of infantilizing people with disabilities, and thereby desexualizing them (Garland-Thomson 2006:260; Shuttleworth 2000). This interpretation is seemingly confirmed when, having finished her utterance, Mary produces a very large, toothy smile, suggesting she has found the utterance amusing and is inviting Ted and the other mouthspeakers at the table to do the same. The joke, in this instance, being played out between the presumed incompatibility between Ted's disability and ability to participate in normative sexual activity/relationships. While it is quite impossible to know if Mary did indeed intend her utterance to be heard in this manner, or if she personally harbored a desexualized interpretation of people with disabilities, her behavior is consistent with similar practices that invoke sexuality of the sexually subordinated (cf. Cameron and Kulick 2003; Hall 1997; Shuttleworth 2000). In fact, however, all but one of the individuals who participated in my research lived active sex lives.

2.3.1 Silence and Attention

After Mary completes her question in line 10 (*so, who's the girl that's with you?*), Ted looks down to his device in order to type his reply. As Ted types, Mary and Frank sit silently, continuing to gaze at Ted's face. Although Frank remains almost motionless throughout the 18 seconds it takes Ted to compose and output his response, Mary traverses a number of highly

evocative postures and facial expressions. To begin, Mary's utterance in line 10 is produced along with a large, toothy smile, which she maintains for approximately 2 seconds while adjusting her seat (Figures 2.3.I-2.3.J). As Mary finishes adjusting herself in her chair, she broadens her smile by opening her mouth slightly, and sticking her tongue out of the corner of her mouth (Figure 2.3.J). Over the next 3 seconds Mary lifts her body back into an upright posture in her chair, but maintains her open mouth smile with extended tongue before finally retracting her tongue, closing her mouth, and producing an exaggerated eyebrow flash (Figure 2.3.K). Swiveling her chair back and forth, Mary continues to gaze at Ted's face and maintains her abnormally wide-eyed expression for approximately 2.5 seconds (Figure 2.3.L). Still gazing at Ted's face, Mary then produces an extended snuffle, which causes her to break her smile temporarily (Figure 2.3.M). Although Mary begins to return to her previous smiling expression (Figure 2.3.N) she sighs, looking away from Ted for the first time in almost 15 seconds, and begins rubbing her eye with her fingers (Figure 2.3.O). Mary finishes rubbing her eye a few seconds later, just in time to hear the chime indicating that Ted has output his utterance to the display that faces Mary and Frank (line 12).

In order to understand why Mary's many poses and postures are important to this interaction we must first say something about her experience of being with Ted and what it means to be *in* an interaction. To do so we will begin with a brief discussion of the concept and experience of being-with-others.



Figure 2.3.I: Mary holds smile



Figure 2.3.J: Mary sticks out tongue



Figure 2.3.K: Mary smile/eyebrow flash



Figure 2.3.L: Mary smile/brow furrow



Figure 2.3.M: Mary snort/sniffle



Figure 2.3.N: Mary smile/sigh



Figure 2.3.O: Mary eye rub

2.3.2 “Fellow Men,” Intersubjectivity, and the ‘Mutual Tuning-In’ Relationship

In considering the question of being-with-others, phenomenologist Alfred Schutz distinguishes four types of beings: “predecessors,” “successors,” “contemporaries,” and “consociates.” Schutz’s typology is based on criteria along two axes: time and space. Individuals who share space but not time thereby exist in a predecessors/successors relationship.

On the other hand those who share in a community of time, but not space are contemporaries. They are those who live amongst one another but are not involved directly in each other's lives in the ways permitted only by sharing in a common time and place (or "time-space" as Schutz calls it). Those, however, who do have immediate/direct access to one another in a shared 'here and now', Schutz refers to as consociates. As Geertz explains, "Consociates, as they meet, confront and grasp one another in an immediate present, a synoptic "now," and in so doing they experience the elusiveness and ephemerality of such a now as it slips by in the ongoing stream of face-to-face interaction" (1973:390). Thus, as consociates encounter one another there arises the possibility for a mutuality to occur wherein orienting to the Other, one may recognize the Other's simultaneous and reciprocal orientation to him/herself. This symmetrical relationship is uniquely available to consociates and provides the basis for what Schutz referred to as the "We-relation," as well as experiences of deeper forms of intersubjectivity which, again following Schutz, we might refer to as "the mutual tuning-in relationship" or (the feeling/experience of) "growing older together."

Within his typology, Schutz presumes that although space can be compressed, time is constant for all parties. This notion is reflected elsewhere, including in the variation and experience of deixis. For example, Karl Bühler (1990[1934]), reasoned that one's immediate spatial and experiential presence provides the grounds for interaction within the deictic field. That is, Bühler proposed to locate the subjective center of experience within a given spatio-temporal moment—which he labels as the "here-now-I" (Bühler 1990[1934]; Hanks 2005; see also Husserl 1989:61). As in Schutz's categories of fellow men and the 'We-relation', Bühler noted that whereas deictic expressions/experiences of place co-vary with those of person, expressions/experiences of time stay stable. Thus, whereas "*I*" am always "*here*" and "*you*" are

always “*there*,” both of us in our respective locations are always “*now*,” rather than “*now*” and “*then*.” In light of this we may posit that the basic experience of a “*now*” shared with others is foundational to our experience of ‘intersubjectivity’ and participation in the social world.

‘Intersubjectivity,’ however, has proven itself to be a rather elusive with broadly varied applications. Recognizing this, Duranti (2009; 2010) has pointed out that the term “intersubjectivity” can be used to discuss a range of interpersonal orientations. As it is commonly used in the social sciences, intersubjectivity refers to the negotiated, shared, and confirmed meanings that develop out of typically linguistic interactions with others. In this use, the term “intersubjectivity” can be thought of as synonymous with “mutual understanding” or ‘shared meaning’ (e.g. Schegloff 1991; 1992; Wilkinson 1999). The second use of the term is much broader as it points to an individual’s most basic orientation to others—and the actions of those others—as constitutive of a shared objective reality. In this second sense, intersubjectivity is a basic recognition of others as fundamentally similar to oneself and is a *prerequisite* to the development of ‘shared meaning.’ Schutz explains the difference between these two perspectives as an issue of

“...whether the communicative process is really the foundation of all possible social relationships, or whether, on the contrary, all communication presupposes the existence of some kind of social interaction, which, though it is an indispensable condition of all possible communication, does not enter the communicative process and is not capable of being grasped by it”
(Schutz 1971[1964]:161).

Building on this interpretation, Schutz posits a number of relationships that may occur between individuals. These include relationships that are maintained through various forms of co-presence, which may be manifest even when individuals are separated in space and/or time. For example, starting with Husserl’s (Husserl 1960:111) notion of the body’s role in empathy (cf. Stein 1989), Schutz points to the underlying “Thou-orientation” wherein one individual may

orient to another, experiencing the other as, *mutatis mutandis*, “like me.” The process of recognition is imbued with different meanings depending on which author we follow. Schutz seems to follow Heidegger, for whom our understanding of, and interaction with an Other is grounded in the notion of ‘Dasein’ – a being that is characterized by ‘*care*’ or ‘*concern*’ that emerges within a practical engagement in the world in the modes of being-toward things, making them an issue for itself (see Heidegger 1962,:157/121). Thus, Schutz notes, “it is precisely the being there (Dasein) of the other toward which the Thou-orientation is directed, not necessarily the Other’s specific characteristics” (Schutz 1972[1932]:264)

Beyond this level, however, Schutz recognizes a deeper involvement made possible by the “We-relationship:” what he refers to as the ‘mutual tuning-in relationship’. The mutual tuning-in relationship presupposes a face-to-face encounter with an Other wherein consociates are given to one another in a direct way. What is of interest within this relationship is not merely the participants’ abilities to grasp the ‘objective’ content of one another’s actions or experiences, but their abilities to engage the ‘subjective meanings’ as well. Convenient to our purposes here, Schutz offers the example of a conversation, noting that while I “first grasp the ‘objective meaning’ of your words...But second, of course, there is the subjective meaning, namely, what is going on in your mind as you speak” (Schutz 1972[1932]:166). Doing so, however, requires an act of empathy wherein “I must picture to myself your stream of consciousness as flowing side by side with my own. Within this picture I must interpret and construct your intentional Acts as you choose your words. To the extent that you and I can mutually experience this simultaneity, growing older together for a time, to the extent we can live in it together, to that extent we can live in each other’s subjective contexts of meaning” (Schutz 1972[1932]:166). Within the mutual tuning-in relationship we are not merely engaged with ‘similar’ intentional objects, but

the thematic focus of attention is the *same*. Our experience of the world is not of two separate individuals with their separate intentional acts, but that both of us are oriented to the emerging stream of action and intention. To borrow a phrase from Heidegger, one might say that we are collectively “we-ing” the ‘We-relationship’. That is, in the midst of the mutual tuning-in relationship, the participants are oriented to unfolding relationship, of which each individual’s actions are part but not the whole. Likewise, the interlocutors’ actions do not occupy the whole of either participant’s attention because they are merely a component of the event, act, object that is the unfolding relationship. As such, the reciprocity of the “We-relationship” is thus not an additive that can be considered over and apart from the individuals’ mere awareness of each other, but the reciprocity of the “We-relationship” characterizes a social *relationship*, and separates it from mere social *observation* (Schutz 1972[1932]:173-6; cf. Stawarska 2010).

In addition to recognizing the importance of encountering another temporally and practically engaged human being, it is also important to stress the aspect of perpetual change/evolution of the mutual tuning-in relationship as it is the very quality of diachronic emergence that undergirds participants’ sharing in each other’s time stream and allows them to “tune-in” to one another, thereby permitting individuals to experience what would otherwise be mere “togetherness” in terms of a “We” (Schutz 1971[1964]:177). That is, as Schutz explains, because communication necessitates and occurs through an outward materialization or occurrence in the objective world, the *unfolding* of its production is built up in the streams of both ‘inner’ and ‘outer time’ (cf. Bergson 1913). Because the communicative act is comprised of multiple, sequentially arrayed constituent actions the “polythetic character” of communicative act generation “warrants the simultaneity of the ongoing flux of the communicator’s experiences in inner time with the occurrences in the outer world, as well as the simultaneity of these polythetic

occurrences in the outer world with the addressee's interpreting experiences in inner time" (1971[1964]:178). In other words, the communicator's production of a communicative act/object is developed in a stepwise manner, wherein each phase is simultaneously composed (internally) and deployed (externally). By virtue of their compresence, the audience to a communicative act perceives and interprets the polythetically-constituted act/object simultaneously with its outward production (i.e. its production in outer time). Because the acts of perception are experienced within the audience's own *durée*, the audience effectively shares in the temporal experience of the communicator. Thus, the sharing of a joint temporal experience depends on the transposition of one individual's inner experience of temporal objects into outer expression, where they may be perceived by another who experiences that perception in his/her own inner *durée*. We might represent the relationship thusly:

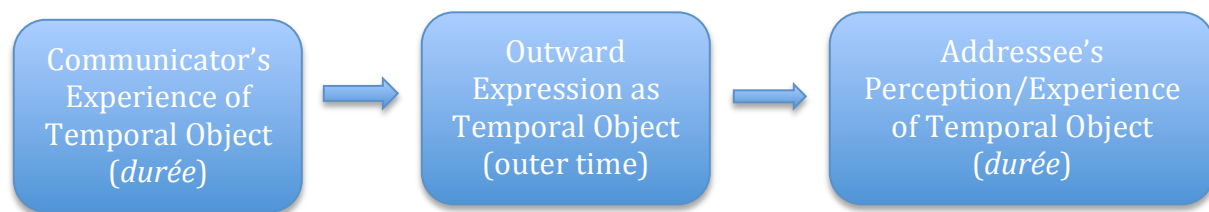


Figure 2.3.P: Sharing Temporal Objects

It is therefore precisely the stepwise unfolding of polythetic acts that allows multiple individuals to partake of a single temporal experience, to share in a *durée*. As such, consociates who are 'tuned-in' to one another *share* in a *single* vivid present. Moreover, Schutz notes that it is *only* within this special form of the "We-relation"—the mutual tuning-in relationship wherein individuals (directly) share in a single vivid present afforded by the face-to-face relationship—that another's conduct becomes meaningful. "It appears that all possible communication presupposes a mutual tuning-in relationship between the communicator and the addressee of the

communication...Only within this experience does the Other's conduct become meaningful to the partner tuned in on him—that is the Other's body and its movements can be and are interpreted as a field of expression of events within his inner life" (1971[1964]:177-8; see also Schutz 1972[1932]).

2.3.3 Time, Temporality, and Progressivity in Intersubjectivity

The issue of 'time' has in many ways been central to the study of AAC since the field began. Traditionally phenomena such as the one described above have been examined as a function of the rate at which augmented communicators are capable of producing utterances (e.g. Beukelman and Mirenda 2005; Demasco 1994; Harris 1978; Harris and Vanderheiden 1980; 1992; Hill and Romich 2002; Leshner, et al. 1998). Proponents of these studies have relied on a Newtonian model of time in order to quantify the rate of augmented communicators' actions for the purposes of inter- and intra-individual comparisons. By conceiving of time in terms of sets of discrete, uniform, and measurable units, these studies have been able to quantify individual performance, all with the expectation that doing so would allow them to design or prescribe more effective (i.e. efficient) solutions for augmented communicators. Philosophers of the experience of time have argued that such a Newtonian model of duration is befitting of investigations of physical occurrences, but fails to account for the *experience* of duration necessary to make such measures appropriate to the study of humans. This owes to the fact that we do not typically experience time as an object, per se, but experience objects and events *in* time: both with respect to the duration of the sensations they engender and the relationships they conjure with remembered pasts and anticipated futures (Husserl 1964).

Edmund Husserl's investigations and analyses of internal time consciousness are known

for, among other things, having unseated the primacy of clock(ed) time, showing it as a derived and theoretical—rather than natural—mode of attending to duration (Husserl 1991; Husserl 2001). Husserl did not deny that time could be segmented and measured, but that such a way of attending to time required a special act of reflection, uncharacteristic of the way people ordinarily engage with everyday experience (cf. Duranti 2009b; 2010; Husserl 1991; 2001). In so doing, Husserl moved away from the understanding of individual and isolated moments in time, arguing that experience of time was characterized by the synthetic nature of any given present as extending to a ‘horizon’ of attention that included attention to both the recent past and anticipated near future (Husserl 1991; Husserl 2001). Moreover, far from being merely a way by which we can measure duration, Husserl argued that time was crucial to the ways we perceive and experience objects, entities, and actions. Summarizing Husserl’s argument, Throop (2003:230) writes, “every intentional object is surrounded by a ‘horizon’ that contains multiple arrays of ‘retention’ and ‘protention’ which serve to partially structure what is given focally to our awareness at any given moment, while also serving to connect the existing moment of awareness to both its antecedent *and* subsequent arisings.” It is important to note that while such ‘temporal objects’ are presented to us within a temporal halo or horizon, the object to which we are attending itself does not change, but only the object’s mode of temporal appearance (Husserl 1991:68[66]). This caution is important as it allows us to consider the ever-present “now-moment [as] characterized above all as the new” (Husserl 1991:65[63]), and thereby position the experience of temporal objects within a continuous flow of ‘new’ and ‘present’ experiences. As long as we are conscious, new contents will continue to enter our awareness in the mode of temporality characterized by the ‘now,’ and will gradually fade into a mode of presentation characterized by retention as new temporal objects appear in the now-moment. Husserl refers to

this process as the ‘running-off’ phenomenon (Husserl 1991:68[66]; Merleau-Ponty 1962b:419; cf. Schutz 1972[1932]; James 1948:280) and it is crucial to understanding the phenomena under discussion here – i.e. the ways in which augmented communicators and their interlocutors experience one another’s presence. That is, what is at issue for Ted and his interlocutors are the ways that the temporal objects indented by the participants manifest differently for each because the ways in which they are produced afford unequal access to Ted—as message composer—and Mary and Frank—as audience.

This can be seen in the example presented above wherein Mary displays her staged disengagement from mutual attunement with Ted over the course of the 18 seconds between when she asks her question in line 10 and when Ted responds in line 12. As discussed above, although Mary produces a series of embodied displays of engagement, maintaining each one over a temporally unfolding arc similar to that of a gesture (cf. McNeil 1992), she eventually withdraws from the activity, and begins attending to other issues (i.e. body cares). Mary’s inability to share in Ted’s present moment hinges on her unequal access to Ted’s actions-in-context and the resulting disruption in shared temporal orientation within the unfolding interaction: specifically, her orientation to Ted’s *next* utterance. Mary’s eventual displays of disattunement (e.g. her facial expression and gaze withdrawal – see Figure 2.3.3.7) suggest that her experience of the temporal flow that united her *remembered* utterance with Ted’s *anticipated* utterance had been ruptured or at least fractured. For Mary (along with Frank and John), the delay of new interactional units/objects caused by Ted’s typing leaves the content of her last utterance (line 10: um, who’s the girl that’s with you?) unaddressed, allowing the object’s strength and clarity to fade as the event passes deeper into participants’ retention.

Although the forms in which such phenomena manifest may appear entirely ‘natural’ or

somehow ‘pre-cultural’, one need only compare this situation to those Basso (1979) recounts to see how local preferences for inter-turn durations can impact the experience of temporal objects in interaction. That is, as Basso notes the Western Apache often allow considerable time to pass between first and second pair parts, and ridicule Whites for their attempts to maintain a ‘no gaps, no overlaps’ interactional structure (cf. Scollon and Scollon 1982). However, unlike the case discussed by Basso, augmented communicators are perpetually immersed in communities with rapid temporal requirements for the recognition of adjacency. That this experience of the running-off of an augmented communicator’s utterance is often (if not always) the case is supported by both the opening vignette and the quote that preceded it; however, what is so compelling about this piece of data is that one can actually see the phenomenon manifesting in Mary’s outward displays. Throughout the time that Ted types, all of his interlocutors produce the basic involvement behaviors common to hearers – e.g. maintaining the participant framework (Kendon 1990), gazing at the speaker at the appropriate times (Goodwin 1979; 1980a; 1981), refraining from making elaborate gestures of their own (Sacks and Schegloff 2002:14), etc. Mary’s facial expressions, however, constitute *stance* displays and therefore serve as a public indication of her interactive involvement (Du Bois 2007; Goodwin 2007b; Goodwin 1998). That is, as Du Bois (2007:163) explains: “Stance is a public act by a social actor, achieved dialogically through overt communicative means, of simultaneously evaluating objects, positioning subjects (self and others), and aligning with other subjects, with respect to any salient dimension of the sociocultural field.” Within this formula, Mary’s facial expressions reflect her evaluation of the response she anticipates from Ted, inviting Ted to align with her. The gradual disappearance of Mary’s stance display suggests that the motivating experience (anticipating Ted’s response) has faded from her immediate concern. Rather, in the sequence of frames

presented above (Figures 2.3.3.1-2.3.3.7), Mary's outwards displays of attention seem to shift from presenting a stance toward Ted's forthcoming turn to more private experiences – i.e. body cares. As will be discussed in the next chapter, these body care behaviors are typically not treated (intended) as interactional displays, but in fact constitute a means of breaking mutual gaze and exiting forms of engagement (Ekman and Friesen 1974; Goodwin 1986).

The fact that Mary maintained her involvement displays (e.g. facial expressions) for several seconds after asking her question suggests that she continued to orient to Ted's next turn as forthcoming. However, the gradual decay of her expressions over the 18-second period suggests that the strength of this orientation faded more and more as time elapsed. We might posit that Mary's fading engagement/orientation owes to the running-off of her last experience of mutuality and her increasing need to interpret the *objective* meaning of Ted's actions within the regularities of the turn-taking structure of conversation (cf. Wilkinson 1999). Mary's experience over the 18 seconds therefore moves from that of a fully ratified and reciprocally attuned participant in the interaction, to that of an observer – someone for whom Ted's actions operate at a level removed from both subjective and communicative intent. (Schutz 1972[1932]).

Ted's temporal experience of the interaction appears quite different from that of Mary's. Whereas for Mary the 18 seconds between lines 10 and 12 passed largely unfilled,²² to Ted, each moment of the 18-second silence is occupied with behaviors designed to produce the words of his response. What to his interlocutors appeared as an indistinguishable series of dyskinetic movements, manifested for Ted as a typing project. Each of his keystrokes was anticipated by those that came before and occasioned those that followed, all of which were united in the service of his overall goal of producing an utterance, and specifically a response to Mary's question. Just as the playing of notes unifies the attention of the musician and listener within the

song, so too might we expect Ted's own perception of his actions to be united within the project/goal of the turn at talk (see Schutz 1971[1964]; Schutz 1972[1932]:57-66).²³

In short, while Ted experienced the flux and flow of his actions as lodged within the unfolding interaction, to his mouth-speaking interlocutors, Ted's movements provided only a basic account of his immediate orientations, and therefore constrained the possibilities for his interlocutors' experience of attunement. As discussed above, the mutual tuning-in relationship requires a perpetual unfolding of sharable intentional objects so as to allow the participants' intentional orientations to align. Although Ted's turn was composed diachronically, each key being hit in sequence with the others *in order to* produce a communicative utterance, his interlocutors' asymmetrical access to the unfolding of Ted's act of typing lead to the slippage in their previously experienced sharing of intentional streams. That is, up until line 11, when Ted typed his response to Mary's question, Ted and Mary demonstrably oriented to one another's behavior (movements, eye-gaze, facial expressions, etc.) as meaningful, and took for granted that the subjective meanings of these behaviors were sufficiently similar. As Schutz (1972[1932]:32) writes, "every act of mine through which I endow the world with meaning refers back to some meaning-endowing act (*Sinngebung*) of yours with respect to the same world. Meaning is thus constituted as an intersubjective phenomenon." However, as Ted began typing and Mary no longer had access to an immediately shared environment – i.e. the array of actions thus far completed and those yet anticipated – she was therefore no longer able to share in richness of subjective meaning in which he experienced each movement.

2.4 Ted's Response: Monothetic vs. Polythetic Experience

In line 12, shortly after hearing the inTra device's 'chime' indicating that a new message

had been displayed, Mary and Frank look down at the inTra device's display, which showed Ted's utterance (MY STAFF). Pausing there for a beat, Mary then looked back to Ted and produced her utterance in line 13 (*cool what's her name?*). In this instant, the slippage that characterized the preceding 18 seconds is both illuminated and repaired. On the one hand, in the moment when Ted's utterance was revealed, Ted, Mary, and Frank were all given simultaneous access to a new interactional unit, an intentional object that they could simultaneously attend to within the unfolding of the interaction. On the other hand, however, it is also at this moment that different ways in which this object is temporally configured for Ted vs. his interlocutors is most clear.

Ted's output was composed though a polythetically-arrayed sequence of operations; however, because his output was revealed 'all at once', his audience encounters the utterance monothetically or synthetically. That is, whereas for Ted, the act of composing an utterance is comprised of several constituent operations or actions, each one linked to those preceding and succeeding it through retentional and protentional relationships (Atkinson and Heritage 1984; cf. Engelke and Mangano 2008; Husserl 1991; James 2010[1890]), his interlocutors are given asymmetrical access to his project, and thereby only encounter his utterance once it is fully formed and exported to his second display. However, by delivering all of the words Ted has produced in a single moment, arraying them on a single surface, the device output fails to capture or retain the temporality of these objects. That is, as the device translates Ted's movements into 'keystrokes' and then into symbols/text the temporal properties of his 'input' actions are stripped away or muted by the target modality in which his utterance is eventually presented.

Thus, Ted's output modality offers his interlocutors no means of engaging in the progressivity of his utterance or the interaction in which it is ostensibly nested. That is, by

obscuring the immediate products of his action, and the ways they respond to and further the interactional context—what we might term the ‘retentionality’ and ‘projectability’ of his turn (cf. Heritage 1984b:242)—and therefore offer no opportunity to orient to, or share in the inner temporal horizons of Ted’s experience within his acts of utterance production, what Bergson (1960) referred to as the *durée*. It is precisely this disruption to the linkage between inner and outer time that resists or disrupts the participants’ ‘mutual tuning-in relationship’. Even when Ted’s utterance consists of several words, which by their nature must be attended to sequentially, the turn (i.e. the ‘sense-giving act’ of producing the signs) seems to be produced in a single instant.

This notion is supported by William James’ notion of the extended ‘now’, or “specious present.” James explains, “we are constantly conscious of a certain duration—the specious present—varying in length from a few seconds to probably not more than a minute” (James 2010[1890]:430). As such, the ‘*now*’ that occupies Ted’s focus of attention is structured around the retention of the typing actions that he has so far accomplished and the protention of those yet to be accomplished; all of which are subsumed under the level of his project, responding to Mary’s question. For his mouth-speaking interlocutors, on the other hand, Ted’s movements reveal little about his attention, leaving Mary (along with Frank and John) to experience a ‘*now*’ that is structured around only the more general acts of retention (i.e. of Mary’s turn) and protention (i.e. of a presumed forthcoming response from Ted). As per our examination of Husserl’s running-off phenomenon, with each moment that Ted types, the strength and clarity of Mary’s turn decays as other intentional objects (e.g. sounds, sights, thoughts, etc.) begin to replace the Mary’s question in his interlocutors’ streams of consciousness (James 2006 [1912]; see also Throop 2003).

2.5 Summary and Conclusions

My goal in this chapter has been to introduce a particular, but prominent, phenomenon that emerges in context of face-to-face interactions with augmented communicators. Specifically, I have been interested in examining the experiences of *being-with* another person that manifest over the course of the interaction. To do so, I examined a stretch of interaction between an augmented communicator and his mouth-speaking interlocutors, highlighting one focal participant's (Mary) passage from an experience of full and reciprocal intersubjective attunement, to a more fractured form. I argued that these fractures in mutual attunement were the result of the asymmetrical access to the augmented communicator's environment as it is made relevant in the moments when he (Ted) was composing his utterance. Drawing on Schutz's notion of the 'mutual tuning-in' and Husserl's 'running-off' phenomenon, I suggested that this slippage or fracture in the sorts of tight attunement that characterize 'normal' or face-to-face interaction (i.e. between mouthspeakers) stemmed from the ways that the participants differently experienced the temporality of interactional units. Thus, while Ted remained engaged in the conversation throughout in the processes of responding to Mary's question, the lack of transparent meaning in each of Ted's movements prevented Mary from sharing in the unfolding action. Thus, Mary's sense of engagement in the interaction was shown to wane as the strength and clarity of her prior turn, and its embedded projections of Ted's next turn, faded deeper into the past. Ultimately, I traced this fracture to the temporal disjunction between the moments when Ted composed his utterance and when he displayed it publically, demonstrating that mere reciprocity of roles (i.e. composer/observer) is insufficient to sustain mutual attunement.

I have shown how this situation leads augmented communicators' audience members to experience what conversation analysts call a 'delayed' or 'stalled progressivity' (e.g. Antaki and

Wilkinson 2012; Clarke 2005; Du Bois 1986) or ‘gap’ (Sacks et al. 1974) in the conversation. And, while this ‘gap’ is attributable to the augmented communicator—as (next) speaker—the augmented communicators’ interlocutors are hardly impotent bystanders. Rather, as we will see in the next chapter, mouth-speaking interlocutors use a variety of techniques to prevent a ‘gap’ or ‘lapse’ from manifesting including taking responsibility for the delay, themselves.

Moreover, the next chapter will build off the discussion here in order to show how, in the moments of silence that occur as the augmented communicator is typing, *both* the augmented communicator and his/her interlocutors become *vulnerable*. Foreshadowing this analysis, I argue that because the act of speaking indicates the presence and content of one’s ‘thoughts’ (Husserl 2000:277) or agency (Duranti 2000:455) to another, and thereby establishes the speaker *for* the hearer in a particular way, when one’s ability to speak/participate in time with others is compromised—as it is for augmented communicators—so too is his/her ability to constitute him/herself for the other. However, the act of speaking *to* the other also serves as, and demonstrates the speaker’s (ethical) response to having recognized the other as another human being—what Levinas refers to as encountering the ‘face’ of the other (see Levinas 1985:88; 2009:48). Speaking therefore not only constitutes the speaker in a particular way, but also reveals a tacit relationship the speaker has with his/her audience, revealing the interlocutor *as* a person *for* the speaker. I argue that in the case presented here, the augmented communicator’s audience is left vulnerable during the ‘gap’ experienced while the augmented communicator is composing his/her message. That is, having responded to the augmented communicator’s presence, ratifying him/her through their speech, the audience is held in a limbo awaiting the response and ratification of the augmented communicator. Despite being able to see the augmented communicator’s typing, the audience is left vulnerable, uncomfortable, unrecognized.

The chapter concludes by suggesting that this sense of vulnerability is caused by the audience's conflation of the act of communicating with the content of that communication, which is temporally decoupled during in the midst of the 'gap'.

Chapter 3: Vulnerable Moments & Repairing the ‘We’

3.0 Introduction

The segments examined here share a number of similarities with the one presented in the previous chapter. As such, they provide further evidence to support the argument regarding the mouth-speaking interlocutors’ experience of a fractured mutuality or attunement. Additionally, in the segments presented here, Mary goes beyond demonstrating her orientation to a fracture in mutual attunement. In the first of the two segments examined in this chapter, the participants’ attunement is again fractured as Ted types a response to a question posed by Mary. After demonstrating her orientation to the fracture, Mary attempts to repair the prior state of mutual attunement by asking Ted another question, even before he has completed his response to the first. This creates an uneasy situation when Ted finishes his response to the first question before addressing the second. In the second segment examined here, Mary asks Ted another question. However, this time, while Ted is responding, Mary produces a series of short, phrasal expansions to her original question. Although speaking while Ted is typing can be a dangerous project (as shown in the first segment below), Mary’s expansions do not substantially alter the context in which Ted’s *next* utterance will be/is heard. As a result, Mary is able to extend her turn into the time when Ted is typing his response, and thereby sustain a sense of mutual attunement by averting the ‘gap’ that otherwise manifests as Ted types. When such action is performed among mouthspeakers the result is an ‘overlap’; however, as shown below, because of the diverse modalities by which Ted and Mary produce their turns at talk, the result in this case more closely resembles standard mouthspeaker turn-taking structure than do non-overlapping practices.

