

The Tragedies and Politics of Social Contagion



Very often, scientific understanding of a phenomenon provides a base to promote change. This is relevant in social phenomena in which understanding can lead to better public policies. But it is of utmost importance when the phenomenon under study involves violent behavior and the safety of innocent people.

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Imitation plays a very important role in our lives. In fact, it is argued that our constant instinct to imitate others has set humans apart from other animals and has driven the rich cultural diversity that exists in our world.¹ Imitation is our main way of learning.

Indeed, imitation provides an efficient and somewhat successful rule-of-thumb for how to behave in variable and complex environments. We imitate others to sort out how to behave when we visit a foreign culture, and we imitate the successful among us in order to be successful ourselves.

But despite its benefits, imitation can lead to organized behavior at the collective level which may not always be desirable. A tragic example is when our instincts for imitation line up with prevalent violent behaviors in the context of inadequate public policies and laws.

This is precisely what a group

of us found in the United States when we studied the mass and school shootings that have been reported in the last years.²

Some of the most recent tragedies are the movie theater shooting in Aurora, Colorado, in July 2012, and the Newtown, Connecticut, school shooting in December of 2012. These events are not isolated and they are only two among hundreds of other tragic incidents.

What we found is evidence that the perpetrators of mass murders and school shootings are influenced by, and imitate, similar events in the recent past. In addition, we found (as many before us have) that these incidents were positively associated with the state prevalence of firearms. In other words, a recent public shooting, combined with a propitious environment, will increase the probability of occurrence of an event in the near future.

The spread of this violent behavior through chains of imitation can thus be studied like a disease that spreads through society. A disease whose capacity to spread can be hindered by appropriate public policies and laws.

What does this mean, how does it happen, and what can we do? Much has been written already. Our investigation is not the first to offer insights into the connections between criminal acts and social connectedness. But we contribute with important empirical confirmation that social contagion plays a central role in the lives of people.

As a society, we are constantly debating about what are the means we can use to reduce the occurrence of tragedies such as public shootings, what information should be transmitted through the media, and how do we deal with violent behaviors in general. Science has a strong voice in

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†Painting to left: *The Blue Soldier*, Oil on Canvas, 2012. Series: Urban Diversity. Artist: Ahmed Farid.

these debates, since thanks to her we can bring a quantitative understanding on these issues.

Contagion in mass and school shootings

In our study, we propose that public shootings are contagious. From this point of view, a person is “infected” when his brain has been colonized by the idea of a murderous act. And, as with any other infection, we recognize it by its symptoms: a public attempt to kill others.

The idea of social contagion is not new at all, and was actually popularized in Malcolm Gladwell’s 2000 book *The Tipping Point*.³ As the saying goes, the devil is in the details. And the details, in this case, are how to quantify social contagion, and how to test if this idea is right or wrong. To investigate this problem, one has to think of how infections work and how they reveal themselves.

Infectious diseases (like tuberculosis and influenza) are caused by microscopic agents (such as bacteria or viruses) that are transmitted through different mediums (air, water, etc.), hopping from host to host. This process of contagion leaves a trail of symptoms and disease behind, creating one of the aspects of the process of contagion that is central to our analysis: *burstiness*. In other words, infections always come in the form of clusters in time (and, sometimes, space), as depicted in figure 1.

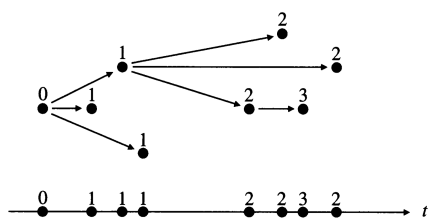


Figure 1: The branching structure and burstiness of contagion. Each node is an infected individual, and the numbers represent different steps, or generations, in the contagion process. (Image from Møller & Rasmussen, 2005.⁴)

As a consequence, we expected to observe shootings to be clustered in time, displaying, like short epidemics, small bursts of incidents. Identifying this statistical pattern is not trivial. There are external factors that might be influencing a clustering of events in time, such as political events, or even climate. But once you know how to disentangle external background effects, the endogenous signals of contagion in mass and school shootings become clear and strong.

The analogy with infectious diseases is not perfect, though. For instance, whereas you cannot get sick from influenza spontaneously, you can, in fact, develop a desire to commit a violent act spontaneously, without having ever been exposed to other such behaviors. Also, whereas in infectious diseases the infective agents are physical and are made of atoms and molecules, in the case of mass and school shootings, the infective agent is a more abstract entity: it is an idea, and it is made out of information. It would be an example of what some biologists have called a *meme*.⁵

This meme is transmitted from brain to brain, without spatial constraints as long as there is someone or something broadcasting the information. You can easily guess that for mass and school shootings the mode of transmission is mass media.

