

The Profession and the World

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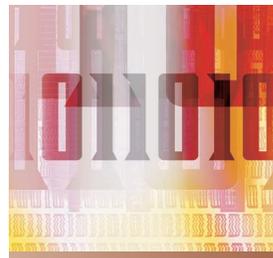
Late this August, the *Guardian Weekly* included a 16-page supplement simply titled *Earth*, which bore the caption “Health check for a planet and its people under pressure” (<http://www.guardian.co.uk/worldsummit2002/earth>). Compiled in association with ActionAid (<http://www.actionaid.org>), the supplement “examines some of the most pressing issues of our time” in the lead-up to the Earth Summit in Johannesburg, held 26 August to 4 September.

The contents of *Earth* would startle and perturb anyone, and deserve a much wider readership than the *Guardian*’s normal circulation. For a computing professional, it carries, or should carry, much greater significance. Professionals have a responsibility to use their skills and experience where relevant to judge the nature and reality of problems facing their community and to promote and support solutions to those problems. This responsibility distinguishes professionals from people who ply a trade.

A computing professional’s skills and experience are particularly relevant to the community. We can apply traditional systems analysis to the global problems we encounter, and digital technology has undoubted potential for supporting good solutions to many of these problems.

RICH AND POOR

The *Earth* report’s opening article, “Look at the Progress We’ve Already Made,” provides its most provocative element. Written by Diane Coyle, who



Does our professional responsibility start with the community, particularly the global community?

runs the Enlightenment Economics consultancy, the article’s first paragraph reads: “Here’s a familiar and terrible story. It says we live in a world where poverty and inequality are increasing, where powerful corporations are ravaging the environment on a global scale, and technology is out of control. And it’s all nonsense.” With this article, Coyle plainly seeks to contradict the rest of the supplement.

In an article entitled “European Cows Are Better Off than Half the World,” Charlotte Denny notes that an average European cow brings in \$2.20 a day in subsidies and other government aid, while 2.8 billion people live on less than \$2 a day in developing countries around the world.

The contrast between these two articles can only be deliberate—chosen, perhaps, to encourage further thought and study. Obviously then, the concerned reader must find what the facts really are. Many individuals and institutions—especially the United Nations Development Programme—affirm that the gap between rich and poor countries, and between rich and poor *within* countries, is not only widening

but, according to some economists, is doing so at an accelerating rate. On the other hand, many economists offer detailed statistics that show the gap is narrowing.

At this point, systems analysis skills become relevant. First, we must determine the real problem. Having been trained to see the bigger picture, a skilled systems analyst looks below the surface to determine a system’s purpose.

SYSTEM AND PURPOSE

In this case the system being studied is the world itself, primarily from the human population’s viewpoint. For humans, the disagreement implicit in the *Guardian*’s supplement relates to the poverty of people and the inequality of nations. To resolve this disagreement, we must determine the human purpose of the world system.

The two focuses usually suggested are the economy and the general community. One school of thought, which I’ll call *materialist*, holds that the *economy* is the end and the community merely one means to that end. The other school, which I’ll call *demotic*, holds that the *community* is the end and the economy merely one means to that end.

How a systems analyst will look professionally at the world’s purpose will depend on who she sees as having the problem. As the employee of a client, the systems analyst will take a materialist approach. But as a professional primarily responsible to the community, that same systems analyst will take a demotic approach.

The entirely quantitative materialist approach looks at economic aspects—

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factors such as incomes, prices, interest rates, exchange rates, employment rates, and economic growth—to discover relationships between these factors so that the controllable aspects can be manipulated to benefit the economy. Materialism offers the advantage that it *is* quantitative and, superficially at least, objective. Present-day First World governments favor this philosophy.

The demotic approach looks at the welfare of the overall population and considers personal benefits—factors such as health, education, security, and full employment—as primary goals. The difficulty with social welfare is its subjectivity, which makes it more difficult to measure and defend. Many post-World War II, First World governments favored, at least theoretically, social welfare.

