

**Constructing Scientific Controversy:
Framing liberation therapy for multiple sclerosis in Canadian mainstream press**

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Abstract

Liberation therapy has received significant attention in Canadian media as a controversial new surgical treatment for multiple sclerosis (MS). The wavering stance of the Canadian Institute of Health Research to fund clinical trials informed contentious media representations rooted in scientific expertise versus patient advocacy and hope. This research supports the finding of preceding media studies in scientific controversies that the conflict was defined by: a) A balance ethic giving equal weight to competing stakeholders, b) Socially constituted moral issues were dominated by a patient injustice frame, and c) A strong emphasis placed on stakeholders made up of patients or affected individuals to dominate the media framing and discourse. Through an in-depth case study informed by the sociology of scientific knowledge, this research argues that not only did the moral amplification of the patient injustice frame give salience to certain facts over others, but it also contributed to the social determination of research priorities.

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1. Introduction

Multiple sclerosis (MS) is a potentially debilitating autoimmune disease that affects thousands of Canadians across the country. Research estimates that between 55,000 and 75,000 people in Canada are afflicted with MS, placing its rate amongst the highest in the world (MS Society of Canada, 2006). Currently, the cause of MS is not known, nor has a definitive cure been unilaterally proven. A variety of medical and therapeutic treatments are available to those with MS along with a burgeoning field of scientific research investigating potential causes, further treatments, and prospective cures. Found within this research is the controversial procedure and possible cure developed by Dr. Paolo Zamboni in 2008. Zamboni's research links MS to malformed or blocked veins in the neck and brain, limiting blood flow to the central nervous system: a condition known as chronic cerebrospinal venous insufficiency (CCSVI). The operation to treat CCSVI is similar to angioplasty or a stent, involving unblocking abnormal veins to increase blood circulation (Zamboni, 2009). Hypothesized as a cure for MS, this procedure has attracted the attention of MS patients, doctors, scientists, and the media across Canada.

Since its development, discourse surrounding the CCSVI treatment has been varied and contrasting. Many Canadian doctors have dismissed the operation based upon non-conclusive, non-scientific, and contradictory research while many MS patients have travelled overseas for the procedure to countries including the United States, India, Mexico, Costa Rica, Poland, Romania, Bulgaria, and Serbia (Stanbrook & Hébert, 2010; Denette, 2010; Weeks, 2011). At the core of this conflict is that, due to questions surrounding the validity of Zamboni's research as of the time of this writing, the proposed operation to treat CCSVI has not been approved in Canada. The Canadian Institutes of Health Research (CIHR) agreed, however, to begin funding the first

phases of a therapeutic clinical trial to study the link between MS and CCSVI in June 2011, ten months after it had instead adopted a “wait-and-see” strategy in August 2010 to assess external research outcomes (Kondro, 2010). Indeed, for the very reasons of conflict of opinion, controversial findings, and polarized discourse, the debate over the validity of liberation therapy has become prime media fodder. Between 2009 and 2011, a vast array of Canadian news media have reported on the issue from the emergence of Zamboni’s hypothesis, to Canada’s “wait-and-see” strategy, to the decision to fund research, to the present.

The media have played a fundamental role in synthesizing and framing this subject for the interest of the Canadian public. Many scholars agree on the media’s function in constructing knowledge “through multiple layers of filtering, representation and interpretation” (Cohen, 2001, p.168), thus constructing ideology and outlining the frames through which the significance of events or issues are presented (see also Gitlin, 1980; Goodell, 1987; Pan & Kosicki 1993). As described by Entman (1993), media frames are able to define a particular problem, make moral judgments, and suggest solutions or remedies to the given issue. The mass media also are able to define the salience of a particular issue, thus influencing its importance in the public agenda (McCombs & Shaw, 1972). By identifying the chief framing techniques found within the news reportage of this debate, this research attempts to trace the evolution of narratives and frames surrounding liberation therapy and multiple sclerosis from the development of the procedure to the decision of the CIHR to fund the first stages of therapeutic clinical trials. It will show how media frames presented a particular definition of the controversy, thus contributing to a socially constructed public understanding of liberation therapy and multiple sclerosis.

1.1. Purpose of Study

This research is concerned with the contentious framing and fragmented discourse surrounding liberation therapy and multiple sclerosis in Canadian mainstream press. For this purpose, framing is defined as the process of “placing information in a unique context so that certain elements of the issue get a greater allocation of an individual’s cognitive resources” while creating meaning and constructing news discourse (Pan & Kosicki, 1993, p. 57). This case study attempts to illustrate the role of media framing in the public understanding of science and its potential impact upon public policy making as well. It will demonstrate how the media framing of liberation therapy and MS evolved and shifted in response to research funding decisions, stakeholder advocacy, and scientific discovery over the period under study. An overview of the social construction of scientific knowledge, media representations of science and health, and the framing of science- and health-related controversies will inform the discussion around the framing of liberation therapy and multiple sclerosis. This research draws the conclusion that the terms of the debate were socially determined through a framework that emphasized the morality behind patient injustice and access to care. Moral fact presented by patient stakeholders disrupted scientific fact presented by medical stakeholders, placing more emphasis on the need for more research in liberation therapy and less on the scientific methodology that requires a cautious approach and extensive testing. However, the purpose of this research is not to evaluate or assess the validity of the scientific findings of Zamboni’s research nor the outcomes of the Canadian-funded trials. Instead, the purpose of this research is to demonstrate how a media framework contributed to the social construction of scientific and moral fact surrounding multiple sclerosis, liberation therapy, and the controversy at large.

2. Literature Review

Mainstream media offer an important site for negotiating the representations and public understanding of science and health. Beginning with a brief overview of the social construction of scientific knowledge put forward by Latour and Woolgar (1979), this section will review previous research on media representations of science as an authoritative producer of knowledge and certainty (Collins, 1987). By this account, certainty is typified by the assertion of a common, taken-for-granted consensus of fact. From a media studies perspective, this is characterized by a dominant or normalizing discourse that conveys a ‘commonsense’ definition for a situation (Malone et al., 2000; Miller & Riechert, 2003). This review will then focus upon the mediated translation of scientific findings for the understanding of lay audiences before moving to an account of media framing techniques of scientific and health-related controversies. There, an examination will be provided on the consequences of highlighting risk and conflict, adhering to the ‘balance ethic,’ and the role of alternative ‘maverick’ science, and the moral imperatives present in mainstream news media coverage of scientific controversies. Finally, this section will briefly look at the social construction of illness, disease, and identity negotiated through representations of health and medicine in the media. It will conclude with a series of questions that will help structure the inquiry of this case study.

The focus in this paper is specifically mainstream mass media as it operates as a site of social reality and knowledge construction. Although it is recognized that many other components are at play in the construction, interpretation, negotiation, and framing of knowledge, information, and reality (political, social, economic, and environmental factors, among many others, provide equally relevant variables for the social construction of reality), the mass media provide a unique field upon which all of these factors coalesce. It is also recognized that other

outlets, including social and alternative media, are equally important channels of information (Newman, 2009). The mass media permeate the social order as a primary indicator of information and ideology on a vast array of subjects (Gitlin, 1980). Indeed, the mass media, specifically print news media, are second only to physicians and clinics as a public source of health and medical information (Caspermeyer et al., 2006). For a specific topic such as MS, mass media representation helps to provide a definition of the subject for individuals not directly affected, thus contributing to a broader public understanding of the issue. Furthermore, news media frequently operate as an arena for public debate on scientific controversy (Priest & Gillespie, 2000). This literature review will therefore illustrate the various processes that guide the social construction of health and scientific knowledge and the public understanding of science as they are presented through the mass media.

2.1. Social Construction of Scientific Knowledge

Modern scientific criticism has examined the process through which scientific knowledge and fact are constructed through social, political, economic, and cultural determinants (Latour & Woolgar, 1979; Tibbetts, 1986; Stocking, 1999; Zehr, 1999; Collins, 1987). Science as a discipline is widely understood to be a producer of certainty and a means to understand the natural world. However, the interpretation of scientific findings is influenced by social determinants. From those determinants, “[information] becomes acknowledged as scientific fact when a critical mass of scientists becomes *persuaded* that a certain way of understanding a phenomenon of study is most likely to be validated through empirical testing” (Dearing, 1995, p. 324; emphasis added). In other words, science is not simply a process of uncovering and objectively presenting fact. Rather, cultural, economic, political, and historical factors all influence the acknowledgement of scientific fact. Particularly where uncertainty and controversy

are involved, acceptance or even rejection of a scientific paradigm becomes a matter of interpretation and negotiation (Stocking & Holstein, 2009).

Within the scientific community, enhancing the validity of a hypothesis is fundamentally accomplished through inquiry that results in published work. The authority of a peer-reviewed and published study bestows greater credibility to the outcome of any given research undertaking. Tibbetts (1986) outlines the extent to which this process is a matter of social determination through the elucidation of the constructivist thesis. The constructivist thesis concerns the “construction, deconstruction and reconstruction of scientific knowledge claims” and “the socially contingent nature of what comes to count as a ‘scientific fact’” (Tibbetts, 1986, p. 39). Beginning with a brief account of what constitutes scientific fact within the science community itself, the focus here will be upon the role the mass media play in translating scientific findings for the understanding of the lay public. Translation in this context refers to a shift in meaning as information passes through scholarly and academic sources to public and lay sources of knowledge, where some information will become lost and others become akin to constructed media representations. It is a transformation of scholarly, technical, and scientific language into not simply more easily understood wording or phrases, but also a conversion of much of the meaning to find points of relevant interest for the lay audience (Fahnestock, 1986; Latour & Woolgar, 1979). The social constructivist thesis has been expanded upon to include the translation of science for the benefit of the public’s understanding (Fahnestock, 1986; Collins, 1987; Ley, Jankowski & Brewer, 2012); the construction of scientific ignorance and doubt (Stocking & Holstein, 2009); controversy over questionably credible and unorthodox scientific theory (Dearing, 1995); and science as an indicator of morality and social problems (Braun,

2007; Malone et al., 2000). Latour and Woolgar (1979), however, offer one of the most significant accounts of the constructivist thesis and the sociology of scientific knowledge.

Latour and Woolgar (1979) explore the degree to which the routines of researchers influence and determine the establishment of fact within the natural sciences. The objective of scientists is to produce knowledge claims that will result in scientific certainty. Latour and Woolgar put forward that the laboratory is home to an array of “inscription devices” (1979, p. 51), the equipment used to produce, chart, and graph findings (termed “literary inscriptions”; p. 52), which are then used to directly support an argument or claim. These inscription devices not only connote scientific authority (Dunwoody, 1999), but also alongside literary inscriptions are integral to the outcome objective of written reports that define or otherwise contribute to a wider body of knowledge on a particular subject. In other words, the goal of scientific inquiry within the laboratory is to create a published work that, in the longer term may help to produce certainty and a commonsense understanding in a scientific claim. Rhetorically, this is illustrated through the classification of statement types found in scientific discourse.

Latour and Woolgar (1979) have described at length the spectrum through which claims germinate from speculative statement to self-evident and taken-for-granted certainty. This ranges from speculative conjectures based upon equally speculative assertions (type one statements) to taken-for-granted and often tacit knowledge requiring no explanation (type five statements). The goal of scientific inquiry is to produce acknowledged statements of fact – type four statements – “to persuade colleagues that they should drop all modalities used in relation to a particular assertion and that they should accept and borrow this assertion as an established matter of fact, preferably citing the paper in which it appeared” (Latour & Woolgar, 1979, p. 81). Within contentious or controversial results, the authority and legitimacy of the findings are determined

through debate, persuasion, and consensus among scientists and frequently the public as well. Certainty statements inform the creation of established knowledge. Such a process of community-oriented acceptance of scientific knowledge is inherently socially determined and further influenced by the credibility, affiliation, and authority of claims-makers.

