that, although they may be defined in many different ways, generally refer to the possibility of dealing with external tensions and disturbances as a result of social, political, or environmental changes. These resilient forms of behavior often include the ability to cushion the change, organize, learn, and adapt. In a certain sense, the concept replaces the idea of sustainability because it is broader and indicative of how to achieve the goal.

Our section includes texts that allude to this concept, relatively new in its application to the socio-environmental sphere. Rafael Calderón-Contreras directly explains the importance of resilience in climate change policies and places it in its empirical context by analyzing the case of biofuels as alternative energy sources. Daniel Rodríguez Velázquez's article also mentions resilience in relation to the social and human implications of climate change through his criticism of techno-naturalist visions; and he argues for recovering a social-environmental focus that implies the democratization of public policies and the participatory construction of local capabilities: in other words, resilient communities.

The concept of resiliency also brings up a big question about the role of sustainable development, traversed fundamentally by climate change, since it is not very realistic to think about a sustainable world, because to achieve it, stable conditions are needed, which, because of the effects of the phenomenon itself, will no longer exist.

If in the future we have to prepare ourselves to deal with extreme climate events that will take many lives, destroy cities, infrastructure, and crops, and deplete our water sources, does it make sense to continue to use the discourse of sustainability? Or would it be worthwhile to discuss the current paradigm and recognize that under today's conditions, what we need is resilient development? **VM**

NOTES

[1] Mike Hulme, *Why We Disagree about Climate Change: Understanding Controversy, Inaction and Opportunity* (Cambridge: Cambridge University Press, 2009), pp. 21-23.

[2] Edit Antal, "Introducción. El futuro del régimen del cambio climático y el papel de América del Norte en ello. Una perspectiva histórica y analítica," *Norteamérica, revista académica*, special issue on climate change, no. 7, 2012, pp. 5-33.

[3] Simone Lucatello and Daniel Rodríguez, comps., *Las dimensiones sociales del cambio climático. Un panorama desde México. ¿Cambio social o crisis ambiental?* (Mexico City: Instituto Mora/ENTS, UNAM, 2011).

[4] IPCC, *4th Assessment Report 2007* (Geneva: UNFCCC, 2007).

Climate Change and the Media Revelations of Catastrophes

Juan Carlos Barrón Pastor*

INTRODUCTION

Practically all civilizations have believed that the world we know is transitory and provisional, and that all societies are temporary. Depending on their knowledge and relationship to the world, almost all cultures have created images and representations of their own destruction. Today, climate change is the fashionable possible end of our civilization, and the mass media have taken it upon themselves to use it to feed the recreation of the collective imaginary of destruction.

Climate change is widely considered one of the greatest challenges to humanity today and for many decades to come. This scientific concern has permeated practically all the dis-

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ciplines, and its complexity and scope can be inferred from the other articles in this section. But we also have to recognize that, very possibly, most of the information we have for understanding the phenomena commonly related to climate change comes from the mainstream media. A Google search quickly tells us that on Internet, at the end of 2012, the idea of climate change was associated with catastrophic events and particularly with the Mayans' supposed prediction of the end of the world.

It mattered little that scientists from almost the entire world explained that the change in the Mayan calendar could not be interpreted as a Biblical Apocalypse. Little is said about the difficulties these scientists had in coming to an agreement about the weight of the human factor in the current climate change, or about what the conflicts and challenges are that led many groups to consider the most recent Doha meeting a failure in its efforts to prevent it.

Instead of the carefully argued, necessary debate about a very complex real problem or promoting mechanisms to prevent and diminish vulnerability, the information presented by the mass media —what most people consume— seems to have to be spectacular, to appeal to people's morbid side, to be based on hardly any profound research, and also to present climate change as a chain of calamitous events that will irrevocably lead to a gigantic environmental crisis. However, clearly the idea of catastrophe creates fear, but at the same time intrigues us, and certainly refers to that paradoxical pleasure that must be much more lucrative than recognizing that unfettered consumption promoted by the media is ecologically unsustainable. So, when the mainstream media cackle that there are no alternatives to the current mode of production, it is possible to logically infer that climatic cataclysm is also inevitable. But this does not necessarily have to be the case.