After examining the two strategies that Mary uses in her attempts to repair or maintain a sense of mutual attunement with Ted, I then turn to examining what such efforts might indicate. I conclude by arguing that these fractures in the participants' relationship leave *both* the Augmented communicator and their mouth-speaking interlocutors vulnerable, albeit in different ways. On the one hand, I argue that Ted becomes vulnerable to various forms of disruption during the time that he is typing. Because of the substantial period of non-speech silence that ensues, mouth-speaking interlocutors may alter the context in which his utterance-in-progress will be heard and thereby compromise his ability to contribute to/fully participate in the interaction. These threats become most apparent in the transcript below when Mary asks Ted a second question before he has an opportunity to respond to her first question. On the other hand, I suggest that Mary, as Ted's primary interlocutor, is also made vulnerable during the time Ted is typing. In short, this is because Ted's typing action does not provide an immediately recognizable receipt to Mary's turn. Thus, during the time of Ted's typing Mary is left in a liminal state of having initiated a sequence of joint action (question/answer), but being left unacknowledged by a reciprocal display of recognition. I draw on Levinas' notion of the 'face' along with his discussion of the 'saying' and the 'said' in order to explore this point more fully.

3.1 Data for Close Analysis: Lines 13-25

The stretch of interaction presented below occurred immediately after the segment discussed in the previous chapter. Here, I will expand the earlier analysis to include a discussion of gaze as an interactional resource that is at play in the fracturing of mutual attunement. Gaze is among the most significant active mechanisms speakers and hearers have for demonstrating their ongoing attention and participation in an interaction (Goodwin 1980a; Rossano 2012; Stivers, et

al. 2009; Stivers and Rossano 2010). By tying patterns of gaze behavior to other interactional structures, researchers have found several regularities and made important inferences as to their motivation (Derrida 1973; e.g. Goodwin 1980a; 1981; Rossano 2012). Along these lines, Goodwin argues that in instances when a speaker is *not* looking at or visibly attending to his/her interlocutors makes qualitatively different claims on the hearer from those elicited when the speaker *is* visibly attending to his/her interlocutors. Specifically, Goodwin (1981:114) points out that talk that is produced in interactive frameworks of speaker disattention does not solicit the hearer's explicit demonstration of hearing. Ted's interlocutors recognize this quality during the composition phase of Ted's utterance, taking this time to look away and perform various self-grooming actions. The most pronounced example of this occurs as Ted is in the process of responding to Mary's question in line 13, (*cool what's her name?*) and before she produces her next question in line 15, (*and you live in Buffalo here?*).

3.2 Fracturing and Repairing the 'We'

Following Ted's minimal response in line 12, Mary asks a second, follow-up question, attempting to elicit the female staffer's name (line 13). 12 seconds later, as Ted is in the process of composing his response, Mary asks a seemingly unrelated question regarding where Ted lives (line 15). Ted does not pause, but continues to compose/type for 11 more seconds after Mary's second unanswered question. In line 17 Ted responds to the first of Mary's two questions and continues typing without a break in order to answer her second question from line 15. Using a pre-programmed utterance in line 21, Ted repairs the inaccurate component of Mary's yes/no interrogative (line 15) only 7 seconds after his last utterance. For their part, Mary and Frank (F) both acknowledge Ted's utterance in line 17—Mary, verbally (line 19), and Frank, with an

exaggerated head nod—before waiting silently for his response to Mary’s second question regarding the location of his home (line 15).

Transcript 3.1

13 M: cool what's her name?
14 (12)
15 M: and you live in Buffalo here?
16 (11)
17 T: ‡ |I can't spell it|
18 (2)
19 M: Oh OK
20 (4)
21 T: ‡ |West Seneca|
22 M: you live in West Se[ne:]ca
23 T: [eah]
24 M: that's a good place=I like it [down there]
25 T: [eah:::]

3.2.1 Further Signs of Fractured Attunement: Off-Stage Behavior & the ‘Disattend Track’

As in the example examined in the preceding chapter (lines 10-12), Mary delivers her talk in line 13 with a large smile, sustaining eye contact with Ted throughout her turn. After accenting the question with a pronounced eyebrow flash as she says, “name” (Figure 3.1), Mary maintains her smile for several seconds after Ted has broken off his gaze in order to begin typing his response (Figure 3.2). After gazing at Ted and holding her expression for around 3 seconds Mary gradually opens her smile into large, open-mouthed yawn, which she maintains for around 2.75 seconds (Figures 3.3-5). Throughout her yawn Mary keeps her face and head stable, allowing her to gaze at Ted as she swivels back and forth on her chair.

Around one second before Mary completes her yawn, Frank raises his right arm and begins rubbing his eye under his glasses (Figure 3.5). Up until this point Frank had sat silent and largely motionless, neither swiveling in his chair nor making any detectable movements apart from looking at the inTra device’s display when Ted produced his utterance in line 12. Frank’s rubbing motion continues for several seconds, during which time John, seated on the couch in

the back of the room, raises his own hand and begins scratching his head (Figure 3.6). Shortly after John initiates his own bodycare movement, Mary, who had been swiveling in her chair with her hands in her lap, lifts her right arm and wipes her nose on her wrist and forearm for approximately two and a half seconds (Figure 3.7). After finishing her nose-wipe self groom, Mary takes a deep breath, sniffles loudly, and then produces her next line of talk (line 15: *and you live in Buffalo here?* – Figure 3.8).

13 M: cool what's her name?

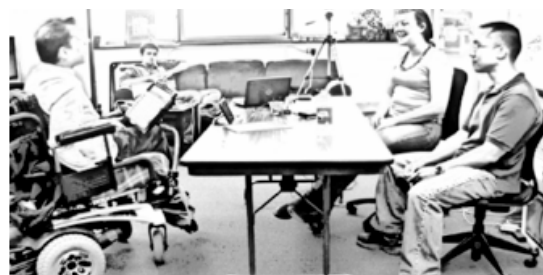


Figure 3.1 (Ted/Mary mutual gaze & Smile on Mary's question)



Figure 3.2 (Mary holds smile and gaze, Ted begins typing)



Figure 3.3 (Mary begins to yawn)



Figure 3.4 (Mary holds yawn)



Figure 3.5 (Mary holds yawn, Frank rubs eye)



Figure 3.6 (Frank rubs eye, John scratches head)



Figure 3.7 (John scratches head, Mary wipes nose on arm)

15 M: and you live in Buffalo here?



Figure 3.8 (Mary asks question 2 before Ted answers question 1)

Line 14: (12sec)

Goodwin (1986) and Ekman and Friesen (1974) have long ago noted a taboo against looking at others as they touch their own bodies. “There is a taboo about being caught looking at hand acts when they involve contact with the body, particularly if hands contact body orifice or genital area. It is not that people are polite and constrained and don’t do these things... But people are polite observers. When the rules of Emily Post are broken and people rub, kick, or massage their noses, ears, [etc.], they believe that others won’t look and this is generally true. Review seems to reside as much in watching such behavior as in emitting it” (Ekman and Friesen 1974:277, quoted in Goodwin 1986:48). Such body cares thus contrast with gesture in terms of the tacit recognition that they are not communicative, and in the way they contribute to the structure of participation framework: repelling rather than soliciting the interlocutor’s gaze (Goodwin 1986:40). As such, the performance of body cares has traditionally been examined as a speaker’s activity, used to disrupt the participant framework for various reasons. As Goodwin (1986:42) notes, body cares “serve to rupture the framework of mutual orientation between speaker and hearer that is being sustained *within* a turn.” However, in the instance we are examining here, the body cares are being produced by hearers rather than the speaker, thus indicating that something else may be afoot.

Following Goodwin’s (1980a:270) recognition that hearers are accountable to the organizations of gaze proposed by speakers’ embodied actions, being somewhat rule-bound to follow the speaker’s lead at any given moment, one candidate explanation is that rather than seeking to break the established participant framework underpinning the turn-in-progress, the mouthspeakers experience the framework as *already* broken. In this light Mary, Frank, and John’s actions can be understood as underscored by a perception of the moment as a suitable opportunity to perform such private, body care behaviors. The mouthspeakers’ rubs, scratches,

wipes, and yawns indicate an attention to Ted's behavior as having disattended from them as participants. Thus, although Mary, Frank, and John continue to mark the sequential slot as 'Ted's turn', they also recognize this time-space as appropriate for engaging in private behaviors. That is, because Ted's device requires him to look *at* it, he is unable to sustain a mutual visual monitoring of his interlocutors while typing. As such, the participants are oriented to and in different spaces, thereby disrupting the possibility for shared meaning of gestures or movements. The overlapping body cares point to a collectively realized off-line-ness to the time-space that they cohabitate with Ted, but do not experience themselves as actively 'sharing' in.

This interpretation is consistent with Goodwin's (1981:96) suggestion that, "a display of disengagement treats someone who is physically present as in a certain sense not relevantly present, that is, not the subject of observation or a locus of joint, collaborative activity." At a more subtle level, the mouthspeakers do continue to orient to Ted as producing a current focal move through the sustained f-formation and the physical orientation of their lower bodies (Kendon 1985; 1990; Schegloff 1998). Thus, while Mary, Frank, and John are present in such a way as to have some access to one another, Ted as the current/next speaker is oriented to an unshared space, engaging in an action that the others cannot immediately participate in. That is, because Ted is oriented to his device, a private virtual space, he is unable to monitor the ongoing actions of his interlocutors, effectively denying them the ability to participate in his act of composing his utterance (Goodwin 1979).

We can therefore see that here, as in the previous example (Chapter 2), Ted's interlocutors continue to treat him as the current/next speaker after Mary's question selects him to speak next; however, as the time since the last recognizable conversational action/utterance grows, the mouthspeakers display their disengagement. The fact that in this case all three of the

interlocutors engage in some form of self-grooming behavior around the same time, and in response to the same organization of interaction, suggests that the fractures in the ‘We-relation’ and ‘mutual tuning-in’ relationship are collectively experienced.²⁴ In addition to the lack of symmetrically available interactional units/signs, I have suggested that this slippage in intersubjectivity is at least partially based on Ted’s gaze direction while typing and the arrangements of monitoring it affords. In short, because Ted is neither producing an unfolding array of interactional units, nor gazing at his interlocutors, Mary, Frank, and John no longer perceive the tightly coordinated sharing of a “vivid present,” but see Ted as oriented to a private space that is inaccessible to them in the ways that it is accessible to/accessed by Ted.

In this orientation, the mouthspeakers appear to have moved from a social experience of the ‘We-relationship’ to one of mere, although direct, social observation. The move seems likely to stem from the perceived breakdown of reciprocity in their intentional orientation to/with Ted as he types his response to Mary’s question in line 13. Here, the sense that they are observers rather than participants of another sort (e.g. audience members or hearers) is motivated by the mouthspeakers’ direct awareness of Ted while simultaneously presuming him to be in some way *unaware* of them (cf. Schutz 1972[1932]:173). What is at issue here is not merely that Ted’s attention *appears* directed toward an unavailable surface/object/project, but that his experience of that object is now is untethered to that of his interlocutors. That is, whereas during the time that Ted and his mouth-speaking interlocutors were engaged in successions of tightly coordinated actions, each motion, utterance, and expression could be harnessed to develop and verify the participants’ tacit suppositions about the other’s internal states, tracing and anticipating the transitions between them (cf. James 2006 [1912]; 2010[1890]: e.g. 159).

3.2.2 Repairing the ‘We-Relationship’: Two Questions, Two Answers

Further evidence that Ted’s interlocutors experience a rupture in the tight mutuality of the ‘We-relationship’ comes when, after the series of body cares discussed above, Mary produces a question in line 15 (*and you live in Buffalo here?*). Although a relatively straightforward first pair part, Mary’s utterance is performed with some notable features. First, and most obviously, Mary asks her question while Ted is still typing his response to her previous question from line 13. Secondly, the manner in which Mary performs her question in line 15 contrasts markedly with her performance of the other questions in that she delivers it without the broad smile (Figure 3.8) or dynamic prosody that she employs during her questions in lines 10, 13, 22, and 27.

In light of the fact that Ted has not yet produced a response to Mary’s question from line 13, Mary’s utterance of another first pair part (question) in line 15 suggests that she has experienced some trouble in the conversation, and specifically in the persistence of the intersubjective frame. This interpretation hinges on our ability to see Mary’s second question as an attempt to *repair* the relationship by self-selecting as next speaker, using her turn to attempt to sequentially delete the trouble source in order to start the interaction over on a new tack. To this effect we note that Mary begins her question in line 15 with the conjunction “and,” which marks the question as sequentially related to her previous one and seems to provide some justification/account of her self-selection as next speaker despite the fact that the group had been attending to Ted as next speaker, sitting in silence while he is visibly (and audibly) typing on his device. Lerner (1989) refers to this sort of inter-utterance linkage as “skip-connecting,” wherein a speaker ties his/her utterance to a prior possibly complete TCU. Doing so suggests that the latter talk is to be heard as completing the prior possibly complete TCU. By completing a prior utterance, the later talk takes precedent over any intervening actions, and is therefore able to

sequentially delete them without violating the *next* speaker's right to speak (Lerner 2004b:252; see also Lerner 2004b). Thus, in the example presented here, because Mary's turn in line 15 serves to complete her possibly complete TCU from line 13, the 12 seconds of non-speech that occur as Ted types in line 14 are sequentially deleted. Doing so provides an opportunity for the group to realign around a symmetrically accessible interaction unit (i.e. Mary's speech).²⁵

What is particularly telling about Mary's utterance is that the content of her second question is topically unrelated to the first and thereby introduces a new and self-contained theme. That is, Mary's question in line 15 (*and you live in Buffalo here?*) does not respond to or incorporate the content or direction of her prior talk, but shifts away from the previous line of conversation that evolved over multiple lines of talk and emerged over more than 38 seconds. Mary's self selection as next speaker and her introduction of an unrelated question can thus be seen as an effort to intervene in the ongoing interaction, attempting to block Ted's action-in-progress by introducing a new line of action (see Blincoe and Thorne 2000), one that does not require the participants' attention to/retention of earlier utterances/actions (see Schegloff 2000).

It is also worth noting that Mary initiates the fresh sequence of action by using a yes/no interrogative. This is significant for a number of reasons, especially when one considers that **yes/no interrogatives are by far the most common style of question posed to Augmented communicators**. Researchers interested in AAC use have long held that this is due to the fact that yes/no interrogatives allow for rapid, rhythmic responses and more predictable progressivity and turn taking (Clarke and Wilkinson 2010b; Light, et al. 1985a:82; cf. Müller and Soto 2002a). Because of an implicit preference for conforming responses over non-conforming responses, yes/no interrogatives pressure *next* speakers to produce a highly limited response – i.e. either “yes” or “no” (Raymond 2003). In the context of communicating with a person with a severe

physical disability, yes/no interrogatives often provide a basic means of interaction that can be employed regardless of whether or not the individual has an AAC device. Due to the fact that yes/no interrogatives propose a closed set of options containing the minimum number of possibilities to allow for a choice (i.e. 2), even the most disabled individuals can participate in interaction sequences by performing any physical operation/gesture under their control (e.g. headshakes/nods, looking up/down, blinking/not blinking, etc. (cf. Loncke and Heleen 1997)). Moreover, because responding to yes/no interrogatives often does not require the augmented communicator to use his/her device, augmented communicators may treat yes/no interrogatives as interjections without disrupting any ongoing typing project in which they may be currently engaged.

In fact, it seems that Ted does respond to Mary's interrogative, but that Mary does not register the action. As Mary delivers her line, Ted briefly raises his gaze to meet hers, arriving as she says the word, "*Buffalo*," but breaking away just as she finishes speaking the word "*here*." A close examination of the video shows that as Ted breaks mutual gaze with Mary, he furrows his brow and extends his closed lips. To those familiar with Ted's expressions, this face suggests disagreement; Mary, however, seems to anticipate affirmation, both in her question design (cf. Raymond 2003) and in her embodied display wherein she can be observed nodding slightly as she delivers the line. As Ted returns to his project of typing his response to Mary's prior question (from line 13), Mary looks away briefly before leaning forward on the table and resting on both elbows, looking between Ted's display and around the room with an expression of boredom on her face (Figure 3.9-below).



Figure 3.9 (Mary and Frank await Ted's output)

When Ted does output a response in line 17 (I CAN'T SPELL IT), it is designed to answer Mary's initial question, and does not take her second question into account. Ted's response is thus unlike those of mouthspeakers who may respond to rapid changes in context by altering their talk in mid-utterance or, in the case when two or more questions are asked, will typically answer the most recently asked question first before proceeding to answer the earlier question, thereby recognizing the local context in which the utterance is initiated (Sacks, et al. 1974; Schegloff and Sacks 1973; cf. Clarke 2005; Clarke and Wilkinson 2008). Although Mary and Frank do eventually demonstrate proper uptake of Ted's utterance (Line 9), they do indicate some trouble in doing so. That is, Mary's utterance in Line 9 (oh ok) comes a full two seconds after Ted has output his response in line 7. Moreover, by starting her turn with "oh," the shape of Mary's turn suggests what Heritage calls a change-of-state (Heritage 1984a). The use of "oh" tokens after AAC turns appears quite frequently in the data, and seems to mark the speaker's experience of the AAC-mediated utterance having been initially unclear, but subsequently figured out. Along similar lines, approximately 3.5 seconds after Ted outputs his utterance, Frank produces what we might gloss as the embodied display of a change-of-state token when he produces an exaggerated upward head nod lasting more than 1.5 sec. For his part, however, Ted never looks up at Mary or Frank, and does not visibly break his attention to his device after

issuing his utterance in line 17 (I CAN'T SPELL IT). Instead, Ted continues, typing his response to Mary's second question from line 15. In contrast to the lengthy production of his utterance in line 17, however, Ted uses a preprogrammed sequence of three keystrokes to output his response in line 21 (WEST SENECA).

Following on the heels of the analysis of Mary, Frank, and John's body care movements in the preceding section, Mary's question in line 15 seems designed to repair a fracture that she experiences in the 'We-relationship' with Ted. Moreover, as illustrated here, Mary question serves as an attempt to repair the fractured state of mutual attunement. That is, in the analysis of the mouthspeakers' self cares, I proposed that in recognizing Ted as oriented to a private/unshared space/object/project, Mary, Frank, and John experienced a movement out of the "We-relationship," characterized by direct social *participation*, and into an relationship of social *observation*. Mary's question in line 15 is consistent with this interpretation insofar as it serves as an attempt to remedy the situation by sequentially deleting the context that houses the source of trouble (i.e. her previous question and the delay that accompanied Ted's act of responding) though her act of proposing a fresh sequence of action to replace it. This attempt to again inject herself into the context of Ted's action suggests her interpretation of that relationship as having been ruptured in some way. As Schutz notes, "*When I start asking questions of the person observed, I am no longer a mere observer...*the point must be stressed that direct social observation can be converted at will into a face-to-face relationship, thereby making such interrogation possible" (1972[1932]:174). Thus, although Mary's question solicits only a minimal response from Ted, it encourages a more rapid repair of the "We-relationship" than would be expected from another open-ended query. Moreover, it seems that Ted interpreted Mary's provocation thusly, making eye contact briefly during Mary's talk and responding to the

content of her utterance with a facial expression. Unfortunately for the participants, however, although Ted attempts to respond to Mary's second consecutive question by making a disagreement face, Mary fails to register his response. Thus, what began with Mary attempting to elicit more immediate feedback from Ted ended up prolonging the moment of asynchrony by requiring Ted to produce two consecutive AAC-mediated answers to Mary's two consecutive questions.

3.2.3 Vulnerabilities of the Augmented Communicator

In the case presented above, Ted successfully answered both of Mary's questions, and in such away that afforded his interlocutors' understanding. However, the difficulties experienced here (e.g. through Mary's second question (line 15) and subsequent lack of immediate uptake of Ted's utterance in line 17 or recognition of Ted's gestured response) indicate one source of possible 'breakdown' in the conversation. In his groundbreaking autobiographical studies, ethnomethodologist and ALS patient Albert Robillard outlines at least three major interactional vulnerabilities augmented communicators have because of the time it takes them to produce a response: the frequent use of limited set questions (i.e. yes/no interrogatives), the 'not now' problem, and "the out of context problem." Each of these poses a particular form of danger to the augmented communicator in that they disrupt the augmented communicator's ability to carry out trajectories of social action at even the most basic level.

3.2.3.1 Limited Set Questions

True to his ethnomethodological background, Robillard's meditations on his condition focus on the ways that interactions frequently expose members' knowledge in the social order.

Thus, in discussing his experiences in the intensive care unit, he notes that doctors often experienced time pressures, leading them to abbreviate or reject Robillard's attempts to communicate with them. To this effect, Robillard notes the doctors' frequent use of yes/no interrogatives as a means of conducting efficient interactions. As noted above, the use of yes/no interrogatives is a prevalent form of question directed toward augmented communicators because it provides a binary response system, which both affords communication by even the most severely physically disabled individuals and encourages rapid, rhythmic exchanges (Clarke and Wilkinson 2010b; Light, et al. 1985a:82; cf. Müller and Soto 2002a). An example of this can be seen in the work by Goodwin (and Goodwin), who presented several interactions wherein Chil, an aphasic man with a vocabulary of 'yes,' 'no,' and 'and', was able to produce highly nuanced utterances by guiding his interlocutors through elaborate yes/no sequences (Goodwin 2003b; 2004; in press; Goodwin, et al. 2002). However, Chil's ability to direct his interlocutors' through these complex interactions was tied to his abilities to produce rapid, prosodically rich utterances and recognizable gestures that were then sequentially tied to the talk of others. For many of the people who participated in my research, these actions would be impossible. Thus, in these cases the imposition of a tightly delimited set of options has the potential to force augmented communicators to choose between what amount to two wrong responses. That is, often, yes/no interrogatives may be framed in such ways that even a 'no' answer will accept the premise of the question, leading to partial or incorrect understandings.

The vulnerability of the augmented communicator in such situations is not limited to merely the prospect of having to choose between two equally unappealing scenarios, but is in fact the augmented communicator's susceptibility to reduction from fully human form. To understand this we must consider what it means to be fully human. One inviting explanation can

be found in the work of Hannah Arendt, who noted that the basic ability to be human resides in one's ability to transcend mere *alterity* and evoke the uniqueness of each individual human. As she writes, "only man can express this distinction and distinguish himself, and only he can communicate himself and not merely something—thirst or hunger, affection or hostility or fear. In man, otherness, which he shares with everything that is, and distinctness, which he shares with everything alive, become uniqueness, and human plurality is the paradoxical plurality of unique beings" (Arendt 1958:176). Arendt goes on to state that it is through speech and action that one's humanity is disclosed:

Speech and action reveal this unique distinctness. Through them, men distinguish themselves instead of being merely distinct; they are the modes in which human beings appear to each other, not indeed as physical objects, but *qua* men. This appearance, as distinguished from mere bodily appearance, rests on initiative from which no human being can refrain and still be human....A life without speech and without action, on the other hand – and this is the only way of life that in earnest has renounced all appearance and all vanity in the biblical sense of the word – is literally dead to the world; it has ceased to be a human life because it is no longer lived among men.

(Arendt 1958:176)

In the above quote, Arendt locates the distinguishing factors associated with human *being* firmly within the act of speaking, noting that it is through this act that humans may exist for one another in terms of the uniqueness of their being. Speaking is not merely bare act but initiates a social relationship that establishes the one to the other in a particular way. Taking the reverse perspective, we see that in being spoken to, we are *given* the Other before us in a way that separates him/her from all other forms of alterity. That is, we experience the Other before us in terms of his uniqueness that exceeds beyond our own being (Levinas 1961; 1985; cf. Throop 2010b), and thereby recognize him as fully human by attending or responding to his agency. That is, in recognizing the outward displays of uniqueness, we constitute the other's full *being* in

an objective way (Husserl 1970a; 1989:53; cf. Duranti 2004; 2010; Throop 2008). Although we will return to the issue of agency within the constitution of the individual's being below, it is worth noting here that in the context of a yes/no interrogative, the queried individual's humanity may be jeopardized. That is, absent the ability to repair or redirect a misshapen question, the respondent is constrained by the implied interrogative's binary structure, and thereby forced to communicate a *mere* something. In these cases, the individual's uniqueness may be muted or obscured as the question posed to them leaves not room for them to invoke their *being* though the subtleties of *particular* words or other signs beyond that which is already anticipated by the inquirer.²⁶

3.2.3.2 'Not Now' Problems

Robillard goes on to identify a second interactional vulnerability stemming from the time it takes him to produce an utterance. When interlocutors recognized the slow pace at which Robillard produced utterances, they would often disattend in one way or another. Thus, "not now" problems, Robillard noted, could take three shapes with (1) potential interlocutors denying him the chance to produce a turn after realizing that waiting for his utterance would take more time than they could commit to spending, (2) when an interlocutor would disattend to his turn mid-utterance, and (3) when an interlocutor would interrupt his turn-in-progress. In addition to the interactional disruptions that these behaviors would cause, the problem sheds light on the ways in which Robillard's interlocutors denied him the equal presence or opportunity afforded others who could produce their utterances more rapidly. As interpreted by Higginbotham and Wilkins (1999:61), "this loss of control of when he could speak effectively devalued his time and labor and also brought into question the importance of his contributions." In light of the above

discussion of speech and agency, susceptibility to this form of interruption can be seen to leave both the augmented communicator's project and being vulnerable. As Robillard, himself, summarizes, "the ordinary forms of conversational participation that generate and sustain a sense of agency are breached when the patient cannot communicate in a socially consensual "real time" (1994:383; see also Patterson and Hughs 1999; cf. Higginbotham and Wilkins 1999).

3.2.3.3 Out of Context Problem/Problems in Understanding

The last of the three behaviors that Robillard recognizes is the 'out of context problem'. As shown in the example above, one way that mouthspeakers may easily and unintentionally disrupt the augmented communicator's interactional project is by producing further utterances while the augmented communicator is composing. Since these new utterances or actions supply a new or altered context (Sacks 1989; Sacks, et al. 1974; Schegloff and Sacks 1973; Stivers 2012), anything produced while an augmented communicator is typing will effect the 'responsibility' of the augmented communicator's utterance-in-progress (Clarke and Wilkinson 2010b:258). Because augmented communicators' acts of utterance production are temporally decoupled from the moments in which their utterances are publically displayed, the window for disruption is much greater than it is for mouthspeakers. Previous studies of AAC use-in-interaction have noted a variety of interactional troubles that these issues can create.

Working from a CA approach, Clarke and Wilkinson (2008) note that an augmented communicator's difficulties in conversation often stem from the difficulties in establishing a common ground for interpreting the augmented communicator's utterances. In their study of AAC using children and their mouth-speaking peers, Clarke and Wilkinson trace out a number of such troubles, which they term 'problems in understanding.' "Problems in understanding," they

write, “[are] not solely rooted in the low intelligibility of some participants’ speech, but also – and importantly – in problematic understanding of the sequential relationship of the VOCA utterance and prior talk...although VOCA turns may be intelligible to their recipients they are not always understandable” (Clarke and Wilkinson 2008:5). The authors go on to discuss examples of troubles that arise when mouth-speaking interlocutors are unable to identify the intended relationship between an AAC-mediated turn and prior speech. That is, because mouth-speaking interlocutors can produce utterances much more rapidly than Augmented communicators, mouth-speech-mediated turns may disrupt or delete the context for which the AAC-mediated utterance was designed/intended (Atkinson and Heritage 1984; Bloch and Wilkinson 2004; Clarke and Wilkinson 2007; Wilkinson 1999). Along these lines, several authors have remarked that the augmented communicator’s relatively slow pace of utterance production make AAC-mediated turns highly ‘permeable’ (cf. Lerner 1996a; Lerner 1996b), suggesting that because of the comparatively long inter-turn delays and intra-turn pauses characteristic of AAC-generated words, mouth-speaking interlocutors have extended opportunities to produce speech while the Augmented communicator is composing his or her turn.

In order to understand how these prevalent forms of interactional exclusion or breakdown can be considered to indicate augmented communicators’ ‘vulnerabilities of being’ we must again consider what it means to be an Other-in-interaction, to be recognized as a fully human being Other. In considering a similar question within the topic of ‘agency’ in language, Duranti, like Arendt, draws attention back to the intentional being who serves as the source of the action, the individual who demonstrates his/her own agency while becoming responsible for the actions performed by the utterances they produce. Reflecting on this issue in relation to the field of

pragmatics, Duranti notes that “[s]tudents of language were so anxious to prove the axiom that ‘language is action (too)’ that they forgot to recognize that language already does something by *being*, before *doing*” (2004:455 emphasis in original). He goes on to suggest that social sciences ought to consider two subtypes of ‘agency’—act-constituting and ego-affirming. Distinguishing between these two, he notes that whereas ‘act-constituting agency’ undergirds instances wherein an *act* has been accomplished, ‘ego-affirming agency’ describes the means by which an actor’s speech establishes him/herself “as a being whose existence must be reckoned with in terms of his or her communicative goals and abilities” (2004:455).

Duranti’s discussion of agency can be read against the backdrop of Edmund Husserl’s phenomenological explorations of what he referred to as “the *intimating function* of verbal expressions.” Whereas Duranti was concerned with the recognition of potentialities through acts of outward expression, Husserl (1970b§7:277) explains, the *intimating function* of verbal expressions provides hearers with a sign of the speaker’s ego: “all expressions in *communicative* speech function as *indications*. They serve the hearer as signs of the ‘thoughts’ of the speaker, i.e. of his sense-giving inner experiences, as well as of the other inner functions...” Additionally, Husserl notes that this sort of recognition is foundational to any intersubjective/social relationship in that “[s]uch sharing becomes a possibility if the auditor also understands the speaker’s intention. He does this inasmuch as he takes the speaker to be a person, who is not merely uttering sounds but *speaking to him*, who is accompanying those sounds with certain sense-giving acts...” (Husserl 2000§7:277).

In light of this discussion, we can see that within the moment of slippage that occurs when the augmented communicator is typing (which leads to the ‘out of context problem’), the augmented communicator may be left bare. In short, because the ataxic movements that produce

the augmented communicator's device-mediated speech are not tacitly recognizable as 'communicative' or in terms of their role in producing interactional units, the augmented communicator's interlocutors do not experience him/her in this moment as 'a speaker', but only as a *mere* movement maker. As such, the augmented communicator's agency and intentionality are muted as the intersubjective frame that united the interactants is fractured.