The legitimacy of scientific findings is acquired through community endorsement (Tibbetts, 1986) based around spheres of personal influence (Collins, 1987) and established through routine practices (Malone et al., 2000). Within controversial science specifically, reality is thus the outcome of debate. Contestable findings are only accepted as fact at the conclusion of the debate, “[transforming] some statements into figments of one’s subjective imagination, and others into facts of nature” (Latour & Woolgar, 1979, p. 236). That which is understood as the scientific reality is ultimately the product of a series of negotiations determined through the community in which such facts are constructed. The wider acceptance of this reality is likewise socially constructed through persuasion and translation among the general public.

Given that literary inscriptions derived from scientific inquiry function to persuade readers of the veracity of statements, this process must move beyond the laboratory setting in order to be fully realized as scientific reality (Latour & Woolgar, 1979). Perhaps paradoxically, the more removed scientific findings are from the research the more such findings are seen as producers of certainty (Collins, 1987). According to Latour and Woolgar (1979), this is known as ‘splitting,’ concisely defined by Collins (1987) as “the process whereby a scientific fact [...] is removed from the laboratory, thereby acquiring ‘facticity’ through its divorce from the contingencies of its origin” (p. 692). When it is presented to the public as a new discovery, such scientific knowledge appears self-evident, having always existed, and simply waiting to be discovered. Closer to the research front, meanwhile, the more tentative the findings appear.

Presenting research publically to nonscientists provides the opportunity for scientists to denote authority over matters of science (Zehr, 1999). The authority of these findings is transformed into even more certain terms when presented in mainstream media as a dominant and normalizing discourse.

2.2. Media Representations of Science

Previous scholarship has indicated that when publicized via mass media, science is frequently portrayed as a “knowledge-producing activity” (Collins, 1987, p. 689), not only upholding the authority of scientific findings, but also presenting them with greater legitimacy, credibility, and certainty (Stocking, 1999; Ley, Jankowski, & Brewer, 2012). Collins (1987) has illustrated this through an account of the televised demonstration of the science experimentation process. By virtue of the presentation of scientific discovery on television programs, the “scientific apparatus appears to be a certainty-rendering machine” (Collins, 1987, p. 701), priming audiences to accept the authority of scientific findings. Using techniques such as reenactments or condensing the time in which the experiment takes place effectively shifts the focus from the effort and skill involved, to “producing unambiguous and intractable knowledge” (Collins, 1987, p. 709). This assertion could be easily dismissed as a necessity of the television medium to condense the process into a television-friendly time slot, requiring that focus be given to the outcome of the experiment rather than the uncertainties and trepidations on the research front. However, the frequent and repetitious representations of experiment success simply reinforce the notion that the scientific process is an authoritative producer of certainty and knowledge.

Ley, Jankowski, and Brewer (2012) have likewise shown that the positive representations of science on television produce a greater reliance on certain scientific tests with unreasonable

expectations. For instance, on the primetime crime series *CSI*, DNA testing is portrayed as “easy, quick, routine, and epistemologically strong” (Ley, Jankowski, & Brewer, 2012, p. 63). The resulting “CSI effect” not only overemphasizes the role of DNA in the judicial process, but also leads to a greater demand and backlog of DNA evidence in real-life courtrooms. Portrayals of science in the mainstream media are one of many processes, including political and social representations, which influence the public understanding of science. The media presentation of testing or experimentation as a certifiable producer of certainty, however, lends to a taken-for-granted assumption of scientific validity and indisputable knowledge claims. Audiences are thus ‘primed’ to generally assume or accept the factual nature of scientific findings as they are presented through the mass media.

The process of minimizing uncertainties is indeed a common theme within science reporting, ranging from disclosing fewer caveats in the findings, to providing minimal sources in the report, to neglecting the context from which the study emerges (Stocking, 1999). Science reporting in popular press has also been found to convert the significance or nuanced meaning within the results to find points of newsworthy interest among an audience with no specialized expertise or knowledge of science (Fahnestock, 1986). Scientific results are frequently simplified or even sensationalized in order to ease the understanding and translation from scientific to plain language. Offit and Coffin (2003) likewise note that the translation and conversion of scientific information and the discourse through which findings are communicated to the public can lead to problematic conclusions. The recent controversy over the hypothesis that the measles-mumps-rubella (MMR) vaccine leads to autism in young children, for instance, began after newspapers in England published the hypothesis as a factual study that had, in reality, not taken place at the time. The hypothesis was presented as a valid statement of fact, leading to a decline in young

children receiving the MMR vaccine, resulting in a dramatic resurgence of childhood diseases that were all but eradicated (Offit & Coffin, 2003). This is one particular example where science communicated to the public through mainstream media deeply affected the public understanding of science. Particularly among controversial topics, where discourse and science itself are heavily at odds with one another, mediated debate can inform how the public interprets scientific fact. For example, varying political interests frequently influence the media framework and discourse surrounding climate change, which in turn determine the information received by the public (Nisbet, 2010). The process through which science is communicated to the public can be heavily contentious, particularly among more controversial topics.

According to Collins (1987), only within controversial science do media present the “window of uncertainty” (p. 189), representations of science that allow for differing and competing opinions, theories, and speculations. Uncertainty is only portrayed alongside controversial or ‘fringe’ science that is the result of scientific incompetency, inadequacy, or limitations to be eliminated with further testing (Collins, 1987). Although this window of uncertainty provides a glimpse of the scientific process, it more effectively heightens the curiosity and dramatic quality of science on television (Zehr, 1999). Uncertainty and fringe science are common features of newsworthiness in science reporting, however the knowledge-producing apparatus of science is continuously reinforced by positive media representations. Indeed, media framing additionally affects the presentation of science and newsworthiness of topics related to science and health.

2.3. Media Framing of Scientific and Health Controversy

When reporting on health, science, or scientific discovery, the mass media employ a common set of narrative frames to convey meaning and ideology. These frames provide the

function of highlighting risk, conflict, and morality as a means of enhancing the newsworthy appeal and journalistic popularization of an issue (Dearing, 1995; Dudo et al., 2007). Alongside increasing the perceived certainty of scientific findings, the mass media influence the overall public understanding of medical- and health-related issues. In the context of controversial science, conflicting points of view combat against one another, allowing journalistic interpretation the opportunity to determine how the story will be constructed and framed (Dunwoody, 1999). Framing plays a large role in defining a controversy. The framework through which a story is constructed organizes central concepts, resonates with ideologies and values, and simplifies complex ideas by putting greater emphasis on certain aspects of the story (Nisbet & Mooney, 2007). Previous scholarship has provided an illustrative account of various habits, themes, and patterns used by journalists to report on controversies related to science, medicine, and health. Criteria of newsworthiness (Allen, 2009), the balance ethic (Braun, 2007), maverick science (Dearing, 1995), and moral imperatives (Malone, et al., 2000; Braun, 2007) all account for varying themes found in the reportage of emerging and controversial stories related to science, medicine, and health. These will be addressed in turn.

Newsworthiness: Conflict, risk, and uncertainty. Goodell (1987) posits that by virtue of the subject matter, stories about science traditionally receive little attention from the mainstream press. This spawns from the notion that science is simply uninteresting, mundane, or difficult for the lay audience to understand. More recent research, however, has shown that when presented as a matter of controversy or conflict, the increased salience and newsworthiness results in a much greater quantity of coverage and public interest. Allen (2009) outlines a series of internalized news values that determine the prominence of a science news story. These include the fascination value, importance, reliability, and timeliness. In short, these news values dictate a

‘good’ science story and include elements that will generate interest or amazement among both new and existing audiences, resonate some element of societal importance, uphold or maintain the validity of the science, as well as convey an overall relevance (Allen, 2009). These values can be applied broadly to journalism, however they are of particular benefit to science journalism when it lacks the ‘breaking news’ quality common among more popular journalism. Among these news values are an emphasis on risk, conflict, and controversy to increase the salience and interest of a story.

According to Dearing (1995), the most salient and interesting stories based in scientific theory focus upon the “consequences of science [that] are often unanticipated, indirect, and undesirable” (p. 342). Dearing goes on to submit that creating a heightened perception of risk or danger can make otherwise mundane topics subjects of fascination or controversy, thus strengthening their newsworthiness. In combination with the alarmist nature of the news media, journalists will amplify risks of such consequences through an episodic framework as true controversies or crises, further emphasizing the urgency of a story (Dudo et al., 2007). An element of sensationalism is not uncommon within such news stories and has been shown to affect the quality of information being relayed to the public. When reporting on topics ranging from emerging science, to controversial science, to potential pandemics or health scares, the news values and frames utilized by reporters affect the translation, representation, and transmission of information to the public. Although information on health-related risk can help individuals make informed decisions, information stemmed from sensational reporting can hinder or inhibit the rational processing of risk information (Dudo et al., 2007). Within the realm of emerging or controversial science, risk and conflict are used to increase the newsworthiness and salience of a topic. The consequence of heightening conflict increases the salience of a

scientific or medical topic on the public agenda, though not necessarily the accuracy (Mooney, 2004). By virtue of these reporting habits, journalists and the media have been criticized for misrepresenting science or creating controversy for the interest of attracting an audience (Young & Matthews, 2007). However, such news values do not only exist to attract audiences, but can be exploited by stakeholders, namely affected individuals and those with a vested interest in the topic, to gain publicity as well.

Journalists and scientists alike have been commonly found to take advantage of scientific uncertainty as a rhetorical tool to heighten conflict or to attribute validity to one side of a debate over another (Dunwoody, 1999). For instance, scientists and other experts may emphasize the uncertainties found in the work of those they disagree with to further validate their own research. Indeed, scientists and researchers have been criticized for exploiting journalistic practices in the interest of promoting their own theories and findings to the media. Stocking and Holstein (2009) found that scientists, industry, and interest groups alike actively make attempts to discredit threatening scientific findings by strategically and intentionally constructing scientific ignorance. Ignorance claims range from assertions that competing or threatening research was “tainted by error, incompleteness, irrelevance and uncertainty and was therefore unsound, untrustworthy and open to doubt,” to an outright rejection as “junk science” or “pseudo-science” (Stocking & Holstein, 2009, p. 28). These ignorance claims are an effort to dominate the media discourse used to describe the issue or topic. They are frequently used to manufacture a heightened sense of conflict or to provide a greater sense of objectivity through a balance ethic.

Balance Ethic. No matter the validity of these ignorance claims, opposing viewpoints from industry, expert, and interest groups are widely quoted in news stories to maintain objectivity (Stocking & Holstein, 2009; Braun, 2007; Stocking, 1999; Dearing, 1995). Research

has pointed to a media bias or preference toward elite social groups such as politicians, academics, law and order professionals, and doctors, indicating a “narrow, ideological lens of ‘primary definers’” (Atton & Hamilton, 2008, p. 118) uncritically presented to the public as claims-makers. These groups and stakeholder positions are frequently considered to be the most legitimate, objective, or ‘correct’ perspectives (Priest & Gillespie, 2000). However, in the interest of reporting a fair and impartial story, or to generate a sense of conflict between factions, journalists will adhere to the ‘balance ethic,’ reporting exclusively two sides to a story in an attempt to report ‘both’ sides (Braun, 2007). The balance ethic offers equal weight to opposing sides of a debate as a means to perform journalistic objectivity. In the case of science journalism, although journalists are more likely to give more focus to the claims made by officials, well-known scientists, or stakeholders (Stocking, 1999; Priest & Gillespie, 2000), these ‘majority’ viewpoints may be pitted against fringe or minority scientists in an effort to fairly and objectively report a controversy or, conversely, to “portray the most extreme conflicting authoritative positions” (Dearing, 1995, p. 343). Often, exploiting this conflict frame in the interest of the balance ethic extends to an over-emphasis on marginalized or minority opinions (Braun, 2007). Just as certain groups make attempts to discredit competing science (Stocking & Holstein, 2009), interest groups – including advocates, beneficiaries, and affected individuals – exploit the balance ethic to move forward agendas and establish a media presence (Braun, 2007). Creating conflict and controversy through balance is a common theme in science reporting. Indeed, the coverage of so-called ‘maverick’ science and scientists offers a prime opportunity to illustrate the social construction of scientific controversy.

