MATISSE, CNRS UMR 8595
Maison des Sciences Economiques
106-112 Boulevard de l'Hôpital –
75647 Paris Cedex 13
Tél. : 33 (1) 44 07 81 75
Fax : 33 (1) 44 07 81 83

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Dans un premier temps, il est prévu de passer en revue divers travaux hétérodoxes en les interrogeant autour d'une question : *« Comment penser les transformations du capitalisme contemporain ? ».*

La première séance du Séminaire permettra de faire le point sur les thèses des radicaux américains, avec la venue de :

Stephen MARGLIN

(Université de Harvard)

« Connaissance et rareté : un regard radical sur les mythes de l'économie »

Discutant : ***Bruno TINEL*** *(Centre Léon Walras – Université Lyon II)*

Vendredi 12 avril 2002 à 16h00

Maison des Sciences Economiques
106 Boulevard de l'Hôpital, 75 013 PARIS
(Métro Campo Formio)
Salle 114 (1er étage)

Contact : Carlo Vercellone (vercello@univ-paris1.fr) Christophe Ramaux (ramaux@univ-paris1.fr)

ECONOMIC MYTHS

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ECONOMIC MYTHS

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CHAPTER ONE
INTRODUCTION

Some years ago the Chief Economist of the World Bank sent a memo to one of his subordinates which said in part:

> Just between you and me shouldn't the World Bank be encouraging more migration of the dirty industries to the LDCs [Less Developed Countries]?...
> ...a given amount of health-impairing pollution should be done in the country with the lowest cost, which will be the country with the lowest wages. I think the economic logic behind dumping a load of toxic waste in the lowest-wage country is impeccable and we should face up to that.
> ...Only the lamentable facts that so much pollution is generated by non-tradable industries (transport, electrical generation) and the unit transport costs of solid waste are so high prevent world-welfare-enhancing trade in air pollution and waste.

The Economist (February 8, 1992, p 66), to which the memo was leaked, found the language "crass, even for an internal memo" but "on the economics his points are hard to answer."

In my experience people who have not been exposed to a college course in economics are likely to be outraged by the memo—if “the economic logic behind dumping a load of toxic waste in the lowest-wage country is impeccable,” so much the worse for economic logic. But what a difference a day, or a year, makes. After a freshman course in economics, college students begin to think like economists—that is the point of freshman economics after all—and will explain to you why and how both the low-wage and the high-wage countries benefit from relocating toxic wastes.

Make a list of all the things that you feel should not be traded in markets, even if there are willing buyers and sellers. (A colleague calls such markets “obnoxious.” I think “corrosive” is more to the point.) If you are an economist, or even if you have had a year of freshman economics, your list is likely to be a short one. But if you are among the unwashed, you might include anything from sexual intercourse to votes in public elections, not to mention toxic wastes. It might include body parts, pornography (perhaps child pornography but not adult pornography), narcotics (maybe only hard drugs). A smaller number of lists will include medical care, education, or military service, or possibly all three. On the fringes of American society are groups that would put insurance on the list.

My concern however is not about the specifics of one list or another, but about the difference in the criteria for inclusion used by economists and non-economists. I believe we can trace those differences to the assumptions about people that form the core of economics and which are at odds with the way non-economists (that is, most of us) think about people. One way of reading this book is as an investigation of the assumptions that allow, indeed compel, economists to reach conclusions that non-economists find difficult to fathom.

But I hope to do more than simply note the differences: economists claim that ours is a universal science, a discipline which explains human behavior not only on Wall Street and Main Street, but in the villages of Asia and the souks of North Africa. My take is very much at odds with this view. A main purpose is to show how the assumptions of economics are rooted in the culture of the Modern West. More. Economics *is* the culture of the Modern West, or at least its cutting edge. Economics formalizes the cultural presuppositions of modernity into a coherent framework. Economic Man is Modern Man.

The assumptions of economics are the myths of modernity. My American Heritage Dictionary (1991, p 827) defines myths in various ways. It begins with myth as a "traditional story dealing with supernatural beings… that serve as primordial types in a primitive view of the world." The dictionary's second meaning is even more on the money: "A real or fictional story… that appeals to the consciousness of a people by embodying its cultural ideals or by giving expression to deep, commonly felt emotions." The third meaning hits the jackpot: "a fiction or half-truth, esp. one that forms part of the ideology of a society."

I do not oppose myth to truth. Even in the last sense of myth, myth as ideology, we are not in the realm of true and false, but rather in the realm of what is beyond our powers to confirm or deny. Acting on myth or ideology is not a failing or disease of the Other for which you and I have immunity. We *all* operate on the basis of assumptions that cannot be proved or disproved. This does not mean there is nothing to discuss, nothing to learn. To the contrary: this essay reflects many years of trying to understand the myths of modernity, especially as these are refracted through the lens of economics. But the first pre-condition of transcending the limits of our myths and ideologies is to recognize them for what they are, rather than seeing them as truths about people at all times and all places. Indeed, I would strongly caution against putting too much faith in *any* assumption about human nature. What we *know* about human nature relative to the claims that are

made about human nature is about the same as the relative weight of your little finger and the weight of your body.

