

Human progress is usually a pretty gradual process. But at certain points in history, our development has spiked, resulting in populations living more comfortable, healthier, longer lives. By and large, these big leaps in progress are caused by a new technology or innovation, like how the wheel got things rolling.

Take the Industrial Revolution. For thousands of years, life stayed the same. Everyone lived on or near the land that provided their food and water. Their clothes and tools were made within their community, and the average life expectancy was thirty-five. Basic machinery was usually fueled by limited power sources, like water wheels, windmills, horsepower, or people power. But in the late 1700s, an industrial revolution began in Great Britain. The invention of the spinning jenny and water frame ignited the mechanization of the textile industry. The steam engine quickly followed, making it possible to work, farm, and live without proximity to waterways. Textiles, clothing, and furniture could be cheaply mass-produced, freeing up labor and resources, which could be used to develop new transportation methods like steam boats and railroads. As these new goods and technologies spread around the world, populations increased and average income saw unprecedented growth, marking the first time in history where a standard-of-living improvement was widespread.

Another exemplary push forward in another time, place, and industry, was the green revolution. With rising populations came new challenges. In the mid-1900s, India was experiencing a massive food crisis. The country had recently gained independence and was facing political chaos and famine. Indian officials went on a desperate search for new crops and agricultural technology. They imported and lab-tested lab-made grain varieties, and combined with newly implemented cultivation technologies, like fertilizer and irrigation, one newcomer took hold. It started producing ten times the yield of traditional rice. They dubbed it miracle rice. These innovations would go on to make India a world leader in rice production and save hundreds of millions of lives from starvation.

The world we live in today is built upon the rapid progress from periods of manufacturing and agricultural advancements like these. They've given the world electricity, blueberries in wintertime, planes, along with some unintended consequences: pollution, chemical contamination, and overcrowding.

Today, we know innovation has the power to drive development, and in a modern world, there's more potential than ever for emerging technology

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to make its mark. Many experts believe we are currently in the midst of a digital revolution.

In sub-Saharan Africa specifically, innovations in technology have the potential to improve lives in a region lacking the traditional information and communication infrastructure found elsewhere. When mobile phones arrived in sub-Saharan Africa in the early 2000s, for example, hundreds of millions of people were able to connect for the first time. But it's not just about texting and checking Facebook. Mobile banking has reduced the need for centralized banking and given people access to bank accounts for the first time. In Mali, telemedicine is helping to make up for a lack of trained health-care professionals in rural areas. In Rwanda, people in need can request blood; it is then delivered by drone. And throughout the region, business owners and farmers are using their phones to buy solar energy or trade crops.

Already, digital innovations are making many Africans wealthier, healthier, and better educated. At the same time, population increases will create new strains and pressures that technology will have difficulty addressing. The costs and rewards are likely to be felt unevenly, and negative effects that no one planned for could arise alongside. And today, as we see the rise of emerging technology, like robotics and artificial intelligence, it is critical to remember that such repercussions have been true throughout history and will continue to be so of all future technological revolutions to come.