Maverick Science. As put forward by Dearing (1995), “maverick science is unorthodox scientific theory which is believed as credible by only one or a few scientists” (1995, pp. 343-

344). Aside from simply reporting from the fringes, these “balanced and conflictual stories often resemble ‘David and Goliath’ struggles, with seemingly bright go-it alone scientist bucking an intransient, conservative scientific establishment, whose representatives subjectively attack the personal credibility of the maverick” (Dearing, 1995, p. 344). Indeed, a subjective portrayal of maverick science and scientists indicated that journalists framed these scientists as beneficial to the scientific field. Relevant experts, meanwhile, were found instead to be more critical of such maverick theories (Dearing, 1995). The subjective reporting of maverick science and scientists illustrates the socially constructed nature of scientific controversies presented in the mainstream media and the potential influence media representations have over the wider public acceptance or rejection of scientific theory as well as public policy making. The potential impact of such public opinion can, as will be illustrated throughout this case study, influence scientific research priorities. This is not to comment on an inherent legitimacy or illegitimacy of so-called maverick science, but rather aims to illustrate how the media coverage and framing this kind of science receives is instead inherently attached to news values associated with conflict and controversy. Indeed, the ways through which science and scientists are framed not only provide a greater sense of legitimacy and authority to particular perspectives, but also a particular sense of moral credibility to one side of the conflict over the other. Just as representations of maverick scientists fall into a particular narrative, the moral imperatives of controversial science construct a framework that defines the problems, solutions, and salience surrounding the subject matter.

Moral Imperatives. A universal facet of controversial science journalism is the existence of moral imperatives. The structure of frame analysis shows that morality is a primary feature of any given media framework or narrative (Benford & Snow, 2000). According to Braun (2007), the framing of many controversial news stories follows socially constructed stock narratives and

genre conventions, effectively simplifying the interpretation of meaning according to preexisting cultural values and themes. These themes are more likely to resonate with an audience, thus making stories easier to tell and providing morally charged solutions to problems while simultaneously adhering to a grand narrative and normalizing discourse (Braun, 2007; Malone et al., 2000). The normalizing discourse found within these issues “[encourages] the reader of the story toward a particular understanding of the ‘facts’ of the story, and [makes] predictions regarding the direction that the issues may take in the future” (Malone et al., 2000). This discourse ascribes the broader values and moral imperatives within a controversy.

The moral credibility of actors and stakeholders involved in a controversy can help determine the public’s perception of such debate, thus influencing public opinion surrounding the priorities of resource allocation within the public sphere. Malone et al. (2000) have found that when reporting upon second-hand smoke as an emerging health issue, for instance, journalists focused upon the “‘human’ aspects of the science” as a construction of “a moral narrative of individual struggle against entrenched power interests” (p. 716). This involved “appealing to commonsense understandings and, especially, experiential knowledge as a basis for action” (p. 719). The coverage of this issue subtly portrayed scientific experts associated with academic or governmental institutions with more credibility than those associated with the tobacco industry (Malone et al., 2000). These actors and claims-makers voiced a perspective that emphasized anecdotal and personal evidence rooted within a commonsense and morally charged understanding of second-hand smoke. Indeed, ignorance and uncertainty were exploited to dismantle the scientific and moral credibility of scientists associated with the tobacco industry.

At the crux of such findings is the extent to which media representations of scientific debate and controversy not only influence the public understanding of science, but wider policy-

making as well. Once science has entered into the public sphere, it can become a tool of policy-making or ascribing social realities. The example of the news coverage surrounding the emergence of concerns over second-hand smoke effectively illustrates how an issue evolves in the public sphere with the help of media representation. The representation of health and medicine likewise shows how these concepts are negotiated and understood in everyday life via the media.

2.4. Health and Medicine in the Media

As noted already, the mass media are among the top sources of information on health and medicine for the public. Concepts of health are influenced by media representation and can range from discourse surrounding the body (Shugart, 2011), disability (Caspermeyer et al., 2006; Haller et al., 2006), and patient advocacy (Harrington et al., 2011), among others. Media representations of health and medicine contribute to the social construction of concepts and identity surrounding a milieu of conditions, diseases, and disabilities. Shugart (2011), for example, notes that master narratives are uniquely able to sway the cultural concepts and public discourse surrounding health and the body, outlining an evolution in the narrative of obesity through the media, manifest in both the problem and solution from personal responsibility to a symptom of broader cultural and social issues.

The presentation of causes and remedies via media discourse influence the identities that are tied to a range of medical conditions. Identity surrounding disability and disease has likewise been linked to media representation. Caspermeyer et al. (2006) have found that frequently, neurological conditions are reported upon in news media with stigmatizing language, “portraying the patient [...] as socially undesirable, less desirable, or reduced in personal worth” (p. 301). Similarly, stories of disability and disease are informed by narratives that involve ‘overcoming

the odds' and inspiration in the face of suffering and tragedy (Haller et al., 2006). These representations have primed media audiences to consider individuals with disease and disability inherently as victims defined by their condition.

This role of affected individuals extends to news framing, identifying the social actors and moral imperatives at play within the issue. For instance, an analysis of the framing of food allergies illustrates a growing trend toward framing health and medical issues with an emphasis on remedies as a primary framing task (Harrington et al., 2011). Such an emphasis places greater weight upon patient advocacy, thus providing a stronger voice to affected individuals in areas of healthcare and policy decision-making and agenda setting. Prosser (2010), however, counters this assertion by suggesting that within news media, a medical expert opinion is valued more than that of the affected individual. Instead, "individuals are encouraged to rely on the medical profession to define and pronounce on health needs and solutions" (Prosser, 2010, p. 67). Therein exists a tension between the knowledge and experience of experts, and the knowledge and experience of laypeople, that has typified much of the discourse surrounding health and medicine in mainstream media. Whereas privileged medical expertise have been found to determine context, ideology, and decision-making surrounding concepts of health and medicine (Prosser, 2010), folk knowledge and personal expertise overwhelmingly influence the media framework through which that information is presented and understood (Malone et al., 2000; Harrington et al., 2011; Priest & Gillespie, 2000; Moore & Stilgoe, 2009). Even beyond the scope of this study, emergent social media amplifies the voices of folk knowledge and personal expertise. It provides a platform upon which laypeople can broadcast personalized experience, opinion, and perspectives through channels of equal access to potential audiences as traditional media. Social media is therefore an increasingly important tool to broadcast and disseminate folk

knowledge (Newman, 2009; Solomon, 2008). Although the focus here remains upon the construction of knowledge through more traditional mass media news outlets, it is worth recognizing the importance of social media upon the dissemination of information to the public. Indeed, the public understanding of science through the media has a profound influence upon how fields of health and medicine at large are negotiated and socially determined.

2.5. Research Questions

The media play a large role in educating the public on issues of science, medicine, and health. The presentation of science as a producer of knowledge and certainty lends greater credibility and authority to the scientific process and the results of experimentation. Understanding, however, the social determinants that influence the validity and acceptance of science are important to understanding how this information in turn shapes concepts of knowledge, information, and reality. Indeed, among controversial scientific findings, reality is only ascribed from the outcome of debate.

Scientific findings achieve certainty through a critical mass of persuasion within the scientific community that is then legitimized through public discourse and media representation. The habit of presenting science as an objective producer of certainty is simultaneously achieved through the overemphasis on the validity of experiment results and translating the language and significance to minimize uncertainties. When presented through news media, an array of news values and frames are applied to topics related to science, medicine, and health as a means to increase newsworthiness. This often results in greater attention to qualities related to risk, conflict, and controversies. Furthermore, emphasizing maverick science, the balance ethic, and moral narratives likewise yield elements of newsworthiness.

The representation of science via mass media deeply affects the public understanding of science, medicine, and health. Particularly for controversial science, the qualities through which it is constituted influence the discourse and perceptions that define the debate. The media frames that construct a conflict guide how a controversy is presented, negotiated, and understood among the wider public. This extends to wider representations of health and medicine in the media, influencing how identities and concepts of health are negotiated and understood. Within a controversy such as the liberation therapy debate for MS, the role of news media representation and framing will be the subject for discussion herein. Stakeholders and claims-makers that emphasize the moral argument behind access to and research in liberation therapy contributed to a moral framework and influenced the terms for debate surrounding the treatment.

Liberation therapy was presented as a controversial scientific theory if only through its frequent and repetitious descriptions as such. It was described routinely as a conflict between medical professionals on one side and MS patients on the other. To bring into perspective how the aforementioned elements of newsworthiness and socially constructed scientific knowledge contributed to a public understanding of the theory, a series of research and operational questions will inform the structure of this case study.

Research Questions. To structure this case study, a series of operational questions were developed to explore the framing of liberation therapy, evolving discourse, and frame analysis as a theoretical perspective of communication and media studies.

Q1: How were multiple sclerosis, liberation therapy, and CCSVI framed in *The Globe and Mail* between November 2009 and December 2011?

Q2: How did the different frames or framing devices reflect events or developments in the public debate around liberation therapy?

Q3: What kind of views or actors received more attention or relevance in the framing of liberation therapy?

With these questions in mind, the following section will look to frame analysis as a theoretical paradigm for the study of the liberation therapy controversy as it was presented in the mainstream media, before continuing with further analysis and discussion.

3. Theoretical Framework

3.1. Frame Analysis

Frame analysis, as defined by Goffman (1974), identifies a “schemata of interpretation” that enables an individual to make sense of everyday life through a process of classification, organization, and interpretation (as cited in Pan & Kosicki, 1993, p. 56). Framing enables social actors to construct and apply meaning through ideology and discourse, highlighting what events are important on any given topic while disregarding those deemed irrelevant (Benford & Snow, 2000; Goffman, 1974). When applied to mass media, it is a useful theoretical undertaking to discover the process through which journalists select the emphasis and salience of a particular topic and moreover, how stakeholders, advocates, and policy makers can communicate a particular or preferred meaning via news media (D’Angelo & Kuypers, 2010). Media frames are most effective when they resonate with an audience’s values, perceptions, and beliefs, “connecting the mental dots for the public” (Nisbet, 2010, p. 47) between meaning and significance. Frames produce significance between two ideas while helping to specify the moral elements at play in any newsworthy story, thus guiding public discourse and debate surrounding the issue.