There are no shortage of discussions showing the vulnerability of the disabled. In the preceding sections, however, I have expanded the existing work by showing that it is not merely the immediate interactional project of a given speaker that is upended, but that the individual's more basic forms of being are also in jeopardy. Thus, I have sought to combine something of the ethnomethodological/conversation analytic perspective with the phenomenological in order to show how structures of social action lead to forms of intentional constitution (cf. Heritage 1984b; Rogers 1983). I will return to the notion of vulnerability below, drawing on similar methods for exposing another form of vulnerability that manifests in interactions between augmented communicators and mouthspeakers; however, in the next instance I will be concerned with the ways that the period of non-speech that occurs as the augmented communicator types makes the mouth-speaking interlocutors vulnerable as well.

3.3 Data for Close Analysis: Lines 26-52

After producing an assessment of Ted's response, in which Ted co-participates verbally (line 22-25), Mary looks down, withdrawing her gaze from Ted. Pausing for around 1.5 seconds (line 26), Mary then turns to Frank and questions him as to the whereabouts of his residence (line 27). Immediately following Frank's response in line 29, Ted produces a pharyngeal fricative ingression (• *gnche:::*) at line 30 in overlap with Mary's partial repeat of Frank's turn. In line

31, Mary acknowledges Frank's turn through a partial repeat of his line (*south campus*) and returns her gaze to Ted. Ted, however, is looking at his device and preparing it to produce his next utterance by clearing the device display and relocating his hand to the left-side frame. Mary continues to look at Ted for the approximately 2 seconds it takes him to ready his device. Just prior to line 34, Ted glances up at Mary briefly before looking back down at his device. Mary immediately begins her question as to how often Ted frequents the lab, but falters in the midst of initial clause as Ted looks up and meets her gaze in a more direct way (cf. Goodwin 1979; 1980; 1981).

Transcript 3.2

26 (1.5)
27 M: where do you live?
28 (.7)
29 F: oh I live just south of South Campus=
30 T: = · gnc[he::]:
31 M: [South Campus]
32 F: (mmm)
33 (2)

During Ted's ingress in line 30, Frank and Mary both turn back to face Ted, who is looking at his device while clearing the display (presumably in preparation for his next utterance). Following a 2 second silence, Mary asks Ted about how often he comes to the lab, beginning her question in line 34 and restarting it in line 35. Over the next 8 lines (35-43), Mary produces a series of phrasal expansions to her initial TCU. Each of these additions are separated from the prior by at least a brief pause, but are also prosodically and syntactically tied to their predecessors. With each new addition, Mary's utterance can be understood as potentially complete or as inviting interruption.

Transcript 3.3

34 M: how many times eaah:: (.)
35 M: how many times have you been here?
36 (1)
37 M: at this lab=er.
38 (.)
39 M: er working with je:ff=er..
40 (..)
41 M: ahumm:
42 (2.9)
43 M: helped with(=tha) experiments here?

Slightly before exporting his utterance in line 44, Ted looks up from his device having already placed his finger in the key-guard hole for his final selection. Meeting Mary's gaze with large smile, Ted presses the button to output his utterance to the second display in the midst of Mary's utterance at line 43. Mary then looks down at the inTra display and reads the text aloud, laughing. Mary then offers a candidate expansion to Ted's utterance (*a(hh)and too many to to* ↑*cou:↓nt*) which Ted simultaneously aligns with through an ingress laugh (*• gha*) and a series of vocalizations coordinated with Mary's laughter (lines 47-51). In lines 50 and 52 Mary offers an explicit evaluation of Ted's line 44, casting the utterance not merely as humorous, but as a (deliberate?) joke, itself worthy of assessment.

Transcript 3.4

44 T: ‡ |alot|
45 (.)
46 M: a lo(h):t? (.) a[hhan]d/a[h-ha] too many to ↑*cou:↓nt*
47 T: [*• gha*]
48 T: hhe:n
49 M: • hyea::
50 M: ets ɔgood
51 T: • gnche
52 M: it's rilly good

3.3.1 Minding the 'Gap': Maintaining Progressivity by Claiming 'Gaps' as 'Pauses'

Rather than allowing the mutual attunement of the 'We-relationship' to fracture before

attempting to repair it, as in the previous examples, Mary's actions in this segment seem directed toward preventing the sorts of intersubjective slippages that were observed elsewhere. In particular, this can be seen in her use of four expansions utterances that extend her turn through time, but to do so without altering the general context entailed by her initial utterance (Lines 34-5). That is, while each of her phrasal expansions (Lines 37, 39, 41, and 43) seem to provide alternatives to her initial question in Line 34-35, each new utterance actually suggests an option nest within the prior options, moving from general to specific. Thus, Mary's query moves from *how many times have you been here -> at this lab -> working with Jeff -> helped with the experiments here*. Although it is unlikely that Mary was thematically aware of this property, this organization of utterances ensures that each of the predicates is interchangeable within the semantic domain. As a result, each new utterance maintains the shape of the turn-space projected by her initial TCU (line 34-35) and thereby preserves the *responsibility* of Ted's utterance-in-progress. That is, as Clarke and Wilkinson (2010b) have noted, mouthspeakers' talk that co-occurs with augmented communicators' typing often disrupts the context of the next turn due. Because Ted begins typing his response to Mary as she reaches completion of her talk in line 35, maintaining the projected shape of Ted's *next* utterance is crucial to upholding his ability to contribute to the conversation in immediately recognizable ways. However, although Mary's expansions do not substantively contribute to the interaction, they do serve to refresh the context for Ted's projected *next* turn. That is, in light of the discussion of temporal objects and the 'running-off phenomenon' in chapter 2, we might posit that Mary's staged delivery of her utterance maintains the strength and clarity of Ted's forthcoming turn by re-invoking it as a projected *next* to each of Mary's phrasal expansions.²⁷

Mary accomplishes this protracted delivery by speaking again after 1 second of silence after her initial possibly complete TCU in lines 34-35. Mary's subsequent utterance in line 37 is tied to and continues her initial question. The most apparent way of connecting these utterances is through Mary's restriction of her new utterance to only the prepositional noun phrase (*at this lab=er.*) thereby making it inherently incomplete. Doing so, Mary invokes the prior utterance as necessary context for understanding the current utterance, positioning the new utterance as an expansion to the first. In addition to being grammatically dependent on the prior utterance, Mary initiates her utterance in line 37 at roughly the same pitch frequency as she ends her preceding utterance, inflecting the new line with a complementary pitch contour (see Figure 3.10).

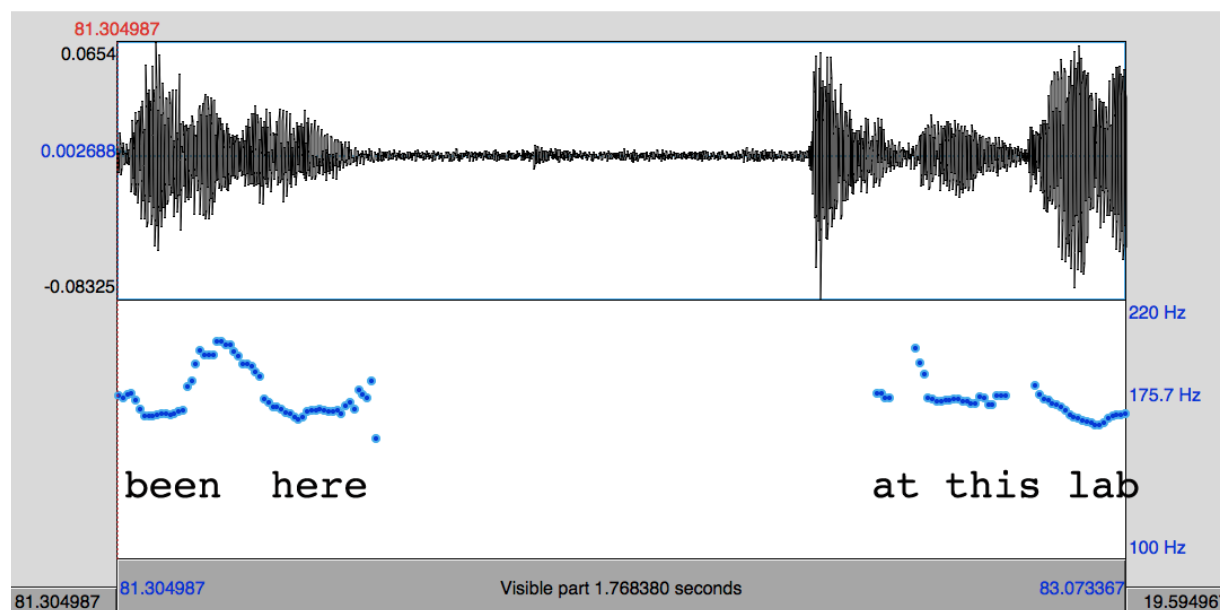


Figure 3.10: Mary's Pitch Across Lines 35-37

At this point, Mary's utterance appears both grammatically and prosodically complete, although and her use of "*er*" warrants some discussion. Here, Mary's "*er*" can be heard as a hedge the claims that are implicit in her utterance; namely, that Ted comes to the place where

they group is currently located, and that his relation with this space is as a *lab* and not as an *office*, classroom, or *clinic*, or other functionally defined place. Coming at the end of what appears to be a newly completed TCU, Mary's "er" can also be heard as a tag question. As such, the word acknowledges Ted's superior knowledge of the situation by indicating Mary's uncertainty as to how to best represent Ted's connection with the lab (Heritage 2012). Moreover, the addition of the tag has been shown to add greater pressure to respond than the bare question might (Stivers and Rossano 2010), in this case by inviting an implicit repair in Ted's projected next turn (cf. Goodwin 1987:123).

After pausing for a beat, however, Mary produces another expansion in line 37, beginning it with a repeat of the "er" token and reframing the word explicitly as conjunction by offering a second alternative to her original utterance (i.e. Line 39: *er working with Jeff=er.*). Here Mary again employs the ambiguous hedge/tag/conjunction "er", this time visibly shrugging, looking down, and shaking her head back and forth as she produces her talk. Mary terminates her line 39 with another "er" token, this time slightly extended and spoken with falling/utterance final prosody. Again, the hedge/tag character of Mary's turn is maintained as she pauses briefly before rolling her eyes and raising her hand from the table, turning it palm up in an 'I don't know' gesture, saying, "*ahumm.*" (line 41).

Returning her gaze to Ted, Mary shakes her head again slightly before twisting her chair, leaning over the table and speaking yet another expansion clause in line 43 (*helped with(=tha) experiments here?*). Mary produces her final expansion almost 3 seconds after her prior talk concluded. As with the preceding phrasal expansions in lines 37, 39, and 41, Mary ties her utterance to the preceding talk by both matching the utterance initial pitch to the terminal pitch of the prior line and constructing the line as syntactically dependent upon those that preceded it.

Just as Mary finishes speaking the final word of line 43 (*here*), Ted's device produces the audible chime, indicating that he has completed his message and exported it to the display facing Mary and Frank. Mary moves her gaze from Ted to the second display and opens her mouth as if to yawn. However, in something of a reversal of her earlier movements from smile to yawn, Mary's face quickly takes on a large grin as she returns her gaze to Ted, laughing while saying "*a lo(h):t? (.) a(hhan)d too many to ↑cou:↓nt*" (line 46).

The concept of 'progressivity' builds from the CA's assumption of 'sequential organization' of talk, wherein each unit of an interaction (e.g. words, utterances, turns, etc.) derives and supplies meaning and context to those that come before and after (Schegloff 2007; cf. Heritage 1984:242; Schegloff 1973:299; Stivers 2012). As the term 'sequential organization' suggests, these slots are (ideally) arrayed in a linear series such that interlocutors move directly from one interactional unit to the next with no intervening delay: the quality of moving from directly one unit to a structurally related 'next' is referred to as 'progressivity'. As Schegloff (1986:297) explains, "each next moment should deliver something recognizable as furthering the course and trajectory of the talk." As such, work in CA has argued that speakers demonstrate a preference for progressivity and seek to repair it in moments of disruption (Du Bois 1986; Stivers and Robinson 2006; See also Schegloff 1979).

In recent years a small group of scholars have begun applying tools from the field of conversation analysis (CA) to studies of interactions involving augmented communicators. While the majority of CA studies of AAC look to moments of breakdown in shared reference (e.g. Clarke and Kirton 2003; Clarke 2005; Clarke and Wilkinson 2006; Collins 1996b; Collins and Marková 1999; Collins, et al. 1996; Marková and Collins 2002) a few studies have noted the disruption that these moments of typing present to the interactional flow. Specifically, Clarke

(2005) and Clarke and Wilkinson (2010b) have noted that the augmented communicators' interlocutors orient to a 'delayed progressivity' during the periods of non-speech/typing. Following the work in CA, these studies of AAC-mediated-talk-in-interaction have noted that the periods of non-speech characteristic of the augmented communicator's typing activities regularly disrupts sequential progressivity, using the preference for progressivity documented in CA studies of mouthspeakers (e.g. Schegloff 1979; Sterponi and Fasulo 2010; Stivers and Robinson 2006) to explain a number of structural abnormalities that are commonly found in AAC-mediated-talk-in-interaction. For example, Clarke (2005) and Clarke and Wilkinson (2010) have observed that the mouth-speaking partners of children who use AAC devices make frequent meta-communicative comments before and within the augmented communicator's turn, often providing candidate completions based on their knowledge of the augmented communicator and their access to the emergent turn-in-progress. Other studies have suggested that mouth-speaking interlocutors will shape first pair parts addressed to augmented communicators so as to promote more rapid or rhythmic exchanges (e.g. Blau 1986; Higginbotham, et al. 1988; Light, et al. 1985a; Sweidel 1992).

In terms of our analysis of the "We-relationship" and the capacity for mutual attunement that it affords, this segment offers an interesting contrast to the last two segments examined in this chapter and the preceding one. Rather than passively holding the sequential slot open for Ted's anticipated utterance by waiting silently, Mary's talk at Lines 37, 39, 41, and 43 extends her claim to the turn-space and thereby circumvents the potential disruption to attunement that we saw was caused by Ted's delay at composing his utterances. Despite having selected Ted as the next speaker by her question in Lines 34-5, an act that Ted demonstrably orients to by looking down and beginning to type his response, Mary self-selects as next speaker in Lines 37,

39, 41, and 43. By tying her talk in these lines to that of her previous turn(s), Mary is able to maintain rights to the floor while Ted is composing his utterance. In this way, Mary orients to the progressivity of the interaction by maintaining it, albeit at a much slower pace than is typical of mouthspeaker interactions, until Ted is able to output his contribution to the engagement (2010b). Here, Mary's staged delivery of her expansions thus allows her to modify her TCU. However, rather than merely amending the utterance to improve its understandability or clarify its reference (cf. Clarke 2005; Clarke and Wilkinson 2010b; Higginbotham and Engelke in press; Svennevig 2010), Mary's talk at lines 37, 39, 41, and 43 effectively *accounts* for the delay in T's response within the interactional frame. Examining a similar phenomenon, Lerner (Svennevig 2010) notes that "[t]his is the strongest way to turn an emerging gap between turns into having simply been a pause in the course of the now-resumed turn because the speaker is continuing with an utterance that could not stand alone. That is, had Mary stayed silent, the several seconds between lines 35 and 44 would likely have been experienced as a 'gap' in the conversation similar to that observed in the previous examples (2004b:176).

3.3.2 An Alternative Vulnerability: Mouthspeakers in Silence

What is particularly interesting here is what this sort of action reveals about the nature of Mary's experience of conversational 'gap'. If we accept that Mary's expansions do not move the interaction along in a substantial way, but rather are used to maintain the context in which Ted's turn will eventually be heard, then this action of claiming the time it takes Ted to compose his talk as part of her own turn can be read in terms of the ways they serve to sustain *Mary's* orientation to Ted in those moments when Ted *appears* to be disattending to her. That is, as discussed above and in the previous chapter, although Ted's activity is very much attuned to

Mary and the interactional order, Mary experiences a slip out of mutual attunement and the “We-relationship.”

One explanation for this is that in staying locked in a state of mutual attunement demands not merely an unfolding of available temporal objects for the participants to orient to, but a specific kind of object. In sections 3.2.3.1-3, I discussed ways that the augmented communicator is left vulnerable to various forms disruption, arguing that it is not merely the augmented communicator’s interactional project that may be in jeopardy, but the augmented communicator’s social *being* itself. To do so I drew on the work of Arendt, Husserl, and Duranti, and the claims that they make regarding the relationship of human *being* and the act of speaking. In short, Arendt, Husserl, and Duranti each argue that the act of speaking, before one who can recognize speech as such, constitutes the speaker as a human, intentional, or agentive being, respectively. In this section I will extend this argument somewhat by examining the vulnerability of the augmented communicator’s interlocutor, drawing on Levinas’ ethics in order to show how the absence of recognizable signs *qua* signs produced while the augmented communicator is typing can be seen to threaten the augmented communicator’s interlocutor.

Whereas Arendt, Husserl, and Duranti argue that speaking leads to the constitution of the ‘speaker’ as a particular kind of *being*, Levinas stands this principle on its head by placing the Other before the self. That is rather than being concerned with constituting ego of the speaker through the act of speaking in front of another, Levinas focuses on the way that the act of speaking, regardless of what is said, *responds* to the presence of the other, demonstrating an openness to that *Other’s being*. This openness is found in what Levinas calls ‘the saying’, the act of speaking that occurs prior to the revelation of whatever contents might manifest in what is said. He writes, “To say is to approach a neighbor, ‘dealing him signifyingness.’ This is not

exhausted in ‘ascriptions of meaning,’ which are inscribed, as tales, in the said. Saying taken strictly is a ‘signifyingness dealt the other,’ prior to all objectification; it does not consist in giving signs” (Levinas 2009:48). For Levinas, the ‘face’ of the other calls us to respond with an act of ‘saying’ – “the saying is the fact that before the face I do not simply remain there contemplating it, I respond to it. The saying is a way of greeting the Other, but to greet the Other is already to answer for him. It is difficult to be silent in someone’s presence; this difficulty has its ultimate foundation in this signification proper to the saying, whatever is the said. It is necessary to speak of something, of the rain and fine weather, no matter what, but to speak, to respond to him and already to answer for him” (Levinas 1985:88). Thus, for Levinas, ‘the saying’ is present in the way approach and Other, and consists of an ethical response to that Other’s *being*. ‘The said’, on the other hand, is merely the content or meaning of the signs employed in the act of ‘saying’. As such, it is possible to convey signification to an Other in a situation where the two individuals do not share a common code, as in such a situation it is only ‘the said’ that would be lost.

Levinas’ approach trades on Heidegger’s distinction between two basic modes of *being* that characterize all entities. Here, Heidegger distinguishes the ontological constitution of what we might provisionally refer to as ‘objects/equipment’ as those entities whose essential being can be described by virtue of spatiality with respect to their location vis-a-vis other entities with the same kind of existence. “All entities whose Being ‘in’ one another can thus be described have the same kind of Being—that of Being-present-at-hand—as Things occurring within the world. Being-present-at-hand ‘in’ something which is likewise present-at-hand, and Being-present-at-hand-along with [Mitvorhandensein] in the sense of a definite location-relationship with something else which has the same kind of Being, our ontological characteristics which we call

‘*categorical*’: they are of such a sort as to belong to entities whose kind of Being is not the character of Dasein” (Heidegger 1962:79). On the other hand, then, are those entities that cannot be characterized in terms of their Being-present-at-hand, which Heidegger refers to as “Dasein.” Dasein is that “which in every case has Being-in-the-world as the way in which it is...that which one inquires into when one asks the question ‘Who?’” (Heidegger 1962:79). By this, Heidegger is pointing exclusively to the mode of being engaged in by humans, characterized as “an entity ‘within-the-world’ [that] has Being-in-the-world in such a way that it can understand itself as bound up with its ‘destiny’ with the Being of those entities which it encounters within its own world” (Heidegger 1962:82). Thus, its mode of being spatially is never to merely “fill up a bit of space as a Real Thing, or item of equipment would, so that the boundaries dividing it from the surrounding space would themselves just define that space spatially. Dasein takes space in... It determines its own location in such a manner that it comes back from the space it has made room for to the ‘place’ which it has reserved (Heidegger 1962:419). Unlike the spatiality of ‘things, objects, equipment, etc.’ Dasein’s mode of being is such that it is characterized by ‘concern’ (*Besorgen*). To Heidegger, concern is the mode of being that we, as humans, encounter most generally in our everyday lives, it is the mode of presence that underpins our absorption in tasks or the handling of equipment. This aspect of our being functions in relation to the immediacy of our surroundings, but always with respect to the future. Thus, Dasein is always involved in projects, working toward *anticipatable* goals. We always encounter Dasein in terms of its concern and cannot divorce one from the other.

That is, in recognizing the ‘face’ of the other, we recognize the other in terms of that which exceeds the realm of objects or equipment. This excess is found in terms of ‘expression’ that is embedded in the ‘face’ (Levinas 1961). Here, Levinas’ use of the term ‘expression’ points

to something similar to what Heidegger was focused on in his understanding of ‘concern’, except that rather than being recognized as an existential property of the individual, expression finds its ontology grounded in the intersubjective. It is therefore that the recognition of ‘face’ occasions an inherently ethical response (Levinas 1961; 1985; 1998; cf. Duranti 2009a; Throop 2005).

The question this presents for us in terms of interactions between augmented communicators and their interlocutors is one of what happens when one person has responded to the ‘face’ of an Other – answering to the Other with her own talk – only to be rebuffed with silence. In terms of the examples presented above, whereas Mary’s talk responds to Ted’s presence, dealing him the ‘signifyingness’ that is implicit in one’s recognition of a unique, human Other, she is then forced to endure a period of silence wherein her own *being* appears unaddressed. That is, as Mary’s talk ratifies Ted within the interaction it demonstrates her openness in response to his human *being/unique/Dasein*. However, in the moments that follow, Mary, herself, becomes vulnerable in a way. That is, having responded to the augmented communicator’s presence, Mary is held in a limen awaiting Ted’s reciprocal acknowledgement. As discussed above, Ted’s response lags substantially behind Mary’s expectations. In both this chapter and the preceding one I argued that this delay leads to fractures in Mary’s experience of mutuality and the ‘We-relationship’. Additionally, however, it is in the midst of these same moments that Mary’s own responsivity to Ted’s being begins to fade in as much as this quality is tied to her utterances directed towards him. As the strength and clarity of Mary’s utterance fades into retention, so too does the opportunity for her to experience Ted’s reciprocal acknowledgement of her own *being*. As Ted’s typing does not *seem* to provide an immediate receipt to Mary’s question, her responsivity to Ted appears not to call forth a response of its own.

However, as we can see from our privileged position as removed analysts, Ted begins

composing his response to Mary almost immediately after she produces each of her questions. As such, Ted's immediate movement to respond to Mary suggests his ongoing orientation to her and sense of participation in the interaction. Ted's typing movements include a tacit acknowledgement of Mary's humanity, and represent an approach consistent with an act of 'saying'. What is notably absent from Ted's actions, however, is the public disclosure of 'the said' that generally co-occurs with 'the saying' (i.e. in the context of mouth-speech). Thus, the extent to which Mary is made vulnerable in the moments of Ted's typing is a product of her conflation of these two separate features of the encounter. That is, Mary's vulnerability in the moment depends on her inability to perceive 'the saying' of Ted's typing, temporally divorced as it is from 'the said'.

3.4 Summary and Conclusions

In this chapter I drew from and expanded the arguments laid out in Chapter 2, providing further examples of the ways that the phenomena of 'intersubjective slippage' occur within the context of interactions involving augmented communicators. Here I examined various ways that Mary and Ted could be seen to fall out of alignment with one another as Ted composed his responses to Mary's questions. Moreover, in this chapter I argued that interlocutors are not passive or impotent, but have various techniques that they can and do exercise in order to re-establish intersubjective attunement and mutual orientation. Ironically, and unfortunately, however, these strategies often backfire, and can lead to one or more of the participants' becoming vulnerable in various ways. To this effect I explored the ways that Mary's attempts to regain the intersubjective relationship that was experienced during her talk had the unintentional consequence of compromising Ted's full, human, being, and led to further disruptions in the

sequential organization of talk. Along these lines I also examined the ways that Ted's practice of typing before outputting could be seen to make Mary vulnerable. Here, by divorcing the act of 'saying' from the 'said' produced thereby, led Mary to potentially feeling open or exposed. This final point brings us back to the vignette that introduced Chapter 2 and demonstrates the power and importance of mutual attunement and the We-relationship in the constitution of participants' very being.

In the next chapter, I move on from examining the ways that augmented communicators and their mouth-speaking interlocutors achieve intersubjective attunements and probe the experiences of the augmented communicator more deeply. Specifically, I turn to examine the ways that augmented communicators experience the voices produced by their AAC devices and the ways that they may be seen to actively incorporate aspects of their devices into their own living bodies.

Section 2: The Embodied Voice

Human experience is incarnated. I receive the surrounding world through my eyes, my ears, my hands. The structure of my perceptual organs shapes that which I apprehend. And it is via bodily means that I am capable of responding. My legs carry me toward a desired goal seen across the distance. My hands reach out to take up tools, reconstructing the natural surroundings into an abode uniquely suited to my body...From the most visceral cravings to the loftiest of artistic achievements, body plays its formative role.

(Leder 1990:1)

Introduction: The Embodied Voice

Anthropological studies of “voice” regularly take as given the individual’s capacity to produce infinite utterances in nearly unlimited variation – often relying on this potential to make claims about human agency and the adeptness with which the sound of one’s voice can enable an individual to occupy various socially recognized roles or attributes. Here, the human voice is considered vis-à-vis social action, an approach that underpins a great deal of the work that has been done on identity (cf. Bucholtz and Hall 2004; Keane 2001; Kroskrity 2000a; 2000b; Rampton 1995; Silverstein 2003). And while the relationship between local practices of speaking and socially recognized persona is an immensely important dimension of human sociality, the notion of ‘voice’ is implicated in other, experientially-oriented understandings as well. For example, speaking voices can often be traced back to a particular person, betraying the speaker’s individual identity in ways as recognizable as one’s face. Such a relationship is not merely confined to our encounters with others, but may be recognizable in the ways that we perceive ourselves speaking as well. That is, although our own voice may go unnoticed in most instances, we may also become aware of how strange and unfamiliar ‘our voice’ sounds when we hear recordings of ourselves speaking. When the deep resounding baritone of a lingering cold

leaves its mark on our speech we may pause to reflect on our voice, comparing ourselves to James Earl Ray or reconsidering whether we should go outside if we may still be sick. Here, voice points to the (state of the) body from which it emanated (cf. Higginbotham 2010). Along other lines, we are often shocked to discover how others have interpreted our voice in terms of its ‘tone’, as when parents scold their otherwise oblivious children, “don’t use that tone of voice with me,” or when a friend or partner makes metacommunicative demands, e.g. “don’t yell at me,” during a casual disagreement. In these cases, the voice betrays not merely the speaking ‘who’, but also the nuances of the speaker’s mood or stance, and may therefore become a reflexive or thematically recognized object of attention in its own right—for the audience at first (e.g. parents and partners) and subsequently the speaker as well. But let us not forget that for mouthspeakers, the voice emanates directly from the bodily actions, articulations of air against multiple physical surfaces, the precise structure of which is unique to each individual speaker’s corporeal body and habitual tensions and contractions. Recognizing the potential variability this produces led Roland Barthes (1977) to coin the term ‘the grain of the voice’ in order to discuss the corporeal mark registered by the mouthspeaker’s voice. And yet the flipside of this mark is also true in that the voice leaves its mark on the mouthspeaker. As an example, we might consider the physical sensations of wailing (cf. Urban 1988) that are both painful and yet feel somehow suited to the emotional moment of their performance.

In each of the senses presented above, voice is a deeply embodied aspect of our being-in-the world. The voice does not merely extend *from* our bodies, but *extends our bodies* into the world in a tangible way. Taken literally, the voice is comprised of the air that is set in motion by our diaphragm, vibrated in our larynx, and honed in our vocal tract. These vibrations pass through space and physically contact the surfaces of the world around us. We *touch* the world

with our voices, and the world is *touched by us* (cf. Merleau-Ponty 1968[1964]:144-5).

Although these dual physicalities of voice are often eclipsed by a focus on the words uttered (e.g. speech or language) or the aesthetics of their performance (e.g. musicality), such masking is not necessarily the case at all times for all people. In fact, attending to voice purely in terms of the auditory/phonic/sonic dimensions suggests a cultural bias towards the segregation of the senses, rather than a necessary or phenomenological separation. Thus, for example, David Howes (2009) explains that the enumeration and classification of the human sensorium is more a product of local belief than a given biological organization. This, he notes, is evidenced by the fact that the sheer viscosity of voice has led to its promotion as the “sixth sense” in various times and places. But even this notion of a ‘sixth sense’ betrays a reflexively applied ideology of the body-in-experience, one which accepts a priori that our modes of engaging with the outer, material world are discrete and that objects of our perception are constructed out of multiple streams of “sensory atomism” (Ihde 2007:43).

Pushing back against this trend in reflexive folk organization, phenomenologists have long argued for a descriptive engagement that begins with the synthetic whole of the phenomena (i.e. as experienced), moving inward to find their structures (Husserl 1960:18). Thus, G.W.F. Hegel (1971§401), for example, was struck by the bodily nature of the voice, claiming it as something akin to the ‘self’ in physical extension, the ideal means by which the “corporealization of the inner determination” (p.82) was accomplished. Along similar lines, Merleau-Ponty championed the notion that speech was, itself, the body of thought through his gestural theory of language. Echoing Hegel, he writes, “In the first place speech is not the ‘sign’ of thought, if by this we understand a phenomenon which heralds another as smoke betrays fire....The word and speech must somehow cease to be a way of designating things or thoughts,

and become the presence of that thought in the phenomenal world, and, moreover, not its clothing but its token or its body” (Merleau-Ponty 1962b:181-2). Having thus assigned speech to serve as a physical – and therefore public – incarnation of thought, Merleau-Ponty goes on to identify speech (*parole*) as the carnal counterpart of language (*langue*), deeply entwined such that neither structure nor practice can exist independent of the other (cf. Merleau-Ponty 1962a; 1964a; Saussure 1983[1915]).