That the assumptions of economics are cultural myths rather than universal truths was brought home to me forcefully some years ago in Moscow. In the aftermath of the fall of the Soviet Government, a Finnish colleague and I had gone there to recruit Russians for a collaborative intellectual enterprise on the scope and limits of economics in addressing ecological problems. One afternoon we had a particularly lively discussion, and there was a general interest in continuing into the evening. The Russians proposed supper at the apartment of Sergei and Lena. Sergei was associated with the School of Cultural Politics where the afternoon meeting had taken place, but in fact we knew Lena much better since she had been our interpreter since our arrival. Lena had already given us a warm welcome and excellent dinner the evening before, so it took considerable reassurance from her to convince us that six or eight people descending upon her would not be a major inconvenience. Her only concession was to allow us to purchase some food and drink for the occasion. We went to a *gastronom*, a delicatessen/grocery store, which despite being a state enterprise was reasonably well stocked. Both because of the long lines and the clumsy system (you got a ticket specifying your purchase, went to a cashier to pay, and then back to the sales person for the goods) the process took a while, but for me the chance to see what more or less ordinary Muscovites could purchase in early 1993 outweighed any inconvenience. At last we were done: a lot of smoked fish, some wine and vodka, and enough other things to make a reasonable supper.

As we emerged from the *gastronom*, Lena, quite out of the blue, said: "Terrible, terrible." Earlier remarks had prepared me for some cryptic if not apocalyptic comment, but nothing seemed particularly terrible to my untrained eye. "What's terrible?" I asked.

"Milk."

"Milk?"

"Yes, milk. It's terrible. Here they sell milk for 54 rubles per liter (approximately $0.09 at the then current rate of exchange) and at the kiosk in front of our apartment house it costs 92 rubles."

Jokingly, I responded: "That's not terrible; it's a great opportunity."

Now it was Lena's turn to be surprised: "Great opportunity? What do you mean?"

"Simple. You buy milk here for 54 rubles and sell it in front of your house for, say, 75. You make a lot of money and the folks in your apartment get their milk cheaper." Once an economist, always an economist.

Lena thought about this for a moment, and then said "It won't work. You can't get the milk there. You can't buy gas."

"Listen," I said. "If you can make money from buying milk cheap, you can find gas."

Lena was silent for another moment, and then shook her head, her exasperation with this uncomprehending foreigner showing through: "No, it still won't work. Even if you could find gas, there is no transport."

Now I began to feel a challenge. Here was first-year economics. Here was freedom for Lena's apartment house from the bondage of 92-ruble milk and a tidy profit in the bargain. "Look, if there is enough money in it, all these obstacles can be overcome."

After some more back and forth, a light bulb went on just above my head: all this talk about "is" was really a cover for Lena's misgivings about "ought." The difficulties were not logistical but moral. As a matter of right, milk ought to sell for the same price in front of her apartment house as at the central *gastronom*. And it was immoral to bring this about through the mechanism of the market and the incentive of profit.

I realized that what was second nature to me was totally alien to Lena. Doubtless the quickness and sureness of my responses owed not a little to my professional training, but my profession was only frosting on the cake of market culture. Most people reared in a market culture, economists or not, would have no trouble understanding rudimentary arbitrage, even if they could not pronounce, much less define, this term.

I realized two other things. First, while it was certain that 70+ years of communism were part of this story of cultural difference, Lena's resistance to the logic of the market ran much deeper, the product more likely of centuries of wariness of the market than of decades of communist propaganda.

Second, however ingrained market logic might be for the present generation of Germans, Frenchmen, and Americans, hardly a century ago Lena's suspicions of market logic could

have been found all over Western Europe and the United States. It oversimplifies to identify the populism that swept the American prairies in the 1890s with wholesale condemnation of the logic of the market, but I do believe that many populists would have taken Lena's side of our exchange rather than mine.

But we don't have to go to Russia or back to 19th century Kansas to see resistance and acclimatization to the logic of economics. Every year thousands of undergraduates all over the United States take courses in the principles of economics, partly, perhaps, because they are persuaded it is useful preparation for business or law school, but partly, I am sure, for enlightenment. Many ask (with Adam Smith) how morally to justify a world based on self-interest. Parents may have urged the importance of looking out for number one, but Smith's idea of an invisible hand propelling self-interest to serve the general interest sounds too much like other forms of adult hypocrisy of which they become, as they grow up, increasingly aware. Imagine the relief, not to say exhilaration, to learn sophisticated arguments why looking out for number one is a social virtue. And if there remain any doubts, students can always draw sustenance from the source of the wisdom of Economics 101: the arguments come from professors of economic *science*—objective, unbiased professors who have no other ax to grind than that of Universal Truth itself. (There remains an unconvinced minority. No matter how hard they try, they just don't get it. Needless to say, these students tend to limit their further exposure to economics. Given this selection bias, it is no wonder that economics is not a hotbed of introspection about its premises.)

The spread of the market was hardly automatic. It needed reinforcement and legitimization. It needed the economics profession's help in the very *construction* of the market economy. Long before Adam Smith, economists began breaking down the resistance of the Lenas of the world to the logic of the market. The centuries it has taken to convince (or marginalize) the resisters even in the most market-friendly societies on earth is a measure of how deep the resistance ran.