The mass media are a pervasive source of information and ideology. Although it is naïve to suggest that media discourse exclusively determines public opinion, the extent to which contemporary, everyday life is saturated by mass media leaves little question as to the influence the media have over framing ideology and constructing the parameters through which public discourse and debate are negotiated (Gitlin, 1980). Gamson and Modigliani (1989) make the important delineation between public opinion and media discourse, namely that media discourse does not define or dictate public opinion, rather “media discourse is part of the process by which

individuals construct meaning, and public opinion is part of the process by which journalists [...] develop and crystallize meaning in public discourse” (Gamson & Modigliani, 1989, p. 2). Gitlin (1980) reinforces this asserting, “the mass media produce fields of definition and association, symbol and rhetoric, through which ideology becomes manifest and concrete” (p. 2). In other words, media discourse and public opinion interact with one another as parallel structures that converge in the social construction of meaning. Media frames can shape public opinion by elevating the salience of a particular topic or the descriptors through which it is discussed, thereby influencing how people understand and evaluate the issue (Entman, 1993). Indeed, media frame analysis, according to Pan and Kosicki (1993), can be best conceptualized as an approach to studying news and media discourse as it influences the social construction and negotiation of meaning, public policy, and public debate. As Malone et al. (2000) write: “understanding *how* a story is presented yields equally important insight into that story’s relevance for its readers, and its relationship (proposed or actual) to the larger social structure” (p. 716). Frame analysis therefore is the study of meaning and significance as it is relayed through mass media.

News media frames exist to help tell a story. They not only identify the key issues, actors, and stakeholders involved, but they cast those elements by archetypal themes and roles. Frames, quite simply, exist to simplify complex ideas into identifiable and referential configurations of meaning. The chief function of media frames is to identify problems, place blame or diagnose causes, make moral evaluations, and propose solutions (Entman, 1993; Benford & Snow, 2000). Not unlike agenda-setting theory, media frames demarcate what issues are important and how they should be addressed. For instance, common frames that emerge across science policy debates include the social progress frame, which highlights science’s contribution to “improving

quality of life” or “sustainability” (Nisbet, 2010, p. 52), or the scientific/technical uncertainty frame, defining the issue by invoking or undermining “expert consensus” and “calls on the authority of ‘sound science’” (Nisbet, 2010, p. 52). These frames rely on carefully constructed themes, descriptions, and rhetoric to convey their ideas. The impact that a scientific uncertainty frame can have on public policy debate, for example, can lead to broad political and social effects.

By way of illustration, Malone et al. (2000) vividly outline how certain selective framing elements not only determine the media frame, but larger social and political implications as well. As research emerged in the 1980s and 1990s exploring the negative health effects of passive smoking and second-hand smoke, the media framework put forward by reporters generated a discourse of morality, thus shifting policy debate from smokers’ rights and civil liberties to a public health issue. Scientists and researchers studying the harm of passive smoking were more likely to be personalized and professionally legitimized than spokespeople and scientists representing the tobacco industry. These scientists were more likely to echo the moral implications of their work, appearing as protagonists within the debate. Researchers affiliated with the tobacco industry were, conversely, portrayed as antagonistic and void of humanism. In one case where the personal life of a tobacco industry scientist was described, an anecdote of his children’s discomfort with cigarette smoke highlighted inconsistencies with any claim to second-hand smoke being harmless. Framing devices such as selective descriptions, portrayals, and quotations produced a tilted controversy embroiled in morality:

“By structuring articles in terms of dualistic, even militaristic conflict, readers were encouraged to view the substantive content of the article in terms of a struggle in which there were clearly defined, polarized sides, and between which they might be asked to take sides” (Malone et al., 2000, p. 724).

Employing such a moralistic framework prescribed a very clear set of solutions, namely that responsibility of tobacco-related health risks should be addressed by the tobacco industry and that the rights of those exposed to second-hand smoke are important to public health policy. By this account, the public health frame became predominant. This point at which the frame is commanded by one particular stakeholder point of view is known as frame resonance (Miller & Riechert, 2003) and contributes to the common public understanding and opinion of an issue.

Conflicts and controversies are frequently born from the desire to define the dominant framework and exercise control over how a ‘commonsense’ understanding of the issue is negotiated. Master frames, dominant frameworks, and normalizing discourse are all synonymous for the prevailing, hegemonic definition of an issue. This is not to be confused, however, with the notion that frames determine public opinion. Indeed, “as part of a ‘frame contest,’ one interpretive package might gain influence because it resonates with popular culture or a series of events, fits with media routines or practices, or is heavily sponsored by elites” (Nisbet, 2010, p. 48). Yet these frames are not solely determined or wrought from the media writ large. The selective construction of news stories and media frames “represent interpretive choices made by reporters in constructing a particular version of the world for their readers” (Malone et al., 2000, p. 716) and very often reflect the interpretation and claims put forward by stakeholders, advocates, and elite sources.

3.2. Fragmented Discourse

The ability for the mass media and stakeholders alike to construct a dominant framework that influences public discourse can be “undermined by the plentitude of competing news outlets, but also the presence of competing frames within a news program or, for that matter, within a news story” (Ben-Porath, 2007, p. 415). This is a competitive process that also involves opposing

groups or stakeholders putting forward their own definition, moral judgment, and solution to a problem, a process Benford and Snow (2000) refer to as counter-framing. Counter-framing can range from making ignorance claims of the rival frame's legitimacy or credibility (Stocking & Holstein, 2009), to calling into question the competing party's motivations or morality (Malone et al., 2000), to a necessary facet of journalism to generate controversy in the interest of telling a story (Braun, 2007). A fragmented discourse thus creates greater debate, uncertainty, and very frequently, controversy.

The debate and conflict that surrounds liberation therapy is heavily characterized by a fragmented discourse. Within health communication, fragmented discourse is defined as “a complex dynamic nourished by competitive and opposite views about diseases' causes and risk factors, preventative measures, and therapeutic solutions” (Nahon-Serfaty, 2011, pp. 1-2). The emerging theories linking MS to CCSVI would not only newly determine treatment options for those with MS, but would redefine the disease altogether. In light of this uncertainty, it is surmised that the differing interests of MS patients, advocacy groups, doctors, researchers, pharmaceutical companies, and the Canadian government all have varying degrees of influence over the media treatment of this debate. Employing frame analysis as a theoretical perspective to look at the effects of a fragmented discourse offers the opportunity to come to an understanding of how differing or competing viewpoints converge in the mainstream press.

4. Methodology

4.1. Case Study Design

The following case study analyzes the evolving media framing of liberation therapy for multiple sclerosis in Canadian mainstream press. As a research methodology, a case study relies on an in-depth analysis of contemporary events bound by time and place. It is a method of research that highlights a particular case, “portraying something of its uniqueness while also – but not always – attempting to offer insights that have wider relevance” (Daymon, 2002, p. 106). For this case study, the research temporally locates itself from November 2009 to December 2011. This time period comprehensively covers the emergence of the CCSVI and liberation therapy theories, CIHR’s recommendation of a “wait-and-see” strategy, and finally the Canadian government’s decision to fund the first stages of a clinical trial. As a longitudinal analysis bound by a single case, this research explores how the framing of liberation therapy evolved over time to reflect changes in scientific findings, government policy, and stakeholder advocacy.

Frame analysis provides an empirical approach to understanding the evolution of an issue within political or social debate (Pan & Kosicki, 1993) or changing discourse as new elements emerge (Driedger et al., 2009). With an emphasis on the conflict at the heart of this issue, namely that the controversy was framed as a dispute in pro and con terms of those who were in support of liberation therapy or generally opposed to the liberation therapy theory, this research looks at how the dominant frame was initially defined and how it evolved through the media over a two-year scope.

To limit the breadth of this case study, this research focuses exclusively on English-language news articles published in *The Globe and Mail* between November 1, 2009 and December 31, 2011. Considered Canada’s newspaper of record, *The Globe and Mail* has been

selected for its national scope and weekly circulation rate of nearly two million (Secko, et al., 2011; NewspapersCanada, 2010). The wider relevance of this case study aims to illustrate the role of news media as a critical element within the sociology of scientific knowledge and the public understanding of science.

4.2. Data Collection and Analysis

Sampling Criteria. This case study employed a selective purposeful sampling technique to select the articles for analysis (Daymon, 2002). Searching the Canadian Newsstand database, the terms multiple sclerosis and MS, qualified by liberation, Zamboni and/or CCSVI were used to find articles. ‘Liberation’ as a search term was optimal to ‘liberation therapy’ because the treatment is often interchangeably referred to as liberation therapy, liberation procedure, and liberation treatment, among others. To ensure inclusion of all relevant articles in the search results, the search criteria did not necessitate the articles include the keywords multiple sclerosis and liberation and CCSVI and Zamboni. Journalists wrote about the debate while referring to liberation therapy but not to CCSVI, or vice versa, or discussed the Canadian context of the procedure without drawing links to Zamboni. In order to be included in the data sample, the articles must, however, have explicitly referred to multiple sclerosis and contained a co-occurrence of one or more additional search term (liberation, Zamboni, or CCSVI) to ensure relevancy to the issue and the research. Although many newspaper articles written during this specific time period made mention of multiple sclerosis in a variety of contexts, only articles that were written specifically with reference to the liberation therapy/CCSVI debate were deemed relevant for inclusion in the sample.

In order to meet the sampling criteria, the article must have met all of the following elements:

- a) It must be an English-language news article published in *The Globe and Mail* between November 1, 2009 and December 31, 2011;
- b) The article must have been written specifically about multiple sclerosis and Zamboni's liberation therapy treatment for CCSVI, however may include a variety of search terms as discussed above;
- c) The subject of the article must fit within a Canadian context, referring explicitly to the Canadian clinical trials for liberation therapy, Canadian health policy, Canadian doctors or researchers, or Canadians with multiple sclerosis;
- d) The article must be a news article. Editorials, letters, obituaries, and comment or opinion pieces were excluded to avoid partisan or biased discourse from either side of the debate.

After the articles were found through the online database, they were then manually sorted and classified according to relevancy to yield the final data sample ($n = 40$). This is an appropriate data sample size for an issue whose news coverage is dependent upon the emergence of new information relevant to the controversy. Comparatively, the media analysis of avian influenza coverage conducted by Dudo et al. (2007) averaged at 15 articles per analyzed newspaper per year. Similarly, studies with a larger temporal scope averaged between 7.4 articles total per year (Malone et al., 2000) and 66.4 articles total per year (Harrington et al., 2011). For this study, focusing on a very specific subject, an average of 20 news articles per year that fit the sampling criteria is comparable to similar research.

Once the final sample was gathered, the articles were divided into three significant phases of the controversy. Phase 1 encompassed the emergence of Dr. Zamboni's original research and introduction of the liberation therapy and CCSVI theories, spanning from November 21, 2009 to

August 4, 2010, inclusive ($n = 14$). Phase 2 began with CIHR's recommendation and the federal government's decision to adopt the wait-and-see approach to assess the validity of liberation therapy in September 2010, spanning from September 1, 2010 to May 13, 2011, inclusive ($n = 21$). The final phase, Phase 3, concludes this sample with a small set of articles published after the decision of the federal government and CIHR to begin funding Phase I/II therapeutic clinical trials for liberation therapy in June 2011, spanning from June 30, 2011 to November 26, 2011 ($n = 5$).¹ Each of these phases was of newsworthy significance over the course of the debate, informing the discourse through which the controversy was framed. To structure this case study, the aforementioned research and operational questions will be answered through a mixture of quantitative and qualitative critical data analysis.

