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Social Construction of Health Risk: Rhetorical Elements in Colombian and U.S. News Coverage of Coca Eradication

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Abstract

This paper examines rhetorical elements related to the social construction of health risk. More specifically, we analyze how prominent Colombian and U.S. newspapers construct the health risks associated with the use of glyphosate in the “war on drugs” in Colombia. Glyphosate, an herbicide that works as a plant growth regulator, is used heavily via aerial spraying to eradicate Colombian coca cultivation: use mandated by *Plan Colombia*. These practices have generated wide ranging cultural and sociopolitical disputes among environmental, health, communal, and political organizations. While our focus is on the controversy related to health issues, our analyses necessarily touch on various environmental, community, and political issues.

Keywords: risk, social construction, Colombia, glyphosate

La Construcción Social de los Riesgos de Salud: Elementos Retóricos en la Cobertura Mediática de la Erradicación de la Coca en Colombia y los Estados Unidos

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Resumen

Este artículo examina los elementos retóricos relacionados con la construcción social del riesgo de la salud. Específicamente, analizamos cómo importantes diarios colombianos y estadounidenses configuran el riesgo de salud asociado con el uso del glifosato en el contexto de la "guerra contra las drogas" en Colombia. El glifosato, un herbicida que funciona como regulador del crecimiento de plantas, es ampliamente usado a través de la fumigación aérea para erradicar cultivos de coca en Colombia según los lineamientos del Plan Colombia. Estas prácticas han generado diversas disputas culturales y sociopolíticas entre organizaciones medioambientales, de salud, comunitarias y políticas. Mientras nuestra atención se centra en la controversia relacionada con los temas de salud, nuestros análisis también aborda diversos temas relacionados con el medio ambiente, la comunidad y la política.

Palabras clave: riesgo, construcción social, Colombia, glifosato

Close analysis of public discourse on contemporary risks reveals a wide range of disputes, illuminating the many challenges of the social construction of risk (Beck, 1992; Giddens, 1990). In this paper, we examine a case in point that has received relatively little attention from health, political, media, or risk communication researchers. We ask: how have major newspapers constructed the health risks associated with the use of glyphosate in the “war on drugs” in Colombia?

Answers to this question will be valuable in several ways. First, they will illuminate rhetorical framing of a controversy generated by multiple agents with diverse arguments and discourses (Raigoso, 2006, 2009). Second, although claims and counterclaims about these risks are ostensibly focused on health, the controversy about the use of glyphosate transcends the material through its political and economic meanings. We wonder if (and if so, how) political and economic considerations are manifested in the discourse on glyphosate health risk. We also ask: how do constructions of glyphosate risk in Colombian newspapers compare to those in U.S. newspapers? Are the stories essentially the same, which might be the case if the science is consistent, and the interests of both nations coincide? Are there differences in the two countries’ news reports, perhaps reflective of diverging interpretations of relevant science or contrasting national interests?

Finally and closely related to the preceding concern, one other reason to be interested in this story is rooted in its irony: the dispersal of a governmentally approved industrial chemical with controversial health effects to combat the agricultural production of a substance deemed a dangerous drug. In this regard, the glyphosate coca-eradication story powerfully illuminates perhaps the most important aspect of the social construction of risk: the judgment that one risk is greater than another. This is an irreducibly interpretive and hence socioculturally inflected moral judgment (Douglas & Wildavsky, 1982; Russell & Babrow, 2011).

Realist and Constructionist Approaches to Communicating About Risks

From the realist standpoint, risk communication is a matter of education. The Public Understanding of Science perspective posits a “deficit model” of the task; risk discourse is challenging because the language of science,

which provides our most accurate rendering of reality, is not always understandable for the public (Blok, Jensen, & Kaltofl, 2008; Burns, O'Connor, & Stockmayer, 2003). In other words, scientists have the authority to speak the truths of material conditions, but lay-people must be trained to comprehend the language of science. The Public Understanding of Science perspective thus gives rise to scientific literacy programs aimed at developing in lay-people the fundamental skills they need to read and interpret scientific contents (Burns et al., 2003). However, the problem of educating the public about risk has persisted despite various scientific literacy programs and more general educational campaigns (see Fischhoff, 1995).