The two approaches need not conflict directly. The global systems analyst might suggest that we should consider material and social welfare together, and recent research on economics and happiness supports this view. Much of the apparent conflict derives from the materialists' tendency to cite averages of indicators such as incomes and productivity, whereas the demoticists cite extremes of poverty and inequality. For materialist facts and arguments, the systems analyst can seek the help of economists. For demotic facts and arguments, however, the social scientists' help alone is insufficient because the analysis involves moral issues.

POVERTY AND INEQUALITY

One frequently cited poverty statistic asserts that 2.8 billion of the world's people live on less than \$2 a day. On the surface, this figure should shame any prosperous person. But the systems analyst will take a closer look.

Is a person who lives on less than \$2 a day poor? In places such as the Amazon basin, some "primitive" people live off the land and outside any monetary system. They are mainly healthy and happy, except where the outside world has started interfering.

On the other hand, is a person who

earns an official minimum wage happy and healthy? Not according to two recent books, which depict the utter misery and degradation of living on a wage of \$7 an hour in the US and \$6 an hour in the UK (<http://books.guardian.co.uk/review/story/0,12084,782997,0.html>).

Poverty arises from social context and represents a moral issue, not an economic one. How can we justify the persistence—some would claim the increase—of widespread misery in most if not all nations? How can we leave 1.1 billion people without clean drinking water, and 2.4 billion people without sanitation?

Inequality suggests conflict: The have-nots envy the haves, and the greater the disparity in property, the greater the envy.

Inequality, often mentioned alongside poverty, presents a slightly different issue, one that suggests conflict: The have-nots envy the haves, and the greater the disparity in property, the greater the envy. A little systems analysis can clarify this highly confused issue.

Inequality in property differs from inequality in income. People can only acquire property if their income regularly stays above that required for their subsistence. Further, property comes from the accumulation of income surplus, so, at the margins of subsistence, few if any can own anything at all.

Equality is a moral ideal for a just and civilized society, but *what* equality should be sought? Economic historian Richard H. Tawney provides a good definition when, in the manner of a professional systems analyst, he distinguishes social inequality from individual differences: "While natural endowments differ profoundly, it is the mark of a civilised society to aim at eliminating such inequalities as have their source, not in individual differ-

ences, but in its own organisation. Individual differences that are the source of social energy are likely to ripen and find expression if social inequalities are, as far as practical, diminished" (*Equality*, Unwin Books, London, 1931).

UNEMPLOYMENT AND INFLATION

In modern developed societies, unemployment causes the greatest social inequality. The most objectionable idea in modern economics is the "natural rate of unemployment," which directly opposes Tawney's ideal by implying the desirability of unemployment—often at the rate of 6 percent. It's significant that postwar governments in several developed countries, such as Australia and New Zealand, successfully adopted a policy of full employment for 10 to 15 years. Unemployment as an economic benefit only came into vogue in the early 1970s with the monetarist economists, led by Milton Friedman (<http://www.observer.co.uk/business/story/0,6903,796373,0.html>).

Its formal name reveals the true significance of "natural" unemployment: Non-Accelerating Inflation Rate of Unemployment. NAIRU works from the theory that inflation can be controlled by manipulating unemployment rates. If you want inflation to go up, push unemployment down; if you want inflation to go down, push unemployment up. Clearly, this theory primarily concerns itself with the economy, not the community. It's far from clear that the theory works.

Inflation, which refers to increased prices, amounts to diminishing the value of money. Over this hallowed territory supposedly none but economists can tread. Yet the economy is a system, and a systems analyst might see a bigger picture here than the economist can.

Nowadays, economists consider inflation normal, deflation—its opposite—abnormal. Eminent economist Roy F. Harrod wrote in 1969, "It is a strange fact that after so many centuries of experience in so many coun-

tries, man has not yet succeeded in providing for himself a money with a stable value" (*Money*, Macmillan, New York).

Part of the problem is that we now use "money" as a *store of value* rather than as a *medium of exchange*. When money mainly consisted of precious-metal coins, the value of a coin remained as stable as the value of its metal. For example, in England after William the Conqueror one pound of silver was generally minted into 240 silver pennies. Harrod notes that "It is a remarkable thing that for more than two centuries the British monetary unit suffered no depreciation at all."

Inflation arises from money's use as a store of value because people can acquire money without exchanging it for commensurate value. In effect, this means that greedy people can draw more value out of society than they put into it and thus depreciate the value that other people have stored.