The English philosopher and politician Edmund Burke (1729-1797) may have been premature when he opined that the age of economists (and sophisters and calculators, perhaps the same thing for Burke) had arrived, but at the dawn of a new millennium, the economist's voice threatens to drown out all others. This does not mean there is no longer resistance. There are still many Lenas out there, and one of the purposes of this book is to strengthen their voices. In my view, all of us, even the most die-hard economist, has something of Lena inside. Indeed, I would argue that a society based solely on the principles of economics couldn't last 4 minutes, not to mention the 400 years that modernity has been in the ascendant.

Modernity is many things and I have no intention of distorting a complex phenomenon by limiting it to its material aspects. But there is no denying that economic abundance is one of the most salient features of the Modern West, one of the reasons for its powerful attraction all over the world. In case my students need to be reminded of the material benefits of modernity, I assign them a chapter from Robert Caro's biography of Lyndon Johnson (Caro 1982, 502-515). This chapter, called "The Sad Irons," sets the stage for Johnson's struggle to bring rural electrification to the Texas hill-country after he was first elected to Congress in the late1930s. The sad irons, the irons that hill-country women used to press their families' clothes, are emblematic of the back-breaking labor that farm women had to do before electricity. Ironing was the last step in doing the family wash, a weekly ritual that traditionally took place on Mondays and Tuesdays. First water had to be carried from the well, often over a distance of more than a hundred yards. Then the water was heated on a wood stove. Only after these preliminaries could the actual washing and rinsing be done, in open tubs, with only the physical strength of the women to operate the paddles to beat the dirt out and the mangles and rollers to squeeze the water out. Tuesdays were reserved for ironing. The irons, six or seven pounds, not the featherweight "irons" of aluminum or steel alloy in use today, were heated on the same wood stoves that heated water and cooked food, then passed over the clothes that had been washed and dried the day before. A monumental chore at best, a hellish one when carried out in the 90 or 100 degree Texas summer.

All this took place in the United States within living memory, but is unimaginable for most Americans today. That in itself is a measure of how far we have come in terms of reducing the physical hardships of life.

But not all of us. The Amish are Protestants who came to the United States in search of religious freedom in the 18th century, and have spread out from their original settlements in Pennsylvania across the mid-West and Canada. To the larger North American world the Amish are quaint folk who shun much of the apparatus that modernity provides to reduce drudgery and increase entertainment. Most Amish use only stationary sources of power—no automobiles, tractors, or other moving engines. Most use bottled lp gas for cooking and other chores, but not electricity, at least not from the grid. No electric appliances, radios, television, videos, or movies. They dress so simply, the women in pastels, the men in American Gothic, that they are sometimes called the plain folk. But for present purposes it is not the quaintness of the Amish that is noteworthy.

Alongside Caro, I also ask my students to read part of a book by Sue Bender (1989) which recounts the time she spent living with an Amish family in the late 1980s. As might be expected in a society in which work is gendered, Bender spent most of her time with the women folk, and much of her book is given over to a description of Amish women at work. In physical terms there is little to distinguish the work that these women do today from what the hill-country women did in the 1930s, before electricity wrought its miracles. Washing and ironing, in particular, employ the same technology that made this labor so oppressive in the Texas hills two-thirds of a century ago.

But drudgery is not one of the words that come to mind in describing the Amish—women or men—at work. Why not? For one thing, Amish women, like their men folk, see themselves as doing God's work. They value not only the product but the process. They value themselves through their work. For another, Amish women do their washing and ironing, and much other work, together, communally. Work is a social occasion. The contrast with the hill-country women could not be starker. Hill-country women might have got satisfaction from seeing their men and children in clean, well pressed clothes, but the ironing and washing themselves brought them nothing but pain. And these women worked as they lived—in virtual isolation, each on her own farm, often meeting nobody outside the immediate family except for the occasional hired help that would show up for the harvest.

Both these differences are connected to modernity. Work in the West has long been instrumental, arguably since Adam and Eve were expelled from the Garden and work was imposed as punishment in the matter of the forbidden fruit. But for Martin Luther and some of the Protestant sects influenced by Luther's ideas, the Amish included, work became a calling, firmly embedded in the divine plan for human salvation. Apart from the Amish (and other fringe groups like the Old Order Mennonites), virtually all that survives of the idea of a calling in North America is that the non-academic, blue-collar wing of our secondary schools often goes under the name of "vocational" (Latin for calling) education. Economics reflects this by treating labor as simply the absence of leisure, unless it be particularly irksome, tedious, unhealthy, or physically exhausting, in which case it is assigned a penalty in the pleasure:pain calculus that is assumed to underlie the choices we make.

Modernity is even more directly bound up with the loss of community. Modernity has brought with it a loss of connection, or, more accurately, modernity *is* the absence of connection. Economists see this as a virtue. Impersonal markets accomplish more efficiently what the connections of social solidarity, reciprocity, and other redistributive institutions do in non-market societies. Take fire insurance. I pay a premium of, say,

$200 per year and if my barn burns down, the insurance company pays me $60,000 to rebuild it. A simple market transaction replaces the more cumbersome way of gathering my neighbors for a barn-raising. In terms of rebuilding my barn with a minimal expenditure of resources, insurance may indeed be more efficient than gathering the community each time a barn burns down. But in terms of maintaining the community, insurance is woefully lacking. Barn-raisings foster mutual interdependence: I rely on my neighbors economically as well as in other ways and they must rely on me. By the same token, markets undermine community, substituting impersonal relationships mediated by goods and services for the personal relationships of reciprocity and the like.