The Public Understanding of Science perspective and the deficit model are challenged not only by limited success in moving popular belief into alignment with expert judgment but also by scientists' inability to achieve consensus about the potential harms in a given area. When several institutions (e.g., scientific, regulatory, public interest) participate in risk discussion, the discourse itself is likely to produce uncertainty (Forss & Samset, 1999) and ignorance (Stocking & Holstein, 2009). Moreover, in recent years there have appeared numerous agents actively involved in disseminating uncertainty across a range of claims about a variety of risks, as well as critics bent on rescuing public discourse from these perhaps misbegotten seeds of doubt (Michaels, 2008; Stocking & Hollstein, 2009).

A great deal of accumulated research indicates that judgments of risk under conditions of uncertainty are susceptible to a variety of social, political, and economic considerations (see Slovic, 2000, 2010). While such findings are taken by psychometrically inclined researchers as evidence for further study of intrapsychological phenomena such as heuristics, they might just as well be understood to reflect the malleability of risk. Indeed, social constructionists argue that "risk is a way—or rather, a set of different ways—of ordering reality" (Dean, 1999, p. 131). While it might be possible to achieve consensus in some risk estimate, it is a mistake to understand consensus as apprehension of actual, material risk. Thus we may believe that material conditions are more or less threatening but understand these conditions to be inextricably intertwined within historically unfolding linguistic, social, cultural, political, and economic discourse (see Beck, 1992; Russell & Babrow, 2011; Strydom, 2002). Because there can be

several discourses on a single risk topic, the most pressing aim is to analyze the contemporary discussion of risk as it takes place in a “public forum” (Strydom, 2002; Under, 1994).

Glyphosate and the War on Coca Production

Given the foregoing considerations, we turn to discourse related to the use of glyphosate in the war on coca production in Colombia. Glyphosate is an herbicide that works as a plant growth regulator. Widely marketed under the trade name Roundup in the U.S., this herbicide is used heavily via aerial spraying to eradicate Colombian coca cultivation: use mandated by *Plan Colombia*, the anti-cocaine strategy established in 1999 between the U.S. and Colombian governments (Veillette, 2005). The use of glyphosate in the “war on drugs” has generated wide ranging cultural and sociopolitical disputes among environmental, health, communal, and political organizations. While our focus is on the controversy related to health issues as constructed by the press, the nature of news reporting became entwined in our analysis with environmental, community, political and economic issues, as detailed below.

It is important to note that there is no consensus on the health effects of glyphosate on the Colombian farmers and villagers when this herbicide is sprayed over the cocaine crops by airplanes and helicopters¹. According to some ecological and health organizations, glyphosate represents a health risk because of its toxic composition (Red de Desarrollo, 2007). Some studies show, for example, that glyphosate causes intoxication, “arrhythmia, shock, hyperkalemia, and metabolic acidosis, despite supportive care” (Chirn-Bin & Chia-Chu 2009, p. 41; Cox, 1998/2000). Nonetheless, its risks are considered less harmful than other chemical herbicides. It is therefore marketed and used extensively around the world.

“Glyphosate is the seventh most commonly used pesticide in U.S. agriculture, the third most commonly used pesticide on industrial and commercial land, and the second most commonly used home and garden pesticide”² (Cox, 1998/2000). In support of this use are scientific studies that find no or only minimal negative consequences for human health (e.g., De Roos et al., 2005). Ironically, India and Taiwanese farmers, caught up in huge debt through the expenses of industrialized (e.g., pesticide intensive)

agricultural practices and crop failures, have been committing suicide by ingesting glyphosate (e.g., Lee, Chen, Chi, Huang, & Tsai, 2000; Heeter, 2005; Talbot et al., 1991). In any case, the Colombian and U.S. governments consider glyphosate harmless for human beings (Rohter, 2000).

The controversy briefly outlined above provides proponents and opponents of using glyphosate for Colombian coca eradication resources to construct health risks in quite different ways. Given this background, we ask, how have major Colombian and U.S. newspapers constructed the health risks associated with the use of glyphosate in the “war on drugs” in Colombia? How do constructions compare across the two countries’ news reports?

Studying News Constructions of Glyphosate Risks in the War on Coca Cultivation in Colombia

Identifying Texts for Analysis

To answer these questions, we analyzed stories appearing in the most read newspaper in Colombia, *El Tiempo*, and one of the most influential newspapers in the United States of America, the *New York Times*. The comparative analysis is especially interesting because it allows us to examine a potential risk as seen from the standpoint of countries that face complexly intertwined risks (drug abuse, narco-trafficking, glyphosate exposure) and benefits (reduced production of illegal drugs, increased industrial revenues, increased foreign aid).

