TECHNOLOGY

Built by bicycle

Andrew Robinson mulls over a study of India's adaptation of low-tech inventions.

In an image taken by the great photographer Henri Cartier-Bresson, two Indian men walk away down an empty, rural, palm-fringed road. Between them is an old-fashioned bicycle. One man grips the tip of a large, conical metal object perched on the saddle — the nose cone of a small rocket. The caption reads: "Near Trivandrum, Kerala. 1966. Preparing for a launch at the Thumba Rocket Equatorial Launching Station, housed in a former church."

That photograph of two space scientists encapsulates the thesis of *Everyday Technology*. This pioneering study by historian David Arnold examines India's response to certain small-scale technologies from the 1880s through to independence in 1947 and up to the 1960s — long before the country's digital revolution.

During the colonial era, British officials in India tended to regard its population, particularly in rural areas, as too mired in conservatism, poverty and illiteracy to adopt new technologies. So officials preferred to introduce large-scale technological projects from the top down, for example electric telegraphs, railways and irrigation schemes. After 1947, this attitude influenced India's first prime minister, Jawaharlal Nehru, who conducted an all-out pursuit of foreign-constructed hydroelectric dams and steel mills, and introduced nuclear power and a space programme. For Nehru, big dams were "temples of the new age" — emblems of an India untainted by its messy social reality.

Arnold, by contrast, believes that understanding technology demands an appreciation of the society embracing it, "even when the technological goods themselves remain largely foreign". He also argues that the slow spread of small-scale technologies, such as the sewing machine, prepared the way for India's later adoption of more sophisticated ones. By domesticating imported inventions, colonial societies undergo self-transformation, Arnold suggests.

As Cartier-Bresson's photograph hints, the bicycle in India has been a means of carrying people (sometimes three or four at a time), things and ideas. Even today it remains essential for millions of poorer Indians, who now may well also use a mobile phone. Bicycles have been converted into cycle rickshaws and three- and four-wheeled carts; their basic mechanism has been used to power knife grinders and foot-powered looms. As Arnold shows, by the early twentieth century, the bicycle — along with three other low-tech mainstays, the sewing machine, the typewriter and the rice mill — were deeply woven into Indian society.

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In the early 1920s, India was importing almost 50,000 bicycles a year; by independence, the number was five times that. In 1948, during the final fast of Mahatma Gandhi, the great leader of India's independence movement, 5,000 cyclists converged at a house in Delhi to hear Nehru report on Gandhi's health, their cycle lamps glowing in the twilit garden like giant fireflies.

HENRI CARTIER-BRESSON/MAGNUM

Henri Cartier-Bresson's Indian space scientists.

Most of these technologies were opposed by Gandhi. But, as Arnold is at pains to detail, Gandhi's well-known aversion to machines was not down to Ludditism. It was based on serious thought, and had a strong influence on the development of the post-1947 cottage industries movement.

Gandhi opposed the bicycle mainly because buying an imported luxury would lead to debt, although he permitted himself to travel by automobile. He had employed typists in his legal practice in turn-of-the-century South Africa and learned to type. But when he returned to India in 1915, he declared the typewriter "a cover for indifference and laziness", preferring to write his voluminous output of letters and articles by hand.

He objected to the rice mill — firstly because it would deprive poor women of income from pounding rice, secondly because pounding was good exercise and thirdly because milling removed the vitamin thiamine from the pericarp of the rice grain, a deficiency of which causes the disease beriberi that affected parts of India. Often critical of Western medicine, Gandhi was happy in this case to accept scientific evidence from two colonial nutritionists, Robert McCarrison and W. R. Aykroyd, but ignored their argument that less rigorous milling would preserve sufficient levels of the vitamin to prevent beriberi. However, Gandhi famously advocated the spinning wheel, and (less famously) championed the treadle sewing machine, particularly Singer's, describing it as "one of the few useful things ever invented".

Everyday Technology organizes an enormous amount of unfamiliar detail on a hitherto largely neglected subject, reinforced with copious statistics and illustrated with some appealing historical and contemporary images. It is enlivened by apt quotations from novels and films of the period, although regrettably includes none from the films of India's greatest director, Satyajit Ray. Ray's works offer many subtle reflections on people and technology, not least the trains, small-scale machinery and office atmosphere depicted in his celebrated Apu Trilogy.

However, the parts of this book are greater than the sum. The author's thesis is abundantly proven, but his conclusions seldom surprise. I am also left with the uncomfortable feeling that for all the enthusiasm with which modern India has responded to foreign technology, it has yet to create anything comparable with the achievements of its pre-colonial mathematicians, scientists and technologists. ■

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