

**Don't shun science—go for it.**  
**A science journalism model for non-scientist reporters**

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**Abstract**

Content analysis studies have documented the amount and/or depth of either science news or scientific content in news stories in which science might have figured prominently, yet the tendency seems to be for science to be either left out or scarcely covered. In this paper we present results from coverage by the Mexican press of three distinct news events: the IPCC's 2001 Report; the AH1N1 influenza outbreak during 2009; and UN's COP16 climate summit held in Cancún, México, in 2010. Our results confirm the tendency for lack of science content, from the printed press to commercial and public TV newscasts. In an attempt to address this flaw, we also present a model of science journalism which introduces a pair of tools to be used by reporters with no previous science background beyond high school. These tools are designed to help in the identification of scientific information points relevant to each news story at the earliest stages of the planning process, and then to help the reporter to recognise and extract the science content from primary sources (i.e., scientific papers in peer reviewed journals, technical reports, congress presentations and interviews with scientists). This ability

strives to empower journalists who might feel threatened by the complexities of the scientific narrative at this level. The model postulates that science content is a limiting factor towards achieving journalistic quality and steers this content towards satisfying perceived citizen's information needs, following well established characterisations of the social function of journalism. The model and its tools have been designed to guide reporters through their journalistic research under conditions compatible with the manufacture of a long-format feature piece, but can be trimmed to accommodate other genres, such as in-depth interviews and, to a certain extent, shorter quick response notes. Research on the model itself is still in the early stages. Nevertheless, we present preliminary results drawn from success stories of college students graduated from careers in journalism in México who have published dozens of pieces in mainstream media outlets, be it print, radio or TV, thus providing proof of principle.

## **Introduction**

Is science journalism a lesser form of journalism, compared to that which deals with politics, sports, entertainment or business? These areas certainly dominate the news agenda, in which journalism still hasn't quite found a proper place for science. Nelkin (1995) argues that journalists tend to cover science uncritically "as an idealized and esoteric activity, a separate culture, a profession separate from other human endeavours" (p. 30). In a meta-analysis, Schäfer (2011) has found that science coverage is a low-priority affair for most of the mass media and that the few journalists specialized in science tend to have a low status within media organizations/newsrooms. It may not be farfetched, thus, to postulate that two of the main problems the profession faces are the extremely scarce coverage of relevant subjects within science and the level of scientific content of what coverage there is. The standard way to examine these issues is by performing content analysis on published products. An exhaustive review would surely surpass the scope of this report, but already within a few media in Latin America some studies have identified an overdependence on press releases and wire services (Arboleda, 2011; Massarani et al., 2007) and a tendency to avoid reporting controversial aspects of new research results while highlighting them with an overall positive tone (Ramalho, Polino and Massarani; 2012). Studies confined to México have documented the scarcity

of space in print and airtime in broadcast media and an apparent disconnect between local scientific production and science coverage by local dailies (Laclette, 2009). The TV coverage of the 16th Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC-COP 16, loosely known as the “climate summit” of Cancún, 2010) was found to be framed with an extreme bias towards political angles and sources (Alvarado-Cruz and Cruz-Mena; 2012), and away from scientific arguments and findings.

In this report we hypothesize that these shortcomings may be explained at least in part by the lack of a clear methodology to apply the basic principles of journalism to a subject matter which is quite often extremely complex and whose more basic sources probably present a daunting challenge to reporters with no more background in science than high school. In particular, we address two practical problems of great impact in the Mexican press: i) the ability to identify specific points of scientific information relevant to any given coverage, along with optimal sources; and ii) to extract this information from the most basic sources in a manner which is compatible with the conditions in which science journalists are expected to work. Cruz-Mena (2010) has presented a couple of tools designed to help science reporters with these very issues. One of them (renamed the Table of Citizen’s Interests) can double as a planning tool for reporters and as a research tool for content analysis, and it is in this latter form that we have used it here to perform an even deeper analysis of the coverage of COP 16 on Mexican TV. Furthermore, we contrast these results with analysis of the coverage of the Third Assessment Report from the Intergovernmental Panel on Climate Change and on the A-H1N1 virus outbreak of 2009.

