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“The Weightless Economy Packs a Heavy Punch”)**

### **Why the weightless economy**

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There are only two avenues which remain open for the continual betterment of a society, once its resources have been allocated to maximise the economic welfare of its citizens. The first is expropriation: a society can plunder the economic achievements of other societies. The second is technical progress: a society can utilise ongoing developments in the arts and sciences to improve the lives of its citizens.

The first option is neither clever nor subtle. More crucially, it is self-liquidating: it cannot result in an ongoing sustained improvement. Therefore, technical progress is the only feasible engine of growth in a modern economy. No other means exist by which an advanced society can continue to improve the range of choices and possibilities open to all its constituents.

This much is self-evident, but questions remain. What is the shape and form of technical progress? How will we know when putative candidates for technical progress are real and for the good, and when, instead, they are false and destructive? Do societies, in a self-organised way, give up enough resources to allow technical progress to take place? Or should we think of technical change as falling spontaneously like manna from heaven?

These issues are critical, and over the long-run likely to dominate over the many other issues that societies routinely debate. It is naïve—not to mention just plain silly—to suppose that there is not a price to pay for technical progress, and that to ensure ongoing economic growth, societies can get by without making difficult sacrifices. Those choices might turn on whether to channel resources into blue-sky research, exploring the boundaries of human knowledge and experience, but which might have no immediately visible payoff. Or, they might turn on smoothing the reallocation of people and resources from one line of work to another, as new productive options open and others close. On such choices, society can come to an informed rational decision only with a long hard look at the form that modern technical progress takes and the structural changes that it engenders.

An obvious manifestation of these changes is what has come to be known as the ‘weightless economy’. By this I mean an economy where creating value is associated increasingly with dematerialised products: computers, telecommunications, machine and biological software, mathematical algorithms, video entertainment, and related services. The ‘weightless economy’ also includes designs and ideas—computer databases, new financial products, better entertainment and more efficient ways of transmitting information. These objects are dematerialised because their economic values reside not in a physical form, but in their organisation of zeroes and ones, binary bits of logic.

Dematerialised products are important for economic growth for a number of reasons. They are infinitely expandable: their use by one person takes nothing away from their contribution to another’s welfare or productivity. In a stylised description, but one that makes the point, when a piece of software—installed on a satellite server circling the Earth—is used by me in my office at LSE, no physical limitations prevent the simultaneous and equally efficient use of that software by

someone else in New Zealand. The same is not true of a chocolate hobnob. Once I have eaten that hobnob, no one else can.

Not all hi-tech products are dematerialised. Over the course of the Industrial Revolution, spinning jennies and open-hearth furnaces played important roles and were the hi-tech tools of their day. The conceptual breakthroughs resulting in them are dematerialised. The spinning jennies and open-hearth furnaces themselves are not.

With dematerialisation, interesting implications for social equity arise: When one segment of society ‘consumes’ such commodities, nothing physical makes the enjoyment any less intense when other segments of society also tap in. This is not true in the case of land, property, or physical machines: redistribution of those from rich to poor, or poor to rich for that matter, is about the most wrenching and profound change a society can inflict on its own citizens.

Skills and training are the key to success in a weightless economy. A large stake of inherited wealth gives one no special advantage over someone else who has acquired the training, discipline, and imagination to see where opportunities arise. In a weightless economy, success comes not from having built the largest factory, the biggest oil supertanker, or the longest assembly line. Elsewhere, you could be stupid and careless, but still be economically successful just because your father owned a large slice of land and a stately home. In a weightless economy, success comes from knowing how to locate and juxtapose critical pieces of information, how to keystroke in appealing metaphors into a piece of software, how to organise understanding into forms that others will demand. All of these are skills that modern education systems can and should provide. By contrast no amount of schooling will give someone the bone structure of a Kate Moss, the acting skills of a Daniel Day-Lewis, or the footballing skills of an Eric Cantona! No amount of post-secondary training will allow someone to build an auto-assembly or cement-manufacturing plant out of thin air. No amount of attending lectures at LSE will give someone the acres of land needed to grow cotton or produce wine successfully.

The rate at which dematerialised products add value to economic life is high, growing, and seemingly infinite. Thirty years ago a single trans-Atlantic telephone cable could manage, at best, 150 simultaneous conversations between North America and Europe. Now, fiber-optic cables carry thousands of times that traffic, without breaking into a sweat—or crossing a conversation—and for a tiny fraction of the price. Fifty years ago, a city’s street lights would dim whenever one of the handful of Earth’s most powerful computers were turned on. Now, disposable musical books that ‘sing’ tunes for my children carry more computing power than all those early machines combined. Once, most international trade comprised bales of cotton and crates of wine piled up in seaports, awaiting slow transportation to societies abroad. Now, more wealth traverses lines of electronic communication into and out of financial centres each day than is the total value manufactured in the UK each year: those digital bits of finance go into reorganising the risks that people face. They improve our welfare by providing better insurance for our consumption of other economic goods.

These changes are profound and of a magnitude never before experienced in human history. However, the theoretical possibilities and the attendant social implications are not just for the future. Present reality already shows the impact of the weightless economy. In America in 1995 close to 3m people work in the entertainment industry. Job growth in California since 1990 has been at almost 2.5% annually, compared to the 1.5% national rate (the latter, incidentally, being already the envy of many in Europe). And California does this despite not being a small,

nimble island city-state, like Hong Kong or Singapore. California's annual output exceeds all but a half dozen or so of the world's economies. The biggest contributors to California's economic success here? Entertainment and advanced technology. In the US computer scientists and engineers are not only among those occupations growing fastest in sheer quantities, they are also where salaries are rising most dramatically—particularly for women, one should add. Economic growth rates in the US have doubled this decade while inflation has fallen and productivity has continued to rise—from reaping the benefits of computer networking and information technology.

However, advanced, weightless-economy technology is by no means an exclusively American phenomenon. In GSM telephony, Europeans are giving Americans more than a run for their money. It was a French company that launched the smart-card technology industry, and which still owns more than a third of the billion-dollar worldwide market. The UK continues successfully to supply close to half the world's video game entertainment software.

But national instincts may be misguided in any case in the weightless economy. Companies now design, analyse, manufacture, and test semiconductors—the world's most valuable products—with the greatest disrespect for where these different activities take place. Indeed, why should anyone care, when designs zip across space as just logical collections of zeroes and ones, and where laying down tracks in silicon involves shifting physical material too minuscule to weigh on a nation's shopkeeper scales?

To conclude, the weightless economy brings hope, optimism, and excitement. Opportunities are ripe and many. Previously-disadvantaged groups in society are no longer. However, a warning: Those making the greatest contributions in the weightless economy and achieving its highest rewards will be those with the skills and training to mesh with its realities. If market failure and social myopia hinder the development of those skills, then it is up to forward-looking governments to put in place the right kind of education system—one that fosters the training and creativity for working in the weightless economy.

*(1503 words)*