In this article, I will explore how this media re-creation is based on a narrative well-known in almost all cultures: legend, using the style of apocalyptic revelations that have proven

their effectiveness, permeating monotheistic religious thought for more than 2 000 years. Based on these narratives, the mainstream media generates a field of social representation that I will link to the concept of *moral panic*, for which they mainly use spiral amplification. To exemplify this, I will use the case of Hurricane Sandy, which devastated several Caribbean and Atlantic islands and part of the East Coast of the United States in late October 2012. I should point out that I will be referring to the mainstream media and not to the many, very courageous electronic alternative media and community radios that swim against the tide of the big corporations.

LEGENDS AND REVELATIONS

According to the *Cambridge Dictionary*, "Legend is a very old story or set of stories from ancient times, or the stories, not always true, that people tell about a famous event or person." However, as Delehaye explained more than a century ago, to be able to work, the legend has to be sufficiently believable and have some kernel of truth at its core, and it is that real element that differentiates it from a myth.[1] The power of a legend lies in its capacity to build a convincing narrative of how a highly improbably, but sufficiently verifiable event happened. Revelations, on the other hand, according to the same dictionary, happen "when something is made known that was secret," or are "a fact that is made known." In many Middle Eastern religions, deities commonly reveal secrets or inspire a piece of knowledge among their chosen, initiates, or prophets, not through argumentation, but through a vision or divine message.[2]

Of course, legends and revelations cannot be considered reliable in scientific thought, which can only refer to them as a starting point for a hypothesis or as an object of study in cultural, humanistic, or social research. Nevertheless, the play between the plausible and the unbelievable and between disaster foretold, known by everyone, combined with the words of a select group of scholars warning of the need to heed the gravity of today's situation create an irresistible media cocktail for consumption.

Frankenstorm Sandy

Hurricane Sandy was given several nicknames, used to convey the information in the media and explain why it could combine with a winter storm that came a few days after the hurricane hit the East Coast of the United States. The most common were "Frankenstorm" and "superstorm." The first term seems to have been coined by Jim Cisco, but it was later banned by CNN and other media for "trivializing the tragedy." So then the term "superstorm" came into general use, but even this became polemical when in January 2013, *The Washington Post* used the expression the "so-called superstorm" to refer to the hurricane during a debate about the monies that should be earmarked for aid to those affected by it.

It is not my intention to minimize the tragedy or the lack of foresight that caused very high human and economic costs, despite the impressive deployment of resources in the days after the storm made landfall on the U.S. coast and even prompted President Obama to temporarily cancel his campaign activities. However, strictly speaking, Sandy was a type-two hurricane, even at its height in the Caribbean; and when it hit the U.S. coast, it was a type-one on the Saffir-Simpson scale, which classifies —very controversially— storms on a scale from one to five according to their wind velocity. That is, Sandy did not even come close to the 49 level-five hurricanes registered over the last century, nor was it comparable to others that have made landfall in recent years in the United States, like Katrina or Rita.

It is very possible, then, that using terms like "Frankenstorm" or "superstorm" overestimated the phenomenon. The question will be whether using this kind of expression achieved better forecasting and response to the disaster or if it only served to keep the audience captive for commercial reasons. What we can say is that to overestimate the phenomenon, a form of discourse was used in which, as I already mentioned,

Biblical revelation and legend are combined. In that mix, the media seemed to be the chosen ones for revealing small doses of information that only an elite —in this case the media themselves— had complete access to. On the other hand, what was being said had a kernel of truth to reinforce the story's believability, but at the same time contained, and even promoted, magical, religious thinking. This handling of the discourse seemed to serve ideological and commercial ends more than fostering a culture of disaster prevention, since it seemed to promote the idea that there is little we can do to mitigate climate change and/or to make ourselves more resilient.