We identified all articles appearing in both the *El Tiempo* and *New York Times* for the decade from 2000 to 2010. *LexisNexis* database was used to search for *New York Times* articles using the terms “Glyphosate,” “Health,” and “Colombia.” This search identified ten articles (about 35 pages of text); all of them were analyzed. In the case of *El Tiempo* we searched for articles by using a facility on the newspaper website; this identified 353 articles in total. Closer examination of these articles revealed that only 30 of them directly analyzed the effects of glyphosate on human health (others only briefly and indirectly mentioned issues of health related to the use of glyphosate). To remain true to our main interest in the question of how health effects have been constructed, we focused exclusively on the 30

newspaper articles in which the health risk of glyphosate was a nontrivial rather than incidental topic. Nonetheless, as we will explain in the following sections, health risk was rarely conceived as an independent risk in these two prominent news sources.

Approach to Analysis

As only the first author's mother tongue is Spanish, the authors commenced analysis with a series of weekly data sessions in which *New York Times* articles were examined in line-by-line readings for thematic content and rhetorical devices. Following Gee (2010) and Potter (1996), the aim in looking for rhetorical elements was to identify discursive choice-making evident in construction of health arguments; we looked for both manifest/explicit and also implicit linguistic/discursive choices in the formation of these claims and supporting evidence. As this work progressed, the first author also examined articles appearing in *El Tiempo*. The first author brought observations and interpretations from *El Tiempo* to data sessions for comparison with *Times* stories. In this way, common rhetorical moves were identified, and the search for diverging moves proceeded. These methods produced the observations and interpretations presented below. Necessarily, these interpretations are open to challenge. We try to present claims with illustrations in detail sufficient to allow readers to judge the credibility of our assertions.

One other aspect of our approach to analysis must be clear from the start. Following Potter (1996), we adopted the stance of "methodological relativism." In other words, our analytical focus was exclusively rhetorical and interpretive; we have not tried to ascertain the factual accuracy of claims about the health effects of glyphosate use. As Potter has urged, we need not be better scientists than those who study the safety or risks associated with glyphosate use, nor must we be better journalists than those presumably trying to report these "facts." Our aim is solely to understand how journalists construct the relevant facts about glyphosate health risks, all the while being sensitive to the truth that we are ourselves constructing a version of reality.

Analysis

Alternative Constructions of Health Risk

Articles in both the *New York Times* and *El Tiempo* constructed claims about the health risks associated with glyphosate in several fundamentally different forms. One form linked health risk to the chemical substance in the abstract, out of any specific context of use. A second form constructed risks that arise out of the way that the substance is used. Third, risk was cast in relative terms; glyphosate was compared to other presumably known risks.

The simplest and most sweeping way of formulating the risk was to claim that glyphosate is or is not a risky substance in itself. Because there is disagreement among scientists about the toxicity of glyphosate (see above), there is latitude for differing claims and argumentation about the herbicide's health risks. In other words, journalists and those they interviewed or consulted had to make rhetorical choices (including neutrality) about how to represent the inconsistent scientific literature. Thus it was noteworthy to observe that U.S. and Colombian governmental agents asserted unequivocally that glyphosate, by itself, does not constitute a health risk. For example:

New York Times (NYT)1: "Calling it 'the most studied herbicide in the world,' he [an U.S. Embassy official] said it was proven to be harmless to human and animal life and called the villagers' account [of health problems related to glyphosate use] 'scientifically impossible'" (Rohter, 2000).

NYT2: American officials dispute [farmers'] reports, insisting that numerous tests on glyphosate have demonstrated that the pesticide cannot cause harm to humans or animals" (Forero, 2001a).³

El Tiempo (ET)1: "'No scientific study done in countries where glyphosate is applied has shown that it causes severe damage to human health' said an Advisor of the Eradication Program of the United States Embassy"⁴ (Glifosato: arma mortal o no, 2001).

In contrast to the general and unequivocal claims that glyphosate is a safe substance, there were no general and unequivocal claims that glyphosate is risky or harmful. On the contrary, claims of risk were more nuanced or

complicated. In some of these cases the focal point of the controversy was not pure glyphosate, but the components added to the herbicide before being used:

NYT3: [Concerns such as] “the mixing of glyphosate with other chemicals without knowing the possible effects, have prompted prominent officials like Eduardo Cifuentes, the Colombian human rights ombudsman, and Carlos Ossa, the nation's general comptroller, to call for a suspension of spraying” (Forero, 2001b).