Why does community suffer if it is not reinforced by mutual economic dependence? Doesn't the relaxation of economic ties rather free up energy for other ways of connecting, as the English economist Dennis Robertson (1890-1963) once suggested? "What does the economist economize?" Sir Dennis asked (1956, p 154). His answer: "[T]hat scarce resource Love, which *we* know, just as well as anybody else, to be the most precious thing in the world." By using the impersonal relationships of markets to do the work of fulfilling our material needs, we economize on our higher faculties of affection, reciprocity, personal obligation—love, in Robertsonian shorthand—which can then be devoted to higher ends.

In the end, his protests to the contrary notwithstanding, Sir Dennis knew more about banking than about love. Robertson made the mistake of thinking that love, like a loaf of bread, gets used up as it is used. Not all goods are "private" goods like bread. There are also "public" or "collective" goods which are not used up by being used by one person. A lighthouse is the canonical example: my use of the light does not diminish its availability to you.

Love is a *hyper* public good: it actually increases by being used and indeed may shrink to nothing if left unused for any length of time. I tried once to sum this up in a ditty:

> Love is a very special commodity
> An irregular economical oddity.
> Bread, when you take it, there's less on the shelf
> Love, when you make it, it grows of itself.

If love is not scarce in the way that bread is, it makes little sense to design social institutions to economize on it.[1] On the contrary. The sensible thing to do is to design social institutions to

[1] Albert Hirschman disagrees. His essay "Against Parsimony" (1985, p ****) argues that love has characteristics of both a scarce resource used up in the using and a skill improved by practice.

draw out and develop the community's stock of love. It is only when we take focus on barns rather than on the people raising barns that insurance appears to be a more effective way of coping with disaster than is a community-wide barn-raising.

The example of insurance may appear to be somewhat random, but it is in fact not. The Amish, perhaps unique in 21st century America in their attention to fostering community, forbid insurance precisely because they understand that the market relationship between an individual and the insurance company undermines the mutual dependence of the individuals. For the Amish, barn-raisings are not exercises in nostalgia, but the cement which binds the community together.

Other losses have come with modernity. Economics teaches us to calculate everything from the relative benefits of vanilla and strawberry ice cream to the value of a human life. It teaches us to calculate what we can reasonably calculate but also to calculate the incalculable. It shouldn't surprise anyone that when the economist calculates the value of human life, the average Puerto Rican is found to be worth something like 1/3 the value of a North American—the ratio of average earnings in the two countries. The value of a sub-Saharan African drops off the chart. (Any wonder why it would be desirable to ship pollution from Los Angeles to Mombassa?) It shouldn't surprise us either that in approaching the environment, prudence, not to say reverence, disappears in the search for an optimal rate of pollution or resource exhaustion. The very attempt to manage the environment opens the door to environmental destruction.

Successive chapters in this book examine the myths that are the assumptions of economics: First, *individualism*, the notion that society can and should be understood as a collection of autonomous individuals, that groups—with the exception of the nation state—have no normative significance as groups, that all behavior, policy, and even ethical judgment should be reduced to their effects on individuals. All individuals play the game of life on equal terms, even if they start with different amounts of physical strength, intellectual capacity, or capital assets. The playing field is level even if the players are not equal. These individuals are taken as given in many important ways rather than as works in progress. For example, preferences are given, and preferences cover everything from views about the relative merits of different flavors of ice cream to views about the relative merits of prostitution, casual sex, sex among friends, and sex within committed relationships. (This aspect of individualism alone accounts for a large part of the difference—more than could possibly meet the eye—between economists' and non-economists' ways of understanding the world.) Finally, in an excess of democratic zeal, the economist

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"Love, benevolence, and civic spirit… atrophy when not adequately practiced… yet will… make themselves scarce when practiced and relied on to excess."

extends the notion of radical subjectivism to the whole domain of preferences: one set of "preferences" is as good as another.

Second, *self-interest*, the myth—assumption—that choices are made in reference to what I perceive as my own good. No room here for duty, right, or obligation. And a good thing too: Adam Smith's best remembered contribution to economics, for better or worse, was the idea of a harmony that emerged from the pursuit of self-interest. Observe that self-interest is not the same as individualism. Individualism is a prior condition for self-interest—there is no place for self-interest without the *self*—but the converse does not hold. Individualism does not necessarily imply self-interest.[2]

Third, an *ideology of knowledge* that privileges the algorithmic over the experiential, an ideology that elevates knowledge that can be logically deduced from what are regarded as self-evident first principles over what is learned from intuition and authority, from touch and feel. In the stronger form of this ideology, not only is the algorithmic privileged, it is the sole legitimate form of knowledge. Other knowledge is mere belief, becoming legitimate knowledge only when verified by algorithmic methods.

Fourth, *unlimited wants*. It is human nature that we always want more than we have, and that there is consequently never enough. Economics, indeed, is frequently *defined* as the study of the allocation of limited resources among unlimited wants. Economics posits unlimited wants as human nature because it takes the assumptions of modernity as its own without recognizing their cultural and historical specificity.

