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CONSULENZA INFORMATICA

The Next Economy

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The last couple of years have been tough for software engineers in Italy. The shock wave generated by the dotcom crash of 2000 in Silicon Valley arrived with delayed (as is often the case) and devastating effect in Italy only in the successive year. Today fewer and fewer companies seem to be hiring, and those that do seem to offer only fixed time contracts. A general malaise seems to have settled over the Italian economic landscape. The Bank of Italy morosely pronounced in late October 2003 [1] that "never in the last 50 years have things been so bad." It's hard to get any more depressing than that.

So I thought that this might be the moment to report on a bit of optimism I recently came across in an article from California by the always-perceptive economist and author Paul Erdman [2] – with origins in, of all places, our normally dour neighbor to the north, Germany. Thomas Fischermann, a journalist with the prestigious weekly *Die Zeit* in Hamburg, has viewed the information revolution in the historical perspective of the other revolutions that have preceded it in history, and the result is anything but depressing [3].

Fischermann looked back into economic history to see what parallels we might see today to what happened then. A good example is the so-called Railroad Revolution in Great Britain during the 1840s. During the wave of euphoria of those times, one company after another opened up new train stations and tracks. Speculators financed multiple train stations in cities and duplicate sets of tracks to carry the enormous expected load of passengers (think of the fiber optic craze just a few years ago). By 1845, when the speculative fever was at its peak, railroad stocks were being traded directly in the streets of London, in a scene reminiscent of the infamous Tulip Mania of the 1600s in Holland (to which our own dotcom bubble was also often compared). But in 1847, teetering from oversupply, the stock market finally crashed and hundreds of firms and their investors went bankrupt.

But the story didn't end there. The great Victorian Railroad Crash was followed – and not very long afterwards – by a genuine and prolonged golden era of rail transport. The well-managed firms that had managed to survive the crash prospered in the aftermath, and by 1910 the size of the railroad network had multiplied ten times over.

This is by no means an isolated case, notes Fischermann – on the contrary, history is full of them. In the 1790s the building of the British canal system was accompanied by a wave of speculation that led to another crash in 1793. Yet in the decades that followed, the canal system doubled in size and became a significant contributor to the Industrial Revolution.

Another example is provided by the American automobile industry. By 1909, the number of auto manufacturers had swollen to an incredible 274 – only to crash soon afterwards. By the 1950s only 7 manufacturers remained, but the automobile has changed the world we live in.

Fischermann observes that all of these New Economies of the past, with their euphoria and speculation and disillusionment, have always been followed by a kind of Next Economy, a kind of "revolution on the second try." For all the disillusionment that we have lived through after the dotcom crash of these years, there is ample evidence that the same will happen after the New Economy of the 1990s. E-Commerce has not only survived, but is in strong expansion; the well-managed companies such as Yahoo have survived and thrived; and the public is eagerly debating the future of the newest star Google.

So why didn't the Information Revolution of the 1990s lead directly to a golden era? One reason is that the inventions associated with revolutions are so-called *basic technologies*: they literally change the way we do things. As a result, their concrete applications must first be discovered, and history teaches us that these applications invariably turn out to be different from what the original inventors themselves expected. Alexander Graham Bell wanted to create out of his "speaking telegraph" a device for transmitting symphonies and operas; Ken Thompson invented Unix principally in order to have a comfortable environment in which to write his computer chess programs. The period from 1760 to 1830 was known as the "Miracle Years," because of all the marvelous inventions: steam engines, spinning machines, new dyeing methods, gas lighting. Yet the real economic impact of these marvels was felt only over a period of many years following their invention, partly because they could only slowly replace the old technology that was still in use.

Another thing that people forgot during the dotcom mania, says Fischermann, is that the revolution is only technical in part – "Technological systems are social products," as Manual Castells of the University of California at Berkeley says. And therefore contributions are also needed from the social institutions, such as law (is radio transmitted over Internet subject to traditional broadcasting legislation?) and politics (policies encouraging e-government and the spread of broadband in households). New ways of working with the new technology are also needed, such as new forms of teamwork (I place the so-called agile methods – written about frequently in this column – into this category, because they rely on the ability of the new technologies to keep the cost of change curve flat). And finally, the users themselves shape the new business models with their evolving habits: perhaps they decide that they really do prefer to order their books online, but to keep buying their vegetables at the market.

So cheer up, Fischermann exhorts us, echoed by Erdman: the great dotcom crash of 2000 was only a kind of dress rehearsal for the Next Economy to come, in which the young software engineers of today have a bright future. In the words of Arthur C. Clarke: "The short-term effects of a new technology are usually overestimated … and the long-term effects underestimated."

[1] Bankitalia: "La crescita in Italia pressoché ferma dal 2001," *La Repubblica*, 25 October 2003.

[2] Paul Erdman, "Happy talk from Germany," *CBS Marketwatch*, 16 October 2003.

[3] Thomas Fischermann, "Revolution im zweiten Anlauf," *Die Zeit*, 42/2003.