One of data processing's finest developments ever—double entry bookkeeping—makes a simple explanation of inflation possible. Such bookkeeping—usually considered a 15th century Venetian development—works on the principle that every transaction involves a balanced exchange of value. Thus, if I buy a cow for \$100, I formally gain \$100 worth of cow in exchange for \$100 worth of money. I therefore record the transaction in my books as a positive \$100 of stock and a negative \$100 of cash.

In such bookkeeping, all transactions are neutral: Adding up all entries, positive and negative, always totals zero. That the books balance proves the arithmetic correct. Within the system, different classes of values allow calculation of nominal worth. Thus, if I now sell the cow for \$90, I gain the \$90 cash in exchange for a cow nominally worth \$100, so that a balancing entry of \$10 must be made to represent the loss of value to me. Where has the \$10 gone? To the cow's original vendor.

I seek to make two points with this example. First, my loss consists of

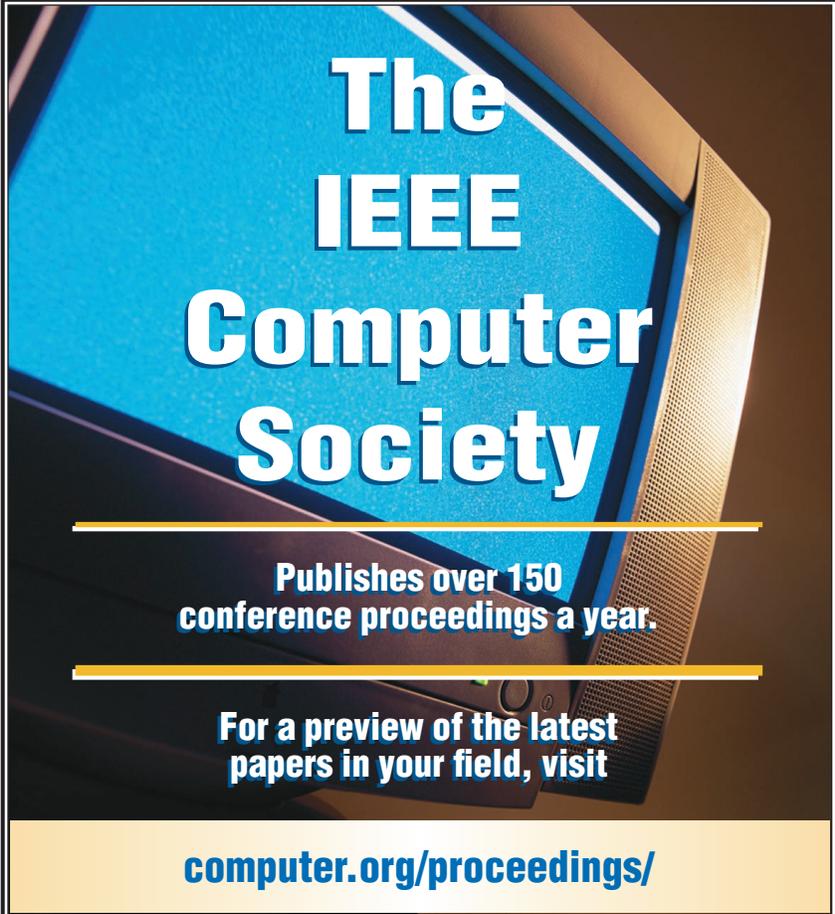
money I originally paid to someone else. Thus, when we read of enormous losses made by a company like Enron, those losses balance with money paid to someone else. Second, in any transaction, someone pays money for goods or services. Thus, there will be no inflation in the overall commercial system as long as the value of all money paid balances with the value of all goods and services received.

Inflation is evidence of greed—people taking out more value than they put in, the difference necessarily diminishing the value of money because the missing value must come from people's monetary savings.

Looking at the global picture is risky and difficult—risky because we must work with the often confused

and confusing "facts" on record, difficult because of the world's complexity. The world situation is arguably out of balance in many ways and highly dangerous. All people with professional skills have a clear duty to study the problem from their own point of view and to join in constructive discussion and planning. Given their particular training in systems analysis, I especially urge computing professionals to undertake such efforts. ■

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