Merleau-Ponty thus became famous for developing an existential phenomenology constructed with respect to the subjective experience grounded in the lived body. As he asserted (Merleau-Ponty 1968[1964]:136), “It is the body and it alone...that can bring us to the things themselves, which are themselves not flat beings but being in depth, inaccessible to a subject that would survey them from above...” This perspective is summarized in the quote that introduces this section wherein Drew Leder, following Merleau-Ponty, sets forth the central argument for including a strong focus on the body within any study of human activity. As this argument suggests, human physicality plays a central role in the ways that we experience and participate in our individual and collective endeavors. Our bodies are the surfaces upon which all social activities ultimately depend. Such bodily involvement is not limited to the obvious and intentional movements of appendages as can be seen in gesture or felt in touch, but includes more subtle forms of participation as well (cf. Goodwin 2000a; Goodwin and Goodwin 2004). The body also provides the central node from which we are able to experience the world around us. *My* body is my ever present ‘here’, the invisible point from which the horizons of my perception extend (Husserl 1960; 1989). And the body is hardly passive in these two roles. Rather, it is only with reference to the very structure of my body that affordances show up as opportunities and objects take on significance within my projects or concerns.

Following in this tack, this section has been broken into two chapters, each of which explores the phenomena of ‘voice’ within the lives of augmented communicators, focusing on the ways that augmented communicators and their interlocutors experience the sonic voice output that emerges from augmented communicators’ AAC devices, and the ways that AAC device use articulates with and disrupts the ‘normal’, unnoticed experiences and relationships mouthspeakers have with *their* voices.

To do so, the chapters examine data from augmented communicators who produce ‘*their* voices’ through a variety of practices, thereby revealing a series of relationships between bodies, technologies, environments, and selves. Because of the richness of this phenomenal field, each of the chapters here focuses on a different aspect of the augmented communicator’s voice. I have chosen to present the data this way in order to maintain the consistency between what may otherwise appear to be disparate approaches to embodiment (see section Whose Embodiment is it Anyway?) and apparent contradictions in how the voice is experienced.

Whose Embodiment is it Anyway?

Despite having become a central organizing theme in anthropology and the social sciences, embodiment is still a largely ambiguous construct. While efforts to understand the body in relation to culture, lived experience, and ‘the world’ often draw explicitly or implicitly on the phenomenological tradition, these tasks are often pursued to seemingly different ends.

In this section, I draw directly from three notions of embodiment with respect to the concept of voice: The first of the chapters presented here (Ch. 4 – *Embodying the Voice*) draws from the notion of embodiment that is rooted in the micro-analytic approach to talk-in-interaction exemplified by the work of Charles Goodwin. Goodwin’s principle contributions to

the field have come from his ability to demonstrate that language and cognition should not be studied as individual accomplishments, but as emerging from/within the collaboratively constructed contexts of multiparty interaction, and are manifest through the diverse affordances of a range of semiotic resources. “A primordial environment for the emergence of language in the lived social world,” Goodwin writes, “consists of a situation in which multiple participants are using talk to pursue courses of action in concert with each other, frequently while attending to, and construing as relevant to their ongoing projects, phenomena in their surround” (2000b:267). By starting with language as it appears in naturally occurring conversation, Goodwin’s work calls into question approaches that conceive of ‘language’ as merely a complex symbolic calculus, and perspectives that treat ‘communication’ as the transfer of information from the head of one individual the head of another through unimodal semiosis viz. ‘talk’ (*qua* text)—e.g. Saussure (1983[1915]), Graham Bell (Hopper 1992), and Shannon and Weaver (Finnegan 2002). Rather, in Goodwin’s analyses the body provides a semiotic surface on and through which individuals make public their immediate and projected engagements with the world by serving as the locus of participation in joint action. Thus, a notion of ‘embodiment’ emerges across Goodwin’s work as the foundational site at which the individual engages the world of objects and others, transforming worldly things into relevant phenomena within a temporally unfolding web of interconnected semiotic structures. Within this perspective, the body constitutes a means to both the essential familiarity with the world that is necessary for what are ostensibly individually accomplished manipulations, and the basic semiotic surface on/through which the individual makes their immediate and projected engagements with the world available to others (cf. Goodwin 2003a; 2007a; LeBaron and Streeck 2000; McNeil 1992; Streeck 2003).

The second chapter in this section – Ch. 5 Vocal Reflection, Vocal Potency – draws more explicitly from the works of phenomenologists such as Heidegger, Merleau-Ponty, Todes and Idhe. Although phenomenology has a long history in anthropology and the social sciences, and has influenced scholars (cf. Desjarlais and Throop 2011; Duranti 2009c; 2010; Mattingly 1998; Throop and Hollan 2008; Throop and Murphy 2002), many of them have sought to include particular phenomenological observations, but have stopped short of developing a more robust phenomenologically-informed method. Thomas Csordas’ cultural phenomenology suggested an effort to correct this. Csordas advocates an “approach to embodiment that begins from the methodological postulate that the body is not an object to be studied in relation to culture, but is to be considered as the subject of culture” (Csordas 1990:5). Crucial to understanding Csordas’ notion of embodiment are the ways that perception functions not as a bodily process but as a product of, what he terms, “somatic modes of attention.” “Somatic modes of attention,” writes Csordas (1993:138), “are culturally elaborated ways of attending to and with one’s body in surroundings that include the embodied presence of others.” For Csordas, then, embodiment is a means of accessing the processes and structures by which cultural objects are manifest and become objectified with the lived experiences of individual community members. This understanding draws on Merleau-Ponty’s phenomenological survey of perception as it arises within the preobjective orientation (e.g. Merleau-Ponty 1962b:79; 1964b), combining it with Bourdieu’s anthropological exploration of ‘practice’ as motivated and united by the ‘*habitus*’ (e.g. Bourdieu 1977b; 1984; 1990). By focusing on the ways that individual experience is first constituted within the realm of pre-reflective engagement with the subject’s daily life and is then thematized and objectified according to shared sensibilities, Csordas posits the socially informed

body as the link between perduring social proclivities and the individual's immediate, involved "coping"/being-in-the-world (cf. Heidegger 1962).

Chapter 4: Embody-ing the Voice

A few days after I collected the data presented in the last two chapters, Ted, Amanda (one of Ted's staff) and I were sitting around a table at a fast food restaurant. Throughout the course of the morning I had asked Ted on multiple occasions to tell me the story of how he got his AAC device as part of my efforts to collect data on AAC and narrative. We had been sitting in the restaurant for over an hour when, during a lull in conversation, Ted turned his wheelchair to face me and began playing an extended narrative that he had stored on his device (see Figures 4.1-4.4). The full extent of Ted's narrative took approximately 7 min.; however, because the narrative was preprogrammed into Ted's device in such a way as to play straight through, Ted was able to engage in a number of different relationships with the voice emanating from the device, including embodying it as a physical (sonic) extension of himself, visibly disattending to it while interacting with his aide on unrelated matters, and separating himself from it by taking up a stance over and against it through non-coinciding gestures and facial expressions that he produced in reaction to the voice.

In this chapter I explore the ways that augmented communicators embody their AAC devices' synthetic voices within the moments of speech/performance. The data I draw from here below focus on the strategies that one augmented communicator used to *actively* incorporate the technologically mediated stream of talk into his own immediate presence. I argue that such strategies allow augmented communicators to *embody* a resource that may otherwise seem to originate from 'beyond' or outside of that which is recognizably themselves. That is, as discussed previously, some perspectives may (wrongly) attempt to separate the augmented

communicator from his/her device-mediated voice by virtue of the fact that the sonic inscriptions are produced by a device residing outside the boundary of the augmented communicator's skin. Moreover, in the case examined here, because Ted employed a series of pre-stored utterances to tell his story, it is possible to imagine an additional objection to embodiment claims on the basis of the two entities' temporality. That is, because the narrative that Ted *told* had been entered into his device several months prior to the day when he played/performed it for me, his utterances could easily be considered 'a text' (Ricoeur 1981) – products of an author who was separated from his audience. Ultimately, however, by examining Ted's co-occurring actions and speech, this chapter argues that Ted actively incorporated the pre-stored text into his own immediate project and presence. Though his coordination of gesture, touch, gaze, posture, and vocalizations, with the narrative emanating from the device, Ted combined the 'said' of his pre-stored narrative with his corporeal displays of 'saying' in order to produce a richly embodied presentation of self.

4.1 Pre-Stored Voices: Questioning the Where-When-Who of Pre-Stored Narratives

As mentioned above, Ted's narrative had been pre-stored in his device in such a way as to allow him to play it straight through without requiring his continued or additional input. All modern, high-tech AAC devices offer users this opportunity to program an almost unlimited number of utterances that may be recalled at the touch of a few buttons and many augmented communicators rely heavily, if not exclusively, on such "pre-programmed" or "pre-stored" messages in their daily interactions. Here, instead of typing out an utterance, letter-by-letter or even word-by-word, a user navigates to the page on their system where the link to desired utterance is stored and selects it to play all at once. Such pre-stored utterances range in length from a few words (e.g. a common restaurant order) up to much longer turns including jokes, pick

up lines, inspirational phrases, instructions, narratives, class presentations, sermons, and even wedding vows. Because pre-programmed utterances can be triggered with very few keystrokes and can be set to play all the way through at a rate that approximates that of standard mouth-speech (Higginbotham 1989; Higginbotham and Caves 2002; Todman 2001; Todman, et al. 2008; cf. Newell and Greggor 2000), using pre-programmed utterances often helps users to avoid the types of slippage documented in the preceding chapters (cf. Atkinson and Heritage 1984; Higginbotham and Wilkins 1999). Although the time augmented communicators spend preparing their message in the moments prior to delivering it *may* be reduced to between one third and one sixth the time needed for novel utterance construction, such time savings are not guaranteed. As Todman et al. (2008) explain, in order to attempt to accommodate the infinite contexts of conversation, augmented communicators' devices need to contain a huge variety of utterances, thereby making retrieval of any one utterance a potentially time consuming process. That is, according well established interface design principles – e.g., Hick's Law²⁸ – the amount of time required to make a decision and produce responsive action increases as the number of options increases (Hick 1952)²⁹. Moreover, pre-stored messages are almost always at least somewhat inappropriate to the context of their issue (File and Todman 2005) as it is not possible to anticipate the infinite nuances of possible conversational contexts in which one might speak. In such instances, the recipient is often forced to interpret somewhat peculiar utterances, shoehorning them into the ongoing interaction. That is, when an utterance does not recognizably respond to the context in which it is performed (cf. Heritage 1984b), the utterance takes on a conspicuous quality, often bringing the objective form of utterance to attention ahead of its meaning.

Recognizing this drawback to pre-stored utterances for conversation, many people in the field of AAC have suggested that narrative contexts offer a number of structural affordances that make them better suited to pre-storing than conversation. For example, expectations that turns at talk will extend beyond hearably complete TCUs (Sacks and Jefferson 1992), and understandings that the narrative – *qua* “dominant communication” line – will proceed according to an internal order without *necessarily* responding to subordinate lines of talk (Goffman 1981) lessen the need for each utterance to be as tightly tied to another’s utterance as is typical in the back-and-forth of conversation (cf. Heritage 1984b:242). Rather, to be considered contextually responsive, narratives may play off several aspects of preceding talk’s *topic* (Keenan and Schieffelin 1976; Sacks and Jefferson 1992). Thus, by allowing the user to maintain the floor over several turns of talk while presenting an internally consistent and socially acceptable plot, such studies suggest that narrative contexts present pre-stored message users with significant advantages over conversational contexts (cf. Todman and Alm 2003; Waller and O'Mara 2003; Waller, et al. 2008).

Despite the advantages of pre-stored messages for narrative use, one question emerges regarding the distribution of agency and the location of the ‘voice’ *qua* speaker. That is, pre-stored utterances raise issues of the temporal distribution of agency (cf. Emirbayer and Mische 1998), and calls the ‘when’ of the speaker into question. In the context of augmented communicators’ pre-stored narratives, this anomaly can be traced to a tension that arises between the temporalities of the ‘figure’ that is constructed within the narrative telling and the subjectivity that is entailed by the act of speaking (i.e. the *doing* of the telling). That is, in the act of speaking we construct a ‘figure’ of the utterance, an “agent, a protagonist in a *described* scene, a ‘character’ in anecdote, someone...who belongs to the world that is spoken about not the world

in which the speaking occurs” (Goffman 1981:147 emphasis in original). While this ‘figure’ may be the person speaking, it is also possible to embed others as the figures of our talk, which is common in cases of reported speech (cf. Goffman 1981; Goodwin and Goodwin 2004:224).

Regardless of who (or *when*) the figure is, accomplishing the act of *figuration* presupposes the individual’s *own* act of speaking in a present moment. As such, one’s utterance cannot escape the self-referential indexical entailments of *being* an act in its own right, regardless of what the speech encodes or from whose perspective (cf. Duranti 2004). Recognizing this capacity of language to interactionally establish the speaking agent, Benveniste writes, “*I* refers to the act of individual discourse in which it is pronounced, and by this it designates the speaker....The reality to which it refers is the reality of the discourse. It is in the instance of discourse in which *I* designates the speaker that the speaker proclaims himself as the ‘subject’” (1971[1958]:226). That is, the *speaking* subject entails an individual body as the inherent center of worldly orientation. This perspective is famously detailed in Edmund Husserl’s discussion of the body as “the zero-point of orientation” wherein he notes that all sensory experience has a primordial relationship to the body *qua* “bearer of the here and now” (Husserl 1989:61). Karl Bühler (1990[1934]), who had a long correspondence with Husserl, proposed a similar location to the subjective center of experience within a given spatio-temporal moment—which he labels as the “here-now-I” (1990[1934]:117), the prereflective nullpoint (*nullpunkt*) from which our words and gestures emanate, and to which our deictic references reflexively point (cf. Duranti 2012:33; Hanks 2005).

Locating this center or source to Ted’s narrative, however, proves to be something of a challenge. On the one hand, as mentioned above, Ted had programmed the words into his device several months before triggering his device to play the narrative for me. As such, this scenario is

similar to the thought problem famous among philosophers of language as “the answering machine paradox.” That is, while the indexicals “I,” “here,” and “now” seem to abide by formal semantic relationships to their speaker at the moment of their utterance, these assumed rules are regularly violated in outbound messages recorded on answering machines: e.g. “Sorry *I’m* not *here* right *now*...” (Michaelson and Cohen in preparation). It might thereby be argued that the here-now-I of Ted’s narrative was *a* Ted, one which was not necessarily coterminous with *the* Ted that sat before me in the restaurant or all Teds that may exist at all times and places. That is, we can picture something like a Ted_a who, several months prior to the telling, crafted his narrative and uploaded it into the memory of his device. We might picture Ted_a alone in his office as he wrote, himself imagining the people for whom he might play his story; fixing the text to the form that it would take every time he played it. In such an understanding, Ted_a existed only at a particular time and place. This is the image suggested by Goffman’s notion of the distributed speaker, where Ted_a plays the part of the *author*, and Ted_n the *animator*; the two united by little more than an ideology of the permanence of self: a ‘folk notion of character’ (see Goodwin 1990:224, 248; Linde 1993: 25, 129). That is, as Goffman notes, “if we happen to be recounting a tale of something that happened many years ago, we were a person we no longer are, then the “I” ... is linked to us—the person present—merely through biographical continuity” (Goffman 1981:149).

Along these lines, Hélène Mialet (2012), who writes about the famous physicist and augmented communicator, Stephen Hawking, notes that the form of utterances achieved through AAC devices shares particular similarities with what Ricoeur termed ‘a text’. That is, Ricoeur distinguishes between ‘text’ and ‘dialogue’ in terms of the relationship between author and audience that each discloses. For Ricoeur, a ‘text’ is an instance of writing in which “The writer

does not respond to the reader. Rather, the [text] divides the act of writing and the act of reading into two sides, between which there is no communication. The reader is absent from the act of writing; the writer is absent from the act of reading” (Ricoeur 1981:146-7). As such, Ricoeur notes, the ‘text’ encodes and fixes the ‘said’, and does so in such a way that makes it possible for the ‘said’ to escape “the finite horizon lived by its author” (Ricoeur 1981:201). ‘Discourse’, on the other hand, “is what refers to the world, to *a* world. In spoken discourse this means that what the dialogue ultimately refers to is the *situation* common to the interlocutors” (Ricoeur 1981:201). By these criteria, Ted’s narrative lies firmly within the boundaries of ‘a text’. This interpretation is furthered by the fact that Ted’s narrative was played from a written text, a page that itself had a durable material presence in the world. The physicality of Ted’s narrative was what allowed him to play the pre-stored narrative all the way through without further or ongoing manipulations of his device. Moreover, it was this physicality that allowed Ted to email me the verbatim narrative some months later and to play it several weeks after that as part of a conference that featured augmented communicators.

And while the division between ‘text’ and ‘discourse’ appears clear, Mialet attempts to complicate this distinction by noting that conversations with Hawking seem to defy both categories. To do so, Mialet points out that Hawking’s output is both responsive to her own turns-at-talk (and therefore not fully ‘text’) and yet at least partly disembodied by virtue of appearing through Hawking’s device (and therefore not fully ‘discourse’). While I will return to Mialet’s assertion regarding Hawking’s output as *disembodied* in Ch. 6, I will now turn to examine Ted’s narrative in greater detail in my own attempt to complicate the distinction between ‘text’ and ‘discourse’. Specifically, by examining the ways that Ted performs his

narrative, I will suggest that he actively incorporates the fixed text into his dynamic present being.

In the excerpts presented below I argue that Ted's device does not merely give him a means to produce speech, but does so in a way that affords him a specialized understanding of his bodily being-in-the-world. That is, in moments when one's physical body (delineated by the boundary of the skin) is the locus of vocal production, the individual body emerges as the default zero-point of that voice as the embodied production of voice is perceptible to both speakers and co-present audience members. However, as suggested above, in cases like Ted's the relationship between actor and voice appear indeterminate. I contend that by anchoring his gaze, movement, touch, and laughter to relevant moments in the device-mediated speech, Ted effectively incorporates the synthetic voice into his embodied production, in a way that leaves little experiential space to separate the tool from the user.

4.2 Constructing a Participant Framework

At the outset of the interaction, Ted demonstrates the richly embodied relationship he has with his technologically-mediated voice when, in anticipation of delivering his narrative, Ted navigated his power wheelchair so as to reconfigure our participant framework. To do this, Ted maneuvered his power chair away from the table, making a lap around the back half of the dining room. When he returned to the table, Ted positioned himself about a foot closer to me than to his aide, and oriented in such a way as to face me rather than the neutral table space that had separated the three of us (see Figures 4.2 & 4.4). Out of what had until that point been a fairly standard 3-way f-formation (Kendon 1990) between Ted, his aide, and myself (see Figures 4.1 & 4.3) Ted hereby produced an exclusive 2-way participant framework wherein Ted and I were

given maximal access to each other's face and upper bodies, while simultaneously producing the publicly visible arrangement of our exclusive conversation (cf. Kendon 1985:249).



Figure 4.1: Ted Facing Table



Figure 4.2: Ted Facing CRE

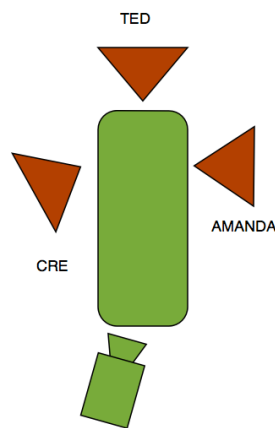


Figure 4.3: Room Schematic of Fig. 4.1

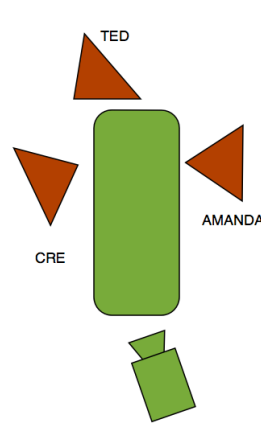


Figure 4.4: Room Schematic of Fig 4.2

Ultimately, then, the value of Ted's physical adjustment emerges with respect to an understanding of the inherently bodily nature of 'speaking'-with-another and discloses aspects of *Ted's* own phenomenal incorporation of his AAC device into his embodied perspective. This seemingly minor adjustment of the spatial relationship between our bodies vis-à-vis each other and his device, reveals a fundamental aspect of Ted's relationship with his AAC device. To quote Merleau-Ponty, "My body has its world, or understands its world, without having to make use of my 'symbolic' or 'objectifying function'" (Merleau-Ponty 1962b:141). It is thus that we might examine Ted's movement as reflexive, suggesting an inculcated schema that tacitly recognizes the particular arrangement represented in Figures 4.2/4 as inherently more appropriate to his anticipated act of telling me his narrative than those represented in Figures 4.1/3. That is,

by redirecting his AAC device (which was fixed to the front of his wheelchair) such that the device's speaker would be directly facing me and, consequently, away from his aide, Ted produced a specific constellation of bodies and objects that afforded me access to his face and body, while simultaneously offering me limited access to the display on his device (see Figure 4.5). This configuration initiated a semiotic ecology that allowed Ted to capitalize on the device's ability to produce the speech sounds that he could not, while simultaneously reducing its capacity to serve me as an object of visual attention in its own right. Additionally, by virtue of the fact that the body is both the site of sensory faculties, and the means by which we conduct action in the physical world, “bodily orientation [is] a public framework for the construal of task relevant intentionality” (Goodwin 2000a:1518; cf. Goodwin 2007b). Thus, it through his realignment of his own body, device, and myself that Ted creates a publicly structured anticipations of relevant next actions by moving in such a way as to bring the diverse surfaces of relevant semiosis into juxtaposition with one another.

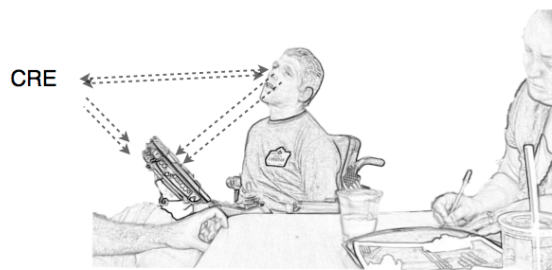


Figure 4.5: Asymmetrical Distribution of Resources in Semiotic Ecology

What is particularly interesting about the configuration Ted produced is how closely it resembles the everyday bodily orientation of able-bodied interlocutors engaged in a 2-way participant framework (see Figure 4.6). This apparent commonality is notable here because of the fact that the participant frameworks of interactions involving augmented communicators typically take a very different shape than those of involving exclusively mouthspeakers or

manual signers (see Figures 4.7-4.9). While participant frameworks for interactions between augmented communicators and mouthspeakers will often start out in a standard f-formation, able-bodied mouthspeakers routinely move into an offset side-by-side or nested (see Figures 4.7-4.9) arrangement, wherein mouthspeakers position themselves next to and/or slightly behind their augmented interlocutor. This configuration is widely dispreferred by augmented communicators (see contributions to Fried-Oken and Bersani Jr. 2000) both for the limited access that the augmented communicator has to his partners' faces bodies, and because it can often make the user feel self-conscious about their typing (e.g. making them feel as though their means of utterance production is on display and thereby heightening the 'pressure' to type accurately and rapidly). Despite this disfavor, the commonality of nested or offset side-by-side participant frameworks may ultimately be traced to the predominant layout of AAC devices and the embodied nature of face-to-face interaction. That is, because most AAC devices are designed so as to provide a single semiotic surface, oriented towards the augmented communicator, with little or no provision for his/her audience, AAC device layouts force interlocutors to make a choice between two imperfect arrangements: either the interlocutors can maintain a standard formation, wherein the participants have unequal access to the common, but not shared, environment of the device's display, or, as is far more common, the participants arrange themselves in such a way as to have equal access to the device's display, but unequal access to each other's body and gaze. When viewed thusly, one possible reason for the prevalence of such nested or offset formations may be due to the fact that augmented communicators' modes of accessing their devices often depends on their being able to see their devices' displays. As such, the bodily techniques for attending to, and activating an AAC device mimic common embodied displays for indicating orientation and attention used to solicit joint

attention toward an external referent (cf. Clark 2003; Goodwin 1981; 1996; Tomasello, et al. 2005). From an interlocutor's perspective, then, the augmented communicators' typing behaviors (e.g. looking at and touching their device display) appear to nominate the display as a relevant object within the interaction, and thereby seem to solicit interlocutors' gaze/attention to it. Moving into a nested or offset side-by-side arrangement suggests an effort to accommodate the participant framework initiated by augmented communicator's actions by maximizing one's own access to the proposed semiotic environment. As such, moving next to or behind the augmented communicator in order to better see the display of his/her device reflects embodied phenomenon Merleau-Ponty recognized as "maximum grip." He writes, "For each object, as for each picture in an art gallery, there is an optimum distance from which it requires to be seen, a direction viewed from which it vouchsafes most of itself...We therefore tend towards the maximum of visibility, and seek better focus as with a microscope" (Merleau-Ponty 1962b:303; cited in Dreyfus and Dreyfus 1999:113). As such, interlocutor' movements reflect their own embodied engagements with the augmented communicator as they harness their own motility to gain a better purchase on environment that is ostensibly shared by virtue of their co-presence within a face-to-face interaction.

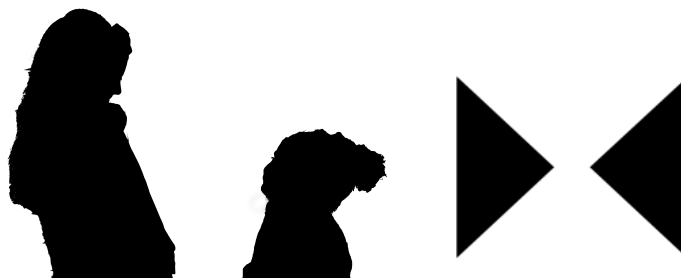


Figure 4.6 Prototypical 2-Way Participant Framework (See Goodwin 2006:521)



Figure 4.7: Offset Side-by-Side Participant Framework with AAC Device 1³⁰



Figure 4.8: Offset Side-by-Side Participant Framework with AAC Device 2³¹



Figure 4.9: Nested & Offset Side-by-Side Participant Framework with AAC Device³²

4.3 ‘On Stage Presence’

Once in this position Ted began his narrative by pressing a unique sequence of keys on his AAC device. As the device produced the words that Ted could not himself vocalize, Ted sustained long periods of eye contact with me, during which time he smiled and nodded along to the synthesized voice. While in this orientation, Ted typically maintained a large grin. However, over the course of his narrative several interruptions caused Ted to look away. During such moments of distraction, Ted’s grin was replaced with other expressions, but it unfailingly

reappeared as Ted reoriented to his narrative and me. By regularly returning to this facial expression when orienting to me, Ted moved in and out of an embodied display of what we might recognize as the “on stage” presence of a storyteller (cf. Goodwin 1984) and thereby demonstrated his embodiment of the role of speaker/narrator by virtue of producing complementary facial expressions with co-occurring directedness.

An example of this can be seen in Figures 4.10-4.17. The sequence begins with Ted oriented to me (off camera to the left), nodding and smiling as his device outputs his narrative text. However, just prior to Figure 4.11, Ted’s staff, Amanda (off camera, right) asks Ted a question about the messages she is listening to on Ted’s phone. In Figures 4.11-4.12, Ted withdraws his gaze from me and begins answering Amanda’s question, using his left arm to spell out the first few letters of his response (Figures 4.13-4.14) before Amanda correctly guesses the completed utterance. Ted then returns his orientation to me, again smiling and nodding along with his narrative (Figures 4.15-4.17).



Figure 4.10

Figure 4.11

Figure 4.12

Figure 4.13



Figure 4.14

Figure 4.15

Figure 4.16

Figure 4.17

It is also significant that throughout the entirety of his narrative, Ted never moved his power chair, despite carrying on extended period of interaction with his aide. Rather, by leaving his chair anchored toward me and engaging in extensive body torque (Schegloff 1998) in order to be able to sign to his assistant, Ted sustained a 'home position' (Sacks and Schegloff 2002) relative to his 'on stage' presence for me, even in moments of his disattention (cf. Kendon 1985:237). Moreover, doing so maintained my status as 'audience' to the narrative emanating from his device, regardless of where Ted was looking at that moment.

Ultimately, then, in returning to his initial expression, posture, and orientation to me (*qua* narrative audience) after Amanda's interruption, Ted effectively bracketed the intervening moments as a sort of 'crossplay'. That is, as Goffman notes, 'crossplay' consists of "communication between ratified participants and bystanders across the boundaries of the dominant encounter" (Goffman 1981:134). Such forms of talk are subordinate to the main line of discourse with which they overlap (cf. Goodwin 1997). What is unique in this instance is that Ted is simultaneously the dominant speaker *and* a participant in the subordinate communication activity. Although such a dual role would not be possible for a mouthspeaker, who would presumably need to pause one conversation in order to participate in another, Ted shows no sign of discomfort in maintaining his position as speaker within two simultaneous speech events.

4.4 Embodied Stance

The third way I will discuss Ted as embodying the voice output of his AAC device is through his use of affective displays, which he laminates onto the device's emerging talk. The segment presented below occurred around one minute into a narrative Ted had programmed into his device. The opening of Ted's narrative is delivered in a rather somber tone, as he explains

that because of his physical disability, people frequently treat him as though he is cognitively disabled. He states,

"MANY PEOPLE THINK THAT I AM SLOW OR HAVE A LOW IQ
BECAUSE OF MY PHYSICAL DISABILITY. PEOPLE ASSUME THAT
BECAUSE I AM IN A WHEELCHAIR AND DON'T SPEAK THE SAME
AS EVERYONE ELSE THAT I AM NOT CAPABLE OF FULLY
UNDERSTANDING EVERYTHING THAT IS GOING ON AROUND ME..."