## The Amplification Spiral and Moral Panic

During Hurricane Sandy, the main broadcast news networks monitored by CISAN seemed to confuse "alerting" the population with "alarming" the population. They also seemed to focus on creating a form of what Cohen called *moral panic* through artificial mechanisms to create amplification spirals.[3]

Moral panics are social overreactions to an episode, a person, or group "defined as a threat to societal values."[4] It is even a concept commonly used to explain the reproduction of social stigma; in this case I use it to understand how the disruption of normality is constructed and amplified due to the so-called "superstorm." The mass media's exaggerated response to the hurricane created a kind of feedback loop often used in media studies to explain Cohen's concept of the amplification spiral.

As the figure in next page shows schematically, the media create, re-create, and amplify each of the elements that make up a social over-reaction to a climate event. At the same time, they continually define and redefine the notion of climate change as something preordained and expressed almost exclusively through disasters that lead to anomalous social behavior that is justifiable in exceptional circumstances and is the raw material for the news.

> The mass media's discourse seemed to serve ideological and commercial ends more than a culture of disaster prevention; it seemed to promote the idea that there is little we can do to mitigate climate change.

AMPLIFICATION SPIRAL TO CREATE MORAL PANIC
IN THE CASE OF SUPERSTORM SANDY
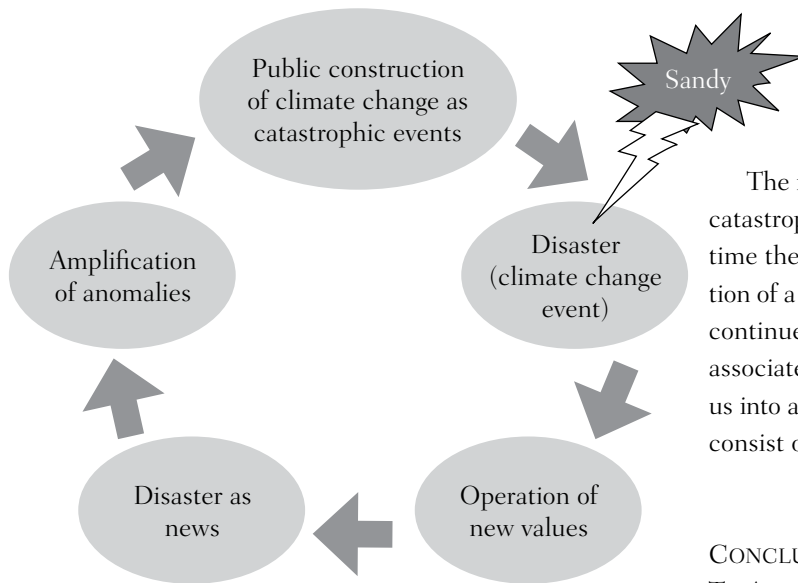
Source: Developed by the author based on S. Cohen, *Folk Devils and Moral Panics* (Abingdon, Oxford, UK: Routledge, 2002).

Entertainment industries could make the difference in creating awareness among the population about the huge impact of small day-to-day actions and about the provisions that would reduce our vulnerability.

The rest of the year, climate change offered up very few catastrophes, and the media resorted to its best shots every time they wanted to touch on the issue. The very construction of a catastrophe and the re-creation of the events jibe to continue developing the media narrative of climate change associated to inevitable calamities that will inexorably take us into an environmental crisis that —in this narrative— will consist of a cataclysm of gigantic proportions.

CONCLUSIONS: MEDIA POTENTIAL FOR HELPING
TO ADAPT AND DECREASING VULNERABILITY

Of course, climate change represents one of the main risks to the continued existence of our civilization. If we continue on the same path, the disasters related to it will continue to multiply. However, it is a much more complex problem than a conglomerate of legends and revelations, much more than a chain of "natural" disasters amplified in the media, and above all, it is not inescapable. A great deal can be done to lessen climate change as such, to reduce our vulnerability, and to adapt better to our planet both in times of calamity and in our everyday lives.

