

## **Covid Musing – September 2, 2020 – North Star Mennonite – Dan Graber**

One of my goals in sharing these musings is to help us gain a variety of perspectives. This may help us with the dynamic of fear as well and facing the future. It may, emphasis, may, keep us from repeating history. Sadly, most learning is not cumulative across generations. As one person shared with me, quoting Elizabeth Elliot: "We are meddling with God's business when we let all manner of imaginings loose, predicting disaster, contemplating possibilities instead of following one day at a time, God's plain and simple pathway." So a little history can be helpful! Enjoy!

### **It's Time to Tell a New Story About Coronavirus—Our Lives Depend on It**

*The way we talk about contagion matters. It shapes how societies respond—and whether many of us will survive.*

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**JULY 14, 2020**

**THE NATION MAGAZINE**

**Dr. Beak: During the plague years, doctors wore iconic getups that included masks filled with scented herbs to protect them from dangerous miasmas.**

In the summer of 1832, a mysterious scourge that had come all the way from Asia loomed over the city of New York, having ravaged London, Paris, and Montreal. Medical officials collected data showing that the disease—cholera—was spreading along the newly opened Erie Canal and the Hudson River, heading straight to New York City. But New York's leaders did not attempt to regulate traffic coming down the waterways.

The demands of commerce were part of the reason; officials knew that shutting down the routes would have disrupted powerful commercial interests. But no less powerful was the belief that they didn't need to. According to the reigning paradigm, contagions like cholera spread through clouds of smelly gas called miasmas. Cholera, one expert said at the time, was "an atmosphere disease...carried on the wings of the wind." To protect themselves from these deadly gases, people burned barrels of tar and strung up large pieces of meat on poles, which they hoped would soak up the cholera vapors. In London they attempted to rid their homes of stinky miasmas by dumping human waste into the river, which also served as the city's drinking water supply.

The stories people told about the contagion in their midst sealed their fate. Outbreaks of cholera plagued London, New York, and many other cities for the better part of a century, killing millions of people.

Paradigms—the obscure, unspoken conceptual frameworks that shape our ideas—are powerful. They bring order and understanding to our observations about the messy, changing world around us. Without them, the philosopher Thomas Kuhn said, scientific inquiry is impossible: We would not know which questions to ask or what facts to collect. But paradigms blind us, too, as during the cholera pandemics of the 19th century, elevating certain narratives and serving particular interests, often to our peril.

Today we once again face a virulent, fast-spreading pathogen. Our scientific understanding has advanced since the time of cholera, but it's nonetheless constrained by paradigms that shape how we respond to this outbreak—and to future ones. It's worth pausing, then, to unearth this hidden,

explanatory framework lurking in the stories we tell about SARS-Cov2, the virus that causes Covid19. Which realities does it illuminate, and which does it obscure? Whose interests does it serve, and whose does it leave behind?

In the case of Covid-19, the story we have told from the beginning has been one of a passive population suddenly attacked by a foreign being. The pandemic, in popular discourse, is an act of external aggression, an assault by an “invisible enemy” that “attacks people so savagely,” as one physician put it in *The Baltimore Sun*. In *The New York Times*, Steven Erlanger compared the virus to an act of terrorism or a natural disaster. The writer Michael Lind likened it to “an alien invasion.”

In accordance with these martial metaphors, the response has been framed as a form of combat against an invasive intruder. France declared itself “at war” with the infection. China launched a “people’s war.” And Donald Trump hailed himself a “wartime president.” Nations grounded flights and closed borders. In the earliest weeks of the outbreak, when cruise ships full of sick passengers drew near, countries waved them away, their pleas for medicine, food, and care be damned.

While the scale of the response has been unprecedented, the ideas framing the outbreak emanate from an old paradigm about contagion. According to that paradigm, contagion is a problem of microbial invasion, a foreign incursion into domestic bodies to be repelled with military might. Consider the history of how the Western biomedical establishment has named contagions. For decades, they named them based on where they were discovered or first erupted when those places were distant but not when they were local.

For example, Ebola was named after a river in the Democratic Republic of the Congo, and the 1918 influenza was dubbed Spanish flu, although it didn’t originate in Spain. But HIV, whose emergence was first charted in California and New York in the 1980s, was not the “LA virus” or “NYC-1,” and the antibiotic-resistant MRSA infection, which exploded in Boston in 1968, is not known as “the Boston plague.” Infectious diseases were so often named in ways that emphasized their otherness and provoked stigma that the World Health Organization issued more-neutral naming guidelines in 2015.