After explaining that he is, in fact, cognitively unimpaired, Ted goes on to discuss the difficulties that characterized his youth, especially in the moments when he would try to communicate with people by pointing to pictures in a picture book that was attached to his wheelchair. He then states:

Transcript 4.1

01 IT WOULD GET VERY FRUSTRATING
02 WHEN NEW PEOPLE COULD NOT
03 UNDERSTAND WHAT I WAS TRYING TO SAY



Figure 4.18

04 OR EXPRESS THE POINT THAT I
((Ted turns to look at two passersby))
05 WAS TRYING TO GET ACROSS.
06 WHICH IN TURN WOULD AGGRAVATE ME.



Figure 4.19

((Ted returns gaze and smile to CRE))
07 CAN YOU IMAGINE WHAT IT WAS



Figure 4.20

08 LIKE TRYING TO PICK UP GIRL[S?]
09 ((exhale))[°hu]-uh °ghuh[hhh]

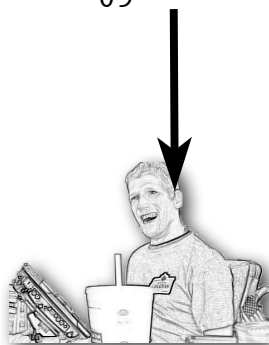


Figure 4.21



Figure 4.22



Figure 4.23

Over the course of line 08, Ted becomes visibly more excited, his smile giving way to a beaming grin, which he produces while throwing his head back and closing his eyes slightly (Figures 4.21 & 4.22). As the device reaches the final word of the line, “girls,” Ted exhales in preparation for the vocalized ingression that he produces in slight overlap with the final word. Along with this in-breath laugh, Ted lifted his hand from his own leg and quickly moved it over

to shove my knee (Figure 4.23). Closing his eyes completely and rotating his head upwards, Ted performs a deep laugh, inviting me to do the same.

Ted's performance suggests at one level that he had intended lines 07-08 to serve as a lighthearted joke within what is otherwise a rather somber part of his narrative. Yet, it was only through his use of gaze, facial expression, vocal laughter, and touch, that Ted was able to secure the proper uptake of his line as comic rather than tragic. As such, Ted's laughter cannot rightly be considered as a privately held or purely internalized aspect of his own being and distinct from the interactional value it presents. Rather, as Goodwin et al. (2012:24) note, "rather than having its primary locus in the individual, [emotion] is dialogic both in the way it takes up a stance toward something beyond the individual, and how it is organized within frameworks of temporally unfolding interaction." That is, Ted's gesture, expression, and vocalization all work together within a single semiotic ecology to produce Ted's emotional display (comicality); however, by locating the target of this emotion within the our shared interactional field – i.e. the talk emanating from his device – Ted's affective displays publicly position him vis-à-vis his target, producing an *affective stance* (Ochs 1996). Here, Ted's gesture, touch, and vocalization do not merely serve as 'signs' of his internal state, but function as the physical incarnation of that state (cf. Merleau-Ponty 1962b:184; Wittgenstein 2001[1953] on pain).

In the example presented here, one may wish to argue that Ted's bodily actions – i.e. expression, gesture, and vocalizations – are directed *toward* the utterance produced by his device, and thereby locate the utterance as over and against – i.e. separate from – themselves. This, however, would be to miss the interactional significance of Ted's bodily displays entirely. That is, as Du Bois (2007) points out, in order to understand *stance* it is necessary to know not only who the stancetaker is and to what they are directing their attention (i.e. the target of stance), but

we must also grasp the nuances of what the stancetaker is responding to. In the example shown here, Ted is not merely laughing at some idealized or neutral utterance, but is laminating an affective charge onto part of his own life narrative. That is, in order to understand Ted's stance here, we must understand that Ted's heightened affective display co-occurs with a reference to his ability "pick up girls." As such, Ted underscores not only his (normative) heterosexuality, but also his sexual potency, suggesting that not only is he someone who can engage in sexual activity, but that he is someone who *actively seeks* to do so.

It is important to point out that although Ted's vocalization and touch served to indicate his relationship to the co-occurring utterance, much of the work done here was performed for *my* (i.e. audience) benefit. That is, at an immediate level, Ted's vocalization and touch combine with the words emanating from his device to produce an elaborate communicative display, one that simultaneously recognizes the taboo flouted by talking about such matters publicly, and invites me (*qua* audience) to participate in his perspective in that moment (Jefferson 1979). At a more durable level, however, Ted's reconfiguration of the participant framework (discussed in 4.1) demonstrated a cooperative stance toward participating in the joint project of our interaction. As Goodwin writes, "the interactive organization of embodied participation also constitutes what might be glossed as a cooperative stance, that is a demonstration that by visibly orienting to both other participants and the environment that is the focus [or medium] of their work, an actor is appropriately cooperating in the joint accomplishment of the activity in progress" (Goodwin 2007b:62; cf. Clark 2005). Within the context of this segment, the importance of the durably installed participant framework is suggested by my continued engagement with Ted's narrative despite Ted's multiple displays of disattunement to me (e.g. see section 4.2).

4.5 Renouncing the Voice of a Bygone Author

In the three preceding examples, I showed ways that Ted actively incorporates the synthetic voice into his presentation of a present self by concomitantly producing affiliated signs through other modalities. In this section, however, I argue that insights into the connection that Ted experiences between his immediate speaking self and the historical figure behind the utterances can be seen towards the end of Ted's narrative when the voice emanating from the device suddenly switches from using the first person singular pronouns, "I," "me," and "my," to using third person pronouns to refer to Ted (see transcript below – Line 13). The switch in perspective was the result of Ted having cut and paste his narrative from a number of different sources, which included older narratives and the personal biography posted on the website of the vending machine and gift companies that Ted owned. This switch can therefore be directly traced to the durable form of Ted's narrative and the types of mechanical operations the form afforded (i.e. being cut and paste from various texts).

While the inclusion of third-person pronouns indexes the 'textuality' of Ted's narrative, Ted's own embodied displays during these moments lend credence to the argument for his incorporation of the device-mediated voice throughout the rest of his narrative. That is, Ted's orientation to the device-mediated voice changes along with the shift in pronouns in Line 13. This shift can be observed first in Ted's facial expressions and gaze, then in an extended vocalization he produces over the top of his device's voice output (Lines 15-16), and finally in the fact that after this shift, Ted never again returned to his 'on-stage' presence.

As the excerpt begins, Ted is attending to his staff/aide (Figure 4.24), who is using Ted's mobile phone to make an appointment to take Ted's car to the shop. Although Ted is conversing with his staff, he is simultaneously attending to the device-mediated speech. In Line 13,

however, the device begins to speak a new section of Ted's narrative. This line is markedly different from the others that make up Ted's narrative as it lacks a verb and is thereby grammatically incomplete. Originally, this line served as the title to a short biographical text on Ted's personal webpage, however, it was copied into his device when he constructed his narrative by cutting and pasting from a number of sources. Hearing the device produce the grammatically incomplete Line 13, Ted turns from his aide and looks at the display of his device where the text of his narrative is displayed (Figure 4.25). After gazing at the display for a split second, Ted turns his head to the side and tilts his head to the device to better hear the voice output over the din of the noisy restaurant dining room (Figure 4.26). Just after the device produces the final words of Line 13 (HUFF GIFT SHOP BY TED), Ted turns again to look at the display, this time with a disapproving grimace on his face (Figure 4.27). Still with the grimace on his face, Ted quickly recoils his head, raising his eyebrows in a look of surprise (Figure 4.28) before glancing up at me (Figure 4.29). Shortly thereafter, Ted turns his head to the side, closes his eyes, and produces a pained smile, vocalizing in overlap with the next line from the device (Figure 4.30, Lines 15-16).

Transcript 4.2

01 Aid: [((aide talking))]
02 Ted: [THE NEXT GOAL IN MY LIFE]
03 Aid: [((aide talking))]
04 Ted: [IS TO ONE DAY HAVE A STRONG ENOUGH BUSINESS]
05 Aid: [((aide talking))]
06 Ted: [TO SUPPORT MYSELF FULLY AND NOT]
07 Ted: ((air signing to aide))
08 Aid: [((aid talking))]
09 Ted: [BE FORCED TO] LIVE UNDER THE RESTRICTIONS OF
10 Ted: STATE AID, AND LIVE AS INDEPENDENTLY AS HUMANLY
11 Ted: POSSIBLE.
12 (1 Sec)



(Figure 4.24)

13 Ted: HUFF SNACK SHOP AND HUFF GIFT SHOP BY TED.



(Figure 4.25)



(Figure 4.26)

14 (1 sec)



(Figure 4.27)

(Figure 4.28)

(Figure 4.29)

15 Ted: IN 2004 [TED WAS SEARCH]ING FOR A BUISNESS
16 Ted: [°eahhhhh yeeaa]



(Figure 4.30)

17 Ted: OPPORTUNITY WHEN THE IDEA WAS PRESENTED TO HIM

The contrast between Ted's active incorporation *of* the voice in moments when it spoke in the first person versus his response *to* the voice when it spoke in the third person confirm the earlier assertions regarding his embodiment of the voice. That is, inasmuch as the third-person pronouns provide a signature of a by-gone author, Ted's rejection of the voice speaking them separates him from the historical figure they index. When viewed in comparison to Ted's corporeal displays that are produced along with the voice speaking in the first person, Ted's commitment to viewing the voice as a sonic extension of his present self becomes clear.

That is, AAC device-mediated utterances may be considered largely uni-modal in that they are only capable of producing a highly limited set of 'speech' sounds, and lack the capacity to present the augmented communicator's utterances with dynamic prosodic contours that regularly co-occur with mouth-speech-mediated utterances. As such, AAC devices present a generic and decontextualized sonic embodiment of the augmented communicator's speech *qua* text (cf. Higginbotham 2010; Rée 1999:68). As I have shown, it is therefore impossible to appreciate the full significance of Ted's action by attending to either the text from his device *or* his bodily displays in isolation. Rather, Ted's capacity to inhabit the nuanced speaker role that he constructs is contingent on his performance of various corporeal operations *in concert with* the device-mediated talk. It is only by observing these multiple engagements that we can see the

extension of Ted's body beyond the boundary circumscribed by his skin. That is, as Ricoeur (1981:199) notes, writing fixes the *said* of the speech event, but not the *event* itself (cf. Mialet 2012:129). The 'text' is therefore agnostic, presuming neither animator nor audience. However, the 'text' in this instance does not survive on its own. Rather, by virtue of Ted's ability to play the text through his device in a form that we both could attend to, the fixed '*said*' of the 'text' is opened to its discursive counterpart, '*saying*'. That is, by virtue of being played through Ted's device, the text of Ted's narrative comes to inhabit the same time and space as Ted's material body, the relative freedom of which allows Ted to produce the signs of co-presence that we might recognize in line with Levinas' notion of the '*saying*' (cf. Levinas 1985; See also Ch. 3, here; 2009).

This perspective emerges most clearly in the work of Charles Goodwin, whose theory of embodiment derives from the understanding that the body as the means of participation within an interactional domain. By beginning with the interactional frame, the body becomes relevant as the grounds for and surface upon which social action is accomplished. Embodiment therefore emerges in Goodwin's work as quality by which agents bring structurally different signs into juxtaposition in such ways as to mutually modify one another, creating semiotic complexes across multiple substrates of action. Ultimately, writes Goodwin "[w]ithin interaction the body is a dynamic, temporally unfolding field that displays a reflexive stance toward other coparticipants, the current talk, and the action in progress" (2000a:1519). Along these lines it is possible to see how Ted's co-speech gesture and vocalization are not mere add-ons, but are necessary components of a single multi-modal interactional unit.

Moreover, it is important that we note that this relationship between body and voice was not merely present for me, as Ted's audience, but was also a fundamental component of how Ted

himself experienced the narrative event. Along these lines I have already pointed to the fact that Ted produces a series of ephemeral (e.g. gesture and vocalization) and durable (e.g. modified participant framework) indications of his narrative tellership. And while Ted's embodied actions have been shown to harness the pre-stored narrative, introducing it to his ongoing project of a narrative telling, it is also Ted's body that united him with the character figured through his narrative. Examining this relationship between the self and the body and mind, Ricoeur writes:

I have the experience of my relation to my members as organs of movement (my hands), of perception (my eyes), of emotion (the heart), or of expression (my voice). I have no such experience of my brain. In truth, the expression "my brain" has no meaning, at least not directly...It is only through the global detour by way of my body, inasmuch as my body is also a body as the brain is contained in this body, that I can say: "my brain."

(Ricoeur 1994:132)

Thus, when Ted performs his acts of embodiment, actively incorporating the voice that emits from his AAC device into his physical presence, there is little phenomenological separation in which to drive a separating foil. That is, it is only through a detour that traces a line of separation at the skin of the individual body that we may get a sense of the synthetic voice as an identifiable component of Ted's fully embodied presence.

4.3 Summary and Conclusions

With these data I have attempted to show ways that Ted actively engages the speech produced by his AAC device in a way that incorporates the technology into his immediate presence. Ted's device extends his abilities not just by "giving him a voice," but by doing so in a way that hinges on a specialized understanding of his augmented bodily being-in-the-world. To this effect, Ted demonstrates an incorporation of his device as a means of producing a stream of speech, which because of its public availability (as sound) and sequentially unfolding nature

(as talk), allows him to coordinate with others in projects of joint attention and cooperative action. Through his preemptive organization of the participation framework, his consistent return to a visible ‘on stage’ presence, and his synchronization of bodily displays with the co-occurring talk emanating from his device, Ted’s actions reveal an embodiment relation whereby the device’s sonic output becomes absorbed into Ted’s project, receding into his own embodied presence (cf. Heidegger 1962; Ihde 1990; Merleau-Ponty 1962b).

CH. 5 Vocal Reflection, Vocal Potency: Embodiments of Voice

In the preceding chapter, I explored the ways that Ted embodied the voice emanating from his AAC device within the moment of his performance, suggesting that he was able to incorporate the voice produced by his AAC device into his immediate, occurrent, embodied action. In this section, I will focus on the relationships that manifest between augmented communicators and their synthetic voices at a more durable level. Here, I examine the ways that individuals orient to various properties of their voices – e.g. the ‘*mineness*’ of one’s voice, the consistency of one’s voice (i.e. over time and in relation to social expectations for age, gender, race, etc.), and in terms of individuals’ tacit sense of how they can *use* their voices within particular contexts. To do so, it is necessary to look at a number of variables including the types of awareness directed towards the augmented communicator’s voice (e.g. thematic or pre-reflexive) and ways that the particularities of individuals’ disabilities might condition their experiences. Because reflection *on the body* is not equivalent to reflections that take their departure *from the body* (e.g. on the occurrent environment), this chapter follows the distinction that some authors have made between body *image* and body *schema* (see Gallagher 2001; 2005; Gallagher and Cole 1998[1995]). In the first part of the chapter, I examine the ways that individuals reflect *on* the synthetic voices produced by their devices, a mode of attention in line with *body image*. Following this discussion, I turn to exploring the ways that augmented communicators tacitly perceive the occurrent potency and possibility afforded by *their voices* by looking at patterns of use. Here I follow the phenomenological postulate that engagements with

the environment are not solely grounded on the individual's perception of an objective reality, but as a function of their bodily capacities to act within that environment, a *body schema*.

In exploring the issues of body image and body schema (schemata) I note that a division seems to follow from the types of disorder that lead to individuals' speech disabilities. That is, while there is considerable overlap, I will show that **there are differences in the ways that augmented communicators with *acquired* disabilities and augmented communicators with *congenital* disabilities experience the synthesized voices that emanate from their AAC devices**. As such, this chapter compares the two notions of body image and body schema across two manifestations of speech disability. Specifically, I compare the ways that augmented communicators with congenital disorders – e.g. types of cerebral palsy – experience the synthesized voices differently than do augmented communicators with acquired disorders – e.g. spinal muscular atrophy (SMA), amyotrophic lateral sclerosis (ALS), or vocal tract impairments. To do this I will begin by focusing on the ambivalence Ted, a congenitally disabled augmented communicator with cerebral palsy, displayed toward the particular vocal profile (i.e. the specific computerized voice) of his AAC device's speech output. I also explore the limits of this ambivalence, suggesting that while congenitally disabled augmented communicators may not experience a one-to-one relationship between their self and a particular synthetic voice, there is a reflexive capacity that can be engendered by particular speech events and a widely recognized commitment to using voices that reflect the user's gender. After presenting some supporting data from interviews and discussions with other augmented communicators I then turn to look at a contrasting perspective – that of mouthspeakers and former mouthspeakers (i.e. people with acquired speech disabilities). Unlike many of the congenitally disabled augmented communicators in my study, augmented communicators with acquired speech disabilities often

view synthetic voices with some distain and are apt to reject synthetic voices because of their incongruence with the augmented communicator's memories of his/her own imagined speaking voice. Efforts to mitigate vocal rejection among people with acquired disabilities are also illuminating as they demonstrate a particular approach and ideology to the speaking voice, one which considers it in terms of fixed phonological patterns, decontextualized and disembodied.

In the final section of this chapter I turn to examine the ways that augmented communicators' tacit experiences of their own bodies provides the grounds to their experiences of their environments. Shifting from examining body image to body schema, I examine the differences in how augmented communicators with acquired and congenital disabilities perceive a given interactional environment. I suggest that these differences can be traced to the ways that the perceptions of augmented communicators with acquired disabilities may operate as a function of their familiarity with a now absent able body. Specifically, this can be seen in both the ways that augmented communicators with acquired disabilities often feel compelled to speak in complete, independently animated utterances, and attempt to take turns at talk in moments that do not afford the temporal requirements stipulated by their means of utterance production.

5.1 Vocal Ambivalence of Congenitally Disabled Augmented Communicators

In the preceding chapter I showed how Ted embodied the speech output from his device within his project of telling me his story. Though his use of physical gestures, touch, gaze, and vocalizations, Ted incorporated the words spoken by his device as the 'said' within an act of 'saying'. Doing so, Ted achieved a connection between his pre-stored message and his physical (and temporal) presence, tying the spoken words to his bodily gestures and vocalizations. Moreover, when Ted's AAC device ceased to afford him the opportunity to incorporate its words

into a single, consistent image of ‘Ted the speaker’ – i.e. when the device began speaking in the third person – Ted demonstrably disattended to the device and discontinued his embodied displays of incorporation. In those moments when his device spoke *about* him, rather than *along with* him, Ted denied the device-mediated voice the ability to serve as part of his presence.

Within the same speech event Ted demonstrated a separate and further unwillingness to allow the computerized voice to fully represent him. This time, however, what Ted denied was not that the synthetic voice could serve as the physical token of his thought in our interaction, but that the regular and identifiable form of the voice could stand for him metonymically. That is, while a natural (mouth) speaking voice betrays the identity of the individual who produced it, Ted’s device had several voices programmed into it and offered him the capacity to modify a number of the vocal qualities of any of these voices. Ted, like other augmented communicators, was free to choose among the voices by merely accessing the menu options on his device and occasionally switched between the voices on his device, giving little or no explanation for doing so. Although such changes typically occurred out of sight, Ted’s device did occasionally switch voices in mid utterance and sometimes did so seemingly on its own. Changing between the voices that were meant to carry *his* words evidences a reluctance or ambivalence toward allowing any one of these voices to serve as *the* unique extension of Ted in the sonic world, to hold sway as a voice that is uniquely his.

One example of this sort of voice change occurred in the line immediately following Ted’s vocalization and touch at line 9 (discussed in the previous chapter). For the approximately 1 minute 20 seconds up to that point, Ted’s device had spoken the words of his narrative in a common synthesized voice known as “Huge Harry.” The ‘Harry’ voice, as it is affectionately known among augmented communicators, is one of nine voices developed for the DECtalk

application, a synthetic speech generator developed at MIT's Speech Laboratory (Allen, et al. 1987). Huge Harry uses the same pronunciation rules as the eight other DECtalk voices, but produces synthesized phonemes in a lower fundamental frequency and a longer duration than the standard DECtalk voice, "Perfect Paul." The result is that the Harry voice provides a 'larger sounding' presence, equated with a more authoritarian sounding voice.³³ Huge Harry was designed at the MIT Speech Laboratory as part of an effort to give synthetic voices more "personality." Thus, whereas Perfect Paul has been compared to bland and unexciting style of a newscaster, Huge Harry has been called "heavy and lustful," and compared to a rough approximation of Elvis Presley (Scha 1992).

In line 10, however, the voice from Ted's device suddenly changed. Although the voice maintained its obvious signatures of a synthetic pronunciation, producing the sounds according to an algorithmic interpretation of phonemes, the difference between the new voice and its predecessor was striking. In order to understand this difference it is necessary to first say something about the ways that computer generated voices are produced by AAC devices. For the most part, computer generated voices can be broken down into two types: digitized voices and synthetic voices. Digitized voices are digital recordings of actual mouthspeakers' talk that are saved in the AAC device's memory in such a way that words and phrases may be recalled by pressing a few keys or clicking on an icon on the display. As a series of audio recordings, digitized voices offer an extremely clear and 'natural' sounding audio stream, but are limited to only those words and phrases that the donor voice recorded and are not practical for novel utterance construction. Additionally, each utterance places increased demands on the device's memory and can quickly exceed the available memory in a standard AAC device. For these

reasons, I am not aware of any adult augmented communicators who use digitized files as their primary voice in everyday interaction.³⁴

Synthetic voices were developed out of research on sound digitization that led to improvements in telephony and general sound recording technologies. Speech scientists unveiled the first synthetic voice output device at the World's Fair in 1939-1940, wherein samples of mouth-speech were encoded and reproduced by breaking up the phonemes outputting electrical signals from the waveform to a speaker (Quist and Lloyd 1997). Early voices were quite 'choppy' sounding as each phoneme was cued independently of those around it, thereby leading to several odd pronunciation patterns. Although synthetic voices, like those for DECtalk, have evolved to recognize and modify phonemes based on their context, synthetic voices still rely on a two-stage system for converting text to speech. In the first phase, an application breaks down the various components of a text and assigns them particular values that the second phase application will translate into electric impulses. The impulses are delivered to magnets within the device's speakers in order to generate sounds. This "gennematic" approach to speech synthesis works by assigning sounds to text without regards to the processes by which the targeted speech sounds are 'naturally' created in the human body, and are therefore always rough approximations of human mouth speech (Scha 1992; see Shroeder 1993 for a detailed explanation).³⁵

Because of the ways that synthetic voices are produced, augmented communicators can adjust several variables of each voice (e.g. pitch, rate, etc.); however, once adjusted, the computer will apply the new rules to all subsequent speech produced by the device until it is changed again or it reads a command line in the user's text. That is, the computer will default to the voice selected by the augmented communicator for utterances produced on-the-fly (typed

live). However, in cases where the device is ‘reading’ from a script or pre-stored page, it is possible to place command line in the midst of the pre-stored text. This allows augmented communicators to switch between voices in the midst of a pre-stored presentation (discussed below) and to modify the voice output so as to ‘sing’. When Ted’s voice changed in the middle of his narrative, the new voice followed the same algorithms for constructing sounds as the old voice had and was therefore recognizable as related to the prior voice, but was markedly higher pitched, faster, and less breathy sounding than the previous voice had been. As a consequence, the new voice lacked many of the qualities that make Huge Harry distinguishable from DECTalk’s standard, neutral offering – i.e. Perfect Paul.

Transcript 5.1

07 CAN YOU IMAGINE WHAT IT WAS
 08 LIKE TRYING TO PICK UP GIRL[S?]
 09 ((exhale))[°hu]-uh °ghuh[hhh]
 10 [IN 19]84
 11 MY COMPUTER TEACHER HAD INTRODUCED
 12 TO AN APPLE SYSTEM COMPUTER.

Produced
with new,
higher
voice

Immediately after the voice switch, I raised my first finger in an “I have a question” gesture, hoping Ted would address the change in voice.³⁶ Ted responded with a smile and brief laugh; however, before we could pursue the issue further his aide interrupted with a number of questions regarding a phone call she was about to make on his behalf. When Ted returned his gaze to me several seconds later I asked him, “why two different voices?” This time Ted responded with a vocalized ingression and hand waving gesture commonly glossed as “retarded” (Figure 5.1). Ted frequently used this gesture to suggest that something/someone was ‘stupid’, or to mean something like, “don’t worry about it” or “it’s not important,” which was how I interpreted it at the time. Thus, it wasn’t until later on in the week when I questioned him again that I learned that Ted’s use of multiple voices was a product of him having cut and paste the

story he played for me from a number of older narratives. Because he had cut together two narratives that each had voice commands written into them the device changed to a second voice when it reached the portion of the document with that command. Ted's response to my inquiries made me believe that this voice switch was an unintentional product of the ways he had created the narrative on his device, but that it was one that he had no intention of changing, or "fixing," as it didn't present a significant issue. It wasn't until I had questioned Ted about the voice shift for the third time that he indicated that he was thinking about re-writing the narrative so that it would be produced in a single voice.³⁷



Figure 5.1: Ted's "don't worry about it" Gesture

Ted's unproblematic treatment of the mid-narrative voice shift demonstrates a highly relaxed attitude toward features commonly associated with the spoken 'voice,' specifically those that relate the sonic form to one's durable, individual identity. That is, in cases where the voice emanates from the body proper (i.e. in some form of mouthspeech), the sounds that comprise the voice index the speaking body at a number of levels. Whereas some features – e.g. mean frequencies, articulation effects and resonance features – may be directly attributed to one's physical body, other features – e.g. pronunciation, stress patterns, utterance speed or 'articulatory style'/accent – point to the speaker's inculcated habits (Bourdieu 1991). In both cases the forms of speech refer back to the *body* of the speaker. However, the fact that Ted failed to respond to the sudden shift in the voice qualities (pitch and rate) until I made it an issue through my question gesture suggests a tacit denial of the *necessary* link between voice and identity on Ted's part.

That is, as demonstrated in Chapter 4, the voice may be subsumed by the body through the individual's active incorporation; however, the ambivalence congenitally disabled augmented communicators show toward specific device-mediated voices suggests that the reverse is not necessarily also true. Whereas the body may incorporate the synthetic voice, this relationship is not necessarily exclusive, allowing augmented communicators to employ several such synthesized voices as their own throughout the course of their lives or even single speaking engagements.

Such a perspective is not at all uncommon among *congenitally* disabled augmented communicators. For example, when I asked the congenitally disabled users in my study about their voices people would frequently tell me that they had little or no connection to any of the voices in particular and every one of them mentioned having switched between voices at one time or another. One example of this came from Kevin Williams,³⁸ a young professional with multiple disabilities caused by cerebral palsy. Kevin is an avid power soccer player, water skier, disability advocate, web developer, and assistive technology enthusiast. I first met Kevin when he was playing the starring role in a theatrical production, *French Twist*, and have gone on to present with him at AAC industry conferences (e.g. Williams and Engelke 2012). Shortly before I met him, Kevin switched devices, moving from a 'full size' AAC device to a smaller, more portable model.³⁹ During one of our many Instant Messenger discussions, Kevin told me:

“When I got my [latest device] I thought new device new voice. I tried the Acapella voice⁴⁰ instead of DECTalk thinking people would say it was better b/c it's more “human.” The people who knew me and formed that identification to Huge Harry voice Hated any other voice: my mom, people who I work with, all was like change it back b/c people make that connection of what they expect people voice is like...I could care less having a natural sounding voice.”⁴¹

Kevin did eventually change his voice output back to DECTalk's Huge Harry in order to appease his mouth-speaking interlocutors who had come to identify him with the older, more robotic sounding sonic profile.

Brett, a middle-aged man with cerebral palsy, tells a story that is closely related to Kevin's. Because he works part time as a representative for an AAC manufacturing company, delivering talks to university faculty and students, presenting at professional conferences, and working at the company's booth at assistive technology conventions, Brett had his story pre-stored on his device. Brett had used DECtalk's Perfect Paul voice for several years before receiving a new device in 2007. However, after receiving the new device, Brett was working a booth with another of the company's representatives, who showed him how to use the new voices in his device. Remembering the moment he switched from Perfect Paul to Prince Charles (a voice developed commercially by AT&T), Brett states,

I tried it. and the reaction was amazing! Since speech therapists are primarily women, they really liked the british voice. I would say "hello" to passersby and they would snap their head around thinking the prince was there or someone famous and handsome. You know like roger moore or sean connery...or how about Jude law 2004's Sexiest man alive...Also, there were times when women would just pass by the booth...as soon as I said "hello" they were hooked and they spun right around and smiled at me, and usually came to talk to me...needless to say the voice stuck and I have used it since 2007.⁴²

Brett's reflections on his voice are focused on the reaction that the Prince Charles voice elicited from his mouth-speaking audience, specifically the women who heard him. Brett's ruminations on his voice suggest that his primary motivation for keeping the voice was to appear more attractive to heterosexual women, a desire that itself is linked to expressions of his own heterosexuality. This relationship to the voice does indicate something of a reflexive attitude that ties the vocal form to his physical body; however, like Kevin's decision to continue to use Huge Harry, or Ted's eventual decision to remove the pitch shift from his narrative, Brett's connection to his voice is mediated through his own explicit awareness of other's reactions to it.

5.1.1 The Limits of Ambiguity

The above discussion is not meant to suggest that congenitally disabled augmented communicators are somehow unable to reflect on the connection between voice and identity, but that attending to this relationship requires a special act of attention. Such an act of reflection is obscured within what Husserl termed the natural attitude (Husserl 1989; cf. Duranti 2010; Throop 2003) or the everyday modes of involved coping that characterize our normal modes of engagement (Dreyfus 1991; Heidegger 1962).⁴³ Thus, for example, while congenitally disabled augmented communicators do not seem to envision themselves as tied to any one synthetic voice, I have witnessed several augmented communicators using multiple synthetic voices within a single pre-stored presentation, often relying on the metonymic mapping of voice to identity to portray multiple characters or to *voice* their own inner thoughts in a sort of reported speech.

