

# Technological Advances

Scale is one of the critical concepts necessary to understand societal pressures. The increasing scale of society is what forces us to shift from trust and trustworthiness based on personal relationships to impersonal trust—predictability and compliance—in both people and systems. Increasing scale is what forces us to augment our social pressures of morals and reputation with institutional pressure and security systems. Increasing scale is what's requiring more—and more complicated—security systems, making overall societal pressures more expensive and less effective. Increasing scale makes the failures more expensive and more onerous. And it makes our whole societal pressure system less flexible and adaptable. This is all because increasing scale affects societal pressures from a number of different directions.

- *More people.* Having more people in society changes the effectiveness of different reputational pressures. It also increases the number of defectors, even if the percentage remains unchanged, giving them more opportunities to organize and grow stronger. Finally, more defectors makes it more likely that the defecting behavior is perceived as normal, which can result in a Bad Apple Effect.
- *Increased complexity.* More people means more interactions among people: more interactions, more often, over longer distances, about more things. This both causes new societal dilemmas to arise and causes interdependencies among dilemmas. Complex systems need to rely on technology more. This means that they have more flaws and can fail in surprising and catastrophic ways.
- *New systems.* As more and different technology permeates our lives and our societies, we find new areas of concern that need to be addressed, new societal dilemmas, and new opportunities for defection. Airplane terrorism simply wasn't a problem before airplanes were invented; Internet fraud requires the Internet. The job of the defenders keeps getting bigger.
- *New security systems.* Technology gives certain societal pressure systems—specifically, reputational and institutional—the ability to scale. Those systems themselves require security, and that security can be attacked directly. So online reputation systems can be poisoned with fake data, or the computers that maintain them can be hacked and the data modified. Our webmail accounts can be hacked, and scammers can post messages asking for money in our name. Or our identities can be stolen from information taken from our home computers or centralized databases.
- *Increased technological intensity.* As society gets more technological, the amount of damage defectors can do grows. This means that even a very small defection rate can be as bad as a greater defection rate would have been when society was less technologically intense. This holds true for the sociopath intent on killing as many people as possible, and for a company intent on making as much profit as possible, regardless of the environmental damage. In both cases, technology increases the actor's potential harm. Think of how much damage a terrorist can do today versus what he could have done fifty years ago, and then try to extrapolate to what upcoming technologies might enable him to do fifty years from now.<sup>1</sup> Technology also allows defectors to better organize, potentially making their groups larger, more powerful, and more potent.

- *Increased frequency.* Frequency scales with technology as well. Think of the difference between someone robbing a bank with a gun and a getaway car versus someone stealing from a bank remotely over the Internet. The latter is much more efficient. If the hacker can automate his attack, he can steal from thousands of banks a day—even while he sleeps. This aspect of scale is becoming much more important as more aspects of our society are controlled not by people but by automatic systems.
- *Increased distance.* Defectors can act over both longer physical distances and greater time intervals. This matters because greater distances create the potential for more people, with weaker social ties, to be involved; this weakens moral and reputational pressure. And when physical distances cross national boundaries, institutional pressure becomes less effective as well.
- *Increased inertia and resistance to change.* Larger groups make slower decisions; and once made, those decisions persist and may be very difficult to reverse or revise. This can cause societal pressures to stagnate.

In prehistoric times, the scale was smaller, and our emergent social pressures— moral and reputational—worked well because they evolved for the small-scale societies of the day. As civilization emerged and technology advanced, we invented institutions to help deal with societal dilemmas on the larger scales of our growing societies. We also invented security technologies to further enhance societal pressures. We needed to trust both these institutions and the security systems that increasingly affected our lives.

We also developed less tolerance for risk. For much of our species' history, life was dangerous. I'm not just talking about losing 15–25% of males to warfare in primitive societies, but infant mortality, childhood diseases, adult diseases, natural and man-made accidents, and violence from both man and beast. As technology, especially medical technology, improved, life became safer and longer. Our tolerance for risk diminished because there were fewer hazards in our lives. (Large, long-term risks like nuclear weapons, genetic engineering, and global warming are much harder for us to comprehend, and we tend to minimize them as a result.)

Today, societal scale continues to grow as global trade increases, the world's economies link up, global interdependencies multiply, and international legal bodies gain more power. On a more personal level, the Internet continues to bring distant people closer. Our risk tolerance has become so low that we have a fetish for eliminating—or at least pretending to eliminate—as much risk as possible from our lives.