Our paradigm of microbial invasion has its origins in the dawn of germ theory in the late 19th century, when the chemist Louis Pasteur discovered the microbe responsible for causing a disease in silkworms and the microbiologist Robert Koch identified the microbe that causes anthrax. For centuries before then, Western medicine described contagions in terms of a dynamic interplay between miasmas (which were shaped by environmental conditions, such as the climate and the local geography) and the interior qualities of individuals (from their morals to the unique balance of “humours” in their bodies). Pasteur and Koch produced evidence that suggested a more tangible process: that disease was not the result of complex disequilibriums but an outcome of the simple presence of identifiable microbes.

The germ theory of disease forged a whole new way of thinking about and acting against contagion. Instead of untangling the web of social relations, environmental factors, and human behaviors that promoted disease, scientists could blame a single microscopic speck. A disease’s movement could be arrested or even repelled entirely. It could be surgically excised or destroyed with killing chemicals, which early 20th century scientists labeled magic bullets. The multifarious process of infection was reduced to its simplest components: a naive victim, a foreign germ, an unwanted incursion.

The paradigm of microbial invasion revolutionized medicine, allowing us to tame contagions in brand-new ways, with magic bullet antimicrobial drugs and effective vaccines. As disease historians have

documented, these interventions alone did not tame cholera, malaria, and other contagions that plagued Western societies. But their arrival coincided with broad social changes, many pushed by the sanitary reform movement, that did. The establishment of clean water systems, sanitation, and safe housing regulations—all hard-won social reforms—dramatically reduced transmission opportunities for pathogens like cholera. The toll of infectious diseases plummeted. At the end of the 19th century, 30 percent of US deaths were caused by infection, and by the end of the 20th century, fewer than 4 percent were.

Nevertheless, the paradigm of the invasive germ and its attendant interventions got nearly all the credit, becoming “the dominant force in Western medicine,” as one observer put it. Part of this may have been the genuine elegance of the theory. But the magic bullet cures it made possible also dovetailed with the logic of industrial capitalism, in which the divisions between us and them, the pure and the contaminated, were clear—and, just as crucially, could be managed through the buying and selling of biomedical commodities.

Despite the seductive simplicity of the invading-germ paradigm, scientists began to realize almost immediately that contagion is far more complex than a simple process of incursion. With each advance in the science of microbial detection—from ever more powerful microscopes to new methods of detecting microbial DNA—scientists found evidence of ever more microbes lurking in ever more places, including inside the human body. Most of these microbes are beneficial, even necessary, researchers have learned in recent years. And when they cause harm, the problem often stems from the way our bodies respond to microbes, not the microbes’ actions themselves.

The paradigm of invasion casts microbial pathogens as invisible enemies full of incipient violence, but more recent discoveries have revealed that even those responsible for deadly outbreaks can be strangely quiescent in certain environments. *Helicobacter pylori*, for example, causes gastric ulcers in some while lounging harmlessly inside the stomachs of others. Strains of *Lactobacillus* that lead to sepsis in some are popped by others as “probiotics.”

Meanwhile, microbiologists have discovered that many pathogens live in the bodies of other animals by the fistful and cause them no problems whatsoever. Zooplankton encrusted with cholera bacteria, for instance, float unperturbed by their microscopic guests in warm coastal waters; wild waterfowl, teeming with influenza viruses, fly blithely through the skies; and bats, their tissues full of Ebola, flit unharmed through the nighttime air.

All of which is to say that, contrary to the central plotline of the paradigm of invasion, today’s pathogens don’t arrive in untouched territory as invaders do. Rather, if there is any invasion underway at all, it is spearheaded by us. The majority of pathogens that have emerged since 1940 originated in the bodies of animals and entered human populations not because they invaded us but because we invaded their habitats. By encroaching on wetlands and cutting down forests, we’ve forced wild animals to crowd into ever smaller fragments of habitat, drawing them into intimate contact with human populations. It’s that proximity, which we force through our destruction of wildlife habitats, that allows many animal microbes to find their way into human bodies.

But the paradigm of microbial invasion obscures these inconvenient facts. Despite the growing scientific acknowledgment of the complexity and nuance of the disease process and our own complicity within it, the biomedical establishment focuses most of its attention and resources on finding magic bullet cures for contagion rather than addressing the underlying drivers. This is true

despite the fact that we've rarely been able to develop drugs and vaccines for emerging pathogens fast enough to save us from their toll. As a 2018 *Lancet* study reported, developing a single vaccine "can cost billions of dollars, can take over 10 years to complete, and has an average 94% chance of failure." It took dedicated researchers more than a decade to develop effective therapies for AIDS, and to this day, there is no effective HIV vaccine. Drugs and vaccines for a wide range of other newly emerged pathogens, from the West Nile virus to Ebola and MRSA, have proved similarly elusive.