In the following extract from a video posted on-line through the AAC-RERC's outreach project, the well known augmented communicator, Michael Williams, invokes a number of imagined others, using alternative synthetic voices to *voice* their hypothetical utterances. Williams is widely regarded within the AAC community as a master presenter for his ability to speak eloquently and for applying a wide range of engaging presentation techniques such as switching between voices in order to add color and humor to his talks. Thus, although Williams consistently returns to the Huge Harry voice when voicing himself, he employs two different synthetic women's voices in lines 15-16 and 21-22 to represent the mother and teacher characters, respectively. Williams also uses a higher pitched synthetic male voice in lines 25-26 to represent the hypothetical protagonist's inner speech.

Transcript 5.2

Huge Harry	01 WHEN I WAS CONSIDERING WHAT I MIGHT
	02 SAY TO YOU TODAY,I STARTED THINKING
	03 ABOUT THE WORD LECTURE.
	04 THE WORD LECTURE HAS MANY MEANINGS, RIGHT
	05 RIGHT. THERE'S THE LECTURE YOU GET WHEN
	06 YOU ARE 5 YEARS OLD AND YOU'RE OUT
	07 IN THE BACK YARD WITH A FRIEND,
	[3 lines omitted]
	11 YOUR MOM, IN ORDER TO PRESERVE HER
	12 SANITY AND IN AN ATTEMPT TO
Woman #1	13 UPHOLD PUBLIC SAFTY STICKS HER HEAD
	14 OUT THE WINDOW AND YELLS
Huge Harry	15 <u>STOP THAT THIS INSTANT BEFORE YOU</u>
	16 <u>PUT SOMEBODYS EYE OUT</u>
Woman #2	17 THEN THERE'S THE LECTURE YOU GET
	18 AROUND NOVEMBER, WHEN YOU'RE
Huge Harry	19 IN 4 TH GRADE. THE TEACHER WALKS
	20 IN AND GOES
Woman #2	21 <u>NOW CLASS TODAY WE ARE GOING TO</u>
	22 <u>LEARN ABOUT THE FIRST THANKSGIVING</u>
Huge Harry	23 YOU'RE SITTING THERE,
	24 BORED OUT OF YOUR SKULL THINKING
Man	25 <u>GEEZ LOUISE NOT THE OLD PILGRIM</u>
	26 <u>AND INDIAN BIT AGAIN</u>

What separates Williams' use of multiple voices from Ted's switch has to do with the ways that Williams maintains a consistent narrator's voice by explicitly introducing the character that each new voice represents, characterizing the character's action through a metapragmatic quotative, and by returning to a consistent narrator voice – Huge Harry – after each quote is produced. Thus, for example, prior to his first vocal shift, Williams – using Huge Harry – states, “YOUR MOM...YELLS” (lines 11-14). Similar practices are used in both of the subsequent voice shifts in the extract above (i.e. lines 19-20 “THE TEACHER...GOES”, and lines 23-24 “YOU'RE...THINKING”).

Williams' rapid and regular switches between a number of distinct voices demonstrates his awareness of the mapping of voice to identity. However, it is no coincidence that this

reflective attitude emerged within the context of a prepared talk that Williams was giving to a group of university faculty and students. That is, Williams' talk, like most speeches or presentations to large audiences, was not composed live but was assembled prior to the event. As such, composing the talk assumes some degree of reflection on the talk itself and the expectations of the audience who is anticipated to be in attendance. Thus, far from demonstrating a pre-reflexive commitment to a particular sonic profile, Williams consciously uses multiple voices as a tool to inject color into his presentation and to elicit laughs.

In addition to reflections on voice that occur as part of composing a presentation or talk, congenitally disabled augmented communicators demonstrated a level of reflective awareness of the synthetic voices' genders. This feature appears somewhat anomalous in that congenitally disabled augmented communicators' voice choices did not regularly follow other physical or social traits (e.g. body size or regional background); however, throughout the course of my study **I never met an augmented communicator who used a voice that itself indexed a gender other than the one that the augmented communicator otherwise presented.** Moreover, augmented communicators would often claim that they would switch to a voice of the opposite gender as a joke (e.g. when making prank phone calls), only to switch back after their identity was discovered or the joke was over. Although this overwhelming pattern suggests that augmented communicators reflect on the congruence of gender and voice when selecting their voice (e.g. when setting up their device), it was also the case that augmented communicators would reflect on the inappropriateness of an opposite gender voice in the moment of speaking. This is demonstrated by the following vignette from the very first day of my fieldwork.

I met Jim at his home. After shaking hands with me Jim pressed a single button on the AAC device sitting on a tray in his lap, thereby producing the utterance, "HOW ARE YOU" in DECTalk's standard Perfect Paul voice. I responded that I was fine and told him a little about the drive in. When I finished, Jim looked down at his device and pressed another key; however, unlike the previous time when the device produced Jim's

utterance, this time the device was unresponsive. Jim continued to press on the keys, pushing them harder and harder until it was clear that his machine was broken. The silence from Jim's device was excruciating. Jim and his wife, Samantha, were to be the very first augmented communicators I would meet as an adult and I had little knowledge of how to communicate without a working device.

After around 15 minutes Jim's wife, Samantha, returned home. Samantha greeted me with a smile, took her AAC device from the basket on the front of her scooter and used it to say, "HELLO" in a markedly female voice that I came to know as Beautiful Betty. Samantha and Jim signed to one another in a form of American Sign Language (ASL) that I couldn't follow and a few seconds later Samantha handed Jim her own AAC device, an identical copy of the broken one that had been sitting on Jim's lap tray when I walked in. Jim pressed several buttons on the keyboard and again, the device produced an utterance: "PLEASE TAKE A SEAT," never acknowledging the fact that we had sat in silence for almost a quarter of an hour. I was relieved that Jim and I would be able to have our conversation. In fact, my relief was so great that it took me several seconds to realize that Jim's utterance was produced in the Perfect Paul voice that he had used on his own device when he greeted me earlier. After taking Samantha's device, Jim had not merely been typing his utterance, but that he had gone into the AAC device's menu and changed the output voice from Samantha's 'female' voice (DECTalk's Beautiful Betty) to the 'male' DECTalk voice (Perfect Paul).

One might object that Jim's attention to the voice was motivated by the fact that both he and Samantha were augmented communicators and his desire to keep his own speech distinct from that of his wife's. This, however, seems unlikely given that fact augmented communicators frequently find themselves in situations where more than one augmented communicator will use a particular voice at the same time. I experienced several examples of this at a recent conference that focused on issues experienced by augmented communicators, and included talks that were predominantly presented by augmented communicators. On the first afternoon, four male augmented communicators sat at the same table as I did: three of the men used DECTalk's Huge Harry, and the other used DECTalk's Perfect Paul. However, because of the conference din, I often had trouble making out who was speaking at any given moment.⁴⁴ In fact, this type of situation was not at all uncommon and did not seem to present any problems to the augmented communicators I spoke with. It thereby seems unlikely that Jim's motivation behind switching the voice output of his device was linked to his fear of confusing me.

5.1.2 Mouthspeakers and the Fixation of Voice to Body

Whereas congenitally disabled augmented communicators were apt to change voices regularly, they often encountered resistance from **mouthspeakers** who **assumed a one-to-one relationship between speakers bodies and their sonic signatures**. The strength of this conviction among mouthspeakers was driven home for me one evening while having dinner with my friends, Tim and Sunshine. Tim is an augmented communicator with athetoid cerebral palsy, a type of cerebral palsy that causes perpetual involuntary muscle movement in his arms/hands, face, and torso. Because his feet are largely unaffected, Tim has learned to drive his power wheelchair, type, and shake hands with his toes. In addition to being a trained minister with a master's degree in theology, Tim is the founder and chairman of the board of a non-profit corporation that connects children who use AAC devices with adult augmented communicator mentors. He is married to an able-bodied mouthspeaker, whom I refer to as 'Sunshine'.

Having accompanied Tim to church earlier in the day, I had asked him if he prayed with his device or his mouth-speech. He responded that he did so both ways but would often use his device when his wife was around. At dinner that evening, Tim delivered the pre-meal prayer, which he had typed into his device a few minutes ahead of time, and then played straight through as we sat down to our meal. Knowing that I was interested in the issue of voice, and wanting to embarrass his wife a little by putting her on the spot, Tim then asked his wife if she thought the synthesized voice was *his voice*.

Transcript 5.3

01 Tim: #....# (.) SO
02 #
03 Sun: but buns have a lot of calories
04 Tim: [# SUNSHINE]
05 Sun: [>that's why] I eat it with< bread
06 Tim: # IS
07 Sun: (h)(h)(h)
08 Tim: ## THIS
09 #..# ## MY
10 # #.# VOICE
11 # SO SUNSHINE IS THIS M[Y VOICE]
12 Sun: [THIS is yo]ur voi:ce.
((Pointing to device with knife))
13 Sun: and I don't like it when I
14 hear other people talking with his voice
15 Tim: ((laughing))
16 Cre: why not?
17 Sun: because this is HIs VOIce
((Open palm gesture indicating Tim head to toe))
18 Sun: ((laughing))
19 Sun: when I dream about Tim-
20 if I have any dreams about him
21 he talks..like . we do
((Rolling gesture at her own mouth))
22 Cre: um-hum
23 Sun: but his voice is this one
24 the computer voice
25 it's really weird (.)
26 Sun: to hear the little beeps
27 Sun: coming out of his mouth but
[6 lines omitted]
34 Sun: well what other voice would he
35 ↑have ↓though you know?
36 that's the voice:
37 Cre: Have you ever heard him use
38 a different voice (.) on his device?
39 Sun: once in a while and I don't like most of them
40 Cre: why not?
41 Sun: because this is the one I know
42 it's like if your wife all of a
43 sudden changed her voice

In this extract, Sunshine reveals a great deal about her experience of hearing her husband's voice. In particular, Sunshine demonstrates a commitment to hearing the sounds that

emerge from Tim's device as a full analog to the embodied process of vocalization, regardless of her knowledge that the sounds are actually produced via his AAC device. As such, Sunshine not only hears the sounds as words, but also hears them as words that are indelibly linked to Tim's *human* body. Here, Sunshine's mandates that Tim's voice is directly tied to his body reflect a powerful set of language ideologies that are tied to normative, able-bodied ('ableist') expectations for human embodiment and that seem to underpin much of the work done in AAC. That is, inasmuch as the physical human body can be said to reflect a historical ideal, ideologies of language undergird the assumed connections between voice and identity. As Merleau-Ponty explains, although "we can 'conceive a man without hands, feet, head' ...this is the case only if we take an abstract view of hands, feet, head...regarding them, that is, as fragments of matter, and ignoring their living function" (1962b:170). He goes on to explain that the experience and understanding of 'man' is dependent on the totality of his faculties, but that these faculties are contingent and not necessary, giving the example of a man with an irregular form of perception/cognition.

Along these lines, Sunshine applies her own able-bodied understanding of the one-to-one relationship between voice and identity – a relationship that is predicated upon the assumption that the physical body is the origin of speech sounds – to Tim's electronically produced voice. Here, Sunshine draws on two aspects of the linkage between physical body and voice that are necessary in cases where the voice emerges from the physical body: first, through identifying the Perfect Paul voice as Tim's (*only*) voice (e.g. lines 12 & 37-43), and second, through her mandate that the Perfect Paul voice is tied exclusively to Tim (e.g. lines 12-17). As such, Sunshine engages the semiotic mechanisms of language ideology known as 'fractal recursivity' and 'erasure'. According to Irvine and Gal (2000), 'fractal recursivity' refers to the process by

which a relationship that is salient at one level gets applied to another level, while ‘erasure’ refers to the process whereby inconvenient or contradictory facts are ignored in the service of promoting socially accepted understandings. In the case at hand, Sunshine is able to hear the Perfect Paul voice *as* Tim’s voice (and Tim’s alone) by applying the rule that differences between individuals motivate differences in their phonetic forms. That is, as Tim is distinct from other people, one will expect that his phonetic profile will be different from that produced by others. This, despite the obvious fact that the Perfect Paul voice is produced through a machine, which Tim supplements with his own vocalizations (cf. Ch. 4 of this dissertation).

Interestingly, however, Sunshine’s erasure of the device behind Tim’s voice is incomplete in that while she seems to tacitly reject the notion that a synthetic voice could be used by multiple people at any given time (e.g. lines 12-17), she accepts the sonic signature of the device within the process of producing Tim’s talk as part of *his voice*. Here, rather than merely erasing the rather inconvenient and incongruent features of Tim’s device-mediated talk, Sunshine includes them in her image of Tim’s body. One example of this can be seen in Sunshine’s discussion of the voice Tim uses to speak to her in her dreams (lines 19-27). Here, Sunshine explains that in her dreams Tim is a mouthspeaker. However, in addition to hearing Tim’s familiar sonic profile (Perfect Paul), Tim also mouth-speaks the “little beeps” that indicate that he is typing (lines 25-27). That is, Tim regularly employs a function on his device that causes the device to produce a high-pitched “beep” or tone whenever a button is pressed. In the transcript above, these sounds are indicated by a “‡” symbol. Thus, in lines 8-11, Tim presses two buttons on his device in rapid succession to produce the word “THIS,” followed by a series of 4 irregularly timed button presses before producing the word “MY” and three more button presses to produce the word “VOICE.”⁴⁵

Transcript 5.4

08 Tim: ++ THIS
09 ++ MY
10 ++ VOICE
11 ++ SO SUNSHINE IS THIS M[Y VOICE]

Nonetheless, Sunshine's commitment to hearing the Perfect Paul voice *as* Tim suggests that these ideologies operate at a level that is in itself pre-reflexive (cf. Kroskrity 1998). This understanding of the location of ideologies finds a parallel in Heidegger's explorations of discourse and language. Here, Heidegger notes that in order for speech to exist, hearing must present it as a possibility. "Hearing," he writes, "is constitutive of discourse" (Heidegger 1962:206). Yet 'hearing' is not conceived here as merely the capacity to receive bare auditory sensations but is instead itself predicated on Dasein's involvements in the world around it, its being concerned (*Besorgen*) – see ch. 3 of this dissertation. It is for this reason that Heidegger notes, "Dasein hears, because it understands." (Heidegger 1962:206). By positioning 'understanding' as existentially prior to *hearing*, Heidegger emphasizes the phenomenological mandate to begin with full, lived experiences, and only then to attempt to understand their structure. Moreover, Heidegger insists that it is Dasein's worldly involvement, its coping, that underpins its perception. That is, we do not encounter bare or 'pure' sensory data, but perceive those objects or actions with which we are already familiar: "What we hear 'first' is never noises or complexes of sounds, but the creaking waggon [sic], the motor-cycle. We hear the column on the march, the north wind, the woodpecker tapping, the fire crackling" (Heidegger 1962:207). In the case of *hearing* a voice, then, what we encounter most proximally is not the stream of sound or the voice itself, but rather we *hear* the Other, the *who* that is speaking, even before we come to understand what is said-in-the-talk.

Thus, unlike language ideologies that are grounded in social stereotypes of speakers, the language ideologies that underpin Sunshine's ableist perspective on her husband's voice seems to be grounded in a basic *familiarity* with the way voices are produced. In this context, the term 'familiarity' should not be taken to suggest that Sunshine has merely been exposed to the mouthspeakers' way of producing voices, but that this connection between speaker and speech is so regular for her as to constitute the unthematized background of her perceptions of the world (cf. Schutz 2011). One possible source for this tacit familiarity comes from Sunshine's own experiences of speaking and being spoken to by other mouthspeakers. That is, Sunshine's own body provides the basic structures that motivate her to experience the linkage between her husband and *his* speech/voice. Here, it is the presumably common mouthspeaker experience of *feeling* oneself speak that underlies the connection between speech and bodily being. That is, it is the simultaneous acts of willing the body to move, kinesthetic monitoring, and hearing the sonorous effects that unites the lived body with the voice (cf. Merleau-Ponty 1968[1964]:144-5; Yamagata 1998:17-18). And, as Merleau-Ponty points out, while my experience of my voice is therefore incomparably bound to my flesh, if I perceive the processes by which the other's voice is produced, "I almost witness, in him as in myself, the awesome birth of vociferation" (1968[1964]:144).

5.2 The 'NOT-Mineness' of the Synthetic Voice: Remembered Voice and Identity

If it is truly the case that Sunshine's own ableist bodily familiarity with the act of speaking stands behind her assertions connecting Tim's synthetic voice to his identity, then we might expect to find the residue of similar bodily understandings among the body images of augmented communicators with acquired disabilities. That is, if the connection between voice

and identity is predicated upon a sort of bodily familiarity that is made possible through able-bodied acts of speaking, it would seem reasonable that those augmented communicators who had previously been mouthspeakers but lost their voices due to a disease or later-life onset disorders would exhibit at least some of the signatures of the body familiarity they developed prior to their disabilities. And, in fact, this is precisely what we do find to be the case.

5.2.1 “I hear me”: AAC and the Voice in My Head

Kurt is a man in his early thirties. He is extremely bright, a well published author of poetry and prose, and a powerful advocate for disability rights at the state level. Up until a couple of years before I met him, Kurt was a mouthspeaker; however he lost his voice after choking on pineapple juice that his girlfriend at the time was feeding him. Because Kurt’s body is weakened to the point of being almost completely immobile due to a progressive disorder called spinal muscular atrophy (SMA), Kurt was unable to clear the juice from his lungs and throat. Kurt choked and died, but was revived at the hospital where doctors performed an emergency tracheostomy. Eventually the doctors installed a tube in Kurt’s neck that connects him to a ventilator that monitors Kurt’s own weakened breath and supplements his inhalations and exhalations. As a result of the tracheostomy and his progressive SMA, Kurt can no longer speak. Moreover, because he cannot contract many of his muscles, he cannot move his appendages perceptibly. However, Kurt can direct his gaze, raise and furrow his brow, blink, and produce a number of facial expressions by retracting his lips in various ways.⁴⁶

Kurt has rejected standard AAC approaches, preferring instead to communicate through a commercially available Apple computer. Because Kurt must remain horizontal (laying down) at

all times, a powerful iMac computer is suspended above his bed at home and a smaller MacBook Air is made available when he is outside his home.⁴⁷



Figure 5.2 Kurt's Room



Figure 5.3 Kurt's Mobile Unit

A few days after I met Kurt for the first time he typed: “So, I have a question. Are you used to people NOT using the AAC voices?” Being that Kurt was among the first augmented communicators I had worked with I did my best to evade the question. Responding to my question as to which synthetic voice he uses, Kurt wrote: “I go to great lengths not to.”⁴⁸ Continuing on, he typed, “The British voice is the least awful, I just can't like them. They pronounce things wrong and I cringe. It's just not me. I'd rather people just read.” Kurt and I continued to discuss his loathing of the computer voices for some time and have returned to these discussions several times since then. Kurt's rejection of the voices hinges **on the incongruences between the sounds that the synthetic voices produce and those that he remembers as *his own***. In the above quotes, this axis of difference is indicated though Kurt's comments about the synthetic voices' propensity to mispronounce words and his tolerance of a foreign – i.e. British – voice. That is, Kurt hereby discloses a particular body image against which he compares his synthetic voice, reflecting on his lost speaking voice with a sense of nostalgia. A mispronunciation occurs when the sounds produced by the computer do not match the sounds

Kurt imagines. However, by employing a synthetic voice that operates under the rules of a foreign dialect, one that Kurt does not presumably control or claim mastery over, such mispronunciations can be attributed to alternative pronunciation rules, thereby allowing him to experience the non-standard word shapes as something of a ‘quirk’ rather than a ‘mistake’ (cf. Bourdieu 1977a; 1991).

Moreover, Kurt’s memories of his mouth-speech voice motivated his decisions regarding developing a number of different techniques for communicating face-to-face and in multi-media formats. One example of this can be seen in the ways that Kurt handled his duties as best man in his brother’s wedding. He explained:

At my brother’s wedding I was the best man, so there’s the big giant scary toast. Mom suggested hooking the laptop to speakers and having Graham read it because “that’s your voice.” She meant well, but that’s so not my voice. So I did what I do when I read flash fiction or poetry at open mic nights, I just picked someone who I thought would sound like me, and he read great.

Kurt, in fact, relies on this strategy frequently. Often selecting a male speaker within a few years of his own age to read his text. One example of this occurred about a year before I met Kurt when he was featured on a popular television program that eventually won an Emmy. Because the program’s style leaned heavily on video with voiceovers, Kurt had the producers ask Johnny Depp to read the pages of output that Kurt generated during filming. Depp did a masterful job. In fact, betraying my own ableist, mouthspeaker biases, when I arrived at Kurt’s house the first time I was somewhat surprised not to hear the famous voice coming out of the computer. I admitted this to Kurt:

Transcript 5.5

01 CRE: so I- I mean having only heard you
02 speak in that video I have to admit
03 that when I read this
04 part of me still reads it in Johnny
05 Depp's voice
06 KRT: You hear Depp and I hear me :-p

Here, Kurt discloses not merely his continuing memory of the particular image of his mouthspeaker voice, but also reveals an important feature provided by the modality of text. That is, by virtue of its purely visible physicality, text is capable of stripping away or muting the speaker's sonic profile. It therefore allow readers to encounter not only the prosodic and other non-segmentable features in terms of their own expectations and interpretations of the work's connotations, but also allows them to imagine it with respect to the sonic profile – voice – of their choosing. It is in order to capitalize on this muteness of text that Kurt communicates almost exclusively in writing. For example, when chatting with Kurt in his bedroom, Kurt will type into a text window located on a massive television on one side of the room (see Figure 5.2). Interlocutors are invited to sit on the bed, next to Kurt, or in a recliner next to the bed so as to be able to see the television and read Kurt's words. This arrangement allows Kurt to 'speak' to his interlocutors though text, while hearing their mouth-speech responses. When Kurt is outside of his room, his assistant will often set up a laptop computer in such a way that both Kurt and his interlocutors can read the text as he types (see Figure 5.3). When an orientation that affords mutual access to the display is impossible, Kurt sends text messages or communicates through Instant Messenger.⁴⁹

5.2.2 Reproducing the Imaginary: Voice Banking and the Residuum of Mouth-Speaking

Kurt's commitment to remembering his own mouthspeaker voice appears to be a rather common phenomenon among both those augmented communicators who have lost their voices and the mouthspeakers with whom they regularly interact. As such, several efforts have been made to salvage the vocal profiles of individuals with progressive acquired disabilities – e.g. ALS or Parkinson's Disease – or those who can be expected to lose their voices as the result of an impending medical procedure – e.g. removal of some key parts of the vocal tract. One example of such efforts is known as 'voice banking'.

Voice banking refers to the process of collecting a number of high quality digital recordings of a mouthspeaker's voice with the expectation of using the recordings at a future time when the individual can no longer produce mouth-speech intelligibly. Mouthspeakers who are in the process of banking their voices are encouraged to record themselves speaking lists of frequently used words and phrases with the hope that they will frequently be able to use digitized recordings of themselves speaking. Additionally, mouthspeakers are encouraged to record themselves speaking lists of around 1600 sentences in order to get a representative sample of the ways that the speaker weights and stresses different phonemes, and to collect a full sample of the language's diphones – i.e. the total collection of possible adjacent phoneme pairs in a language. This inventory is parsed and used to provide donor sounds to a synthetic voice that can be used by an AAC device to produce novel utterances that the user did not record verbatim (Bunnell, et al. 2010; Yarrington, et al. 2008). In order to attempt to replicate the target (donor) voice, diphones are split into biphones, single units that comprise the end of one phoneme and the beginning of an adjacent next phoneme. Doing so allows the synthetic voice to produce a more

‘natural’ and fluid sounding voice by statistically sampling a number of measures of stress and duration applied to each part of a phoneme relative to others that it may transition to or from.

Participants in a pilot program at Boston’s Children’s Hospital have responded positively to the hospital’s approaches to voice banking, noting a number of favorable aspects. As Costello (2000) reports, recording individuals’ natural speech prior to the onset of a speech disability helps alleviate anxieties of patients and their families by allowing the patients to maintain a token of their healthy bodies in the midst of their disabilities. Voice banking also allows the individual to record utterances that project various attitudes in their own mouth-speech voice, allowing them to encode emotion or stance through the pitch and prosody of their digitally inscribed utterances. Additionally, Costello explains, the process of voice banking itself can help to emotionally prepare an individual for the upcoming disability.

Although recreated voices can be comforting at first, **few of the people I have contacted who have a voice based off of their own mouth-speech continued to use the voice for very long.** This is true in the case of the famous film critic, Roger Ebert, who lost his speech after complications resulting from surgeries to remove thyroid cancer. During a TED talk that Ebert gave, he played a sample of the voice that had been constructed for him based on audio taken from his numerous TV appearances and DVD commentaries. A company in Scotland constructed the voice at an approximate cost of \$20,000. Using the “Roger 2.0” voice, as he calls it, Ebert says:

WHEN I HEARD IT THE FIRST TIME, IT SENT CHILLS DOWN MY SPINE.
WHEN I TYPE ANYTHING THIS VOICE WILL SPEAK WHATEVER I TYPE.
WHEN I READ SOMETHING THEY WILL READ IT IN MY VOICE...IT
MAKES ME FEEL GOOD THAT MANY OF THE WORDS YOU ARE
HEARING WERE FIRST SPOKEN WHILE I WAS COMMENTING ON
CASABLANCA AND CITIZEN KANE.

Tellingly, however, Ebert only delivered a short segment of his presentation in the Roger 2.0 voice, preferring instead to use either the Alex voice – a voice that comes standard on Apple computers – or to have his wife and friends read a script he had prepared. In fact, Ebert originally prepared the excerpt quoted above for an appearance on the Oprah Winfrey Show and chose to reproduce the excerpt in his TED talk. That is, Ebert plays *a clip* of his voice, but does so in a way that separates it from his present being. For example, by introducing the clip as “RECORDED” and by including his greeting to Oprah, Ebert portrays the voice as something from another time, a figure that is separated from his present self who merely animates it (cf. Goffman 1981).

As noted above, Ebert’s present, occurrent voice is that of Alex, a synthetic voice developed by Apple Computers. To access this voice, Ebert, like Kurt, uses an Apple laptop when he is outside of his home. It is no accident that both of these augmented communicators with acquired speech disabilities have chosen off-the-shelf technology to fit their assistive technology needs. That is, as Lupton and Seymour (2000) state, people with disabilities are often fearful of drawing further attention to themselves. Dedicated assistive technologies such as AAC devices point to disabilities that may be masked or invisible in most situations. That is, because a speech disability only becomes apparent in conversation, some augmented communicators avoid displaying their AAC devices when they are not in use so as to keep that aspect of their (dis)ability hidden. Within my study this view was far more pronounced among augmented communicators with acquired disabilities than among those with congenital disabilities, who positively perceived the design of their devices. Whereas augmented communicators with acquired disabilities often searched out popular commercial equipment (e.g. iPads or tablet computers) or other devices that conform to normative design aesthetics (cf.

Pullin 2009), **congenitally disabled augmented communicators would cite the cost of their devices or the highly cryptic interface to support the notion that the AAC device was something of a status symbol.** Moreover, congenitally disabled augmented communicators often used the device to break the ice with new people, inviting them to look at it and observe how the augmented communicator operated it, harnessing the momentum of the conspicuous device into their own projects of social interaction. Additionally, whereas physical disabilities are often confused for, or taken as indications of cognitive disabilities, many congenitally disabled augmented communicators perceived their device as a symbol of their *ability* rather than *disability* in that it served as an indication of their capacity to use visibly high technology and to communicate complex thoughts.

5.2.3 Re-Imaging the Body: Claiming the Synthetic Voice

In spite of this, augmented communicators with acquired disabilities are *not* doomed to reject their synthetic voices indefinitely. In fact, perhaps the most famous augmented communicator to date provides a perfect counter point to any such claim. Physicist Stephen Hawking was diagnosed with ALS in 1963. Hawking's speech grew increasingly more dysarthric over the years, he preferred to use his mouth-speech, whispering to assistants who would re-voice for him (cf. Robillard 1994; 1999). Hawking eventually lost his speech entirely after a bout of pneumonia led to a tracheostomy in 1985. Since his operation, Hawking has relied almost entirely on one AAC device and only one output voice, a system and voice developed by a now extinct American company called Speech+. ⁵⁰ In one of his many published essays, Hawking comments on the voice and what it has allowed him to do since losing his voice. He writes,

01 I have also given a number of scientific papers and popular talks. They have
02 been well received. I think that is in a large part due to the quality of the
03 speech synthesizer, which is made by Speech Plus. One's voice is very
04 important. If you have a slurred voice, people are likely to treat you as
05 mentally deficient. This synthesizer is by far the best I have heard because it
06 varies the intonation and doesn't speak like a Dalek.⁵¹ The only trouble is that
07 it gives me an American accent. However, by now I identify with this voice.
08 I would not change even if I were offered a British-sounding voice. I
09 would feel I had become a different person.

(Hawking 1993:26)

In this excerpt, Hawking discloses a number of aspects of the relationship he has with the synthetic voice, drawing it into his own lived body. For example, Hawking begins by noting that people perceive the quality of the speech synthesizer as reflecting the user's cognitive ability (lines 01-05). As such, Hawking follows the sort of reflective understanding of the voice described by congenitally disabled augmented communicators above. That is, despite the fact that the voice is being issued from a device that exists beyond the boundary of the skin, the voice it creates provides the sonic extension of the individual wielding it. Here, it is not merely that the voice is capable of extending the individual's presence through what is said, but it is also perceived as a demonstration of the speaker's bodily abilities. This aspect of the embodied voice becomes more apparent if we were to substitute the presumed relationship between a high-quality voice and a speaker's intellect for a less characterologically grounded trait. For example, it might strike us as absurd that a nasally sounding synthetic voice would indicate that the augmented communicator had a sinus infection, or that an augmented communicator whose volume was turned down was tired or shy. Nevertheless, Hawking notes this as one of the key features as to why he chose the voice he currently uses.

In many ways, however, the argument that Hawking continues to use the Speech+ voice merely because of its quality is untenable. That is, while Speech+ was among the leading AAC

design firms in the mid-1980s, the voice it created required too much memory and did not offer significant advantages over more popular offerings by DECtalk (described above). Although to those who are unfamiliar with synthetic voices, the Speech+ and DECtalk Perfect Paul voices often seem quite similar (e.g. Mialet 2012), the voices are at least as differentiable as DECtalk's own multiple offerings. In the more than 20 years since Hawking lost his voice, a number of much higher quality voices have been introduced, including, for example, Apple's own Alex voice, which produces both extremely 'realistic' sounding speech, but is also designed to make inhalation sounds between sentences. One AAC developer suggested that such additional sounds help cue the listener that there is another sentence coming and solicit them to focus their attention earlier in utterance. Still, the fact that Hawking has continued to use the Speech+ voice suggests that there may be alternative forces at play in his decision over and above the voice's realistic quality.