Fifth, *the nation state as the only legitimate social grouping*. Since Adam Smith, economists have conceived of society as the nation state. It is legitimate to ask if the nation will be made better off by free trade, but it is parochial to ask if workers, or old folks, or farmers will fare better or worse. If readers had any doubt what was meant by society when Adam Smith wrote of the wonders of the invisible hand in promoting the social good, they had to look no farther than to the title of his *magnum opus*: his was an enquiry not into the conditions under which the sick, the maimed, the widow, or the orphan might thrive economically, but into the conditions which determined *The Wealth of Nations*.

[2] Although Alexis de Tocqueville (1805-1859), the astute French observer of the 19th century American scene, thought that individualism must eventually become self-interested. See *Democracy in America*, originally published in two volumes in 1835 and 1840, vol 2, part 2, ch 2 (1969, 506).

What has been noted about unlimited wants in fact is true of all the five assumptions. Each is a plausible characterization of the modern West, though partial and incomplete. The problem is not only the partiality and the incompleteness but the pretense that these assumptions are universal truths about human nature. This is where myth comes in: in fact, the way of being and knowing the world encapsulated in the assumptions of economics emerges in a particular historical and cultural context, the early modern world. And even in the West, the grip of these assumptions on culture has never been complete and has always been contested, as Lena's story witnesses.

Modernity, though a product of the West—Europe and North America—has spread well beyond the geographical boundaries of its origins. The elites of Lima or New Delhi are as Western in their culture as the elites of New York and Paris, and as far from the non-modern cultures of the pueblo of the Peruvian altiplano or the village of rural India as are Americans or Frenchmen. The West is no longer only a place, it is also a frame of mind.

But it all began in a place and the next chapter presents a sketch of the changes that distinguish the early modern period from what existed before.

Before we turn to this sketch, a couple of disclaimers are in order. Let me begin with an obvious one. I am not a neutral observer, and this essay is not neutral between modernity and its critics, or between economics and its critics. This is not a "on the one hand,… on the other hand" book. I am not oblivious to the virtues of modernity or the strengths of economics. It is rather that the virtues and strengths are internalized by most of us and constantly trumpeted to the rest, whereas the vices and weaknesses are passed over largely in silence. I see this essay as helping to right the balance.

I should also perhaps state some things that are not so obvious. This essay is critical of capitalism and markets but the critique is not from a socialist perspective, certainly not from a Marxist perspective. On the fundamental issues of this essay there is not much to choose between Marxists and defenders of the capitalist order. Both sides are committed to individualism and the modern ideology of knowledge. If Marxists have doubts on self-interest, they are muted: it is the self-interest of the bourgeoisie that produced capitalism and the self-interest of the working class that will produce socialist revolution.[3] As for unlimited wants, Marxists see the historical role of capitalism as producing the material conditions for an end to scarcity—in the fullness of time the productive apparatus will be sufficiently developed that

[3] There is a problem of going from the self-interest of the individual capitalist or worker to the *class*-interest of the bourgeoisie or proletariat. And *vice-versa.* Marx and his followers have had surprisingly little to say on this subject, but critics of Marxism have been less reticent. See, for example, Jon Elster (****).

everybody's material needs can be met. It is only with the "development of the productive forces" (to use a favorite phrase of Marx and his followers) that abundance can conquer scarcity. This essay, particularly Ch 7, this view.

The only issue on which Marx and his followers have a clear disagreement with the mainstream is over the role of the nation state. And here Marxists clearly went wrong in underestimating the pull of nationalism on the working class during World War I, in which German workers slaughtered Russian, British, and French workers—and *vice versa*. In any case, official Marxism in Russia and, later, in China abandoned Marx's internationalism in favor of a rather crude nationalism when faced with the need to mobilize mass support.

In short, mainstream and Marxists largely agree on the assumptions of modernity even though they disagree totally on the issue of how well capitalism accomplishes the goals implicit in these assumptions. The fight to the death is not about goals but means: Marx's utopia, in which I am free "to do one thing today and another tomorrow, to hunt in the morning, fish in the afternoon, rear cattle in the evening [sic!], criticize after dinner, just as I have a mind…" (Marx and Engels 1959 [1846], 254), is an individualistic utopia, just as Marx's argument for the superiority of socialism over capitalism rests on an ideology of knowledge which favors planning and calculation over impulse and intuition. Marx's problem with bourgeois society is not its promise of the reign of the calculating, maximizing individual who acts in terms of self interest, but the failure of capitalism to deliver on its promise. The problem with "freedom, equality, and Bentham [utility maximization]" (Marx ****) is that the working class gets so little of any of them, not that these goals are problematic in themselves.

If my critique is not red, neither is it particularly green. I have noted that the idea that we can calculate the benefits and costs of measures to arrest ecological deterioration is, to put it mildly, problematic. But the problem does not come from any certainty that we are going to hell in a basket ecologically. I don't know whether we are or not. And I am hardly alone in my ignorance. The most striking thing about the ecological debate is how much of it rests on the pessimism or optimism of the disputants. On both sides.

The greens have a winning hand nonetheless. Though this book does not have anything to add about the benefits of acting to preserve the environment or the resource base, it does have something to say about the *lack* of benefits of growth. The benefits of growth appear large because we do not question the assumptions of modernity, specifically, the unboundedness of wants. But to the extent wants are unbounded for reasons specific to modernity and not because of a universal human nature, then the trade-off between more growth and a better environment or a larger resource base appears in a different light. The question becomes whether or not we wish to preserve *modernity* at the possible expense of our ecological future.