## **Methodology**

### **COP 16**

We analysed the coverage of the UNFCCC-COP 16 on Mexican TV combining two research tools. First, the Protocol for TV Analysis of Climate Change, designed by the Iberoamerican Network for Monitoring and Training in Science Journalism (Ramalho *et al.*, 2012), was applied to the coverage from three Mexican TV newscasts before,

during and after the event. All three newscasts are considered *prime-time*; two of them compete head-to-head on commercial networks (Televisa's *Noticieros Televisa*, NT; and TV Azteca's *Hechos*, H) while the third one (*Noticias 22*, N22) is broadcast by one of the public TV networks, managed by the Mexican National Council for Culture and the Arts (Conaculta). Since COP16 itself lasted from November 29<sup>th</sup> to December 10<sup>th</sup>, we analysed four weeks: the one immediately before (Nov. 22-26), the two weeks of the event (Nov. 29 – Dec. 3 and Dec. 6-10) and the week immediately after (Dec. 13-17). Overall, 59 hours of TV were watched<sup>1</sup>, from which all notes related to COP16 were identified, with the only exception of opinion pieces (two in total). As noted in Alvarado-Cruz (2012), the Protocol examines six dimensions: general characteristics; relevance; subject; treatment; actors and geographical location. Each dimension includes a number of items, each one of which was entered onto a spreadsheet for further analysis.

Some of the items within the Protocol may be interpreted as proxies for certain qualities of the coverage. No assumption is made, however, regarding the relevance of the scientific information included. In contrast, the Functional Model of Science Journalism (Crúz-Mena, 2010) postulates that the coverage can be planned so as to include what the reporter explicitly identifies as potential citizens interests to be satisfied by her journalistic enquiries. The main planning tool at this stage is the Table of Citizens' Interests, through which the perceived interests of the citizenry to be served dictate the information points the coverage cannot do without, and these, in turn, point to the optimal sources. For COP16, Alvarado-Cruz (2013) formulated such a Table, yielding 16 points of information (Table 1). This choice stems from journalistic considerations alone, but a further refinement can be made if one isolates those information points which in turn demand scientific information. We have crossed these refined? list of scientific information points with the spreadsheet from the Protocol to get to a second tier of analysis of how these points appeared in the coverage. Our results will be discussed in the next section.

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<sup>1</sup> *Canal 22*, the public TV network, was only able to deliver 19 hours of video, instead of the 20 from four full weeks of telecast due to a logistical problem on their part. We were assured, however, that no material related to COP16 was broadcast in the missing show.

Citizens' Interests	Points of Information	NT	H	N22	Total
Are the impacts of an increase in global temperature well known?	<b>P1</b> Evidence by sector: food, watersheds, ecosystems and health	0	3	14	17
How relevant was Cancun's summit?	<b>P2</b> Purpose	0	2	0	2
	<b>P3</b> Specific objectives	3	1	3	7
Which agreements were reached during COP 16?	<b>P4</b> Mitigation	6	11	4	21
	<b>P5</b> Adaptation	0	0	1	1
	<b>P6</b> Financing	5	5	4	14
	<b>P7</b> Technology transfer	0	1	5	6
	<b>P8</b> Others	5	2	3	10
Will these agreements allow to revert or mitigate climate change?	<b>P9</b> Holding the increase in mean global temperature below 2°C	0	0	1	1
	<b>P10</b> Scenarios over 2°C	3	3	1	7
	<b>P11</b> Application of financial schemes	2	2	0	4
	<b>P12</b> Technology exchange with other countries	0	0	0	0
Which specific actions could I demand from Government regarding mitigation and adaptation to climate change?	<b>P13</b> Honour the summit's agreements	0	0	0	0
	<b>P14</b> Follow the National Strategy on Climate Change	0	0	0	0
	<b>P15</b> Follow the recommendations set out by IPCC's AR4	0	0	0	0
	<b>P16</b> Follow recommendations by experts	1	0	9	10

**Table 1:** The first column indicates what the reporter perceived to be potential interests of an average citizen regarding this news story. To satisfy these interests, 16 points of information were identified by the reporter. The rest of the table shows the number of times each newscast addressed these points of information. Those which require some science are highlighted in gray.