One such pressure to maintain the Speech+ voice may actually be found in the alterity the voice presents. That is, while the voice is intelligible, it is also recognizably not human. Moreover, as Hawking notes, the voice was built on the model of an American accent, and is therefore recognizably not British and consequently not Hawking's natural speaking voice. These two levels of remove, however, may have actually endeared the Speech+ voice to Hawking. That is, the human relationship with machines prescribes a very particular degree of similarity and difference be maintained. While anthropomorphic forms are generally considered more desirable, this affection is limited by what is known as the "uncanny valley" – a point at which the technological reproduction of human form becomes disturbing and repellent (MacDorman, et al. 2009; Mori 1970). Thus, as Pullin (2009) points out, a synthetic voice that

sounds too foreign is likely to be rejected as unintelligible or robotic, while a synthetic voice that sounds too natural is likely to be rejected as “eerily realistic” or “macabre.”

Over the course of the several years he has used the Speech+ voice, however, Hawking notes that he has developed a connection with the voice (line 07) and that changing it would make him feel as though he were a different person (line 09). Here, Hawking’s comments suggest something of a stabilizing quality to the voice, in that what we observe of body comes to represent us to ourselves. In fact, Hawking has had numerous opportunities to change voices, and to ‘upgrade’ to more realistic sounding voices that require less memory and computing power. In every case, Hawking has rejected the voices as ‘not his voice’ (Mialet 2012). Hawking’s connection to his voice is quite interesting in that while he incorporates the synthetic voice into his own body image, he does so by drawing on the tacit body structure associated with having been a mouthspeaker. That is, although Hawking accepts the synthetic voice as his own, this connection is built on several of features that mouthspeakers use to relate to *their* voices.

One example of this can be seen in the fact that Hawking’s synthetic voice is unique. That is, like a mouthspeaker’s natural voice or Roger Ebert’s recreated voice, Hawking’s voice is one of a kind. Because of the fact that the Speech+ voice was created in an era before inter-platform portability was normalized, and was written in a now outdated computer language, only two copies of the voice survive, and both of them are in Hawking’s possession. Over the years, Hawking has employed a series of computer technicians, engineers, and graduate students to maintain the two copies so that he always has a back up. And while various companies have offered to replicate Hawking’s voice on a new platform, thereby giving him the ability to update to a more modern computer system, Hawking and the inventor of the voice – Walt Woltoz – have rebuffed these offers.

That Hawking recognizes the fact that his voice is unique can be seen in the ways he uses his voice. For example, during his many appearances on animated television shows, most notably, *The Simpsons*, Hawking insists on actually recording his lines in a studio rather than merely sending the output voice file to the editors. In discussing this with both augmented communicators and the designers and builders of AAC technology, many have remarked that although a digital recording of Hawking's voice would sound *like* Hawking's voice, it wouldn't sound *exactly like* Hawking's voice as it wouldn't have been played through his device with speakers and so forth. We might imagine that, for Hawking, hearing the Speech+ voice played from a digital file may induce the same uncanny sense as when mouthspeakers hear their own voices on a tape recorder.

While the Speech+ voice identifies Hawking, and connects the animated shapes to all that we already know about the brilliant physicist, Hawking also uses his synthetic voice as his image in more mundane settings as well. For example, a number of people who have had the good fortune to have met Hawking in person – often by contributing to a cause that he supports and thereby gaining access to an event where he is speaking – have explained that because Hawking can no longer give physical autographs, he allows people to use their mobile devices (e.g. phone) to audio record him saying a short message, often including his own name. Whereas a standard – i.e. written – autograph leverages the durability of text to inscribe something of the presumed presence of an individual, Hawking's audio-autograph uses now ubiquitous digital audio recording technologies to do the same. Moreover, in much the same way as the autograph draws its value from its connection with the identity of the signatory via the implicit connection with the celebrity's body, the value of Hawking's audio-autograph draws on an implicit connection between the Speech+ voice and Hawking's persona. Here, Hawking and those who record his

sonic signatures depend on the recognizable activity of philography to transform the Speech+ voice-based utterance into a ‘signature’. Like manual or physical works of art, Hawking’s audio-autographs are removed from daily living; they are produced and curated without the intent or value relations that other objects in their class depend on (Arendt 1958:167). That is, while Hawking’s audio-autographs are designed to connect the recorder (recipient) with Hawking’s presence, they are designed to do so at a more durable level than conversation exchanges and are not revered in the moments of their production for their contribution to an ongoing conversation. Moreover, like the acts of manual autography where the signatory’s mark is prized, Hawking’s audio-autographs are recordings, inscriptions of an ephemeral gesture. Unlike a signed name, however, Hawking’s voice must be reconstituted through playback in order to be made present in the collector’s world. Although these audio-autographs are not highly valued or traded, we might imagine that this fact arises at least as much from their infinite digital replicability (Benjamin 1969[1935]) as from their presumed intangibility.

In all, Hawking identifies with his synthetic voice in ways that trade on the tacit bodily familiarity of a mouthspeaker. As discussed above, not only does Hawking feel a connection to the voice as an image of himself in sonic extension, but he has actively worked to further this connection among others. Through his unwillingness to allow others to replicate the Speech+ voice on newer digital devices, Hawking has been able to maintain his sonic form as unique. It is thereby that such practices as recording his own lines in the Simpson’s studio and giving audio-autographs, Hawking has bolstered the iconic connection between the Speech+ voice and the collectively imagined celebrity that is ‘Stephen Hawking’.

5.3 From ‘Body Image’ to ‘Body Schema’

In all of the cases presented above, individuals reflected *on* the voice itself, thematically identifying their synthetic voices and remembered mouth-speech voices as objects of attention in their own right. Throughout this dissertation, I have sought to show the ways that the voice is a feature of the lived body. As such, the examples above reflect a particular mode of embodiment, one wherein the individual’s *own* body is elevated to a level of reflective attention in such a way as to occupy the predominant position within the individual’s perceptual field. This mode of attending *to* one’s own body is referred to as “body image,” and consists of those moments in which one turns his or her intentional orientation to his or her own physical form. As such, *body image* refers to both the immediate perceptions of one’s own body, as well as the more durable reflections, memories, or assessments of one’s physical form. Drawing on the distinction formulated by Head and Holmes (e.g. Head and Holmes 1911), Gallagher explains, “A *body image* consists of a system of perceptions, attitudes, and beliefs pertaining to one’s own body... A body image involves more than occurrent perceptions, however. It can include mental representations, beliefs, and attitudes where the object of such intentional states (that object or matter of fact towards which they are directed, or that which they are about) is or concerns one’s own body” (Gallagher 2005:24; cf. Gallagher 2001; Gallagher and Cole 1998[1995]). Thus, *body image* is in play in instances when one’s bodily form is explicitly taken account of, whether this is through perceptions of the body – e.g. looking *at* one’s torso in a mirror or explicitly attending to interoceptive sensations such as “fullness” – or in maintaining general assessments of the body – e.g. in beliefs such as, “I’m fat” (cf. Fuchs 2010; Legrand 2010; Mishara 2010; Murray and Sixsmith 1999).

However, *body image* comprises only one way in which the body is implicated in human experience. A second way in which the body is implicated in our experiences is through the ways it structures our engagements with the world around us, providing the basis for our relationships with objects and actions. This function of the body in relation to experience is what Gallagher (2001; 2004; 2005) refers to as “body schema.” Merleau-Ponty observed that the body played a tacit role in formulating our everyday, embodied experiences of, and in, the world around us. For example, he writes:

“I do not need to visualize external space and my own body in order to move one within the other. It is enough that they exist for me, and that they form a certain field of action spread around me. In the same way I do not need to visualize the word in order to know and pronounce it. It is enough that I possess its articulatory and acoustic style as one of the modulations, one of the possible uses of my body.”

(Merleau-Ponty 1962b:180)

Although Merleau-Ponty consistently used the term “*schema corporel*” to represent this relationship, Colin Smith chose to use the unfortunate term “body image” in his 1962 translation of *Phenomenology of Perception* (Gallagher 2005:20). Reserving the term “body image” in reference to the definition offered above, Gallagher defines a *body schema* as “a system of sensory-motor capacities that function without awareness or the necessity of perceptual monitoring...The body schema, in contrast [to body image], involves certain motor capacities, abilities, and habits that both enable and constrain movement and the maintenance of posture. It continues to operate, and in many cases operates best, when the intentional object of perception is something other than one’s own body” (Gallagher 2005:24).

Body schema thereby opens us to the idea that lived experience is not limited to reflections on the physical/objective body [*corpor*] but is always understood with respect to the place the body occupies, its situation or context. That is, by virtue of its schemata, the body

becomes the grounds of our experience and the means by which we inhabit the world. As Merleau-Ponty writes, “The body is our general medium for having a world” (Merleau-Ponty 1962b:146). That is, our body constitutes the pre-reflexive foundations of our *being-in-the-world*, since it is through our body that we come into contact with the world. Moreover, because we engage the world through our body, the body is responsible for coloring our perceptions of the world, for transforming objective properties of the world (e.g. the specific weight of an object) into subjective experiences (e.g. the ‘heavy-ness’ or ‘unliftability’ of an object). The world is thereby revealed in relationship to my body, taking on characteristics with respect to my projects and tasks. Merleau-Ponty explains,

Consciousness is not in the first place a matter of ‘I think’ but of ‘I can’...Movement is not thought about movement, and bodily space is not space thought of or represented...[rather]...In the action of the hand which is raised towards an object is contained a reference to the object, not as an object represented, but as that highly specific thing towards which we project ourselves...Consciousness is being-towards-the-thing.
(Merleau-Ponty 1962b:137-8)

Through much of his work, then, Merleau-Ponty explains the ways in which the bodily capacity to act grounds our perceptions of the environment. We should stress that in the midst of involvements, the body remains an invisible and unthematized ground from which the objective world appears. In the midst of unproblematic, everyday actions or worldly involvements, the body disappears (Leder 1990), and is essentially “forgotten” (Sartre 1956:429). And while not elevated to the level of conscious reflection, the body provides the fundamental point of contact between the self and the world. This means that my body is always my ‘here’ and ‘now’, the zero-point from which I orient to all other locations and times (Husserl 1989:61). But the body is also the means by which I act in the world. Here too, the body is ‘invisible’ to me, receding into the depths of my engagement. Explaining bodily disappearance through the example of

writing a letter, Sartre (1956:426) notes, “I am not in relation to my hand in the same utilizing attitude as I am in relation to the pen; I am my hand.” Sartre goes on to note that I attend to my hand only in so far as I attend to its operation within my task: “...my hand has vanished; it is lost in the complex system of instrumentality in order that the system may exist.” Our intentionality radiates through our body to reach the world around us as we intend the effects of our movements, while paying no attention to the movements themselves (cf. Schutz 1972[1932]; Throop 2010a). Moreover, the invisibility of our body in the midst of action leads us to impart our subjective experiences of objects to the objects themselves. That is, we see things as ‘liftable’, ‘heavy’, or ‘useful’, all without recognizing the role played by our own body and its relationship to the objects of our attention. It is therefore that Merleau-Ponty famously notes that “Our perception ends in objects, and the object once constituted, appears as the reason for all the experiences of it which we have had or could have” (1962:67).

5.3.1 AAC, Body Schema, and ‘the Elevator Problem’

A correlate to this understanding is the notion that as the body is modified, so too is the subject’s experience of a given environment. Such bodily modifications can be conceived of as ‘internal’ or ‘invisible’ adjustments – e.g. the acquisition of a belief, preference, or skill (cf. Dreyfus and Dreyfus 1999; Ingold 2000) – as well as external, physical changes. Physical changes may well occur on or beneath the surface of the skin. When a couch potato begins exercising regularly, he or she may eventually come to redefine what distances are perceived as ‘runnable’, objects as ‘liftable’, or obstacles as ‘climbable’. The body may also be extended through its incorporation of equipment as well (Bateson 1972; Heidegger 1962; Merleau-Ponty 1962b). With regards to the latter, Don Ihde concludes his discussion of the relationship

between the body and technology by stating, “We are our bodies—but in that very basic notion one also discovers that our bodies have an amazing plasticity and polymorphism that is often brought out precisely in our relations with technologies. We are our bodies in technologies” (Ihde 2002:138).⁵² This is not to say that our body becomes equipmental, and exists for us as does the tool in Heidegger’s famous discussion of the hammer (Heidegger 1962:98), but rather that tools and equipment can become like extensions of our body, extending our sensibilities and sensitivities beyond what our flesh affords.⁵³

As with any technology, AAC devices extend the augmented communicators’ bodily abilities to act, thereby altering users’ relationship with and perception of their environments in specific ways. Examples of this can be seen in the ways that individuals use their devices in everyday settings, exploiting technological affordances to carry out novel courses of action through the production of device-mediated utterances. Effectively, any of the examples offered in this dissertation can be seen for the ways they indexically presuppose the augmented communicator’s perception of the situation as one in which they have an ability to act. That is, in every act of using their devices to produce an utterance, the augmented communicators demonstrate a tacit sense of potency and a body schema that is afforded by their immediate access to their devices. As such, unproblematic or successful AAC device-mediated turns demonstrate the augmented communicator’s orientation to the situation through a body schema based on an occurrent body.

In addition to our body schemata based on our occurrent body, however, we also develop more longstanding, habituated relationships between our body and the world. By internalizing the regularities of embodied engagements with objects and environments, we develop body schemata that are based on a presumed, familiarized body. We may then sustain these body

schemata based on a ‘habit-body’, as Merleau-Ponty calls it, across a range of encounters and environments, including those when the occurrent body and habit-body are not identical. In fact, body schemata become especially visible in moments when they do not match with the individual’s actual, occurrent body, as it is in these moments that the body becomes conspicuous in its dysfunction.

What is particularly interesting in the present study of the embodiments of voice are the ways that augmented communicators with congenital disabilities and those with acquired disabilities rely on complementary body schemata to inform their perceptions of interactional environments. That is, just as a body schema provides the grounds for imparting objects with subjective qualities – e.g. ‘liftability’ – so too does body schema underpin individuals’ perceptions in and of interactional environments. One example of this can be seen in the ways that augmented communicators perceive particular moments within an interaction as ‘available’ to them as a place to take a turn at talk, and what forms of turns at talk are afforded in that moment.

A first point of reference here comes from the widely recognized understanding that augmented communicators produce significantly fewer first pair parts and initiate conversation far less frequently than do mouthspeakers (Blau 1986; Clarke 2005; Clarke and Wilkinson 2007; Harris 1978; Higginbotham, et al. 1988; Kraat 1985; Light 1989; 1997; Light, et al. 2002). While some have suggested that this lack of parity is a result of the ways that novice augmented communicators are taught to use their devices – i.e. primarily in response to teachers’ and parents’ explicit invitations and interactional initiations – (Ogletree, et al. 1992; Sigafoos and Mirenda 2002), others have suggested that the skewed distribution is a result of the ways the devices function in conversation. That is, as documented in Chapter 2 of this dissertation, AAC

device-mediated turns at talk take considerably longer to produce than those produced via mouth-speech. As a result, augmented communicators may rely on mouthspeakers' first pair parts to secure extended time slots in which to produce their contributions. Moreover, because of the assumption that second pair parts will be heard as responding to first pair parts, augmented communicators can capitalize on the contexts generated by mouthspeakers first pair parts, and thereby make use of various efficiency techniques – e.g. anaphora – in producing their own turns (Clarke and Wilkinson 2010b; Wilkinson 1999). Thus, the argument holds that augmented communicators perceive their interactional environments as a product of their abilities to perform competently within them, in terms of a body schema that is sensitive to the specific affordances of their devices and the social context in which they are embedded.

The plausibility of this second argument is bolstered by a phenomenon we might call 'the elevator problem'. The phenomenon is so named for the consummate example of the situation augmented communicators face when spoken to in an elevator. As Bill Hughes, an augmented communicator, recounts, "I was in the lift [i.e. elevator] with a [mouth-speaking] stranger when she began asking questions about university. It was an impossible situation because I realized that I would have no time to speak before one of us would reach our destination and have to exit the lift" (Paterson and Hughes 1999:606). I have personally witnessed this phenomenon several times with congenitally disabled augmented communicators, and every time the augmented communicator's response has been roughly equivocal. In at least two instances in my notes, the augmented communicator did not acknowledge the person speaking to them. When I questioned one of the augmented communicators he told me that there was no way he could answer the question in a way that would allow him to present himself as a competent speaker, so he merely ignored it. In effect, he preferred that the mouthspeaker think he was rude or didn't hear what

was said than to think he was incompetent (mentally disabled) or to cause a disruption by delaying one or both of their departures from the elevator (cf. Paterson and Hughes 1999). In a third instance from my fieldwork, Samantha, an augmented communicator, responded to my quip about almost missing the elevator behind her by raising her index finger in a ‘hold on’ or ‘one moment’ gesture, maintaining the pose until she exited the elevator, and reached a quiet place on the desired floor. We should note that ‘the elevator problem’ is paradigmatic, and is therefore not restricted to interactions that occur in elevators. Rather, we might use the term ‘elevator problem’ to refer to any situation wherein an augmented communicator is solicited to participate in an interaction that takes place in a context that, by virtue of its organization or location within other sequences of action, precludes the augmented communicator’s production of an appropriate or acceptable contribution.

Both of these responses (i.e. ignoring the mouthspeaker and producing a placeholder gesture) provide us considerable insight into the ways that the situation manifested to the augmented communicators. Each of the congenitally disabled augmented communicators perceived the events in terms of the prohibition on participation that they represented. As such, the situation presented itself in terms of an ‘I cannot’ rather than the usual, ‘I can.’ That is, the body schema of the congenitally disabled augmented communicators colored their perceptions of the moment, causing them to see it in terms of the impediment it presented to taking a turn at talk. Thus, when the congenitally disabled augmented communicator perceives the elevator problem, they inherently project and perceive the normative possibilities for turn taking. The augmented communicator manifests an act of perception that is at once informed by the ways that *one* acts, and by the limits presented by their own body schema. As such, this perspective is similar to that discussed by Young with regards to the “inhibited intentionality” of the feminine body. Young

writes, “When the woman enters a task with inhibited intentionality, she projects the possibilities of that task – thus projects an “*I can*” – but projects them merely as the possibilities of ‘someone,’ and not truly *her* possibilities – and thus projects an “*I cannot*”” (1980:147).

5.3.2 The ‘Phantom Voice’

While we might assume that augmented communicators with congenital and acquired disabilities encounter elevator problems with equal frequency, a crucial difference can be seen in the ways that the two groups attend to the problem. As discussed above, congenitally disabled augmented communicators often perceived their inability to participate in the proffered activity, using various means to diffuse their interactional responsibilities. Augmented communicators with acquired disabilities, however, did not often seem to share these same sensitivities. Instead, augmented communicators with acquired disabilities demonstrated an attunement to the interactional environment that did not take time limits or pressures into account.

This perceptual sensibility was revealed frequently in my encounters with augmented communicators with acquired disabilities. For example, I regularly witnessed augmented communicators with acquired disabilities who would begin typing a turn that seemed impossible to complete given structure of the context, e.g. when a passer by would greet them with a “how are you?” and the augmented communicator would begin typing a polite, and expanded response – e.g. “fine, how are you?” – only to complete it several seconds after the person had left or while the person was engaged in a subsequent conversation. Moreover, because of the nature of their affliction (e.g. ALS, SMA, stroke, etc.), augmented communicators with acquired disabilities usually suffer from various degrees of paralysis. As a result, it is often difficult to discern whether or not the individual is typing and leaving the intended interlocutor to assume

they have been ignored. When I queried my good friend, Kurt about this, he explained that so-called telegraphic utterances are rude and suggest a lack of commitment to the conversation. As a result, Kurt often continued to type his utterances, even after they had been guessed by his interlocutors, and sometimes after his interlocutors had walked away.

Kurt's commitment to producing his entire utterance, completely, and regardless of the structural limits of the context in which it was produced demonstrated his ongoing commitment to a particular linguistic practice, grounded in an able-bodied familiarity with the capacity to produce his utterances as speech rather than text. For one, because mouthspeakers can vary the rate at which they produce an utterance, they can often modify the rate of production to accommodate the specific temporal boundaries of an interaction. Augmented communicators are typically restricted to comparatively slow rates of utterance production and cannot therefore augment their rate on the fly. Secondly, social expectations around genres of interaction and the structures of utterances that will take place therein are derived from *normative* (i.e. able bodied) capacities to act. On this issue, disabilities studies theorist, Bill Hughes (1999) notes that impairments arise in *social* situations, situations where individuals are unable to participate in socially constructed and normalized environments. He explains that understanding impairment requires an understanding "of the sensual and sensate relationships between bodies, and an appeal to the ways in which perception is a social act of social constitution" (Hughes 1999:164). As such, Hughes recognizes one of the central tenets of ethnomethodology, namely that the expectations and prescriptions for participation function, in large part, according to established principles of interaction (cf. Garfinkel 1967; Heritage 1984b; Livingston 2008). However, when a speech disability prohibits the individual from engaging with others in accordance with the socially preferred practices, the individual is often forced to choose which aspect of the

preference he/she will violate. With regard to the issue at hand, this means that individuals with speech disabilities are forced to choose between violating norms of content – what they say – or norms of duration – how long it takes them to say it. And, whereas congenitally disabled augmented communicators regularly violated the norms of content – discussed above – Kurt would ultimately violate the norms of duration. Rather than abstaining from typing, or producing truncated utterances in order to fit the turn into a time-limited slot, Kurt regularly produced lengthy, grammatically complete utterances that far outran his intended interlocutors' ability to attend to them.

Ultimately, I would suggest, this participation style reflects a mouthspeaker's familiarity with voice in that it demonstrates Kurt's perception of his environment according to a set of sensibilities that are themselves predicated on an able-bodied (i.e. mouthspeaker's) ability to act. That is, in encountering such situations where the elevator problem might manifest, Kurt often perceived those situations in terms of a set of potentials to act that he had habituated over his many years as a mouthspeaker. Rather than grasping the situation in terms of the "I cannot" manifest by his occurrent body, Kurt often tacitly perceived the "I can."

A dramatic example of a mismatch between Kurt's remembered body schemata and his occurrent body occurred during a trip to the shopping mall when I accompanied Kurt, his girlfriend, Angela, and Kelly, Kurt's assistant/nurse to buy a designer computer bag. When we entered the store, Kurt's girlfriend and nurse parked his wheelbed and began browsing the store. I glanced at Kurt after a few seconds and noticed that he was staring at me intensely and fluttering his eyebrows – the most obvious movement that Kurt has at his disposal. Sensing a problem, I asked Kurt if he was ok. He responded by closing his eyes tightly, his manual signal for "no." I called to Kelly and she hurried to Kurt's side.

Kelly arrived and began ‘alphabetting’. Alphabetting is a ‘no-tech’ communication process wherein the mouthspeaker speaks each letter of the alphabet at a regular pace until the augmented communicator gives her a sign to stop, thereby selecting the last letter spoken.⁵⁴ The able-bodied partner is encouraged to guess at the augmented communicator’s words and at the phrase once they have sufficient information; however, doing so can also be something of a double-edged sword as incorrect guesses can lead to lengthy repair sequences. Although a competent alphabetting partner, Kelly often found it difficult to remember all of the letters selected in words and longer phrases and frequently typed Kurt’s letters on an iPod touch. I stood next to Kelly as she alphabetted with Kurt, following along and watching over her shoulder as she typed. Letter by letter, Kurt spelled out the phrase, “could you check my air.”

As noted earlier, the nature of Kurt’s disability (SMA) led to his inability to breathe independently. As a result, Kurt depends on an assistive ventilator, using an older, and more temperamental portable model whenever he is out of his home. Kurt was connected to the portable vent through a fragile and flexible air hose. We later discovered that this hose had developed a large tear from rubbing against one of the wheels on Kurt’s bed as we walked from the car to the mall and through the mall to the store. As a result, Kurt had been receiving only a fraction of the air he needed. After several attempts to apply a makeshift patch to the hole in the tube, we eventually found a temporary solution and conveyed Kurt back to his van where Kelly found a spare air tube.⁵⁵ Kurt later counted the incident among the 12 times that he thought he was going to die.

In effect, this instance constitutes an extreme example of the elevator problem in that Kurt was faced with a situation that itself imposed a rather stark and severe endpoint. However, despite being faced with the limits of the encounter (coterminous with the limits of his own

existence), Kurt resisted the sort of telegraphic utterance style that is common among congenitally disabled augmented communicators. That is, instead of offering a simple, concise phrase or keyword, Kurt produced a grammatically complete question. A question that, by virtue of the number of words used, consumed several more seconds than would something along the lines of spelling out “a-i-r,” and, by nature of English SVO structure, postponed the production of the most crucial element – i.e. the word “air.”

While this vignette offers a somewhat spectacular example, the grounds of this perception is no different from that which underpins the ways that augmented communicators with acquired disabilities encounter other elevator problems (e.g. responding to the greetings of individuals who are unable or unwilling to wait for the full utterance). In each of these situations, augmented communicators with acquired disabilities may rely on a habitually informed body schema that is based in the abilities they formerly exercised. In such cases, augmented communicators with acquired disabilities manifest something akin to what Merleau-Ponty discussed in terms of the ‘phantom limb’ – the sense that an amputated appendage is still present and working with their body in the way it previously had. This *sense* of the body as it was takes shape in the individual’s body schema rather than body image, and as such the phantom limb phenomenon operates and discloses the individual amputee’s pre-reflexive engagements with the physical world. Effectively, what is shown by the phenomenon is the way that the individual retains, projects, and perceives the practical field known through their former body (Merleau-Ponty 1962b:81-2).

Although augmented communicators with acquired disabilities often lose their abilities to move their arms, legs, and head, the body part of interest here is the voice. Thus, we might term the phenomenon presented above as the ‘phantom voice’, thereby calling attention to the

ways that individuals' perceptions of an interactive environment may be grounded in their habituated but not occurrent body. Thus, rather than seeing a physical world of objects that solicit our bodily manipulations – e.g. in the ways that doorknobs call us to turn them with our hands, or stairs appeal to us to climb them with our legs – the experience of a phantom voice refers to the ways that individuals perceive conversational slots to be filled with our talk. Specifically, however, these slots solicit us to produce particular forms of talk, the preferences for which having been socialized over the course of our lifetimes and durably installed in us as a *habitus* (Duranti 2009c:220; cf. Bourdieu 1977b; 1984; Ochs 2002; Ochs and Schieffelin 1984). Thus, as I have argued, while augmented communicators with acquired disabilities may readily substitute their AAC devices for their mouth-speech, they continue to perceive interactive environments in terms of the affordances, constraints, and socially preferred actions with which they are habitually accustomed.

5.4 Summary and Conclusions:

In the first part of this chapter I examined the ways that augmented communicators related *to* their synthetic voices as a product of their type of speech disability. I suggested that congenitally disabled augmented communicators think about their voices as modular parts of their living bodies, seeing the particular sonic profiles (e.g. Perfect Paul or Huge Harry) as exchangeable for equivalent voice organs without disrupting the individual's notion of self or body. I then set this relationship into relief by looking at the ways that augmented communicators with acquired disabilities hold fast to the notion of a voice that is grounded in the way mouthspeakers experience it. That is, when voice emerges directly from the body, it does so with a singularity that assumes a connection between the sonic and physical forms. Whereas

congenitally disabled augmented communicators do not strongly equate the sonic profile of their synthetic voice with their own identities, augmented communicators with acquired disabilities tend to draw from an able-bodied familiarity with the voice, continuing to perceive the synthetic voice as the unique sonic extension of the individual body. I concluded that whereas mouthspeakers demonstrate a one-to-one relationship of voice and identity, which they maintain even after losing the ability to produce mouth-speech, congenitally disabled augmented communicators do not hold these same proclivities.

In the subsequent sections of this chapter I examined the ways that augmented communicators used their voices. Here, I turned from looking at the augmented communicators' relationship with their voice as a function of *body image*, to looking at the ways that voice betrayed the augmented communicators' *body schemata*, the tacit, pre-reflexive senses of one's own body-within-the-world that give rise to individual perceptions of objects and events. Here the divide between augmented communicators with acquired disabilities and those with congenital disabilities is visible through the groups' perceptions and the practices they generate. This discussion furthers phenomenological postulates of the interplay between embodiment and perception by examining the ways perceptions of dynamically unfolding interactional environments, like perceptions of physical environments, depend both on the individual's bodily capacities to act and the cultural preferences regarding such action (cf. Csordas 1990; 1994). Thus, I have suggested that augmented communicators with acquired disabilities may continue to pre-reflexively apprehend interactional environments in terms of able-bodied sensibilities, even after having lost their abilities to act in those environments in a normative way.

Conclusions

In this dissertation I have endeavored to shed light on aspects of experience associated with augmented communication. The stories I have recounted and events I have explored in this dissertation furnish us with several points from which to view the everyday worlds into which augmented communicators and their interlocutors are thrown. And, while I have highlighted individual agency and humanity in their making throughout this dissertation, it is important to note that the experiences and worlds depicted here are not the sole products of isolated individuals, but emerge through an inescapable entanglement with others. As such, worlds are neither ready-made nor the products of individual actions or interpretations, but are spawned in our sociality.

In particular I have sought to focus attention on the ways in which both augmented communicators and mouthspeakers attend and respond to what amount to various dimensions of what we might refer to as 'Being-with'. As Husserl (1965:150) points out, "to live as a person is to live in a social framework, wherein I and we live together in community and have the community as a horizon." That is, a central dimension of being human is being among other humans, being influenced and affected by others and their experiences. And while this point is in many ways at the center of the field of anthropology and the social sciences, the range of *experiences* of 'being-with' available is often neglected in our investigations as we search for *normative* social structures and the organizing principles that generally govern social collectives. However, by drawing from diverse forms of data, I have sought to expose what are otherwise often veiled dimensions of these experiences. Doing so, I have sought to show how the modes of

‘Being-with’ that are available to augmented communicators and their interlocutors and the ways that these modes manifest often defy *normative expectations* for ‘able-bodied’ mouthspeakers.

