HOCKEY NIGHT IN CANADA
On 17 December 2009, the Globe and Mail reported that the brain of hockey tough-guy and fighter Reggie Fleming had been discovered in autopsy to be afflicted with a degenerative condition known commonly today simply as CTE, an acronym for chronic traumatic encephalopathy. While CTE had been found in football players, it had not been discovered in a hockey player, until Fleming.¹ The disease, neurologists at Boston University concluded, resulted from numerous concussions sustained from hits to the head.

The finding triggered the “concussion discussion” in Canada, as it related to hockey. While talk began slowly and cautiously, from the time of the Fleming discovery, no other subject pervaded the country’s attention so much as the concussion issue. It was prodded along by further CTE discoveries, by a sequence of nasty “head shots” in the National Hockey League (NHL), by testimonials of former players, and, most dramatically, by the head injury that Sidney Crosby sustained in a high-profile NHL game.

In this chapter, I review how a report about an unpronounceable medical condition found in a professional player from a bygone era fueled a debate that split communities and households apart across the country. As Canadians gradually, sometimes reluctantly, absorbed the information about concussions, a window opened into the long-undisturbed culture of hockey. Through traditional and
social media, including radio talk shows, television panels, and documentaries, Canadians debated the merits of changing the rules of the venerable sport to protect players from head injury, be they young or old, amateur or professional. Logical though such change may sound, it wasn’t, and isn’t, an easy conversation for this country to endure. Those who were imploring for reform were often shouted down by those wanting hockey to be left alone, and those wanting hockey to be left alone were slammed for their Neanderthal attitudes.

For media watchers, the challenges that the concussion debate presented to media outlets were riveting. Many outlets struggled with their level of engagement—especially, but not limited to, those with vested interest in the NHL’s prosperity. Revenues formerly of the CBC and now of cable sports entity Rogers Sportsnet and to a lesser degree TSN, are highly dependent on the success of NHL broadcasts. Sports radio stations risked turning off their listeners with often complicated medical talk when many merely wanted to debate whether the Flames should trade Jarome Iginla, or the Leafs fire coach Ron Wilson? While the Globe, the Toronto Star, and others approached the topic of hockey concussion sporadically, some newspaper sports departments virtually ignored it until news broke—such as the NHL changing its rules or a player being lost to his team as a result of “upper body injury,” which had too often been the league’s code for concussion. Perhaps the avoidance was due to the lack of resources required to report medical matters properly, or to editors’ belief that their consumers preferred to see/read/hear about the games rather than a disturbing off-ice problem. During this period, Hockey Canada, the Calgary-based body that presides over the sport at the amateur level from coast to coast, was often mute on the issue in comparison to medical experts, some journalists, and many parents.

No matter, the combined forces raised concern to a degree that couldn’t have been imagined prior to the Fleming discovery. Three years and three months after the revelation about Fleming, an Angus Reid poll of 2,017 Canadian adults found that 87 percent believed that hockey involved significant risk of head, neck, and brain injury; 88 percent supported elimination of body checking at the peewee level (ages eleven and twelve); and 67 percent of hockey parents knew of a player who had incurred a head, neck, back, or brain injury.2

This issue presented immense challenges for the sport at the major junior and professional levels, and for their fans. These leagues have marketed the violence of the sport for decades—Don Cherry’s Rock ’em Sock ’em videos have been sold annually since 1989. Hockey is the only sport outside of boxing and mixed martial arts that implicitly endorses fighting as part of its business and game strategy.
Much like NASCAR spectators anticipating a crash, to this day fans rise to their feet as one when two heavyweights square off for a fight on the ice or a player gets smashed into the boards. But knowing what they know now, it is appropriate to cheer such violence?

“The problem with this century-old tradition is that it’s running up against reality,” wrote Bruce Dowbigginn, a sports media columnist for the Globe and Mail. “How can a league bent on eliminating head shots and concussions still pretend that punching someone in the head is consistent with safety?” Dowbiggin goes on to cite the responses of panel members on a Sportsnet Insiders broadcast. A former general manager of the NHL, Neil Smith, essentially denied the problem, claiming that concussions “rarely” result from punches to the head but are chiefly caused by high-speed impacts. Another former NHL executive, John Shannon, took issue with Smith. “Fighting is responsible for 25 per cent of concussions,” he said, but then went on to make the consent argument. “As distasteful as it may be to some,” he commented, fighting nonetheless involves “two willing combatants.” It also involves leagues unwilling to ban it. Instead, coaches deliberately kept fighters on their rosters, not only because fans seem to enjoy the spectacle but because the emotional charge of fights can serve a purpose. As another panel member, journalist Scott Morrison, pointed out, fighting is still commonly viewed as “a strategy, a momentum changer, a release valve.”