## A-H1N1 influenza outbreak

In journalistic terms, the A-H1N1 influenza outbreak in México, during the end of April through to May 2009, was a complex, fast moving affair. Thus we decided to examine it with a sort of “two-gear” approach: a *prime-time* commercial TV newscast (TV Azteca's *Informativo 40*), expected to react quickly to the news flow, and an assortment of weekly print magazines (*Emeequis*, *Milenio Semanal*, *Newsweek en español*, *Día Siete*), expected to capture some of the many nuances of the story. One of us (jcm) worked with Flores (2014) to analyse the results from a one- year period (January-December 2009) for the weekly magazines and from April 22 to May 11 for the TV broadcast. To the latter we applied the general version of the Protocol for Analysis of Science News in TV Newscasts (Ramalho *et al.*, 2012) in a straightforward manner, but we used a trimmed version of it with the material from the four magazines (Flores, 2014). The adjustment was rather trivial, mainly doing away with items particular to TV but naturally absent on paper-printed magazines.

## Results

All of our results confirm the trend of scarce coverage, in terms of number of notes, extension/duration and science content. However, our methodology has allowed us to reach a slightly deeper level of analysis and highlight some important deficiencies which might be promptly addressed by journalists, should they be so inclined.

### COP 16

Out of the 59 hours aired by the three TV newscasts, only 1 hr. 39' 33" was devoted to COP 16, spread throughout 54 notes (NT=23, H=18, N22=13). The coverage reached its peak during the third week and died off quite quickly. The behaviour of N22 is noteworthy in several aspects: all of its 13 notes were aired during the third week, and 11 of those 13 on one single show (December 7<sup>th</sup>). On the other hand, 4 of the 5 notes lasting longer than 3 minutes belong to N22, but only 2 of the 24 lasting less than 1 minute. All three newscasts showed a strong bias towards political framing (47 of the 54 notes) and a certain disregard towards scientific framing (only 3 notes, all by H).

The spectrum of sources is quite telling. Governmental sources dominated the coverage with 31 mentions, but trailing closely we detected 30 instances in which the media, by not attributing the information to any source, are to be taken as sources themselves. Only 5 sources were identified as scientists or members of academia.

By crossing the results from the TV protocol with the Table of Citizens Interests we were able to assess the level to which the coverage gave citizens the option of evaluating the information with a science perspective. By isolating those information points which require specific scientific content (Table 1) we could then use the Protocol to examine how this content was delivered to the audience. Two findings here are particularly noteworthy. First, 37.5% of this information was attributed to no source, including 29% of information regarding evidence about climate impacts and 62% of information about mitigation of greenhouse gas emissions. Secondly, of the 1 hr, 39' 33" of total airtime devoted to covering COP 16 between the three newscasts, only 25' 14" covered these points of scientific information, and this time was very unevenly distributed (Table 2): 19' 4" belonged to N22, 3' 58" to H and 2' 12" to NT.

Total air time (3 newscasts)	Air time devoted to COP 16		Air time devoted to specific points of scientific information			
59 hrs.	1 hr. 39' 33"	NT	22' 19"	25' 14"	NT	2' 12"
		H	20' 53"		H	3' 58"
		N22	56' 21"		N22	19' 04"

**Table 2:** Out of 59 hours of air time devoted to COP 16 on three prime-time TV newscasts, less than a half hour was spent on points of scientific information. Furthermore, 76% of this air time came from just one newscast (N22).

### A-H1N1 influenza outbreak

A total of 59 texts and 179 TV pieces were analyzed. Nearly 51% of them had a political framing, but this was heavily biased by the TV coverage (42%). Conversely, TV was almost entirely responsible for the 23.5% of notes with a framing of science and technology impacts, the second most dominant. The most frequent kind of source was a member of government (29%), but 70% of them appeared on the TV coverage. Only 10% of all sources were identified as scientists (Fig. 1).