NYT4: “But spraying opponents accuse the administration of trying to conceal other components, known as surfactants, added for use in Colombia to help the glyphosate to stick to the coca leaves. ‘We don't know what those surfactants are,’ said Dr. Cederstav of Earthjustice” (Marquis, 2002a).

ET2: “Elsa Nivia [director of the Colombian affiliate of the advocacy organization Pesticide Action Network] claims that neither the government nor the agencies that deal with fumigations are interested in conducting a thorough investigation as it has been recently done in Ecuador, where one hundred percent of the tested people living in the border zone showed toxicity after the fumigation done in our country [Colombia]. Moreover, the concentration being used in Colombia is 26 percent glyphosate, even though the amount recommended for agriculture is one percent. And if we add the cosmuflux, the action of the herbicide quadruples” (Glifosato: arma mortal o no, 2001).

The quotes above reveal that this health risk discourse becomes more complex not only in recognizing that glyphosate is at times used in mixtures with other substances that have unknown potential for harm, including some that interact with glyphosate to make it more powerful. Risks are also associated with other aspects of the way that the herbicide is used. These constructions challenge simple claims about the inherent safety or riskiness of the substance in itself. In other words for some agents in some contexts, glyphosate by itself or in the abstract might not be inherently risky; rather, risk arises in the way it is used, which may or may not be hazardous (Herr, 2003). Risk is thus caused by people who do not appropriately employ the herbicide.

In some cases, risk emerges from more dramatic (ab)uses, notably because pilots spread glyphosate at the wrong altitude or at the wrong place:

NYT5: “The children and their teachers were in the schoolyard, they say, playing soccer and basketball and waiting for classes to begin when the crop-duster appeared. At first they waved, but as the plane drew closer and a gray mist began to stream from its wings, alarmed teachers rushed the pupils to their classrooms.... Critics say they frequently receive reports of mistakes and abuses by the planes' Colombian pilots that both the American and Colombian governments choose to ignore.... Critics, like Elsa Nivia, director of the Colombian affiliate of the advocacy organization Pesticide Action Network, see the eradication effort as dangerous and misguided. ‘These pilots don't care if they are fumigating over schools, houses, grazing areas, or sources of water,’ she said in an interview at the group's headquarters in Cali” (Rohter, 2000).

Construction like the preceding locates the risks associated with glyphosate in the way it is (mis)used rather than as inherent in the substance itself.

In contrast to the two preceding formulations of risk, one other way that journalists and their sources word risk claims is in the form of comparisons among different kinds of risks. By comparing the use of glyphosate with other health, environmental, or social risks, agents aim to show either that this herbicide is a minor worry compared with others or that glyphosate is the worst among several hazards. The following are two striking examples of comparisons used to trivialize the risks:

NYT6: “The American government contends that glyphosate is one of the world's safest herbicides – ‘less toxic than common salt, aspirin, caffeine, nicotine and even vitamin A.’” (Semple, & Golden, 2007).

ET3: ‘Detergent for washing the dishes is more dangerous for human health than glyphosate’ said the Justice Minister [of Colombia] Rómulo González before the Senate” (Choque de posiciones, 2001).

In these excerpts, glyphosate is compared to harmless substances to minimize the idea of its potential risk. Moreover, and perhaps more importantly, the comparisons in effect normalize the threat by likening it to mundane risks.

In short, news stories about health risks associated with glyphosate use in Colombia construct these claims in various forms, from general and unqualified assertions of safety, through various more nuanced formulations of risk that take into account the way the substance is actually used (e.g., in mixtures with unknown substances or misapplications through indiscriminate spraying), to comparisons to other risks, typically to trivialize and normalize the threat. Of course, all of these claims are rooted in physical/material processes (biological, atmospheric, behavioral). As such they fall comfortably within the realm of scientific-technological expertise. But the controversy is also politically, economically, and legalistically charged. Hence, Potter's (1996) discussion of category entitlement and attribution of interest is a useful lens for illuminating these constructions.

Category Entitlement and Attribution of Interest

Potter (1996) demonstrates the significance of credentialing sources in argument-making. His notion of category entitlement refers to the relative expertise or standing one has to make claims about some aspect of the world given one's social position. A given position, such as combat veteran or stock broker, entitles one to others' willingness to believe, depending on the subject area of a claim. Thus, for example, combat veterans and stock brokers have the right to our credulity, although for very different topics.