No matter which side of the argument they adopted about body checking or fighting or hits to the head, parents and league executives alike ultimately realized that the reality of concussion had to be acknowledged. Parents began to ask whether they were subjecting their kids to unknown harm; fathers who had played hockey wondered about the long-term damage their own brains may have sustained during a lifetime of ignorance about concussion. Sherry Bassin, a long-time major junior hockey executive in Ontario, spoke at a seminar on concussion in Peterborough, Ontario. Held in the spring of 2012 and chaired by Ken Dryden, the event attracted parents, teachers, and coaches from the community. Bassin revealed that a player on his Fort Erie Otters team had been repeatedly concussed, yet when the Otters accepted the advice of three different neurologists to keep the player off the ice, the player’s parents reacted angrily. “That’s how much change is needed,” Bassin said.

A number of mileposts in the news chain kept the conversation percolating. Among them are the following:

- During the 2009–10 hockey season, a team of researcher led by doctors Paul Echlin and Charles Tator followed a pair of Junior C hockey teams for
fifty-two games. They reported that seventeen of sixty-seven players suffered concussions and that the teams were ill-prepared to diagnose and deal with the injuries. The doctors argued that the results of this study should be interpreted as symptomatic of a problem that affects the sport at all levels.\(^5\)

- In March 2011, a second discovery of CTE was made, this time in the brain of a retired player from the modern era, Bob Probert.\(^6\) Marty McSorley, a long-time protagonist for the Edmonton Oilers and Los Angeles Kings, admitted to cognitive dysfunction such as short-term memory loss;\(^7\) corporations, politicians and Prime Minister Stephen Harper reacted publicly to an ugly hit by Boston’s Zdeno Charra on Montreal Canadien Max Pacioretty; and the NHL at its annual meeting of general managers instituted a tighter protocol for in-game concussion evaluation.\(^9\)

- In the summer of 2011, active hockey players Derek Boogaard, Rick Rypien, and Wade Belak died, and speculation tied their deaths to head injuries sustained while playing hockey. Later that year, Boston University researchers announced that CTE had been discovered in Boogaard’s brain.\(^10\)

- In 2012, Hockey Calgary’s twenty-four member associations debated and voted on a proposal that would have banned body-checking at the peewee level. The vote had been prompted by an earlier study showing peewee players to be three times more vulnerable to concussion in a league that permitted body checking, compared with a league that banned it.

If the Fleming case and subsequent media reporting about concussive injuries in the NHL hadn’t been sufficiently provocative, a head injury suffered by Sidney Crosby forced awareness on even the willfully ignorant.\(^11\) During the “Winter Classic” on 1 January 2011, a game played outdoors in Pittsburgh, Canada’s most famous player crumpled to the ice when David Steckel, then with the Washington Capitals, hit him from the blind side with his shoulder near the end of the second period. Despite being obviously staggered by the collision, Crosby returned to play the third period. Four days later, in Tampa, the captain of the Penguins suffered another blow to the head from Viktor Hedman of the Lightning. Still, the Penguins put him on the team plane to Montréal with the intention of using him in the ensuing game against the Canadiens. But he did not play that game. Rather, due to severe concussion symptoms, Crosby returned to Pittsburgh on a private plane for further evaluation.

He then plunged into the mysterious, frustrating, dark fog of post-concussion syndrome. Three hundred and twenty days passed, followed by a short-lived return to league play. Ultimately, he would play a total of only twenty-eight games over a two-year span. Had we known then what we know now, with league concussion
protocol now stiffened by formal NHL regulation, one wants to believe that Crosby would not have played that third period, would have sat out the game against Tampa Bay, would not have been put on the plane to Montréal. We know what we know, in part because of Crosby’s injuries. His absence from the game put a famous face on the CTE discoveries in Fleming and Probert and gave the microphone to medical professionals who had been desperate to be heard on the dangers of concussion. For years, their warnings had gone unheeded.