Data Analysis. Frame analysis as a theoretical perspective can be approached in a similar method to rhetorical criticism, qualitatively emphasizing researcher interpretation and critical analysis of the studied texts (D'Angelo & Kuypers, 2010). From a health communication perspective, it is a beneficial approach to "studying characteristic tensions in health communication" (Babrow & Mattson, 2003, p. 48) as well as cultural, narrative, and ideological discourse (Shugart, 2011). As a qualitative case study, this research focused upon the construction of frames "composed of key words, metaphors, concepts, symbols, [and] names given to persons, ideas, and actions" (Kuypers, 2009) and used by stakeholders and claim-makers to define and apply salience to the liberation therapy/CCSVI issue. This approach also includes a quantitative description of some variables that contribute to a better understanding of

¹ All gaps between dates in each sample category can be attributed to no articles being published that fit the sampling criteria. There are no articles in the sample that were published from August 5, 2010 to August 31, 2010 and May 14, 2011 to June 29, 2011 that fit the sample criteria for this research.

the salience of certain themes and actors in the framing of the controversy, and the way they evolved in such a brief period of time.

Malone et al. (2000) have asserted that media frames and discourse are constructed through specific rhetorical devices and quotations used to convey the perspectives of stakeholders and claims-makers, such as patients and affected individuals, medical professionals, advocacy groups, and government representatives. The selection of quotations and claims used to present a news item is a strong indicator of the ways in which an issue is framed. Stakeholder perspectives are selectively and purposefully chosen by reporters to represent the issue being discussed. This is not to suggest that journalists intentionally or overtly manipulate sources, but rather recognizes that “news stories, the presentation of scientific studies, the experts, and even the ‘facts’ themselves are socially constituted through sets of routine practices” (Malone et al., 2000, p. 714). Not only are source quotations necessary for delivering a standard of objectivity and expertise on the subject, they are selected by journalists based on interpretive decisions informing the representation of the topic. Such perspectives determine the generally favourable or generally oppositional frames manifest throughout this controversy. Furthermore, the conflicting positions taken by competing stakeholders demonstrate the characteristics of fragmented discourse prevalent in health communication.

Previous research has shown that collapsing media frames to two possible categories dramatically increases coder reliability (Tankard, 2003). As such, the coding process began with the assumption that, being understood as a scientific controversy, liberation therapy would be framed either generally positively or generally negatively through its coverage in *The Globe and Mail*. Understanding the natural prevalence among journalists to rely on a conflict frame (Smith, 1997), the articles were coded according to stakeholder perspectives that perceived the liberation

therapy and CCSVI theories generally positively and those that perceived the theories generally negatively. A positive perspective was defined as one taken by those who were in favour of immediate access to liberation therapy for multiple sclerosis patients or advancing liberation therapy and CCSVI as a research priority. A negative perspective was conversely defined as those skeptical of the validity of the liberation therapy and CCSVI theories and expressing caution, highlighting the dangers, or discouraging immediate access to liberation therapy. The intent here was to first identify stakeholders and stakeholder arguments, then to categorize them in broadly pro or con terms. This was done to simplify the coding process and to help determine how specific stakeholder groups contributed to the overall framing of the controversy.

The articles were read chronologically and first coded according to frequency and category of stakeholders and claims-makers mentioned. Claims-makers are those who were primary sources of information within the articles, including individuals interviewed by journalists and referenced materials in the form of studies, reports, and statements (Harrington et al., 2011). The definition of stakeholders, while significantly overlapping with claims-makers, extended to individuals affected by liberation therapy whose circumstances are mentioned but who are not necessarily quoted. Most significantly, this refers to a patient who died after undergoing liberation therapy and was referenced in relation to the negative risks of liberation therapy.

Stakeholders and claims-makers were categorized as people with MS or affected individuals, including family and friends; doctors and medical professionals, including neurologists and scientific researchers; advocacy groups, including the Multiple Sclerosis Society of Canada or patient rights groups; government representatives, including politicians, government bodies, and spokespeople; and Dr Zamboni. Dr. Zamboni was sorted into his own

claims-maker category to eliminate the bias his opinion conveys. Although he expressed some caution over unregulated procedures, his opinion was generally in favour of his own theory.

This particular focus on stakeholders and claims-makers was informed by the understanding that such individuals, groups, and organizations dominate the framing and discussion of issues surrounding public policy (Harrington et al., 2011). To avoid limiting this research to a quantitative measure of frequency of stakeholders mentioned, articles were then qualitatively coded for how stakeholder perspectives were framed, in particular as being generally favourable or generally unfavourable. This second phase of coding also included an analysis of framing mechanisms to help inductively identify the dominant frames as well as sub-frames. This involved developing a list of catchphrases, keywords, and descriptors to help detect frames, as advised by Tankard (2003).

Beyond the polarizing favourable or unfavourable schemata used to determine the media framing of liberation therapy, it was assumed in the early stages of this research that certain sub-frames would emerge to reflected developments during the two-year scope of liberation therapy's coverage. For instance, the findings by Dearing (1995) allow the assumption that Dr. Zamboni would be subjected to the maverick scientist frame regardless of positive or negative framing. Employing an interpretive approach to the qualitative analysis of this case study allowed for a holistic emergence of sub-frames that reflected developments within the liberation therapy debate.

The analysis of this data thus measured the frequency of stakeholders mentioned concurrently with interpretive frame analysis. This bridged agenda-setting and frame analysis theories, reporting not only which perspectives were being represented, but also *how* they were being represented over the course of this controversy. Moreover, it afforded the opportunity to

see how opinions and frames shifted and evolved over the course of the controversy as well. As framing patterns emerged in the articles, they were coded and compared with one another along the temporal scope of the data sample. Following this approach, the analysis observed how specific favourable or unfavourable frames shifted over the course of the debate that reflected evolving discourse surrounding liberation therapy.

5. Analysis and Discussion

5.1. Frequency and Distribution of Claims-Makers and Stakeholders

As part of the initial analysis of the data set, articles were coded according to frequency of stakeholders and claims-makers mentioned as sources of information. Claims-makers were sorted into categories by type: health professionals, MS patients, advocacy groups, government representatives, and Dr. Zamboni. Health professionals were defined as doctors, neurologists, scientists, and researchers involved in either or both the primary care of MS patients and research surrounding multiple sclerosis (this category excludes Zamboni as he was sorted into a separate claims-maker category). MS patients were individuals diagnosed with multiple sclerosis. Advocacy groups were made up of those representing the interests of those affected by MS, including the Multiple Sclerosis Society of Canada, Direct-MS, patient rights groups, and claims-makers cited in the data sample near-anonymously as “MS advocates”. Claims-makers in this category were specifically identified through their association with such groups. Government representatives were directly associated with federal, provincial, and municipal governments and were typically made up of politicians or their spokespeople. Dr. Zamboni made up his own claims-maker group for his role as the inventor of liberation therapy and, as already mentioned, to eliminate the bias his claims convey. Individual claims-makers were coded once per article but were not limited across articles. For example, a stakeholder whose statements appeared in more than one article was coded individually across articles. Zamboni, for instance, was coded once for every article he appeared in as a claims-maker. This was done to help document changing opinions and claims of stakeholders over the two-year scope of the case study. In total, of the 40 articles in the data sample, there were 194 sources of stakeholder claims. An initial observation indicates that health professionals were most frequently sources of information, making up 61 of

the total 194 claims-makers (31.4%), followed by MS patients (25.3%), Dr. Zamboni (19.1%), government representatives (18.0%), and advocacy groups (6.2%, Table 1). The high frequency of claims from medical professionals preliminarily supports the assertion that reporters turn to expert, scientific opinion to provide context, particularly in events of scientific uncertainty (Wilson et al., 2004; Harrington et al., 2011). Likewise, patients and affected individuals were also frequently cited, suggesting an emphasis on local knowledge and personal expertise (Harrington et al., 2011; Moore & Stilgoe, 2009).

Table 1. Frequency of Claims-Makers, November 2009 – December 2011

Health Professionals	MS Patients	Advocacy Groups	Government Representatives	Zamboni	Total
61 (31.4%)	49 (25.3%)	12 (6.2%)	35 (18.0%)	37 (19.1%)	194

The distribution of claims-makers suggests that certain sources of information, though not cited as frequently within articles, did appear more frequently across articles. The most dramatic of these findings shows that Dr. Zamboni is quoted or paraphrased in 37 of the 40 articles sampled (Table 2). This suggests that there is not only an inherent connection between liberation therapy and Dr. Zamboni as its inventor, but that Zamboni and his reputation have become synonymous with the controversial procedure. The high distribution of health professionals and MS patients across the data set, appearing in 72.5% and 62.5% of articles respectively, likewise reinforces the dual importance of both professional and personal expertise in defining the initial phase of scientific and medical controversies.

Table 2. Distribution of Claims-Makers, November 2009 – December 2011

Health Professionals	MS Patients	Advocacy Groups	Government Representatives	Zamboni	
29 (72.5%)	25 (62.5%)	10 (25.0%)	17 (42.5%)	37 (92.5%)	<i>n</i> = 40

These findings, however, do not reveal the significance of *how* the liberation therapy and CCSVI theories and actors involved were framed in the media during the course of this

controversy. For this, a critical qualitative analysis of stakeholder quotations and rhetorical devices was used to determine the ways in which liberation therapy was framed over time. The stakeholder claims were divided between those that portrayed liberation therapy as generally positively and those that portrayed it generally negatively. From there, a holistic approach was taken to determine the additional frames used to illustrate the dynamic of stakeholder involvement and to define the problem, cause, moral imperative, and solution within the controversy.

5.2. Framing Over Time

The framing of this controversy was analyzed by dividing the data population into the three temporal phases and analyzing rhetorical framing devices therein. This gave insight to the evolving framing as the issue progressed. Overall, liberation therapy was framed generally positively in *The Globe and Mail* between November 2009 and December 2011 (Table 3). Although the majority of stakeholders and claims-makers considered liberation therapy generally favourably (69.6%), there was a significant discrepancy between the categories of claims-makers and the frame their claims supported. Favourable framing was dominated by MS patients, government representatives, Dr. Zamboni, and, to a lesser degree, advocacy groups. Meanwhile, doctors and other medical professionals voiced skepticism and caution toward the validity of liberation therapy more frequently than any other claims-maker and stakeholder group (70.5%). It raises the question that despite the frequency of medical claims-makers and the concurrent non-favourable assertions, to what degree does the opinion of medical professionals or experts influence the media discourse? Indeed, this discrepancy of framing between claims-makers is illuminating as to the nature of this controversy.

Table 3. Frequency of Favourable (+) and Non-Favourable (-) Claims, November 2009 - December 2011

Health Professionals		MS Patients		Advocacy Groups		Government Representatives		Zamboni		Total (193)	
+	-	+	-	+	-	+	-	+	-	+	-
18 (29.5%)	43 (70.5%)	47 (95.9%)	2 (4.1%)	8 (66.7%)	4 (33.3%)	26 (74.3%)	9 (25.7%)	36 (97.3%)	1 (2.7%)	135 (69.6%)	58 (29.9%)

Beginning with an overview of the favourable and non-favourable perspectives through each phase of the controversy, this section will analyze the rhetorical devices used to frame liberation therapy as a debate between stakeholders. It will then look to how the controversy was established within ideological terms to contribute to a socially constructed definition of liberation therapy.

Table 4. Frequency of Favourable (+) and Non-Favourable Claims During Phase 1, November 21, 2009 - August 4, 2010

Health Professionals		MS Patients		Advocacy Groups		Government Representatives		Zamboni		Total (62)	
+	-	+	-	+	-	+	-	+	-	+	-
10 (52.5%)	9 (47.4%)	14 (100.0%)	0 (0.0%)	5 (83.3%)	1 (16.7%)	7 (70.0%)	3 (30.0%)	13 (100.0%)	0 (0.0%)	49 (79.0%)	13 (21.0%)

Phase 1, November 21, 2009 – August 4, 2010. In the first phase of this debate, liberation therapy was considered generally favourably by all key claims-makers (Table 4). Patients, government representatives, advocacy groups, and Zamboni were nearly unanimously favourable in their consideration of the treatment. In this regard, the favourable perspective was typified by claims such as one patient’s assertion that he was “reborn” after the procedure and “[doesn’t] remember what it’s like to have MS” (*The Globe and Mail* [G&M], November 21, 2009) alongside other patients reporting “impressive responses” (G&M, April 14, 2010). The procedure was considered to be “potentially paradigm shifting” (G&M, November 24, 2009) by medical professionals with the potential to “completely change the way we think about MS, and

how we'll treat it" (*G&M*, November 21, 2009). Indeed, the initial coverage of the procedure framed liberation therapy as nothing short of a medical miracle.