But, as must be clear by now, I am at best ambivalent about modernity—not for ecological reasons, but ecological considerations can only heighten my ambivalence. My main gripe is that, for all its achievements, modernity is destructive of human relationships, from the family to the community. If families and communities are once again to flourish, then we will have to address the failures of modernity, and not just applaud its successes. As part of this process, we may end up by dismantling the engine of growth—not because we perceive growth as a threat to our relationship with nature, but because we come to see it as a threat to our relationships with each other.

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CHAPTER SEVEN

WHY IS ENOUGH NEVER ENOUGH?

One of the paradoxes of our age is that the possibilities of abundance are always one step beyond our reach. Despite the enormous growth in production and consumption, we are as much in thrall to the economy as our parents, grandparents, and great-grandparents. We worry about mortgage payments, car payments, retirement plans, the rising cost of day care for our children and nursing homes for our parents. Most American families find one income inadequate for their needs. This is true not only at the bottom of the distribution, where falling real wages have eroded the standard of living over the past quarter century, but in the middle and upper ranges of the distribution as well.

My purpose in this chapter is to explore the connection between modern culture and our inability to realize the promise of abundance.

Mainstream Economics and the Non-Problem of Abundance

In mainstream economics it is axiomatic that wants are unbounded. Unbounded wants are the root of scarcity, and scarcity is the keystone of economics. Scarcity in turn causes rivalry—division of the pie is normally treated as my blood or thine rather than as a moral issue. Economic men and women are assumed to want as much as they can get for themselves with nary a thought for the moral claims of one's neighbors. "Every man for himself and devil take the hindmost" is taken to be a verse from Holy Scripture.[4]

The unboundedness of wants can be defended as a convenient fiction in models which collapse the evolution of desire into a single set of preferences defined over both present and future goods. Such static models, which are standard in economics, necessarily hide the interaction between the *growth* of wants and the *growth* of the means to fulfill them. "Unbounded wants" becomes shorthand for a pair of assumptions: wants *now* exceed the means to fulfill them, and wants *will always grow faster* than means.

This is a more realistic way of thinking about wants than assuming a categorical unboundedness because it is consistent with survey evidence that relatively modest sums would satisfy most people's felt wants. But the shorthand is preferred because it allows economists to elide the

[4] There is a body of work in experimental economics trying to elicit people's attitudes towards fairness in the distribution of the economic pie. Typically the question is posed as whether one would give up something to prevent another individual to gain even more. And typically the answer is that people would indeed go without to prevent other folks from having more. It is hard

problem of how wants evolve and avoid the slippery slope of departing from the assumption that preferences are given, a primitive of the problem of choice.[5]

I accept that, in this shorthand sense at least, the assumption of unbounded wants is suitable for *our* economics as a reasonable description of *our* economy. I question rather the tacit auxiliary assumption that the tendency of wants to outstrip means is deeply embedded in human nature, that this assumption is valid not only for us, but for all people at all times.

This essay lays out an alternative view, namely that this Sysphean relationship between means and wants is a product of the development of the Modern West over the last 400 years. Economics posits unlimited wants as a universal axiom only because it takes the assumptions of modernity as its own while imputing them to human nature.

Keynes and the Possibilities of Abundance

In 1930, the world was entering the Great Depression. Indeed, Great Britain had been mired in recession since the mid-20s, while most of Europe and North America was enjoying unprecedented prosperity. Against this scene of economic gloom, John Maynard Keynes tried to cheer up his countrymen with an essay celebrating long-term growth. Times may be bad, Keynes wrote, but the present difficulties are but a blip in an onward-and-upward trajectory that will eventually liberate mankind from the constraint of economic scarcity.

Keynes's essay, "Economic Possibilities for our Grandchildren," made an even bolder assertion: namely, that his generation's grandchildren might well live to see the end of scarcity. If the rate of growth that had been achieved in recent decades could be maintained, "the *economic problem* may be solved, or at least in sight of solution, within a hundred years" (Keynes 1931 [1930], 366, italics in original).

The secret is compound interest. If output and consumption per capita grow at 2 percent per year, we will see a doubling approximately every 35 years. In a hundred years (103.5 years to be precise), consumption and income will increase to 8 times its current level!

Keynes perhaps thought it obvious that an 8-fold abundance of goods and services would vanquish the economic problem; in any case he did not spell out an argument why this should be

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to distinguish fairness from other reasons for sacrificing one's own gain to prevent someone else from improving his lot even more.

[5] There is no insuperable difficulty in modeling preference formation, and economists have done so from time to time. The problem is that the evaluative, or normative, part of economics cannot

so. Pressed however, Keynes might have argued along the following lines. Suppose that people in the top tenth of the income distribution enjoy on average 8 times the income of the bottom decile, a ratio not out of line with the pattern of distributional inequality in Western Europe and North America when Keynes wrote his essay, or for that matter, today. If we are justified in supposing further that today's top tenth have no economic problem, it follows that, after 100 years, the bottom tenth won't either. An individual in the bottom tenth will have the same income and consumption that a member of the most well-off tenth had 100 years earlier. In 2030, the poorest individuals will be at the level of the richest in 1930.