It is understandable that the mainstream media resort to millennia-old, multicultural narrative structures to try to seduce and captivate a larger and larger audience. However, it seems to me that these entertainment industries include people with immense creative potential who, even in the framework of their own interests, could make the difference in creating awareness among the population about the huge impact that small day-to-day actions could have and about the provisions that would reduce our vulnerability to these events.

Among the day-to-day actions that could be stepped up through media strategies are saving energy, purchasing from small local firms, supporting our communities' cultural projects, increasing our space for personal contact, or reporting on the importance of strengthening scientific, social, huma-

From its baptism as "Frankenstorm," the media began constructing the notion of catastrophe itself and the identity of this event in particular. The media compete to convince the audience that it should stay glued to news channels where they reveal small doses of revelations by experts. Between one revelation and the next, the previously broadcast scenes and information are repeated over and over, and each time their content is broadened. For example, a particularly large wave washed up on a coastal street; it is just a wave, but now it will be repeated hundreds of times until another image and its respective revelation arrives. Or, a journalist had to do his report "on the scene" inside a huge puddle of water at the crossroads of two streets in a small New Jersey town. In the studio, images are gathered —the more eye-catching the better— and are used to create "informational spots" accompanied by music appropriate to the feelings that they seek to evoke. Studio commentators have to show their dismay and concern about what is happening "on the scene," while the images are being edited better and are jumbled together with other images and revelations to construct little by little the narrative of the catastrophe, the legend of what happened.

nistic, and technological research to build the alternatives that would move toward an ecologically sustainable planetary civilization.

In addition, during events like Hurricane Sandy, the media could help in not cooperating in the reproduction of amplification spirals of moral panic. It is one thing to report truthfully and in a timely fashion, and a quite different matter to use discourses that can spread scenes of states of exception, in which the values of survival are the ones that prevail, which can lead to desperate action that often complicates the situations more, increasing our vulnerability as individuals and communities. For example, they should discourage panic buying instead of promoting it, and stimulate solidarity and not insecurity and mistrust among people, sharing and not hoarding

of resources, and facilitate interaction and neighborhood cooperation instead of people isolating themselves. **VM**

NOTES

[1] Hippolyte Delehaye, *The Legends of the Saints: An Introduction to Hagiography* (London: University of Notre Dame Press/Longmans, Green, 1907), http://archive.org/details/legendsofthesaints012977mbp.

[2] Karen Armstrong, *The Great Transformation* (New York/Toronto: Alfred Knoft, 2006).

[3] Stanley Cohen, *Folk Devils and Moral Panics* (Abingdon, Oxford, UK: Routledge, 2002).

[4] Ibid., p. 9.

Climate Change, Infrastructure, and the Promethean Myth

Carlos Domínguez*
Marie Karaisl**

There is no technology without a negative social, economic, and/or environmental impact. This is the case whether a new automatized process displaces the use of labor in a particular economic sector or the more intensive use of solar panels drives up the demand for certain materials like cobalt or cadmium, often located in social and environmentally sensitive areas.

Indeed, benefits of technology might exceed negative side effects, but this requires finding the mechanisms to use part of these benefits to compensate negative impacts. The quest for social and economic development since the industrial revolution may be summarized in this way: it is not only

a struggle to improve general living conditions (for example, health, education, or gender equality), but also a struggle to palliate the negative effects of our own efforts to achieve development goals.

In our times, innovation and technology are often understood by the layman as "new artifacts," but we are thinking of technology in a broader sense. Strictly speaking, technology does not only refer to new artifacts (e.g., the bicycle, the car, the solar panel, the smart phone, etc.). Technology and technological change also refer to human activities, to new knowledge, and to new ways in which existing knowledge is applied.[1] Thus, for example, the artifacts, methodologies, and strategies chosen to face the challenges of climate change include particular technologies (like wind farms and solar panels); new ways to think about existing ones (for example, hydro-electrical dams to reduce greenhouse gas emissions); and assess-

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