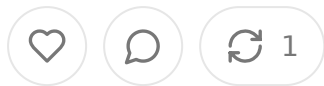


The Great Convergences: How Three Revolutions Shaped Modern Capitalism - And Why Healthcare Remains the Final Frontier

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For most of human history, the movement of people, information, and energy remained remarkably consistent. A Roman merchant would recognize the basic principles of transportation, communication, and power generation available to his counterpart in 1750 CE. But in the span of just two centuries, humanity underwent three interwoven revolutions that fundamentally transformed how our species operates.

The first great leap came through mechanized transportation. For millennia, the speed of human movement was constrained by the limitations of muscle - whether human or animal. The fastest a human could travel was atop a galloping horse. Then, in rapid succession, came the steam engine, the internal combustion engine, and finally the jet engine. Each breakthrough expanded humanity's reach by orders of magnitude. Each revolution followed a clear pattern: massive infrastructure investments in railroads, highways, and airports laid the foundation. Then came standardization through uniform gauges, traffic rules, and air traffic control systems. Finally, market competition drove optimization. The end result was a dramatic reduction in the cost and complexity of moving people and goods.

If the transportation revolution expanded our physical reach, the communication revolution expanded our mental reach. From smoke signals to the printing press, information moved at the speed of human messengers for most of history. Then came the telegraph, telephone, radio, television, and finally the internet. Each wave compressed time and space further, until today when anyone can instantly communicate with billions of others at negligible cost. The pattern here was sim-

infrastructure buildout through telegraph lines and fiber optic cables, followed standardization protocols, followed by market-driven optimization. The result was an exponential increase in humanity's ability to share and process information.

The third great convergence came in how we harness and distribute energy. For millennia, human civilization was limited by our ability to convert biomass - wood - food - into useful work. The discovery of fossil fuels - first coal, then oil and natural gas - gave humanity access to millions of years of stored solar energy. The development of electricity provided a flexible way to distribute and utilize this energy. Again we see the pattern: infrastructure development through power plants and electrical grids, standardization of voltage and frequency, then market optimization. The result was abundant, cheap energy that enabled the other two revolutions.

It's not coincidental that Elon Musk has built companies in transportation (Tesla, SpaceX), energy (Tesla Energy, Solar City), and communication (Starlink, Twitter). These sectors share important characteristics that make them amenable to technological disruption. They benefit from network effects and economies of scale. They require massive upfront infrastructure investment but can be standardized and optimized through engineering. Perhaps most importantly, they follow relatively predictable physical laws.

This brings us to a curious omission - healthcare. Despite consuming an ever-larger share of GDP in developed nations, healthcare hasn't experienced a similar revolution in standardization and optimization. Even Warren Buffett, masterful at identifying sectors ripe for consolidation and optimization, has largely avoided healthcare investments, with the notable exception of some pharmaceutical companies.

The reason lies in healthcare's fundamental differences from transportation, communication, and energy. Biological systems are far more complex and variable than physical systems. The "infrastructure" consists of human bodies, which resist standardization. The stakeholder landscape remains fragmented and politically charged. Outcomes prove highly individualized and difficult to measure. Perhaps most significantly, innovation in healthcare often increases rather than decreases costs.

This helps explain why attempts to "disrupt" healthcare through pure technology plays often fail. Unlike bits and electrons, human bodies don't follow Moore's Law. The complexity of biological systems means that standardization and optimization face fundamental limits.

Medicare Advantage presents a fascinating case study - an attempt to apply market mechanisms to healthcare delivery. Its partial success in achieving better outcomes at similar costs, coupled with its inability to dramatically reduce costs, perfectly illustrates healthcare's unique challenges. Unlike transportation and communication where technology consistently drives down marginal costs, healthcare technology often increases costs by expanding what's possible to treat. And unlike energy, where standardization leads to predictable outcomes, standardization in healthcare must constantly balance against the need for personalization.

Does this mean healthcare will never experience its own revolution in standardization and optimization? Not necessarily. But it suggests that such a revolution will look very different from the previous three. Rather than following the pattern of infrastructure-standardization-optimization, healthcare's transformation may require fundamentally new approaches that embrace rather than minimize complexity and variation.

The next great revolution may not come from treating healthcare like a physics problem to be solved, but from developing new frameworks that can handle biological complexity at scale. This might explain why the most promising healthcare innovations often combine technological advancement with human judgment rather than trying to eliminate the human element entirely.

Understanding this distinction - between sectors that can be optimized through engineering and those that require more nuanced approaches - may be the key to finally unlocking healthcare's potential for transformation. The lessons from Medicare Advantage suggest that success will come not from forcing healthcare to conform to the patterns of previous revolutions, but from finding new ways to harness market forces while respecting the inherent complexity of human biology.

As we look to the future, the challenge will be developing systems that can achieve efficiency gains seen in other sectors while preserving the personalization and adaptability that effective healthcare demands. This may require us to fundamentally rethink our approaches to optimization and standardization, creating new paradigms that can accommodate both technological advancement and human variability.

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