The very first article published in *The Globe and Mail* that wrote about the development of liberation therapy on November 21, 2009 set many of the parameters through which the rest of the issue would be understood. The headline in the form of a short paragraph succinctly described the problem, cause, as well as the moral imperative behind the treatment and the proposed solution:

"Canada has the highest incidence of multiple sclerosis in the world. Half the population knows someone with the disease. And it affects more than three women for every man. Now one doctor in Italy has made an astounding discovery, one that suggests MS can be cured or even prevented. He did it out of love for his wife. And it has given people everywhere hope" (*G&M*, November 21, 2009).

This headline alone set a specific precursory tone for the succeeding coverage. Not only did it bring a sense of relevant urgency to the issue, but it also connoted injustice and victimization by emphasizing the rate of women who have MS alongside a sense of romantic chivalry in Zamboni's motivations as a scientist. Moreover, this passage identified each framing task used to effectively set referential framework of hope and optimism for those affected by multiple sclerosis. The prevalence of multiple sclerosis, particularly among women, and the lack of cure are each identified as the problem and cause. Zamboni's method was thus the proposed solution. The moral imperative behind the dual notions of injustice and hope therefore proved to be a powerful mechanism in mobilizing people affected by multiple sclerosis as well as government officials in prioritizing CCSVI on the research agenda.

Driedger et al. (2009) found that the first ten days of reporting a health- or risk-related issue sets a referential framework through which the topic is discussed and understood. Indeed, the discourse of relevant urgency, patient injustice, and hope were all themes that dominated the framing of liberation therapy throughout the debate. They go on, however, to also suggest that

the emergence of salient new information can change the dominant framework of the issue as it progresses. Although the generally favourable frame did not shift dramatically as the liberation therapy debate developed, stakeholder rhetoric evolved as new scientific, political, and anecdotal evidence emerged.

Table 5. Frequency of Favourable (+) and Non-Favourable (-) Claims During Phase 2, September 1, 2010 – May 13, 2011

Health Professionals		MS Patients		Advocacy Groups		Government Representatives		Zamboni		Total (110)	
+	-	+	-	+	-	+	-	+	-	+	-
7 (20.0%)	28 (80%)	31 (93.9%)	2 (6.1%)	2 (50.0%)	2 (50.0)	14 (70.0%)	6 (30.0%)	18 (94.7%)	1 (5.3%)	72 (64.9%)	38 (34.2%)

Phase 2, September 1, 2010 – May 13, 2011. Phase 2 marked the focal point of the liberation therapy and CCSVI controversy during the scope of this research. The federal government had heeded the advice of the CIHR stating there was “an overwhelming lack of scientific evidence” proving the validity of Zamboni’s theory (*G&M*, September 1, 2010), which was quickly rebutted with a swath of anecdotal patient evidence claiming otherwise. During this phase, articles written about the liberation therapy controversy appeared in *The Globe and Mail* more frequently ($n = 21$) alongside more contentious framing.

Medical Professionals. Phase 2 observed a remarkable shift in opinion put forward by medical professionals (Table 5). From the perspective of the medical community, liberation therapy was framed almost entirely negatively (80%). This negative frame was qualified by such perspectives ranging from warning patients not to travel to foreign clinics where the procedure was done “prematurely with little regard for their effectiveness and side effects” (*G&M*, November 10, 2010) to a neurologist’s opinion that “There’s a fine line between a crank and a genius [...] I think Zamboni is skewing toward the crank side now” (*G&M*, May 9, 2011). The generally non-favourable framing appeared to reflect research that emerged during Phase 1

casting doubt on the validity of Zamboni's theory, "[adding] a note of caution for MS patients and physicians who are contemplating interventions for possible venous abnormalities in the findings of [Dr.] Zamboni" thus concluding, "At this time, the theory must be considered unconfirmed and unproven" (*G&M*, August 4, 2010). Echoing Stocking and Holstein's (2009) study on the journalists' role in the social construction of scientific ignorance, uncertainty claims from medical experts balanced an otherwise generally positive frame. Claims from medical experts emphasized doubt, inaccurate research, and outright rejection of the theory. Such claims therefore illustrated the "window of uncertainty" (Collins, 1987, p. 189) that addressed the controversial and fringe quality of the science behind Zamboni's theory. However as Collins (1987) maintains, the constant presentation of science as a knowledge-producing activity overshadows many of the competing uncertainty claims made. Within the sample of articles presented by *The Globe and Mail*, ignorance claims made merely to evoke uncertainty antagonistically contributed to an injustice frame, emphasizing the victimization of MS patients wronged by an unjust medical system. Including the federal government's adoption of the wait-and-see strategy, the general sense of caution, skepticism, and doubt among medical professionals triggered an even greater counter response from patients on the other side of the debate.

Multiple Sclerosis Patients. In Phase 2, the reliance upon multiple sclerosis patients and affected individuals as claims-makers was particularly significant. Multiple sclerosis patients made up 33 of the 110 stakeholders mentioned during Phase 2 (30.0%), an increase from 14 of 62 stakeholders mentioned during Phase 1 (22.6%). Alongside a greater frequency of stakeholders identified, nearly all accounts from multiple sclerosis patients were positively in favour of immediate access to liberation therapy (93.9%, Table 5). Phase 2 exemplified the

patient injustice frame that was introduced in the initial stages of reporting liberation therapy and evolved to inform the dominant discourse of this controversy. The patient injustice frame, which largely victimized MS patients, dominated much of the discussion surrounding liberation therapy and will be discussed in greater detail forthcoming. The wait-and-see policy decision made by the federal government to delay clinical trials in August 2010 was quickly reported as “deflating the hopes of many patients who want to believe it will end their suffering” (*G&M*, September 1, 2010) while “clinging to the hope that the treatment could be the cure for what is a terminal and debilitating illness” (*G&M*, September 14, 2010). Patients felt that the wait-and-see decision was “maddening” (*G&M*, September 1, 2010) and were angry with their doctors “for being so closed-minded” and biased (*G&M*, September 20, 2010). Patient upset was a common theme across articles, highlighting it as a salient issue across the debate and characterizing the patient injustice frame.

Patients, routinely referred to as ‘MS sufferers,’ frequently cited anecdotal evidence to substantiate claims in support of liberation therapy. The use of this evidence selectively emphasized the association between the patient experience of suffering and the need for research into liberation therapy. The pattern of patient anecdote is perhaps best illustrated in one article that interviewed eight individuals with MS who had undergone liberation therapy overseas. The result is a compilation of overwhelmingly positive patient accounts speaking to the efficacy of the procedure. Patients who “felt [they] had no choice but to try the experimental procedure” shared their stories of increased mobility, subsiding fatigue, and “a new lease of life” (*G&M*, November 27, 2010). Should the conjecture be granted that stakeholder experience influences news framing, this single article effectively dictated the moral imperative behind research into CCSVI and liberation therapy.

Government Representatives. If patient anecdote shaped the moral argument of this debate, then claims from government representatives affirmed the importance of CCSVI/liberation therapy research on the public agenda. During Phase 2, political stakeholders experienced a slight increase in claim frequency, from 10 out of 62 claims-makers in Phase 1 (16.1%) to 20 out of 110 in Phase 2 (18.2%). Similarly to multiple sclerosis patients, government representatives were generally in favour of granting access to liberation therapy (70%, Table 5). Those who were not instead were found to be speaking in favour of the wait-and-see decision put forward by the CIHR or felt such an experimental surgery was not an appropriate use of public funding. Support for research likewise employed patient anecdote and advocacy claiming, “It is a demand that has been made by MS patients in all parts of the country, who are clinging to the hope that the treatment could be the cure for what is a terminal and debilitating illness” (*G&M*, September 14, 2010). Advocacy voiced from government representatives showed the effects of patient mobilization. For government representatives to echo the sentiment of affected individuals offered significant weight to the debate and brought it to the political agenda. As the outcome of Phase 3 illustrates, the pairing of patient and government advocacy can indeed affect the scientific research agenda.

Table 6. Frequency of Favourable (+) and Non-Favourable (-) Claims During Phase 3, June 30, 2011 - November 16, 2011

Health Professionals		MS Patients		Advocacy Groups		Government Representatives		Zamboni		Total (21)	
+	-	+	-	+	-	+	-	+	-	+	-
1 (14.3%)	6 (85.7%)	2 (100.0%)	0 (0.0%)	1 (50.0%)	1 (50.0%)	5 (100.0%)	0 (0.0%)	5 (100.0%)	0 (0.0%)	14 (66.7%)	7 (33.3%)

Phase 3, June 30, 2011 – November 16, 2011. The third and final phase of the debate within the scope of this research included a small but telling sample of articles. On June 30, 2011, Canada’s Health Minister announced that the federal government would begin funding

Phase I/II clinical trials for liberation therapy. *The Globe and Mail* noted that the “move [came] as a surprise” (*G&M*, June 30, 2011), given the division between doctors, patients, and politicians. The CIHR gave credit to scientific evidence that warranted beginning clinical trials while advocates, politicians, and the media alike credited the decision to lobbying done by and on behalf of people with multiple sclerosis, as demonstrated throughout Phase 2.

In contrast to the patient injustice frame in Phase 2, there was a notable absence of statements or claims made by patient stakeholders during this final phase. The number of MS patient stakeholders mentioned or quoted fell to 2 out of 21 claims-makers (9.5%) whereas government claims-makers increased slightly to 5, or 23.8% of claims-makers mentioned during Phase 3. Alongside the waning number of articles published in *The Globe and Mail* about liberation therapy, the type of stakeholders mentioned suggests a resolution to the conflict, at least the conflict between patients and doctors rooted in the injustice frame. With the moral victory won for patients granted clinical trials for liberation therapy, their opinion became less salient to the subsequent discussion. Discourse surrounding CCSVI and liberation therapy during this final phase instead was concentrated to medical professionals, government representatives, and Dr. Zamboni.

With less emphasis placed on the struggle of MS patients, more articles publicized disputes to Zamboni’s theory instead. As of the final date of articles in this sample, November 16, 2011, none of the federally funded clinical trials had officially begun, much less reported their findings. Instead, articles were written about other conflicting research that had recently emerged, injecting uncertainty into Zamboni’s hypothesis. One article, written about a study that researched the genetic origin of MS, suggested that such new studies provided “absolutely no support whatsoever for that [blocked veins] idea,” putting forward that “it’s ‘shameful’ so much

attention and investment is being placed on an idea that is simply not true in light of findings about the immunological roots of the disease” (*G&M*, August 11, 2011). Other articles published during this final phase likewise highlighted the obstacles posed for the theory and the general uncertainty surrounding the hypothesis. Articles such as these adhered to a conflict frame and the social construction of ignorance by questioning the validity of the theory and therefore the government decision to fund clinical trials. The conflict now became a matter of uncertainty within the scientific community and the judgment of government representatives. This almost immediate shift in framing shows how concepts of research priorities can change in tandem with imperatives and habits of reporting. With the patient injustice ‘resolved’ by ways of going forward with the first phase of therapeutic clinical trials, the conflict surrounding that frame was no longer relevant. The newsworthiness therefore shifted from the injustice done upon MS patients to questioning the validity of Zamboni’s initial hypothesis. Phase 3 was framed in relation to scientific uncertainty, thus contributing to a fragmented discourse surrounding multiple sclerosis and the CCSVI and liberation therapy theories.