If we look at the distance we have come over the last century, it is easy to see the force—and the limits— of this logic. In the last century US output per capita pretty much followed the 2 percent trajectory that Keynes supposed would solve the economic problem. Over the period 1900-1999 the compound growth rate was 1.9 percent, and since 1930 growth has been a tad stronger, which is perhaps surprising since the Depression took most of a decade to overcome.

At first blush such an expansion vindicates Keynes's claims. All the more so since Keynes identified the economic problem with the satisfaction of what he called absolute needs—food, clothing, shelter, health care—those needs which "we feel…whatever the situation of our fellow human beings may be." The solution to the economic problem will be achieved "when these needs are satisfied in the sense that we prefer to devote our further energies to non-economic purposes" (Keynes 1931 [1930], p 365).

There is an ambiguity here. Does "further" mean after some particular date is reached? Is Keynes equating a solution to the economic problem with satiation? With the idea that somehow our absolute needs will be met with so little effort that we will be free of all economic necessity? Free to pursue whatever fancies us? Or is "further" a statement about the margin, namely, that at the margin we will decide to allocate more of our energy to the non-economic and less to the economic?

The first interpretation is problematic because satiation might well require productivity increases well beyond the 2 percent growth figure that Keynes took as his benchmark. The second is equally problematic, for economists at least, because our standard position is that people make choices at the margin all the time. No need to wait until 2030 or any other date certain for people to choose to allocate more energy to leisure and less to goods, or (what is the same thing for the

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be carried out on present lines if preferences are changing. Positive or descriptive economics is held hostage to the normative agenda encapsulated in Smith's paean to the invisible hand.

economist) more to non-economic and less to economic pursuits. As a statement about the margin, Keynes's criterion for the solution to the economic problem is hardly very helpful.

In my view, Keynes had neither satiation nor marginal analysis in mind. His perspective is rather a psychological, or perhaps even a cultural, one. The problem for Keynes is that our lives are focussed on the economic. We not only get our daily bread from the economy, we live in the economy. We not only nourish our bodies, but also our minds and souls through the economy. We will have solved the economic problem when it no longer presses on us to the extent that our lives are primarily engaged in the economic arena. Keynes foresaw a gradual withering away of the economy as the dominant force in our lives. The economic problem would recede as more and more people became emancipated from the need for full time remunerative employment.

He was agnostic on how a future without economic compulsion would sort itself out. For with the withering away of the economy would come two very different possibilities. At one pole, the possibility of a flowering of human potential that the economic problem had held in check. At the other, the possibility that eons of conditioning in terms of scarcity might make the vast majority of human beings unfit for the new freedom from economic need. "[W]e have been," he tells us (Keynes 1931 [1930], p 366)

expressly evolved by nature—with all our impulses and deepest instincts—for the purpose of solving the economic problem. If the economic problem is solved mankind will be deprived of its traditional purpose.

Keynes finds no grounds for optimism in the behavior of the vanguard, the wealthy classes of his own times. Look, he says, at "the wives of the well-to-do classes." These women, at least many of them,

deprived by their wealth of their traditional tasks and occupations… cannot find it sufficiently amusing, when deprived of the spur of economic necessity, to cook and clean and mend, yet are quite unable to find anything more amusing (1931 [1930], p 367).

Nor are more ordinary folk very promising. The working-class imagination is as limited in its own way as is the imagination of the rich. The "traditional epitaph written for herself by the old charwoman" says it all (1931 [1930], p 367):

Don't mourn for me friends, don't weep for me never,
For I'm going to do nothing for ever and ever...
With psalms and sweet music the heavens'll be ringing,
But I shall have nothing to do with the singing.

Such passivity may be understandable for people whose lives have been spent at alienating work—the charwoman's ambition is not, after all, so different from that of the present day couch potato whose work may be physically easier and economically more rewarding but in the end no more meaningful than hers. "Yet," as Keynes says, "it will only be for those who have to do with the singing that life will be tolerable—and how few of us can sing" (Keynes 1931 [1930], p 367).

Keynes's most striking observation is that freedom from economic want will at last allow us to free ourselves from a system of ethics geared to solving the economic problem but opposed to goodness and decency, opposed to life.

We shall be able to rid ourselves of many of the pseudo-moral principles which have hag-ridden us for two hundred years, by which we have exalted some of the most distasteful of human qualities into the position of the highest virtues. We shall be able to afford to dare to assess the money-motive at its true value...a somewhat disgusting morbidity, one of those semi-criminal, semi-pathological propensities which one hands over with a shudder to the specialists in mental disease. All kinds of social customs and economic practices, affecting the distribution of wealth and of economic rewards, and penalties, which we now maintain at all costs, however distasteful and unjust they may be in themselves, because they are tremendously useful in promoting the accumulation of capital, we shall then be free, at last to discard.

. . .

I see us free, therefore, to return to some of the most sure and certain principles of religion and traditional virtue—that avarice is a vice, that the exaction of usury is a misdemeanour, and the love of money is detestable, that those walk most truly in the paths of virtue and sane wisdom who take least thought for the morrow. We shall once more value ends above means and prefer the good to the useful. We shall honour those who can teach us how to pluck the hour and the day virtuously and well, the delightful people who are capable of taking direct enjoyment in things, the lilies of the field who toil not, neither do they spin. (Keynes 1931 [1930], pp 369-370, 371-372).