As noted above, given that glyphosate-related health risks (or safety) surely entail material processes, one would expect news articles dealing with health risks to report on the observations and experiences of those with material experience with the substance, such as those who work at its application, those exposed to application, and scientists who study effects systematically. We have already observed that reports of those directly exposed—the villagers who have been sprayed by errant or irresponsible pilots—are disputed by political sources (NYT1 and 2; also see NYT5). Yet another example of efforts to discredit risk claims on the basis of direct experience (i.e., category entitlement) was the following:

NYT7: “State Department officials say the herbicide being used is not toxic, even when people are directly sprayed. One official who defended the program said he had been inadvertently sprayed with the herbicide in Colombia on 15 occasions and had suffered no adverse effects” (Marquis, 2002a).

However, the evidence of direct experience was also used to challenge the claim of harmlessness, as in the following *El Tiempo* excerpt:

ET4: “The Ecuadorian Vice President, Lenin Moreno, challenged [the Colombian government]: ‘If glyphosate is harmless then fumigate the Nariño Palace.’” (Ayala, 2007).

In late modern discourse on material risks, we most often turn to scientists for authoritative information (see Giddens, 1990; Lupton, 1999). Scientists engaged in independent, systematic study of glyphosate’s effects ought to be the most knowledgeable and least biased or interested sources for knowledge claims. We would expect them to be prominent sources in these news stories, along with recounting of their credentials and hence entitlement to our willingness to believe. However, in all of the analyzed articles, only one scientist is directly identified, along with credentials, and quoted. Talking about the difference between the kind of glyphosate used in Colombia and the Roundup products commercialized in the U.S., a *New York Times* article quoted a scientist who explained that the toxicity of both products is not the same:

NYT8: “‘It’s not the same as what you’re finding on the shelf at the Home Depot,’ said Anna Cederstav, a staff scientist at Earthjustice, an environmental law firm” (Marquis, 2002a).

Aside from the foregoing exception, rather than referencing scientific authorities, both *The New York Times* and *El Tiempo* quote and refer to a large number of political actors. Congressmen, judges, communitarian leaders, ambassadors, presidents, and members of non-governmental organizations and military forces, among other political agents, are referenced in claims about effects of glyphosate on human health. However, whereas journalists do not quote scientists that they have interviewed or

reports of scientific studies they have read, the political sources they quote frequently invoke scientific studies. In most cases, the word *scientific* and references to “research” and “studies” are used as generic terms to create the appearance of an empirical discourse (Potter, 1996); these words are used to add credibility to claims about the material reality or unreality of glyphosate health risks. In other words, science and empirical research are most frequently invoked by political actors, apparently as a way to overcome what might otherwise be seen as their lack of category entitlement to speak with authority on material risk. For example, recall NYT1 and ET1, and consider the following:

ET5: “[Rand Beers, the American Sub-Secretary of Narcotics] cites scientific studies conducted by the World Health Organization according to which glyphosate does not cause cancer, birth defects, genetic mutations or reproduction problems” (*Intensificaremos las fumigaciones, 2001*).

Affirmations like these (also see further examples below) show that both “science” and “scientific” characterizations of information are used to warrant claims about material reality. These moves are made without corroborating evidence anywhere in the articles. Thus it appears that references to “science” are used by political actors as a rhetorical strategy to enhance the credibility of their claims. Ironically, however, these political sources often deviate substantially from the scientific ideal in communicating research findings; in the latter, generally, claims are supposed to be carefully qualified as to their scope and level of available support, particularly when evidence is inconsistent. By contrast, as illustrated in the preceding quotes, political sources in this discourse often assert unequivocally that glyphosate is safe.

In short, “science” is invoked by political actors who might otherwise appear to lack the necessary credentials to pronounce on matters of material risk. However, in addition, the invocation of science might also be a way to preemptively overcome the counterargument that these political actors are untrustworthy sources because of their interest or stake in the outcome of these disputes (what Potter (1996) terms the “attribution of interest”). Political actors who support or oppose the continuing use of glyphosate in Colombia might be biased and hence unworthy of belief. So constructing

source interest or stake—either asserting that a speaker has a stake or inoculating against such claims—become important discursive activities in building up the facticity of accounts (Potter, 1996). For example, the following illustrates the attribution of interest.

ET6: “Gabriel Merchán, the Colombian Director of Narcotics warned: ‘[this campaign against glyphosate] is a drug traffickers’ disinformation strategy to discredit the Colombian program against drugs” (Acabar fumigación, 2001).