5.3. Framing Liberation Therapy

There are a number of precepts at play in the media framing of scientific and health controversies. These include highlighting controversy and conflict, adhering to the balance ethic, and harnessing moral imperatives in the interest of generating compelling, newsworthy stories. The media framing likewise selectively emphasizes the salience and ideology behind the issues, thus producing definitions, associations, and meaning. The media framing of the liberation therapy controversy heavily relied upon all of these principles. The following section will discuss the role of the patient injustice frame, the mechanisms at play behind framing the debate as a

conflict and scientific controversy, and finally how this debate informs the concept of the social construction of scientific knowledge.

Patient Injustice Frame. Frame analysis goes far beyond revealing pro or con values in news discourse. It permits the unveiling of ideological, emotional, and moral imperatives critical to setting the terms for debate within the public sphere (Tankard, 2003). The patient injustice frame dominated the coverage of liberation therapy. Although the debate largely fell into the broad favourable framing category, the patient injustice frame heavily informed all positive representations of the experimental procedure. The injustice frame is common among issues related to social mobilization, particularly where the aim of one group is to change the dominant framing and discourse put forward by an opposing group. In conceptualizing the injustice frame, Benford and Snow (2000) define “injustice frames as a mode of interpretation [...] generated and adopted by those who come to define the actions of an authority as unjust” (p. 615). While simultaneously performing the core framing tasks of defining a problem, diagnosing the causes, making moral judgments, and suggesting remedies (Entman, 1993; Harrington et al., 2011), the injustice frame distinctively casts certain key actors and stakeholders into the role of the victim. Indeed, at the core of the injustice frame is a necessary amplification of stakeholder victimization (Benford & Snow, 2000). Specific to this issue, the lack of access to liberation therapy was the injustice to MS patients’ victimization. The patient injustice frame gave meaning to the moral debate in three ways: It defined liberation therapy as the only hope for people living with MS; it cast those with MS as victims through their suffering; and it constructed a rebuttal against competing claims unfavourable of the procedure. These three elements are discussed in turn.

Defining Liberation Therapy. The patient injustice frame introduced a compelling moral argument to the debate. For many people living with multiple sclerosis, liberation therapy

offered the “only hope at a better life” (*G&M*, May 6, 2010). Overshadowing the imperative of choice, the injustice frame cast MS patients into a role whereby they were not simply being denied an option of treatment, but also a potential cure to an otherwise incurable disease.

According to one patient: “It’s our bodies. The government should let us see for ourselves if it works [...] They want us to wait a few years, but this illness won’t wait. We see this as a way out, the only way out” (*G&M*, May 6, 2010). With an overwhelming volume of patient stakeholder voices, the injustice frame placed emphasis on the morality of proposing a solution as a chief framing task. Proposing a solution, one of the main functions of news media frames, became embroiled within this moral imperative. Harrington et al. (2011) identified this trend toward moral amplification, pointing out that within news media, a “growing focus on remedies [...] appears to be providing a stronger voice to advocates and affected individuals” (p. 736). This moral amplification was fundamental to the patient injustice frame and contributed to defining MS patients as victims and sufferers.

MS Sufferers. According to Haller et al. (2006), “for people with disabilities, issues of identity are tied to media labeling” (p. 72). Routinely referred to as ‘MS sufferers,’ the depiction of MS patients was dominated by their disability. Suffering became the primary action performed by those with multiple sclerosis. A narrative that emphasized the physical deterioration experienced by individuals with MS interrupted personal qualifiers such as occupation, hobbies, and family life. One individual interviewed before receiving treatment said, “Two years ago I could bench-press 200 pounds. [...] By last spring if I had to carry one of the kids up the stairs, that would knock me out” (*G&M*, March 18, 2010). After having the procedure in Poland, that same patient remarked, “I can behave like a normal person. I can play with my kids. I don’t have to measure my energy before I go for a walk and can even go

shopping in a mall for more than 20 minutes” (*G&M*, November 27, 2010). As well as anecdotally illustrating the effects of the liberation therapy treatment, this example attempts to show how liberation therapy ended the suffering of one patient with MS so he could once again lead a “normal” life. By virtue of these anecdotal assertions, the injustice frame left little question to the apparent validity of the liberation therapy theory and the imperative need for further research. It tellingly ignored the voice of those with MS who may have been more skeptical or exercised caution toward liberation therapy and it overshadowed the non-favourable perspective of stakeholders who acted as claims-makers throughout the duration of media coverage. It produced a commonsense definition of liberation therapy that suggested it was the only solution offering hope to so-called MS sufferers, minimizing uncertainties surrounding the procedure with patient anecdotes attesting to its validity. This frame constructed the conflict as a struggle between MS patients and an unjust medical system.

Framing Scientific Conflict and Controversy. Informed by a combination of news values and media framing techniques, liberation therapy was routinely discussed in *The Globe and Mail* as a scientific and medical controversy. One of the very first indicators of newsworthiness for liberation therapy and CCSVI was the representation of maverick science, encompassing unconventional scientific theory supported by equally unconventional proponents (Dearing, 1995). Zamboni himself was “determined to solve the mystery of MS” through a process that included “medical detective work, scouring dusty old books and using ultra-modern imaging techniques, [that] could well turn what we know about MS on its head” (*G&M*, November 21, 2009). This portrayal of him continued, including ‘mad scientist’ allusions as he “came out swinging at his critics” (*G&M*, February 9, 2010) and eventually suggested that opposing doctors and scientists were purposefully interpreting his findings in a negative way

(*G&M*, May 9, 2011). This confirms a subjective interpretation of actors involved in the debate and the construction of a controversy according to news values.

Alongside the aforementioned patient injustice frame, the balance ethic and scientific ignorance claims both influenced the presentation of liberation therapy as a scientific conflict and controversy. These are addressed in the following.

The Balance Ethic. The manifestation of the balance ethic during the course of this debate served the primary function of heightening conflict and therefore newsworthiness of the issue while voicing the claims of opposing stakeholders. Following the balance ethic, news media report two oppositional sides taken (Braun, 2007) with contradictory views publicized in the interest of objectivity. Braun (2007) and Stocking and Holstein (2009) alike warn that the balance ethic allows the opportunity for fringe groups to exploit the journalistic necessity of objectivity. Understanding the media bias toward elite social groups as primary claims-makers (Atton & Hamilton, 2008), one might have assumed that MS patients and Zamboni himself would fall into the category of fringe claims-makers. It is therefore difficult for the lay observer to determine whether the focus and space afforded to the claims of Zamboni and MS patients is proportional to their 'scientific' legitimacy, or whether they have been over-represented throughout the coverage. However, given the morality at play in this debate, an otherwise marginalized patient population was enabled the opportunity for mobilization via the mass media. The short-term outcome, a social determination of scientific research priorities, was assisted by a constructed account of CCSVI research that aligned the moral imperative with the voice of MS patients. Emerging and contradictory concepts surrounding health, disease, and treatment can disrupt the dominant discourse surrounding such concepts, resulting in fragmentation of the discussion (Nahon-Serfaty, 2011). With differing ideas presented through

competing stakeholder and claims-maker assertions, salience as moral emphasis were therefore handed to the preferred meaning and ideology produced by a patient injustice frame. Indeed, given the morality at play over the course of this debate, MS patients defined the dominant framework while medical professionals simply offered a contrasting, albeit expert, opinion.

Arguments within this study followed a similar positioning pattern laid out by Malone et al. (2000) that ascribed and asked audiences to take clearly defined sides according to the moral imperative of the patient injustice frame. Borrowing from Malone et al. (2000), the use of the assertion/challenge/response rhetorical format shows how claims made by MS patients were given preference throughout the debate. It shows how an emphasis upon the simplicity of the procedure minimized uncertainties and constructed a naturalized discourse surrounding the patient injustice frame. One example voices the frustration of a patient and doctor alike, but concludes with a conviction as to the theory's simplicity and validity evidenced from the following patient anecdote:

Assertion: "Many patients are furious at the government for heeding the recommendation of the panel assembled by the Canadian Institutes of Health Research, who advised that clinical trials be delayed until more evidence is gathered. [...] 'I had an appointment with my neurologist on Sept. 2 and I could not bring myself to go because he doesn't believe in this,' said Teresa Woo of McLennan, Alta. [...]"

Challenge: "The doctors are also frustrated at having to debunk what they believe to be an unproven theory pushed by news outlets. 'Why are doctors also not believers? Perhaps that's because we are doctors and we do understand the science, or in this case the non-science' [...]"

Response: "But liberation therapy seems so simple – it involves angioplasty to open the veins leading from the brain. Believers point to the television for proof that it works. 'An Edmonton nurse couldn't pour a cup of coffee, she couldn't pick up the cup of coffee,' Ms. Woo said. 'She had the procedure done, they showed this on the news, she picked up the coffee pot, poured herself two cups of coffee, picked them up and carried them over to the table. Now, what more proof do you need?'" (G&M, September 20, 2010).

This passage illustrates the construction of the patient injustice framework through the balance ethic. Patients were furious, doctors were frustrated, but the solution was so simple no further

proof beyond anecdotal evidence is needed. As each stakeholder voiced their claim, the last word was given to the anecdotal account of not only the treatment working, but also its simplicity and the importance of it being available. The balance of claims between stakeholders appeared to be little more than a catalyst for diagnosing the moral judgment behind the framing of this issue. It offered an interpretation of the controversy that placed the salience upon the need for equitable access to care and to curing an otherwise incurable disease. Although the dominant patient injustice frame favoured claims from patient stakeholders, ignorance claims show how the balance ethic was further constructed through competing stakeholder claims.

Scientific Ignorance Claims. This issue exemplifies how differing sides competed for discursive control over media framing, showing a more complex layer of the balance ethic and a glimpse into the social construction of ignorance. Stocking and Holstein (2009) suggest that news media's attraction to controversy can "lead them to become unwitting allies [...] to discredit new claims to knowledge with ignorance claims" (pp. 36-37). The strong moral component behind the patient injustice frame contributed to a very particular social definition of the liberation therapy rooted in the right to treatment options. Employing anecdotal evidence and personal stories of suffering, multiple sclerosis patients insisted upon equitable access to treatment and care as well as research into a potentially life-saving surgery. Doctor responses therefore became little more than rhetorical ignorance claims to inject doubt into this maverick and controversial scientific theory.

Ignorance claims used throughout the debate ranged from stock phrases used to convey a sense of objectivity within the controversy to outright rejection of the theory in favour of a competing hypothesis. Articles that framed liberation therapy generally positively frequently cited a stock claim from the perspective of those voicing skepticism for the treatment. The claim,

“Many in the medical community have been skeptical of Dr. Zamboni’s work, because it is preliminary, with a small sample size, and has been heavily promoted before it has gone through the rigorous scientific research process” (*G&M*) was used word-for-word alongside negative claims from unnamed or non-cited experts in twelve articles (*G&M*, April 14, 2010; April 15, 2010; August 4, 2010; September 20, 2010; November 20, 2010; November 27, 2010; December 11, 2010; February 18, 2011; May 9, 2011; July 19, 2011; August 11, 2011; November 26, 2011). It brings to mind as well the statement types introduced by Latour and Woolgar (1979). A stock phrase such as this draws attention to the lack of evidence available behind Zamboni’s theory, prohibiting the “splitting” involved in removing claims from the setting in which they originate. Certainty is thus lessened through stock claims such as this.