Even in the case of older pathogens, vaccines that provide full immunity and treatments that deliver us from illness are the exception, not the rule. Smallpox is the only human pathogen that we've eradicated through a purposeful campaign of vaccination, yet it ravaged human populations for centuries before we succeeded. The best treatment for influenza, a pathogen that annually infects a billion people, can do little more than reduce the duration of illness by a day or two. And despite a massive and expensive annual effort to research, develop, and distribute flu vaccines, they're only partly effective, leaving some half a million people to perish every year.

Nevertheless, six months into our current pandemic, hype and desperate anticipation surround the development of drugs and vaccines. But with treatments and vaccines still months away, the fact is that we must face SARS-Cov-2—as well as the next coronavirus, influenza virus, or other novel pathogen—bereft of medical weaponry. Our only hope to stave off the worst damage is to alter our behaviors to reduce opportunities for the pathogen to spread.

**It's time for a new story**, one that more accurately captures the reality of how contagions unfold and why. In this story, pandemics would be cast as both a biological reality and a social phenomenon shaped by human agency. And the coronavirus, if cast as any kind of monster at all, would be a Frankenstein's monster: a creature of our own making. We, after all, created the world in which SARS-Cov-2 evolved, one in which our industry has swallowed up so much of the planet that microbes from wild animals easily slip into livestock and humans. We created the society of overcrowded prisons and nursing homes staffed by underpaid employees who must work in multiple facilities to make ends meet; in which employers force their workers to labor on meatpacking lines even if they're sick; in which asylum seekers are crammed into detention centers; and in which people living in hard-hit cities like Detroit lack access to clean water with which to wash their hands.

A narrative that elevates these realities would compel us to consider a much wider range of policy responses to counter the threat of pandemics. Instead of blaming outsiders and waiting for magic bullet cures, we could work to enhance our resilience and reduce the probability of pathogens reaching us in the first place. Instead of reflexively demanding that killing chemicals be slathered across the landscape to destroy mosquitoes infected by the West Nile virus and ticks infected with Lyme disease bacteria, we could restore the lost biodiversity that once prevented their spread. We could protect the forests where bats roost, so that Ebola, SARS, and other viruses stay in them and don't find their way into human populations.

A new story would allow us to see contagion as more than a purely biomedical phenomenon to be managed by biomedical experts and, instead, as the dynamic social phenomena they are. It would necessitate new alliances among public health advocates and environmentalists, between doctors, epidemiologists, wildlife biologists, anthropologists, economists, geographers, and veterinarians. It would shift the meaning of human health itself. Instead of thinking of good health as the absence of pathogenic contamination, we would understand it as a complex latticework linking the health of our livestock, wildlife, and ecosystems to the health of our communities.

When pathogens emerge, we could scrutinize our social and economic relations to find ways to reduce transmission opportunities as attentively as we screen pharmaceutical compounds to create new pills and potions. When we encounter respiratory pathogens that spread silently in crowded places, we could empower our workers with hazard pay, sick leave, and fair wages. When faced with viruses ferried around by mosquitoes, we could work to improve drainage and housing so that people aren't regularly exposed to their bloodthirsty bites. Rather than prop up a drug industry that profits from our sickness, we could work to prevent the conditions that lead to contagions.

Progress toward this new paradigm has already begun, thanks to a new approach called One Health, which considers human health in the context of the health of wildlife, livestock, and ecosystems. As a theoretical approach, One Health has been endorsed by the WHO along with a wide range of high-level agencies in public health and veterinary medicine. It's been operationalized, on a more limited basis, as well.

After a 2005 outbreak of avian influenza, USAID used it to launch the Predict program, which sought to identify viruses that could slip from animals into humans. The New York City-based EcoHealth Alliance used a One Health approach to discover a reservoir of SARS virus in bats, opening up new ways to understand the coronaviruses that afflict humans. And in the Netherlands, it's been used to tackle the spread of antibiotic-resistant pathogens in people, by addressing the use of antibiotics in livestock.

These still-nascent efforts could go much further to address the social, political, and environmental phenomena that drive the emergence of infectious disease, but they are already under attack. The Trump administration canceled the Predict program in 2019 and recently pulled EcoHealth Alliance's government funding. Still, there are signs that policymakers are awakening to the value of the approach. Just last year, bipartisan legislation to establish a national One Health framework to prevent and respond to disease outbreaks was introduced in Congress.

We can write a new story for this pandemic and the next ones. We must if we hope to survive a future punctuated by outbreaks. In this new story, the microbial other will fade into the background, and the nature of our relationships to one another and the environment will claim the foreground. Instead of being the passive victims of microbial invaders, we can emerge as the makers of our own destiny who can rebuild the postpandemic world anew.