Whereas invocations of “science,” “studies,” and “research” are often used to inoculate against charges of interest, the following excerpts construct such evidence more suspiciously; even empirical research is said to be susceptible to interest or bias.

NYT9: “‘There are a lot of studies out there, but the problem is that they come from people who have certain interests,’ said Klaus Nyholm, chief of the United Nations Drug Control Program in Colombia” (Forero, 2001b).

ET7: “[Colombian] scientists and environmental organizations are afraid that the [American] Environmental Protection Agency was forced to base its analysis [of glyphosate] on limited information given by the State Department, which they consider a source full of prejudices” (Gómez, 2002).

Many of the political agents contributing to the social construction of glyphosate’s health risks in these news stories accused others of having personal interests that motivate their opinions about the herbicide. This attribution of interests not only increases the controversy and uncertainty about glyphosate, it also illustrates the challenges of negotiating the meaning of risks in prominent news forums. The analysis of these mechanisms of category entitlements and attribution of interests also displays the entanglement of health risk with politics. The following section will discuss in greater detail the difficulty of disentangling health risk from other dimensions and risks associated with glyphosate.

Entanglement of Glyphosate Health Risk

As we can see in the previous excerpts from *El Tiempo* and *The New York Times*, news of glyphosate's health risks is often entangled with non-health issues.

Our analysis of the newspaper articles shows that constructions of the nature, scope, and limitations of glyphosate health risk are not only based on nonscientists' characterization of scientific findings, but also by association with political and economic issues. Theoretically, we might imagine a continuum ranging from news stories that adhere strictly to the regulative ideal (or some would say, fantasy) of purely scientific considerations on one end to explicitly politicized (or otherwise explicitly interested) framing of health risks on the other. Between these extremes would be more and less explicitly entangled constructions.

The most explicit form of entanglement shows a direct association between health risk and other ecological, economic, and political risks; the nature or scope of the former is determined by issues related to the latter. Thus, the health problems that glyphosate may cause are directly explained by mentioning economic, political or environmental issues. One of the most representative examples of this kind of entanglement is found in almost all of newspaper articles that analyze the role of Ecuador in the Colombian discussion about the use of glyphosate. The role of Ecuador in the Colombian discussion about this herbicide shows that the use of glyphosate represents a political and diplomatic issue between Colombia, Ecuador, and the United States. In general terms, Ecuador considers glyphosate to be a dangerous herbicide that's use affects the Ecuadorian borderland and therefore the health of its population:

ET8: "The Ecuadorian Vice President, Lenin Moreno, said that there are 1,635 Ecuadorians affected in their health as the result of the 'cocktail' that Colombia uses in its aerial spraying with glyphosate..." (Ayala, 2007).

In the Ecuadorians' claims we can also see the entanglement of health with politics and, therefore, the difficulty of treating glyphosate health risk as an independent and isolated risk:

ET9: “Quito [government] says that glyphosate crosses the borderland because of the wind and affects the health of people, animals, and plantations.” (*Ecuador demandará a Colombia, 2007*).

ET10: “The Ecuadorian Vice-president, Lenin Moreno, had claimed that ‘[the Colombian] President is the leader of an allied country and should behave as such and not just follow the orders that the [American] empire dictates’” (*Ayala, 2007*).

The possible health problems that glyphosate may cause are not supported by medical reasons, but they are defined in relation to diplomatic issues and the politics of the border between Colombia and Ecuador. In the above excerpt we also notice that political alliances are drawn on to comprehend the meaning of glyphosate risk. More generally, all of these excerpts show that economic power is a key element in sorting out the meaning of this risk. Although Ecuador is Colombia’s neighbor and ally, the United States gives Colombia considerable economic support to eradicate cocaine cultivations.

But not all entanglements are as direct as in these previous quotes. Less direct entanglement occurs when, instead of consulting scientists or the scientific literature to assay the health risks, journalists quote politicians. In general, sourcing of scientific information was poor; both journalists and their political sources use general expressions such as, “experts say,” “scientific studies show,” or “scientists have found.” Indeed, most “scientific” information came from politicians, and thus sources with potentially quite mixed motives underlying their participation in the debate on the health issue.