In viewing these data, we may be tempted to take a strongly relativistic perspective, accepting that these experiences of ‘Being-with’ are limited to a population of a few million augmented communicators and their interlocutors. However, to do so would be miss out on the range of applications and illuminations of the otherwise tacit dimensions of interpersonal engagement that have been brought to light herein. Incorporating this range, however, requires us to see **the disabled body as a product of culture, rather than detached from it.**

About ten years before the turn of the 21st century, the disability rights movement in the UK began fighting for a new political approach to ‘disability’, reframing the concept as a socially produced problem rather than one endemic to individuals’ biomedical condition (Hughes 1999; Hughes and Paterson 1997; Oliver 1990; Shakespeare and Watson 2001). Within this perspective, the medical ‘impairment’ is cordoned off from the personal, subjective experience of ‘disability’. As such, the physical body is ceded to biomedicine, while the lived body is retained as the experiential center of *being*. Because culturally *normative* images of the body underpin ideas of common sense (Garfinkel 1967; Geertz 1953), intersubjectivity (Ingold 2000; Jackson 1989), and culture (Becker 1994; Csordas 1990; 1999; French 1994), the disabled body poses challenges to the social order (Paterson and Hughes 1999). As such, ‘disability’ is characterized specifically by the disruption it presents to the *enactments* of ‘common-sense’.

Moreover, when viewed in light of the ethnomethodological approach to community membership as a product of common sense knowledge and routine, it is no stretch to see disability as a naturally occurring counterpart of Garfinkel’s famous ‘breaching experiments’ or ‘incongruity procedures’ (Garfinkel 1967). Although the ethnomethodological focus on

knowledge highlights individual agency within the accomplishment of social action, it often does so by taking as given the individual's *ability* to enact the normative or preferred operations. Because social actions are typically performed through bodily manipulations – e.g. speaking, gesturing, or otherwise ‘acting’ in a particular way – the majority of work in CA and ethnomethodology has therefore tended to focus on individuals with ideal – i.e. ‘normal’ – bodies and bodily abilities. Recently, however, a number of authors have begun applying the tools developed in CA and other ethnomethodologically-inspired fields to the study of people with disabilities, attempting to uncover the structures of interaction that manifest in the context of impairments (Atkinson and Heritage 1984; e.g. Clarke and Kirton 2003; Clarke and Wilkinson 2005; 2006; Clarke and Wilkinson 2010b; Goodwin 2003b; 2004; Wilkinson 1999; Wilkinson, et al. 2003; Wilkinson, et al. 2011; Williams 2011). And while these approaches have done much to elucidate the ways that people with disabilities harness, approximate, and/or circumvent ‘normative’ modes of action, they have also opened a space to reflect on the normative structures.

In fact, this can be seen throughout the preceding chapters where the effects of an individual's disability set normative practice into relief by ‘breaching’ the accepted, invisible norms. However, rather than bracketing the ‘common-sense’ *knowledge* shared among community members, physical disabilities, like the ones experienced by the participants in my study, disrupt the individual's *ability* to *enact* normative ways of being, thereby shedding light on the expectations for physical ability implied in normative social practices, including the prescribed recognition of the environment and its affordances.

The impact of such breeching can be seen in the first section of this dissertation where I explored the temporal and technologically mediated conditions of shared experience and mutual attunement. While the experience of co-presence is ordinarily considered to arise from the

objective conditions wherein two or more individuals have some form of access to one another within a single *spatial* environment at a given moment, Chapter 2 demonstrates the importance of *shared* temporal orientations to the *unfolding* of interactional units within the intersubjective frame. That is, although several studies of conversation have argued that intersubjectivity is predicated upon a shared orientation to the referential function of interactional units, I demonstrated how a shared *temporal* orientation to the interactional unit is also crucial to the most profound types of intersubjective *mutuality*, such as that characterizing face-to-face interaction and similar engagements with the Other. Moreover, I showed that because of the ways AAC devices are designed and operated, augmented communicators and their interlocutors often experience a form of intersubjective slippage when the participants are unable to sustain mutual temporal orientations to the unfolding of interactional units.

The central argument of Chapter 2 depends on our ability to see interactional units as temporal objects – intentional objects that have a temporal element as part of their being. Temporal objects are experienced with a ‘temporal halo’ such that the experience of them at any moment includes both retentional and protentional aspects, thereby uniting the present experience with both that which has passed and that which is yet to come. Any object of attention that becomes synthesized with others in an unfolding progression can rightly be considered a temporal object. Because interactional units are created in a stepwise manner, be it through the diachronic unfolding of an utterance or the sequential reciprocal exchange of semiotic displays of attention between interlocutors, the objects themselves maintain an innate temporality. Interlocutors can therefore attune their temporal flows (*durée*) by collectively orienting to the unfolding of interactional units as they are produced. This sort of harmonization is crucial to our experience of a particular type of ‘being-with’ Others known as the ‘We-relationship’, a state in

which we share in a single vivid present with others. That is, it is this experience of attunement with the Other that allows us to experience our compresence with an Other in terms of a *shared* presence, allowing us to experience our *mere* co-incidence as a ‘we’.

Through close analysis of the talk, gesture, gaze, facial expressions, and the movements required to manipulate an AAC device, Chapter 2 demonstrates how the means by which augmented communicators produce their utterances ‘breaches’ the temporal immediacy that characterizes face-to-face interaction, thereby causing forms of intersubjective slippage between themselves and their interlocutors. That is, because AAC-mediated utterances must be typed before they are produced publicly, there is always an additional step separating utterance production from utterance performance. As such, interlocutors are unable to maintain full attunement with the augmented communicator’s *durée* whilst the augmented communicator is composing his/her turn. While studies of talk-in-interaction have long shown the preference for progressivity, the sort of violations of temporal expectations documented here illuminate the necessity of temporality within intersubjective attunement.

Again, while it is tempting to end our investigations of this phenomenon here, such ruptures are hardly limited to augmented communicators and their interlocutors. Rather, it takes little reflection to consider how the same issue arises in our use of widespread communications technologies. It is unlikely that any reader will not have had the experienced ‘lag’ in an overseas telephone call, a text message or IM interaction, speaking through a relay or translator, or another form of on-line engagement with another human. In each case some indication was given that the Other was acting (‘saying’), but the disclosure of what was *to have been* ‘said’ was withheld temporarily. Such modifications to the *typical* face-to-face arrangement may be treated as an inconvenience and overlooked as anomalies to those of us who have habituated a particular

form of intersubjectivity that demands mutual temporal attunement; however, we might also want to consider the potential such technologies have for reshaping the *normative* expectations and experiences of ‘being with’ others. That is, as such technologies that modify primordial face-to-face temporality proliferate, so too may the acceptance of the interactional orders they establish. In any event, studies of sociality can neither deny the importance and consequences of such technologically mediated forms of compresence, nor expect that the experience of ‘Being-with’ that they provide will be equivalent to that of normative face-to-face interactions.

This is not to say that such expectations and experiences of sociality will change uniformly or will be symmetrically distributed among the participants in any given interaction. In fact, Chapter 3 of this dissertation is dedicated to showing the ways that the mouth-speaking interlocutors demonstrate their resistance to the temporality of ‘Being-with’ generated through one individual’s use of an AAC device. In particular, I showed how the mouthspeakers employed various strategies to attempt to repair the normative temporal frame and reengage with the augmented communicator on more familiar terms. Such an examination of the cross purposes of speakers is crucial to understanding the phenomena of ‘Being-with’ as it allows us to see not only the individual moments and tokens that comprise social engagement, but also exposes the deeper significance nested in notions like ‘personhood’. For example, in Chapter 3, I examined the ways that individuals’ full humanity became vulnerable in the face of the intersubjective slippage outlined in Chapter 2. Though the analysis provided in Chapter 3 we saw the *experience* of ‘Being with’ was the key to both the mouthspeakers’ and the augmented communicator’s full humanity. And, that such an experience arose in the midst of the interaction, rather than from the individuals’ durative innate abilities to participate in normative structures of interaction.

Building directly from the first section of the dissertation, the second group of chapters interrogates ‘the voice’ as a phenomenon within the experience of ‘Being-with’. That is, although the concept of ‘voice’ includes both the literal sense of expressive vocalizations as well as a host of metaphorical extensions, in each case ‘the voice’ is that of a speaker who takes his place vis-à-vis an audience and within a particular situation (Goffman 1964). Thus, in looking at the ways augmented communicators produce their symbolic displays publicly, I have shown that the augmented communicator’s ‘voice’ does not exist in a social vacuum and cannot therefore be encountered in terms of its own bare qualities. Rather, the augmented communicator’s voice is always instantiated in the shared environment of interaction, wherein interlocutors collaboratively achieve context at every level (cf. Goodwin and Duranti 1992; Schutz and Luckmann 1973:130; 1983:5). Here, the actions are subject to others’ perceptions, where they are experienced against a background of expectations built out of the sedimented history of individual experiences and culturally prescribed normative characteristics. As a result, encountering the augmented communicator’s voice, be it in the midst of conversation or as an object of thematic reflection, is always an experience that calls forth the individuals’ ‘familiarity’ with ‘voice’ and socially established practices of ‘voicing’. And, while such familiarities typically operate at the level of tacit knowledge, and thereby frequently go unexamined in our investigations of the social order, the preceding chapters have shown moments when these background components of our experience are elevated to an observable position.

For example, in Chapter 4 I observed the deep intertwining of ‘voice’ and ‘speaker’, shedding light on our tacit understandings of sociality through an examination of another sort of temporal breach. In particular, I showed how utterances that had been pre-stored in an augmented communicator’s device raised new concerns relating to the *embodiment of voice* and

the *act of 'voicing'*. In Chapter 4, I showed how an augmented communicator was able to actively accomplish the merger of his lived body and a pre-recorded narrative. The augmented communicator thereby claimed the 'voice' emanating from his device as an extension of his immanent self, rather than allowing it to serve as the disembodied echo of a bygone other.

The elemental construction of 'the speaker' has long been a theme in studies of interaction and agency (Goffman 1979) and has led many authors to explore the distribution of speaker roles in a variety of settings (Goodwin 2004; Goodwin and Goodwin 2004), including interactions including an augmented communicator (Clarke and Wilkinson 2010a; Pilesjö and Rasmussen 2011; Wilkinson, et al. 2011). In these latter studies, the fact that the augmented communicator's words are the objective material products of an AAC device is taken to indicate a level of remove between the augmented communicator and the *animator* of those words. That is whereas these studies locate the augmented communicator within the role of utterance *author*, they uniformly afford the plastic box located *outside* of his skin the independent role of *animator*. Chapter 3 provides grounds to refute this claim by demonstrating that our attention to the corporeal enactment of speaking cannot be limited to the 'speech' itself, but must include an eye to whole being behind the utterance.

Thus, in Chapter 3 I argued that along with negotiating the physical extensions and dimensions of the body that are negotiated at any given moment of speaking, so too are the temporal parameters of the self negotiated. Moreover, as with the other issues of temporality discussed above, these propositions find often overlooked parallels in the everyday experiences of 'Being-with' encountered by normatively embodied individuals. One need only think of the experience of listening to a presenter read his/her talk at a conference, or remember a moment

when we might have been engaged with pre-rehearsed speech to acknowledge that the our experiences of ‘Being-with’ are always negotiated in the moments of performance.

Tracing this relationship between body and voice further, Chapter 5 examined the disruption of normative modes of embodiment by looking at the ways that individuals experience the voice as the product *of* the body. In this chapter the issues that arise in response to the breach of disability are dealt with explicitly through contrastive examinations of the ways that augmented communicators with congenital and acquired disabilities experience the synthetic voices. Here, I showed how lifelong augmented communicators demonstrated an ambivalence toward aspects of voice that occupy areas of central concern to mouthspeakers who either *have*, or *have lost* the ability to speak. Specifically, whereas mouthspeakers develop a strong relationship with their own voice, recognizing a one-to-one link between their sonic profiles and their individual identities, congenitally disabled augmented communicators do not maintain such a sensibility. Perhaps here more than anywhere else in this dissertation we encounter the issue of ‘familiarity’ head on. As noted among phenomenologists, ‘familiarity’ sits behind the human ability to engage in meaningful action by supporting the myriad unthematized relationships with those objects that comprise the background to an individual’s immanent engagement. That is, our pre-reflexive understanding of our world allows us to engage in the projects that make us who we are. It is what allows us to be at home in our world, rather than merely present in a space.

The examinations of voice provided in Chapter 5 show how the bodily capacity to act sits behind our experiences of our environments and our expectations for others. Here, the in/ability to produce mouth-speech colors the ways that individuals perceive the connection between self and voice, and the ways they apply it to others. The ‘familiarity’ of those who are unable to

produce mouth-speech sets into relief the ‘familiarities’ of those with normative bodies, exposing what appears to be a ‘natural’ connection between speaker and voice to be little more than sedimented habit.

Although many of the differences between the ways that individuals with differently enabled bodies experience the voice can be seen in the ways they explicitly reflect on this connection between speaker and speech, the disparities extend into more tacit domains as well. In particular, in Chapter 5 I also examined the ways that congenitally disabled augmented communicators and augmented communicators with acquired disabilities *used* their AAC voices differently. Here, I explained how the two groups’ familiarities with voice and their abilities to manipulate it within particular, temporally constrained circumstances manifested in contrasting perceptions of those circumstances. In particular, I demonstrated how otherwise invisible familiarities could be seen in the ways that groups of individuals attend to an environment and their abilities to act within it.

By examining the ways that augmented communicators with acquired disabilities differ from augmented communicators with congenital disabilities, this chapter demonstrates ways that our ‘familiarities’ and proclivities are grounded in a lived body, which extends well beyond our capacities to act within a particular situation. As such, this discussion relates directly to such theories of the body in culture as found in Bourdieu’s habitus (Bourdieu 1977b; 1984) or Csordas’ cultural phenomenology (Csordas 1990; 1993; 1994). Additionally, however, by examining both the contexts of both congenital and acquired disabilities, this chapter demonstrates how familiarity is not merely a normative phenomenon, but is also dependent on the physical capacities of the individual.

In the chapters of this dissertation I have attempted to provide a sense of the manifestations of ‘Being with’ that occur through augmented communication. Doing so lead me to examine the communication that occurs through, and despite, mediating forms. In order to develop this focus on the structures and experiences of interaction I drew from a number of distinct theoretical frameworks and methodological approaches, combining a close analysis of interactional substrates with a phenomenological approach to ontology, ethics, and the structure of attention. This blend of fields allowed me to show the social grounding and collaborative achievement of interactional phenomena, including the experiential structures in which these phenomena manifest. It is my hope that through developing this union of perspectives that I have contributed to each of these fields.

I am deeply optimistic in my belief that this dissertation may serve as an example of the valuable insights that can be gleaned by studying the lives of people with disabilities. And, moreover, that in addition to the insights that can be gained by reflecting on ‘normative’ behavior in light of the breaches that disability presents, we must not loose sight of the possibilities that these insights raise. That is, to the extent that we accept that disability is itself a social product, we must also accept that fuller understandings of the social structures, practices, ‘common-sense’, and otherwise that contribute to the experience of disability may be useful in the attempt to intercede. And, specifically, to build, create, adjust, and design for a world that will augment humanity and contribute to the full human *being* of those with whom we work.

¹ See also Ochs and Schieffelin (1984) and Throop (2010:281; 2012) on how the alterity encountered through anthropological fieldwork casts the ethnographer's pre-reflexive orientations and understandings into relief.

² Captioned Telephone is a service that provides a real-time transcription of incoming speech. During a call, the two parties speak to each other directly, but the client uses a special phone or standard computer to connect to an operator who uses voice recognition software to provide immediate captions of the incoming voice. The service is most useful for people who can speak intelligibly, but cannot hear.

³ TTYs (Teletypewriter) or TDDs (Telecommunication Device for the Deaf) are electronic typewriters that transmit text over a standard telephone connection. These devices were/are primarily used in telephone interactions with people who are deaf or hard of hearing. Although the devices are still used, their popularity has waned considerably with the popularity of the personal computer.

⁴ TRS (Telecommunications Relay Service) is system through which individuals can use their TTY/TDD/PC to complete telephone calls to hearing/speaking persons by connecting through a specially trained operator. In these calls, the operator acts as an intermediary between the TTY/TDD/PC user and the hearing/speaking individual, transcoding and relaying messages to each party in the appropriate medium. VRS (Video Relay Service) is similar to TRS, but relies on an internet-based video connection to allow the operator and 'client' to communicate via sign language instead of text.

⁵ The use of facial movements located close to the eyes allows interlocutors to maintain eye contact while interacting and capitalizes on the tendency for the eyes and surrounding area to be the least/last impacted by most motor impairments.

⁶ In the rare instances where dynamic prosodic manipulation techniques have been tested, users are forced to manipulate joysticks or other manual controls in real time (Todman, et al. 2008). Although there are several cases of augmented communicators who have programmed their devices to "sing" by inputting command-line codes into pre-stored text, these adjustments take several months to accomplish and can only be used on the token songs for which they are programmed.

⁷ LAM is a branded software package owned by the Prentke Romich Company (PRC). Other AAC device manufacturers offer similar products, but the LAM package remains the most well known and commonly cited.

⁸ In the past I have also used the term "AAC user" to refer to augmented communicators, as can be seen from my inclusion of a reference to work that I co-authored with D. Jeffery Higginbotham. Although the term has disturbed me for the reasons I discuss in this chapter, I was not familiar with a reasonable alternative until rather recently when I was introduced to the term "augmented communicator." Other terms that I have heard used to represent augmented communicators, such as "augcommer," "people who use AAC" or "PWUAACs," and "AAC operator," often struck me as unnecessarily wordy, opaque, or 'odd', despite the rationalizations motivating each.

⁹ In my experience it is not at all uncommon for people with severe disabilities to unexpectedly become ill for extended periods of time. Part of this vulnerability stems directly from the nature of the disability, as when colds regularly become infections or pneumonias because the individual is unable to clear his or her air passages. Other times, illness can arise or become more serious because of the difficulty in addressing the issue early on. This was the case for one friend of mine who ended up needing to have his thumb amputated because of an infected cut.

¹⁰ As stipulated by UCLA's IRB, all augmented communicator's names are pseudonyms unless otherwise noted.

¹¹ Lyrics from *Angel in the Snow*, sung by Elliott Smith

¹² Lyrics from *Blood Roses*, sung by Tori Amos

¹³ The other being when, after a night at the clubs, a college student saw me feeding Ted at an all night diner and yelled to his friend something to the extent of "look, that guy can't even feed himself." The comment was intended as a joke, the student thinking that Ted was drunk, rather than permanently impaired. Nevertheless, Ted stopped eating. The two students, after seeing Ted's wheelchair, paid their bill and left before their food arrived.

¹⁴ Video of Eulenberg's original attempts can be viewed at http://www.youtube.com/watch?v=94d_h_t2QAA. A subsequent attempt by a contemporary AAC manufacturer can be seen at <http://www.youtube.com/watch?v=Zgdq8ILTKNQ>

¹⁵ This exchange took place through IM, where spelling and punctuation standards are relaxed. In order to enhance readability, I have modified some spelling and orthography.

¹⁶ Typographical features (e.g. capitalization, font, spelling, and punctuation) are preserved from original. Email was forwarded to me as personal communication, 11/17/11.

¹⁷ Having lived with Ted for several weeks I knew that because he is unable to stand, he bathed by first maneuvering himself so as to be laying down in his bathtub and then turning on the water. He would allow the cold water to clear from the pipes through the tap before switching it to spray from the showerhead. However, because I had showered that morning before Ted woke up and had accidentally left the valve set to spray from the shower rather than the tap, Ted was doused from above with an icy jet as soon as he turned on the water. Worse yet, Ted's CP made him unable to control his startle reflexes, meaning that while being sprayed with cold water he would be unable to control his muscles and was thus forced to endure the cold discomfort for a minute or more before the shower water warmed up.

¹⁸ This scenario is possible both when the augmented communicator is using an utterance-by-utterance delivery style *and* in a word-by-word style. That is, whereas in the case of utterance-by-utterance delivery systems the audience is forced to wait for the complete utterance to be produced/revealed, in the case of word-by-word systems the *time* that elapses between words may separate them conceptually in the audience members' mind or significantly disrupt the local progressivity of the turn-in-progress (Schegloff 2011).

¹⁹ Schutz regularly uses the term "side by side" to indicate that the participants' streams of attention may be directed towards the same objects. This is the case, for example, when we are attuned to the other members of our sports team through our mutual attention to the unfolding of a play, the other members of our ensemble through mutual attention to the unfolding of a musical composition, or the members of a surgical crew through our mutual orientation to the unfolding of events in the operating room. In the case of conversation,

however, he employs the term “face to face” to indicate the nature of the orientation within the interaction. Here, we are attuned to the other member(s) of our interaction through mutual attention to the unfolding of objects that constitute the interaction itself, and are oriented such that we have unequal access to each object/event. That is, we are given fuller access to those contributions produced by our conversation partners than by ourselves. I return to this notion later in the chapter.

²⁰ Apart from Ted’s CP, he does have some rather profound hearing damage and has limited literacy skills; however, Ted is not cognitively impacted but is in fact extremely bright and attentive.

²¹ It is important to note that while Ted’s CP impairs his fine motor control and balance, he is largely able to control his eye gaze and facial expressions. As a result, Ted can and does use these resources to engage in tightly synchronized interaction.

²² I will return to this issue in the next chapter when I discuss Mary’s conflation of what Levinas referred to as the ‘saying’ and the ‘said’. That is, Mary’s mistaken fusion of the content of communicative action with the action itself.

²³ This interpretation is supported by comments made by other participants in my study. One of whom, for example, noted that when he is in the process of typing on his AAC device he enters a sort of zen-like ‘zone’ wherein he becomes completely consumed with his project and tends to lose track of the conversation going on around him.

²⁴ It is possible that this recognition is touched off by one individual’s experience of a weakened ‘We-relation’, with the other participants following in rapid succession.

²⁵ Mary employs a variant of this strategy in her next exchange with Ted. Thus, we will return to this strategy below.

²⁶ I will return to this issue in my chapter on AAC ‘success stories’ and narratives of becoming where I suggest that narratives in the ‘success story’ genre often trade on the notion of *becoming* a full human being through the ability to communicate with others in a way that extends beyond yes/no responses. In these narratives, the *becoming* is regularly linked to the individual’s receipt of a high-tech AAC device.

²⁷ See Chapter 2 for a discussion of temporal objects and the running-off phenomenon.

²⁸ Also known as the “Hick-Hyman Law/Principle”.

²⁹ Fitts’ Law is also applicable here as it predicts that the time it takes to move to/select a target function with respect to the size, distance, and field in which the target is located (Fitts 1954).

³⁰ Photo taken without permission from Internet video: Sara Pyszka – DynaVox: Cerebral Palsy AAC Success Story. All Rights Reserved.

<http://www.youtube.com/watch?v=VLC8G5nNE7k>

³¹ Photo taken without permission from Internet video: Beth Anne Luciani – Cerebral Palsy AAC Success Story. All Rights Reserved.

<http://www.youtube.com/watch?v=DnGWxuNnDfI>

³² Photo taken without permission from Internet video: Henry Evans – DynaVox: Stroke AAC Success Story. All Rights Reserved.

<http://www.youtube.com/watch?v=1nFQzjXzNM4>

³³ An audio sample of several of the DECTalk voices can be heard at

<http://www.youtube.com/watch?v=8pewe2gPDk4>.

³⁴ Digitized voices are frequently used by young children who are believed to enjoy hearing a familiar voice (e.g. their brother's, sister's, mother's, father's, teacher's, or therapist's) coming out of the device. This is also a method by which the augmented communicator's caretakers can limit the augmented communicator's vocabulary, providing him/her access to only those words that are deemed appropriate to his/her age, cognitive development, social class, etc. Such controls are typically instituted under the banner of trying to minimize the child's stress and cognitive load, which would theoretically be increased though an overabundance of word/phrase choices.

³⁵ This means of producing speech sounds differs from early attempts to replicate the human vocal tract through synthetic reproductions of various attributes. Early effects of such efforts can be seen in the VODER voice demonstrator, a complex apparatus that included both keyboard and foot pedals, which allowed the operator to include modify a sound output in a number of ways based on the human vocal tract.

³⁶ Because of the angle from which the video of this interaction was shot, only my hand and arm are visible.

³⁷ After presenting his narrative to me, Ted was invited by a mutual friend to present "his story" as part of a conference by and for augmented communicators. As part of his preparations for the conference, Ted asked me for feedback on his narrative, and ended up modifying it so that it would play in a single voice. He also changed the final section so that it read in the first person rather than the third person as it had when he played it for me (see ch. 4).

³⁸ Kevin asked me to use his real name when representing him so that he can both receive credit for his contributions and, at a political level, so that he can serve as a model for younger augmented communicators.

³⁹ As Kevin phrased it, he "stubbornly made the transition to a smaller keyboard layout for more independence."

⁴⁰ Acapela Group is a company dedicated to producing a wide range of highly customizable synthetic voices that can be used in a variety of applications, including AAC devices. The voices are widely regarded as being more "natural" sounding than DECtalk voices.

⁴¹ This excerpt was taken from one of my many instant messenger chats with Kevin, a format where orthographic standards are relaxed. I have added standard capitalizations and punctuation at line breaks to enhance readability but have not altered spelling or word choice.

⁴² Brett sent me this story in an email. I have preserved the original spelling, punctuation, and capitalization from that email. In some cases, non-standard orthography have been inserted in order to get the device to produce the preferred pronunciations or prosodic contours – e.g. "tried it. and the reaction..." – in other cases the non-standard orthography is unmotivated by pronunciation – e.g. lower case substitutions for what are prescriptively uppercase letters.

⁴³ See P. 25 of this dissertation for a fuller discussion of Husserl's natural attitude.

⁴⁴ This confusion was reached its zenith when two female augmented communicators took the stage to deliver a staged dialogue. Because both women used the same voice on their respective devices and accessed their phrases with an eye-gaze tracking system, it was impossible to tell which of the presenters was speaking at any given moment, and very difficult to understand when one turn at talk ended and the other began.

⁴⁵ The word “MY” is actually produced through a two-button sequence on Tim’s device. The four button presses used here indicate that he accidentally hit the wrong button first, followed by what amounts to a backspace/delete button, and then the proper sequence required to produce the desired word.

⁴⁶ In light of these abilities, Kurt rejects the label of “locked in.”

⁴⁷ Because Kurt has opted to use off-the-shelf computers rather than dedicated AAC devices, he is often without a device when outside of his home. For example, whenever he is traveling to/from a particular location in his car or being pushed on his wheelbed, Kurt does not have access to his computers. During these times Kurt typically uses low-tech/no-tech communication strategies as are described in the section on the body schemata of augmented communicators with acquired disabilities.

⁴⁸ I have included punctuation within the quotations to reflect the fact that this punctuation was included in Kurt’s own typing. That is, because Kurt would type directly to me, he always included punctuation and occasionally used combinations of letters and punctuation to produce graphics – e.g. “:-p” to indicate a face with the tongue hanging out.

⁴⁹ Recognizing the importance of seeing Kurt’s text appear on the screen as he is typing (cf. Ch. 2-3 of this dissertation), Kurt and I worked together to develop a new Instant Message system that allows him to produce real-time-text in a window that is shared across multiple devices (e.g. his computer and individual interlocutor’s mobile phones or tablets). This allows the interlocutor to see the text unfold as Kurt types it, and thereby keep a sense of his presence and engagement in a relationship of mutual attunement. We have also integrated this system into a video chat application so as to allow the two parties to see and hear one another, and to allow Kurt’s interlocutor to see his text appear in real-time – i.e. character-by-character – See Figure 5.4.



Figure 5.4: Screen shot of “Liquid Text” for Video Chat

⁵⁰ This claim has been challenged by recent reports that Hawking has tried out recently developed synthetic voices with British accents.

⁵¹ Daleks are a race of cyborg extraterrestrials made popular through the popular television show Dr. Who. Along with being known for their utter lack of regard for non-Dalek life, Daleks occupy the popular science fiction imagination through their robotic voices, which index their lack of emotions and inability to think creatively.

⁵² Perhaps the most famous example of this sort of bodily incorporation, or bodily extension, occurs in Merleau-Ponty’s discussion of the blind man’s cane. The “stick,” as he calls it, extends body’s capacity to perceive beyond the boundary of the skin itself, and, once the “perceptual habit” of orienting to the world through the stick has been established, it *withdraws* from the individual’s perception.

The pressures on the hand and the stick are no longer given; the stick is no longer an object perceived by the blind man, but an instrument *with* which he perceives...Correspondingly, the external object is not the geometrized projection or invariant of a set of perspectives, but something toward which the stick leads us and the perspectives of which, according to all perceptual evidence are not signs, but aspects.

(Merleau-Ponty 1962:152)

⁵³ Along these lines, Leder writes,

If our body were itself a tool, there would need to be a second, more primordial body that uses it, *ad infinitum*. Yet to terminate this regress by conceiving of the soul or mind as what wields the body-tool raises further problems. As Marcel notes, this attributes to the soul all the potentialities the body actualizes (perception, motility, expression, etc.), which would indeed make the soul into something like a second body...The true relation between body and instrument, phenomenological rather than crudely materialistic in character, is only revealed when we reverse the analogy. It is not the body that is like a tool, but that the tool is like a second sort of body, incorporated into and extending our corporeal powers.

(Leder 1990: 179 n. 70)

⁵⁴ Efficiency techniques are occasionally used between partners who are familiar with one another. For example, people who alphabet with Kurt's typically begin each sequence by asking if the letter is in first or second half of the alphabet (e.g. "A through M?").

⁵⁵ Although we had originally tried to patch the hole with packing tape, we discovered that it was impossible to seal the hole due to the shape of the tube. However, it turned out that the palm my hand was large enough to cover the hole, and maintain sufficient pressure to keep the hole closed while also allowing air to travel through the tube.

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