Sidney Crosby’s corporate sponsors value him for his capacity to command attention as the sport’s leading player with the boy-next-door persona. People listen to him. However, during his recovery, Crosby and his family resisted invitations to bring youths, parents, and the hockey community at large inside the recovery process, either by communicating through traditional media or via social media vehicles such as Twitter or Facebook. In public, he provided little information, speaking only hesitantly and diplomatically about the NHL’s need to better safeguard its players. By being open, he could have been exponentially more effective than academics with their research data, doctors with their warnings, even hospitals with their neurological autopsies.

What Canadians weren’t told was that Crosby had suffered his first concussion as an eleven or twelve year old when playing a game of wall ball in Halifax, according to his words quoted in a Pittsburgh newspaper blog published four years prior to his 2011 concussion. Charles Tator, a neurologist at Toronto Western Hospital, became the country’s leading educator during this concussion awareness period, once taking on Don Cherry, the CBC Hockey Night in Canada commentator, with a highly publicized critique. When told of Crosby’s prior experience with concussion, Tator responded in an email to me on January 6, 2012: “Hopefully, that is all he had prior to the Steckel shoulder-to-head attack. The blow fell on ‘prepared ground.’ And that is the problem—the brain does not go back to normal each time.”

Revelations such as Tator’s came to be both craved and feared as the concussion debate rolled out—are some individuals genetically predisposed to concussion? Once concussed, is a person more liable to be concussed again? How long does recovery take? Does one ever fully recover? Triggered by the Fleming case and propelled by Crosby’s concussion issues, the Globe, as just one example, published more than two hundred articles about sport-related concussion in a three-year span as news unfolded. The public wasn’t certain what to make of it all. Canada’s national game, a sport ingrained in its culture and its history, seemed to be coming under attack as its greatest player went into a shell. In February 2011, Roy MacGregor wrote in the Globe and Mail:
It is a great game, but it surely needs some work.

The problem is that head shots have become the global warming of hockey, a polarizing issue that pits the disbelievers against the believers, with no results to show for all the braying back and forth.

Hockey Night in Canada, with its vast array of old-school thinkers, has become Fox News. The mainstream media, with their editorials demanding action against head shots, have become Al Gore.

So nothing ever seems to get done.

The loudest shouting has come from the naysayers. . . .

The quieter voices are more numerous, but have gained little. The NHL did bring in a specific rule against blatant headhunting, but still lags far behind other team sports when it comes to offering protection for vulnerable brains.¹⁴

Before Bob Probert died of a heart attack at age forty-five in July 2010, he had become fascinated by the news from the United States about CTE being found in the brains of dead National Football League players. He told his spouse that hockey players needed to come forward along with their football-playing brethren. Indeed, Probert donated his brain to Boston University, and on 2 March 2011, the Globe reported findings of CTE in that brain.¹⁵ The Fleming discovery had produced simultaneous awe and disregard. This one lit a fuse in the country.

Hundreds of readers posted comments to the Globe’s online article about Probert. Radio stations across the country, along with television sportscasts, reported the findings. Looking back on the seminal reaction, it’s possible that a great many athletes could relate to Probert on a certain level. While he was an elite tough-guy, an enforcer with considerable technical skills, he also symbolized the testosterone element prevalent throughout hockey, seen in the pro game and the backyard rink.

That male spark plug motivates one player to ram another player into the boards, to fell an opponent with a thudding check, to drop the gloves for a bare-knuckles fight, to forearm-smash an opponent’s head—and, more profoundly, it also motivates the victim of such violence to get up and continue playing as though he had suffered no damage. After getting knocked silly, the first instinct of a player is to take the next shift, to attend the next practice, to play the next game. Until the Probert discovery, no one even thought about stopping the player from doing so.

Now people were wondering how their behaviour in sport was affecting or had affected them, their friends, their relatives, and their offspring. Many of them had been jammed head-first into the boards too, or felled by a fist, or had a stick
jammed against their heads. Because concussions are also sustained in other sports including football, basketball, and soccer, the discussion veered outside the hockey zone. Immediately in the wake of the Probert news, the *Globe* published an article about a forty-nine-year-old male named David Greenaway who’d suffered multiple concussions as a nonprofessional football player. In an interview, he cited the sudden attention being paid to youths and to NHL players, but asked rhetorically: What of the hundreds upon hundreds of former athletes who had moved on from competitive sport and kept with them the legacy of the concussions sustained while playing? “What about Dave?” he asked.