In other cases, the entanglement between health and other risks is even less direct. In many cases, news articles treat glyphosate’s health risks as the main topic, but they also mention other kinds of risks in other paragraphs. Indeed, almost none of articles focused solely on glyphosate’s health risks. For example, when discussing the possibility of suspending the spraying because of citizens’ complaints about the health effects of glyphosate, journalists also refer to the economic aspects of the problem. In other words, these newspaper articles not only mention the health complaints, but some paragraphs later they point out the economic consequences that the suspension of the fumigations might have:

ET11: “An adviser of the International Relations Committee of the Colombian Representatives’ House said that ‘in pure silver [to lose the American cooperation] would mean that, besides losing the U.S. air fleet, there would be no money to buy gas for and maintain police helicopters and to acquire glyphosate’” (Acabar fumigación, 2001).

Thus, what began as a health risk became an economic risk. Several articles revealed how the Colombian government reconfigures the problem by presenting the economic risk as more dangerous than the health hazard. Glyphosate as economic risk goes beyond the fact that the Colombian government receives monetary support from the U.S. Congress within the frame of *Plan Colombia*, but glyphosate is also an economic problem when approached from the standpoint of the ongoing conflict with guerilla forces. In this sense, it is necessary to take into account that some coca-producing regions are controlled by rebels or *paramilitars* who traffic cocaine in order to finance their illegal groups. U.S. financed-aerial destruction of coca crops in Colombia constitutes a way to eliminate the economic resources of these groups. Because of this, suspension of glyphosate spraying is both an economic and a political risk. Glyphosate becomes a weapon of war used by the Colombian government against guerrilla groups. For this reason, articles that discuss the health risks of glyphosate often mention political and economic issues such as Plan Colombia, the amount of money that the United States gives to Colombia, and the diplomatic relations between both countries:

NYT10: “At stake is more than \$300 million in United States assistance, which the Bush administration has earmarked for Colombia as part of a regional Andean counter-drug program. The United States has already allocated \$1.3 billion in mostly military aid under Plan Colombia, which started under President Clinton” (Marquis, 2002b).

Another issue that shows this indirect entanglement between glyphosate health risk and other risks is the problem of legislation. When discussing the impact of glyphosate on human health, newspaper articles sometimes

mention the necessity to legislate about the use of this herbicide. Newspaper articles show the conflicts that emerge when legislation is intended to respond to diverse interests at the same time (interests of the Colombian, U.S., and Ecuadorian government, indigenous communities, farmers, etc.). This conflict emerges, for example, when the indigenous population demands that the law protect them from the aerial spraying of glyphosate in its territory:

NYT11: “Indigenous leaders contend that the government is obligated to consult them before spraying near or on their land and that it never has” (Forero, 2001b).

To which the Colombian Government responds:

ET12: ““The Colombian government cannot be subjected to the approval of indigenous communities to implement the laws concerning the eradication of illicit crops,’ said Colombian judge, Gilberto Reyes Delgado” (Luz verde, 2001).

Once again, these excerpts show that several voices are involved in defining the risks of glyphosate. The dangers extend beyond health and the realm of biological science and involve a variety of voices and dimensions that braid to form a complex weave of biology, economics, sub-national, national, and international politics, and law.

Conclusion

Our analysis was intended to understand constructions of the health risks of using glyphosate in efforts to eradicate coca production in Colombia. We examined all *El Tiempo* and the *New York Times* articles that treated health concerns in a non-incident fashion in the decade between 2000 and 2010. These stories constructed risk in a variety of ways. The simplest formation was the general and unequivocal claim that glyphosate is safe. More complex and nuanced claims arose when authors or their sources considered the ways that glyphosate is used (e.g., in mixture with other substances, in indiscriminate spraying on villages). In addition, some articles frame the health risks of glyphosate in comparisons to other risks, typically to

trivialize and normalize the threat. All of these constructions are rooted in physical/material processes (biological, atmospheric, behavioral) and thus fall comfortably within the realm of scientific-technological expertise. But the news stories also reveal political, economic, and legal dimensions. Notably, the news stories entangled glyphosate health risks with politics by relying almost exclusively on non-scientific, typically political sources for “authoritative” claims about scientific evidence. Moreover, nearly every article drew more and less explicit connections between glyphosate use and a variety of economic, political, and legal risks and problems.

Somewhat surprisingly, in terms of kinds of sources, rhetorical mechanisms, and presentation of the information there was little meaningful difference between constructions of the glyphosate risks in *El Tiempo* and those in *The New York Times*. The only major difference was the frequency of publication on the topic. Understandably, the Colombian newspaper published articles about glyphosate health risks more frequently. In general, though not with the same frequency, both papers addressed the same kinds of issues. Only the issue of spraying the border area between Colombia and Ecuador was not elaborated in depth by the *New York Times*.