Ignorance claims also constructed conflict and exploited the balance ethic to grant publicity for competing research interests. In fact, one article publicizing a new study on the immunological roots of the disease was publicized and framed entirely counter to the Zamboni theory. The article suggested that the “largest genetics-based study of multiple sclerosis ever conducted is casting significant doubt on a controversial theory that the disease is a vascular condition caused by blocked neck veins” and “casts aside ‘eccentric and maverick ideas’ that it is caused by venous abnormalities” (*G&M*, August 11, 2011). Such negative claims from medical professionals heavily informed a fragmented discourse surrounding liberation therapy. Patients voiced a moral urgency to granting clinical trials, yet the medical community boasted a factual imperative to the “non-science” (*G&M*, September 20, 2010) behind the procedure. Indeed, in part thanks to the normalized discourse of the patient injustice frame, the uncertainties injected into Zamboni’s theory were overshadowed by the moral framing of access to liberation therapy. Understanding the news media’s role in transmitting knowledge, socially determined research

priorities influenced by a dominant patient injustice frame held sway over the public understanding of liberation therapy and the social construction of scientific knowledge.

5.4. Social Determination of Scientific Research Priorities

This case study demonstrates the role of media framing in the social determination of scientific research priorities. It shows how a common-sense definition of liberation therapy informed by the patient injustice frame influences the public understanding of science. The patient injustice frame identified the role of key actors and set the terms through which the debate between liberation therapy advocates and skeptics was discussed and understood. The moral framework was concentrated around victimized patients fighting for equitable access to care. With this in mind, this analysis reaffirms the importance of stakeholder anecdote in the creation of a dominant news framework. The importance of claims-makers providing localized or folk knowledge has been well documented in issues surrounding second-hand smoke (Malone et al., 2000), food allergies (Harrington, et al., 2011), agricultural biotechnology (Priest & Gillespie, 2000), and childhood vaccinations (Moore & Stilgoe, 2009). Through all of these examples, anecdotal evidence and folk knowledge permitted a media framework that bestowed a greater emphasis upon proposing solutions to the identified problem. Focusing upon affected stakeholders produced a volume of morally charged claims that muted competing or differing claims-makers. Although the role of medical or scientific expertise differs between issues, it was found that in this case, medical professionals, though frequently cited, held little sway in defining the dominant framing of liberation therapy. Quantitatively medical professionals made up the majority of claims-makers mentioned, however qualitatively they provided context to the medical importance of the issue and contributed to a fragmented discourse surrounding the efficacy of liberation therapy and treatment options for multiple sclerosis. The moral argument at

the core of the patient injustice frame supplied heavier rhetorical weight to the side of those in favour of immediate access to liberation therapy, amplifying the voices of those affected by multiple sclerosis, therefore putting greater emphasis on the proposed remedy.

Despite an apparent non-acceptance from the medical and scientific community, the media discourse of the controversy was constituted by an assumption of scientific certainty that gave credibility to the emergence of the theory. Indeed, this analysis reaffirms some of the basic tenets of the social construction of scientific knowledge. Specifically, anecdotal patient evidence as well as public and media debate defined liberation therapy as a scientific research priority. This case study is uniquely located within the emergence of the liberation therapy and CCSVI theories and illustrates the function of media- and community-based debate, persuasion, and endorsement in defining the necessity for further research, and ergo what may ultimately be validated and acknowledged as scientific fact. Public interest brought liberation therapy to the forefront of scientific research priorities in Canada. No matter the eventual conclusions of the Canadian-funded trials, this case study shows how public fascination and patient mobilization through the mass media helped bring an otherwise controversial and questionable procedure to the fore of medical study.

The patient injustice frame importantly identified the moral priorities behind this issue as they were presented through the news media. The rhetoric of hope, liberation, and suffering influenced the debate that helped determine the community endorsement of the liberation therapy and CCSVI theories. The patient injustice frame monopolized the media discourse surrounding liberation therapy, thus influencing how ideology and meaning were interpreted and negotiated. The framing of liberation therapy determined the salience of patient access to care as a moral

issue. Indeed, this debate serves as a reminder that social as well as scientific realities are constructed through socially constituted negotiation, persuasion, and translation.

6. Conclusion

This case study followed the emergence of liberation therapy and CCSVI as a scientific controversy lived through media representation. Through an understanding of the social determination of scientific knowledge, this research has attempted to elucidate the role of media framing as it informs the dominant discourse and moral imperative of liberation therapy. Liberation therapy was first introduced as a medical breakthrough offering hope and optimism to multiple sclerosis ‘sufferers’. The first phase of this controversy set a referential framework that cast patients as victims of an unjust medical system. As the coverage of this controversy continued throughout the case, the patient injustice frame was solidified as more emphasis was placed upon the anecdotal claims of patient stakeholders. Through these claims, liberation therapy was presented as a medical breakthrough supported by certainty claims from purposefully selected patients supporting its validity. Meanwhile, claims from medical experts were instead used simultaneously to provide context and to enhance the conflict through manufactured ignorance claims.

This case study concludes that the interpretive presentation of stakeholder claims constructed a patient injustice frame that contributed to the controversy in two main ways. First, it generated greater conflict by positioning claims-makers in competition, thus manufacturing the debate as a controversy. Second, media framing constructed a moral emphasis that contributed to the dominant discourse surrounding the disease, treatment, and necessity of liberation therapy as a treatment option. The social construction of scientific knowledge dictates that scientific fact is ultimately determined through debate. This research illustrates such a debate taking place in the public sphere and represented through the media. To fully determine the relationship between the frequency of claims-makers and the patterns of frames in the articles, a more in-depth

quantitative analysis would be needed. It is possible, however, to come to the preliminary conclusion that the media framework constructed through this debate contributed to a fragmented discourse surrounding multiple sclerosis as a disease as well as its treatment options. The patient injustice frame became the dominant framework throughout the emergence of liberation therapy and CCSVI. It effectively won the debate both in terms of dictating the dominant framework and informing the social determination of scientific knowledge.

It is worth noting, however, that throughout the three phases discussed, the framing of liberation therapy had undergone a series of rapid changes to the discourse through which the controversy was discussed. Within the two-year scope of this case study, the media approach to liberation therapy included revolutionary and maverick science, the patient injustice frame, as well as scientific ignorance claims. Although the patient injustice frame remained the most prevalent throughout this case, the frequent framing adjustments, including the sudden shift toward ignorance claims in the third phase, are important indicators of the influence certain social determinants have on the overall media approach to this debate. The combination of new scientific evidence emerging and the interpretive approach to news framing on behalf of reporters and journalists results in a dynamic, rapid evolution of public controversy.

Results reported from studies as of 2012 have cast doubt on the overall validity of the initial theory proposed in 2009. These include a small, observational study conducted by Newfoundland's Memorial University that reported "no measureable benefit" to patients after receiving liberation therapy (Branswell, 2012) and a much larger study from Italy that found no relationship between blood flow in the brain and symptoms of MS that defined CCSVI (Weeks, 2012; Gevers, 2012). This Italian study thus concluded the CCSVI theory to be "dead" (Gevers, 2012) and contributed to criticism over the Canadian government's continued funding into

CCSVI research guided by “emotion and theologic belief” [sic] (quoted in Weeks, 2012). An analysis through hindsight would show that non-favourable medical experts held the “correct” scientific perspective of the theory. The presentation of fact via socially constituted debate resulted in early, morally charged conclusions supporting the necessity of research into liberation therapy and CCSVI. Indeed, this case study supports the theory that media framing plays a significant role in the public understanding of science. The social construction of scientific knowledge within this case study was the product of constructed and interpretive knowledge, debate, and ideology within the public sphere.

Limitations. Understanding the bounded breadth of this case study, the findings are not without limitations. A greater number of Canadian newspapers included in the data analysis, for instance, would have allowed for a broader understanding of differing editorial sources and perspectives. However, given the scope of this case study, an in-depth analysis of coverage found in *The Globe and Mail* is sufficient. Notwithstanding *The Globe and Mail*'s reputation as Canada's newspaper of record (Secko, et al., 2011), generalizations to a greater population can only be made cautiously. Likewise, extrapolating the results of the content analysis to draw conclusions regarding public opinion and the public understanding of science must also be made cautiously. Despite the parallels between public discourse and public opinion (Gamson & Modigliani, 1989), the results of a content analysis cannot be conflated with public opinion research without a reception study. Moreover, a full understanding of the impact of this subject upon scientific research priorities is limited by the scope of data collected and analyzed as well. The analysis of *The Globe and Mail* articles offers some insight, but does not illuminate the full picture. That being said, however, in-depth case studies are a useful qualitative research methodology to discover and explore recurring phenomena within a case that may inform future

public opinion and public understanding of science research (Ellis, 2004). Indeed, further and broader research is necessary to fully understand the impact of news media upon the sociology of scientific knowledge as well as the public understanding of science.

Future Research. This case study provides a foundation upon which to base continuing research within the sociology of scientific knowledge and the public understanding of science. While this research would be naturally enhanced by a reception study to measure public opinion surrounding liberation therapy for multiple sclerosis, it can be expanded upon as well to include other emerging and salient medical and scientific controversies. Indeed, to perform a continuing reception study as the different phases of a controversy unfold would provide a fascinating account of evolving public opinion. Furthermore, including additional media, notably social media, would provide a rounded analysis of this topic. Even beyond reception studies, additional research that further analyzes the connection between discourse fragmentation and the sociology of scientific knowledge would be a fruitful avenue of study. Further research on this subject would provide welcomed insight to the role of mass media and health communication upon widespread concepts of health and the public understanding of science.

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Appendix**Elements of Favourable and Non-Favourable Frames**

<u>Favourable:</u>	<u>Non-favourable:</u>
<ul style="list-style-type: none"> • Expertise of Dr. Zamboni (qualifications, background, title, accreditations) • Personal motivations of Zamboni's research (wife as MS patient) • Prevalence and frequency of disease in Canada • Patient as victims <ul style="list-style-type: none"> ○ MS sufferers • Post-surgery disappearance of symptoms • Solving mystery of MS <ul style="list-style-type: none"> ○ Potential of discovery ○ Promise of discovery • Patients' quality of life <ul style="list-style-type: none"> ○ Need for treatment ○ Severity of MS symptoms ○ Desperation of patients ○ High demand from patients • Validity of Zamboni's research <ul style="list-style-type: none"> ○ Simplicity of hypothesis • Closed-minded doctors <ul style="list-style-type: none"> ○ Hostile relationship between doctors and patients ○ Equitable access to care • Anecdotal evidence from patients • Power of patient activism <ul style="list-style-type: none"> ○ Mobilized patients 	<ul style="list-style-type: none"> • Skeptical or cautious reaction from claims-makers and experts <ul style="list-style-type: none"> ○ Reference to scant evidence • Zamboni presented as a 'mad scientist' • Stressing hype of procedure • Patient death • Placebo effect • Negative counter research <ul style="list-style-type: none"> ○ Results from competing studies ○ Risk associated with procedure • Ignorance claims <ul style="list-style-type: none"> ○ Lack of validity behind Zamboni's theory • More testing needed <ul style="list-style-type: none"> ○ Unproven and experimental treatment • Zamboni as crank scientist <ul style="list-style-type: none"> ○ Junk science ○ Eccentric and maverick ideas ○ Credibility of his research • Vulnerability of patients