The online *Globe* article generated another hundred comments. One writer, under the name of “anonymous74,” encapsulated the concerns expressed privately to doctors with a highly personal post:

I’m a thirty-seven-year-old male who has played competitive contact sports my entire life. In my childhood, I was knocked unconscious from blows to the head three times, resulting in concussions. I receive numerous other undiagnosed concussions as well, I am sure. As an adult, I continue to play contact sports and have suffered two more concussions in the last five years. I have also suffered from depression my entire life, but the depression has been much worse in the last five years, largely because I lost my wife six years ago. [. . .] However, reading in this article that there might be a connection between concussions and depression really makes me wonder if my struggles with depression are not limited to the grief I feel over losing my wife. My history of concussions could very well be a factor, and one I wish I could explore further.

Another, calling himself “Laughing Lodro,” wrote:

The article resonated with me because it is around my teen years, when I played football at a serious level, that I can pinpoint significant changes in my behaviour, my personality and in my academic achievement. I had developed an extremely poor attention span, was more apt to “feeling down,” lacked impulse control and was quite drawn to stimulating behaviours (drinking, smoking pot, misbehaving).

These sorts of contributions inevitably drew rapid-fire responses from the leave-it-alone faction, the traditionalists. A commenter pen-named “johnnyleroux” wrote, for example: “What a load of crap. I’ve never heard so much whinin’ and complainin’ in all my days! These posts are haunted by sissies. Take your hits like a man and move on. You’ve probably suffered more brain damage just watchin’ television and drinking artificially sweetened drinks.”
Male machismo has been the lifeblood of hockey from the dawn of the sport. Its voice is heard today in beer league dressing-room banter (in a mono-sex atmosphere immune from workplace harassment guidelines), in the fathers’ voices yelling “encouragement” to their sons from the stands at those peewee games, in the primal roar of a crowd rising as one when a fight breaks out during a NHL game. That’s simply how it has been, and perhaps how it always would have been. A senior league player died in Ontario after hitting his head on the ice, dropped by a fist. Nothing changed. Youths, their spinal cords more vulnerable as teens, were paralyzed after being pushed into boards. Nothing changed.

Then along came the spectre of concussion, the veritable cold shower. People had to learn about it, had to talk about it. Ken Dryden, the Hall of Fame goaltender, had refused a couple of invitations to write about the sport for the Globe, but the concussion issue spurred a change of mind, and he has since become the face of reform. He began writing after the Fleming case but before Crosby went down. Ten days after the news about the discovery of CTE in Probert’s brain, in a 12 March 2011 Globe article headlined “Head Shots Should Be History,” Dryden wrote that fifty years from now, without meaningful action toward prevention, our prolonged ignorance of the concussion issue would be likened to the period when cigarette smoking was not considered hazardous to health. “The brain weighs about three pounds,” he wrote.

It floats inside a boney skull, surrounded by spinal fluid, not quite in contact with the skull. Except when the head is jarred.

Then, the brain moves, ricocheting back and forth, colliding with the sides of the skull, like a superball in a squash court. With hard-enough contact, the brain bleeds. And the parts inside it—the neurons and pathways that we use to think, learn and remember—get damaged.

Why would we ever have thought otherwise? Why would we ever have believed that when the dizziness goes away, everything goes back as it had been before?

The Globe submitted Dryden’s first three articles to the National Newspaper Awards for consideration, and he was named a finalist in the 2011 sports category. To support the nomination, I asked him to explain what had eventually drawn him to the keyboard. He replied:

I wasn’t intending to write anything . . . I was still an MP, we had a probable election coming up, and I wasn’t much interested in writing about hockey anymore. I felt I had nothing more to say. But I kept seeing all the concussions of NHL players, and maybe more than that, reading the obituaries of
football players, in particular Bobby Kuntz who had been one of my favourite players for the Argos. How these players seemed to be dying younger than most people die, and how they had spent their last years in the living death of dementia. I thought all this was more serious than what I was hearing. So I sat down in front of my screen and tried to find a way of putting things that might hit home. I wrote how we all look back on the past and shake our heads at certain things—slavery, women having not even basic rights, cigarette smoking—and wonder about people of that time, “How could they’ve been so stupid?” But also knowing that fifty years from now, people will look back on us the same way. About what? In sports, I thought, it will be about head injuries. All those big bodies colliding at high speed: how could they/we have been so stupid? In an article for *The New Yorker* magazine on the subject of CTE detection in football players, Malcolm Gladwell stated that the debate at the core of the research is whether brain injury “is incidental to the game of football or inherent in it.” The question was equally applicable to hockey, and NHL commissioner Gary Bettman responded to it implicitly in that inflammatory month of March 2011. A tighter concussion-evaluation protocol was introduced at a meeting of the league’s general managers in the days after news of the Probert discovery broke. Data collected over a two-year span and presented at the meeting demonstrated that 44 percent of concussions had been sustained from legal hits, 26 percent from accidental hits, 17 percent from illegal hits, and 8 percent from fights, leaving 5 percent undetermined.

“This notion that the players have no respect for each other, and they’re going around hitting each other in the head on a regular basis, and that’s what’s causing all the concussions just isn’t accurate,” Mr. Bettman said. “There’s no one single thing causing concussions. There is no magic bullet to deal with this. I know that it’s an emotional, intense subject, particularly for our fans. We get it. But dealing with this issue is not something you can do whimsically or emotionally. You really have to understand what’s going on.”

To eradicate testosterone-fueled violence—that unchecked Mad Men culture—from the game would be to alter its very nature, or at least the nature of the game that sells tickets. In youth hockey and recreational leagues, however, the argument wasn’t complicated by the business of hockey. It was reported that coaches were teaching kids to turn their backs, to exploit the “STOP” patch stitched to the backs of minor-league jerseys as a defensive tactic: Marty McSorley said: “It has to be addressed.”
Indeed, at the recreational level, with the danger of concussion as a prism, the culture of the sport became open to kitchen-table discussion. Hockey moms became empowered, perhaps for the first time, as they questioned the violence that is characteristic of, if not endemic to, the sport. Those who love the sport for its speed and fluid play and deplore the head-hunting and the fighting—they got a voice too.

Social media became a conduit, going beyond reports in the traditional media about NHL incidents to relevance at the community level. What happened to Johnny last night? What did the referee do? Will the league suspend the offender? What are they saying?

During the spring of 2012 in Calgary, as Janice Paskey discusses in her chapter in this volume, a debate about eliminating body-checking at the peewee level was waged, largely online and at local association meetings. It split the city. Hockey Calgary president Todd Millar led the group in support of a ban. University of Calgary research had shown that in a league where body-checking was allowed, peewee players were three times more likely to be injured and four times more likely to sustain a concussion compared to a league in Québec in which body-checking was banned. On the other side of the debate, some parents argued that their kids would be placed at a disadvantage in tournaments against teams from leagues that allowed body-checking as a matter of course. They threatened to move their kids out of the jurisdiction if the proposal passed. These parents complained about Hockey Calgary becoming dictatorial, and ultimately, they won. In a secret vote, the twenty-four member associations voted against the proposal, leaving pee-wee-level body-checking at status quo.

Three months after the vote, it was discovered that Millar’s passion about the issue had been expressed in a personal blog, written in the midst of the debate: “There are so many morons in this game that can’t understand that, by simply changing a simple rule, you will save the well-being of eleven and twelve-year-olds. Children’s safety should come before any of the moronic arguments I have heard.” When a local newspaper reported those words, the city erupted and Millar resigned from a position he had held for seven years.

In 2012, Andrea Winarski of Markham, Ontario, calling herself part of a burgeoning national movement of hockey moms, launched a Facebook petition with the goal of ending body-checking from bantam age on down, at all levels. She noted that pediatric associations in Canada and the United States had been calling for such bans since 2000, without success. The tension between reformers and traditionalists remained persistent in the conversation in social media. From the time
of the Fleming story, Winarski ran headlong into the stone wall of that ingrained hockey culture: hockey is just fine as is, injuries happen, the game will take care of itself. “You should see some of the comments on my Facebook,” Winarski told Globe and Mail writer Roy MacGregor. “I’ve been called a p-u-s-s-y and a lot worse than that.”24

Even so, the tide shifted, gradually, over time. Commentator Mike Milbury, of CBC’s Hockey Night in Canada, at one time personified the resistors. As the NHL pondered rules and changes to mitigate the increasing occurrence of concussions, Milbury decried the coming “pansification” of hockey during a broadcast and insulted reformers at the community level as “soccer moms.”25 While the backlash from gay advocacy groups may have been predictable, not so foreseeable was the negative feedback from viewers toward his seeming endorsement of the sport’s unchecked, reckless violence.26 Milbury would change his stance. When New York Islanders forward Trevor Gillies attacked Minnesota’s Cal Clutterbuck viciously in March 2011, Milbury called for the league to suspend Gillies permanently, saying that sort of hit has no place in hockey. Gillies received a ten-game suspension.