Besides this difference, both newspapers tend to represent the same kinds of agents and reflect the same types of rhetorical mechanisms to construct risk in similar ways. On the surface, this similarity might be taken to suggest that the health risks are either truly minimal or it is in both countries’ interests to minimize whatever might be the health risks.

We can understand the similarity more deeply if we consider the controversy and uncertainty about this herbicide. Both newspapers reported the lack of scientific consensus about the chemical. Thus, although there is no consensus at all regarding glyphosate health risks, there was homogeneity in the way in which the discussion about that risk was presented in prominent Colombian and U.S. newspapers. It appears that the journalistic value of balanced coverage on controversial topics was more influential than national political and economic differences, at least in these two quite prominent papers.

In most cases, the articles presented a set of testimonies taking differing positions with respect to the herbicide. These sources were diverse: U.S. and Colombian government officials, Colombian farmers, spokespersons from different environmental and health organizations, military officials,

physicians, teachers, and lawyers. Because each of these agents presented her or his own opinion on glyphosate, the newspaper texts provided a space for the interchange of what Potter (1996) refers to as defensive and offensive rhetoric. As he explains:

[A] description will work as *offensive rhetoric* in so far as it undermines alternative descriptions. It may be constructed precisely to rework, damage or reframe an alternative description. . . [A] description may provide *defensive rhetoric* depending on its capacity to resist discounting or undermining. (p. 107)

Although the agents did not directly answer among themselves (because this was not a conversation), the texts constructed by the journalists created a sense of confrontation and therefore staged the dispute (see Beck, 2009). Moreover, the fact that there were contradictory voices with respect to the same phenomenon inescapably confronted readers with uncertainty; readers faced collections of controversial opinions that forced them to take a side in a controversy or to accept uncertainty (at least for the time being).

It is clear that the notion of risk is socially constructed according to a variety of interests and based on specific rhetorical moves. The analysis presented in this paper shows that this construction is highly complex because it involves not only multiple agents from different fields, but also diverse discursive mechanisms that, for example, allow some agents to make categorical and radical claims about glyphosate even though there is no consensus about its effects on human health and even though there were no scientists consulted.

It is also interesting to notice that glyphosate health risk cannot be understood in absolute terms since it is usually constructed in relation to other environmental, economic, and political risks. As we discussed, even though there are different degrees of entanglement, all of them show how relative the idea of health risk is and how it is presented in the frame of other hazards. This entangled nature of glyphosate health risk is also evident in the surprising fact that scientists are barely consulted by the authors of the newspapers articles that we analyzed. Politicians are the agents who refer to the scientific field but often in an indirect and vague form.

Finally, if there is indeed a lack of consensus about glyphosate health risk, if the toxic effects of the substance are debatable, if they depend not

only on basic biological pathways but also patterns of use, if their meanings can only be understood relative to various alternative considerations, then clearly “risk” is best understood and dealt with through a process of public deliberation. According to the most recent literature of sociology of scientific knowledge (SSK) and sociology of scientific ignorance (SSI) that we examined at the beginning of this paper, these processes of public deliberation are becoming more and more important in the negotiation of the probable meanings of a certain risk. In news contributions to public deliberation on the risks of glyphosate use in Colombia, we see the confluence of challenges to this process: a multiplicity of agents with their own particular and somehow different interests and priorities. For the U.S. government the priority is to eliminate drug production, the Colombian government seeks to eliminate drug-trafficking as a financial source for illegal groups, the Ecuadorian government opposes any U.S. initiative, indigenous communities oppose any intervention in their territories, environmental groups are worried about the ecological risks of glyphosate, and farmers call for manual eradication that would not endanger their families. The health risks of glyphosate are thus only partially understandable from the standpoint of a disinterested biological science; whatever the risks may be, they are conceivable from a wide range of interests. Discourse on these risks is unlikely to lead to shared understanding unless this diversity of risk construction is taken into account.

Notes

¹ Farmers claim that imprecise aerial spraying in the campaign to eradicate coca also fumigates vegetable crops, water supplies, houses, and people (Rohter, 2000, May. 1).

² The Food and Agricultural Organization of the United Nations (2002) defines a pesticide as “any substance or mixture of substances intended for preventing, destroying or controlling any pest, including vectors of human or animal disease, unwanted species of plants or animals” (p. 6). Glyphosate is, specifically, an herbicide, one form of pesticide.

³ For an example of a similar claim by a Colombian official, see ET3 below.

⁴ All translations were made by the first author, a native of Colombia.

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