Mass media as a mode of transmission is only part of the phenomenon. The other part is whether the meme transmitted is able to thrive and become symptomatic in the colonized environment. In other words, a disease also needs a suitable milieu to grow, develop, and reproduce. In epidemiology, we call these “environments” *susceptible* individuals. These are the individuals that for some reason lack a protection against the disease. Notice, however, that the protection of an individual can come from his own immunity, or from the immunity of the community he is part of. This form of immunity is what epidemiologists call *herd immunity*.

To understand this, imagine a

town where all individuals have been immunized (e.g., through vaccination) against a disease, except one person. This single individual, in spite of missing the vaccine, is in fact protected against the disease. And the wall that protects him from being infected is the society in which he is fortunate to live (figure 2). The same can apply to the transmission of violent behaviors.

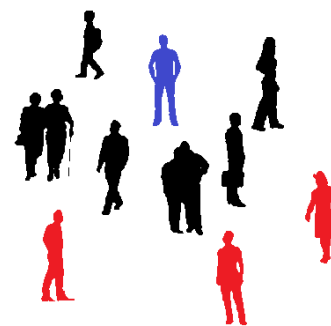


Figure 2: The unvaccinated individual (blue) is immunized against the infected individuals (red) thanks to the vaccinated individuals that are surrounding him (black).

Fighting bad contagion with good contagion

Thinking of mass and school shootings in epidemiological terms allows us to understand the phenomenon better. One of the strengths of this point of view is that it directs our attention to potential solutions to the problem. For example, it leads us to ask whether the solution can be thought of as a process of “immunization”.

While we all carry varying predispositions to act violently in violent environments, we can all get “immunized” by (1) changing the environment so that the meme finds it difficult to be transmitted, and (2) by preventing the meme to instantiate in the form of a violent act. Both prevent the further propagation of the epidemic.

The first can be accomplished

by stimulating correctly our feelings of empathy, not just towards our family and friends, but also towards strangers. As unusual as it may sound, being able to put oneself into somebody's shoes is in effect a "vaccination" against desires to act violently towards others. As a bonus, empathy is also contagious. This is evident, for example, with yawning. Studies show that yawning is both a manifestation of empathy and it is also contagious.

The second can be achieved by identifying at-risk individuals that may be, for one reason or another, more prone to anti-social behavior, and providing them with better medical and psychological support. Furthermore, creating situations in which the tools to harm others are out of reach or difficult to use will prevent the infection to develop its symptoms.

Steven Pinker shows in his 2011 book *The Better Angels of Our Nature* that these two effects have largely driven the general decline in worldwide violence over the last centuries. He highlights that in the course of history people have increased their *circles of empathy*, and he shows how, at the same time, we have restricted our access to arms. He recalls, for instance, the reason why table knives have a rounded rather than pointed end. People used to eat with the same sharp and lethal knives they carried to defend themselves and attack others. The use of a rounded knife while eating, together with the establishment of other table manners, proved to be a good strategy to prevent quarrels over dinner to result in tragedy.⁶

It is natural to think that we can still push a bit further our capacity for empathy and our restrictions to arms.

Science and Politics

The right to keep and bear arms, as stated in the Second Amendment to the U.S. Constitution, stands as one of the representative features of

American Culture. But it has been the focus of much debate recently. The supporters argue that violent behavior and criminal acts are hampered by allowing citizens to carry their own arms for self-defense. The opponents on the other side argue that carrying arms would not deter criminals to act, and would rather give them the means to be successful in their actions. The debate seems endless.

Also, statements about the vices of mass media have now become cliché and hackneyed.

But these debates have to be discussed under the umbrella of Science. Of course, scientific inquiry is mute regarding questions about how things *ought* to be. But resolutions about how things ought to be are directly dependent on the state of affairs in the real world. And our knowledge about the world comes from Science.

Thinking of mass and school shootings in epidemic terms helps in the debate. And quantifying the effects of the contagious process helps even more.

From the standpoint of our study and the results we found, allowing people to carry arms is analogous to supplying people with pills that carry in them the virus of the flu. And it is our opinion, informed by our empirical analysis, that the sensationalist broadcast of mass and school shootings is like letting people cough openly into the air when they are sick with the flu. In this world, you would have to agree, flu would wreak havoc on society.

What is interesting, is that mass media is precisely the latest in a sequence of technologies that have caused the expansion of our circles of empathy. A sequence that started with the printing press revolution, and the increase in literacy, which enabled people to experience others' experiences. With this in mind, reports of violent events should be tailored to activate the *good angels* within us, to paraphrase Pinker. Many do, but let

us add the science.

We all look at newspapers, television, the internet, etc., not only because we seek knowledge, but also because we are seeking to get influenced about how to behave, what to buy, where to travel, what to read, what values to hold on to, and *who to imitate*. We should protect this industry, not only because it is a source for information and value creation, but also because it represents freedom of speech. We should equally defend our right for self-defense.

These freedoms should be exercised wisely, however, because we live in a connected world and we are a species with very particular instincts and needs. Politics have to account for this. Our study adds an additional drop to the mounting evidence that shows that even though our connectedness is our strength, it may also be our weakness.

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