Meanwhile, as an extension of the debate about hockey violence, people demanded medical education about concussion. Traditionally, coaches at all levels of the sport had simply waited for athletes to “let the cobwebs clear” before getting back on the ice. Long-term effects were thought to be restricted to boxers, who had exhibited symptoms associated with Alzheimer’s. Now, the media reported that repeated concussions in hockey and other sports could also cause dementia and depression, especially when the recovery process was cut short. Individual patient records had been left incomplete over the years, with doctors not always understanding what they were dealing with; neither players nor their doctors could be specific about numbers of concussions players had sustained. Those who had suffered concussion while playing hockey as youths and adults now wanted medical guidance about the long-term consequences, minor-hockey and school coaches needed to know how to detect and deal with concussion, and parents became increasingly concerned for their kids’ welfare.

Doctors responded to the demand for information, often through the media, but bedside manner in the case of concussion amounted to dishing out some frank news about the state of the science. People were informed that there is no treatment for concussion, that nothing eliminates symptoms completely. Experts admitted that concussion research is in its infancy relative to research into cancer prevention and cure.
Others began to fill the information gaps. Former player Keith Primeau, a victim of four documented concussions, co-founded the educational website Stopconcussions.com. Dr. Charles Tator founded ThinkFirst and SportsSmart Injury Prevention programs. Dr. Paul Echlin assembled academic studies for a dedicated website. Ken Dryden began chairing all-day seminars in Peterborough, Guelph, Calgary, and other cities. Just as doctors say medical research about concussion is in its infancy, the discussion in this country is far from over. Dryden recently wrote:

People now know that concussions are a big problem, and that they, and others, don’t know as much as they need to know. Doctors and researchers don’t; coaches, players, parents and sports officials don’t. They know that the number of concussions is not because of a stretch of bad luck that will pass, but is instead an on-going problem. They aren’t sure whether their sons or daughters, grandsons or granddaughters should play hockey or football. They’re worried and they don’t know what to do.

At the Peterborough seminar chaired by Dryden, eighteen-year-old Laura Young spoke emotionally about the lingering, maddening effects of a third concussion sustained while playing hockey. She had to take a year off from school. Former pro hockey player Scott Wasson opened up about taking a dozen concussions and about the misery inflicted on his family due to related depression, anger, and the medication required to deal with the headaches. His kids love sports, he said, and yet he wonders whether it’s wise to let them play. In Peterborough, the Youth Sports Concussion Program was established to give standard concussion management guidelines to primary care providers and specialists and to provide information about concussion through a dedicated website.

Two years after being concussed, and three years after the Fleming discovery, Sidney Crosby made an about-face, declaring himself ready to take on the role of lead guardian. In February 2013, Globe writer Roy MacGregor quoted Crosby calling for player safety to be recognized as a prime directive. He said responsibility rests with everyone associated with the sport, from parents of kids playing Timbits to NHL executives. “I think it starts when you’re younger,” Crosby said. “That’s definitely where you learn all your habits and all the things that you’re going to grow up and do. But that being said, I think the NHL is obviously what everyone watches, so there’s got to be a balancing act there.” He emphasized that the high visibility of the league in Canada casts players as role models on the ice, and thus, the manner in which they conduct themselves influences play at all levels: “That’s what all the kids and all the young players are trying to play as—that’s what they’re watching.”
The conversation about concussion in hockey opened the sport to inspection. Attitudes changed. Canadians still embrace the game above all others. But in order to protect those who play it, they wanted a say in how it’s organized and legislated.

NOTES

15 Mick, “Enforcer’s Brain Under the Microscope.”
17 Personal communication, 5 January 2012.
27 Personal communication, 23 February 2013.