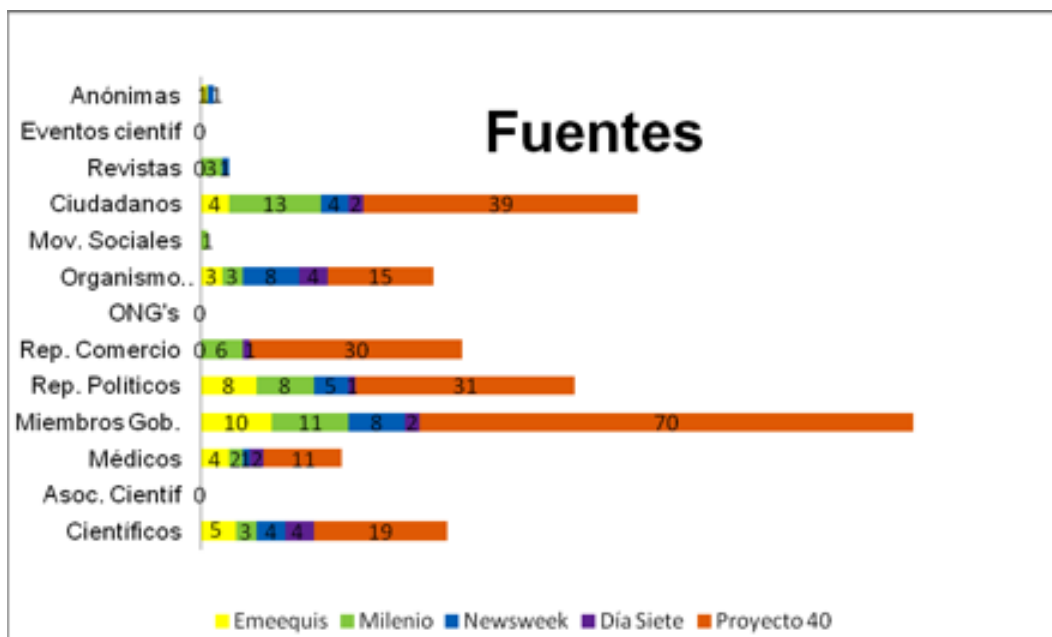


Figure 1

**Discussion**

Our results appear to be in line with those from previous studies. In one of the first uses of the Table of Interests as a tool for content analysis, Rosen (2008) already uncovered serious deficiencies in the coverage by the Mexican written press of the IPCC's Third Assessment Report. There, she showed that Mexican consumers of either or even all of the three leading dailies were left uninformed of the scientific arguments which allowed the IPCC to claim, for the first time, that climate change was indeed real and mostly of anthropogenic origin. This was the result of a one-two punch of sorts: an extremely low number of notes on the subject and an almost utter absence of science content within them. As our results here appear to show, things haven't improved a lot in the coverage, but we may be in a better position to identify some of the distal causes. We have examined coverage of two quite different news events. The A-H1N1 outbreak was an almost disastrous public health emergency, while the COP 16 came out as a peaceful meeting perceived to have been well organized and somewhat successful. Yet in both cases the dominant framing, by far, was political; and in both cases the press gravitated heavily towards political sources and away from scientists. Furthermore, the utter absence of scientific, peer-reviewed articles, in two subjects as dominated by science as climate change and a flu pandemic, is telling.

Why would so many journalists so blatantly disregard what would appear to be such an obvious angle? We consider at least two possible reasons, having to do with complacency and intimidation. As is the case in other latitudes, the Mexican press responds in a disproportionate manner to politicians (Campos, 2010), but can claim that this is necessary to fulfil their social function as watchdogs for the general public. However, Cruz-Mena (2011) has argued that this historical function should not be confined to the pursuit of gross acts of corruption and that it ought to include the systematic examination of the processes by which decision-makers do indeed decide. In particular, when public-policy decisions are made with or without the relevant scientific information, science journalists should see it as their watchdog duty to investigate and report on it, instead of complacently settling on the narrowest possible interpretation. We speculate that this complacency may have blinded editors to the journalistic value of framing stories with a science oriented viewpoint. Furthermore, it may have also blinded



reporters to the need of identifying the relevant scientific information points upon planning their story. On the other hand, if such scientific information was to be found on peer-reviewed scientific papers, Rueda (2007) has hypothesized that reading such sources might intimidate the untrained reporter. This could help explain the scarcity of scientific sources in the stories we have analyzed here.

Both shortcomings could be overcome by the use of a couple of tools available to science reporters, as reviewed by Cruz-Mena (2010). In the cases examined here, the use of the Table of Citizens Interests might have helped reporters identify the need for such relevant points of scientific information as the propagation number of the virus as determinant of its pandemic potential, or the strategies laid out by the IPCC to try and limit the global average temperature increase to 2°C. Furthermore, Rueda's method of successive synthesis (Rueda, 2007; Cruz-Mena, 2010) might have helped reporters to get the science from its most primary sources.

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