Keynes, as always, gives us much to chew on. First his conception of the contingent nature of customs, practices, and even ethics. Yet the devil is in the details, and I confess that I have real problems with the particulars of his idea that we construct our lives around markets *because* up to now we have needed markets for the sake of material progress.

For Keynes social attitudes, "all kinds of social customs and social practices," including ethics, reflect the needs and requirements of an economic base. As long as the base is geared towards the accumulation of capital, the cultural superstructure conforms: Not only should policy foster economic growth, "we must pretend… that fair is foul and foul is fair; for foul is useful and fair is

not" (Keynes 1931, p 372). Only after sufficient capital has been accumulated can we abandon policies and pretenses appropriate to an earlier age.

“Base” and “superstructure” are not Keynes’s own terms. They belong to Karl Marx and his followers. But though Keynes took great pains to distance himself from Marx, and certainly never uses the words base and superstructure, the shoe fits: the Keynesian view differs little from the Marxian idea that capitalism dictates the culture of market society, and that this culture must be tolerated until capitalism has had enough time to lay the material foundations for a more decent society.

And if the Revolution comes before these material foundations are complete? As Keynes was writing these words, Josef Stalin was putting a more murderous version of the economistic vision into practice. Forced march, socialist, accumulation also was to be temporary and only for a limited time to require us to "pretend to ourselves and to every one that fair is foul and foul is fair; for foul is useful and fair is not."

I am not suggesting any affinity between Keynes and Marx (and not between *either* of them and Stalin) beyond their shared economistic convictions. But that is no little affinity. It is precisely his economism that prompts Keynes to see the elimination of work as requiring us to learn to sing. Were Keynes to have started from a broader conception of life, he might easily have come to the opposite conclusion: the problem is not that we must learn to sing once freed from economic necessity; rather, our fundamental problem lies in our inability to make our work sing even while we fulfill our economic needs.

Keynes, it should be noted, is hardly alone in his insistence that work precludes the pursuit of loftier goals. For Edward Bellamy, the 19th century utopian socialist and author of *Looking Backward*, a futuristic vision set at the end of the 20th century, the abolition of work was the precondition of a spiritual life (Bellamy 1889, quoted in Noble 1997, pp ****). In this Bellamy and Keynes follow a long tradition in Western thought. In “Losing Touch” (Marglin 1990), I argued that the Judeo-Christian tradition has for the most part remained faithful to the Biblical idea that labor is a punishment for the transgression of Adam and Eve in the matter of the forbidden fruit. And thus, like chicken pox, something to be got over with as quickly as possible. This is in marked contrast to various non-Western traditions, in which work may itself be a means for spiritual expression.

Are We There Yet?

By Keynes’s own standard the striking gains in material abundance do not appear to have

brought us very close to solving the economic problem: If we measure the severity of the problem by the space that the economic takes up in our lives, we have hardly made a dent. There is little evidence that, as a people, we "prefer to devote our further energies to non-economic purposes." Middle class folks—who, according to Keynes, should be towards the front ranks of the march away from the economy—work longer hours today than our parents did a generation ago (Juliet Schor 1991). Moreover we enjoy our work less, and fear for our economic futures more (Jill Fraser 2001).

Why has Keynes's prediction fared so badly? Keynes gives himself an out, for he recognizes at the outset of "Economic Possibilities" that in addition to absolute needs there are relative needs, "those [needs] which... we feel… only if their satisfaction lifts us above, makes us feel superior to, our fellows." Relative needs, Keynes allows, know no limits. "Needs… which satisfy the desire for superiority, may indeed be insatiable; for the higher the general level, the higher still are they" (Keynes, 1931 [1930], p 365). [6]

So our apparent failure to solve the economic problem may be because of the continuing pressure of "insatiable" relative needs. [7] But if this is the case, how can Keynes so easily put to one side the insatiability of relative needs in arguing that a solution to the economic problem is at hand? That is, if relative needs play a major role in consumption patterns, then why should even

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[6] Compare Adam Smith's (1937 [1776], pp 821-822) distinction between necessities and luxuries. For Smith, necessities as well as luxuries have a cultural component:

> By necessaries I understand, not only the commodities which were indispensably necessary for the support of life, but whatever the custom of the country renders it indecent for creditable people, even of the lowest order, to be without. A linen shirt, for example, is, strictly speaking, not a necessary of life. The Greeks and the Romans lived, I suppose, very comfortably, though they had no linen. But in the present times, through the greater part of Europe, a creditable day-labourer would be ashamed to appear in public without a linen shirt, the want of which would be supposed to denote that disgraceful degree of poverty, which, it is presumed, no body can well fall into without extreme bad conduct.

By contrast, luxuries are those goods which are neither life sustaining nor essential to personal dignity:

> Beer and ale, for example, in Great Britain, and wine, even in the wine countries, I call luxuries. A man of any rank may, without any reproach, abstain totally from tasting such liquors. Nature does not render them necessary for the support of life; and custom nowhere renders it indecent to live without them.

[7] Thorsten Veblen, who added the term "conspicuous consumption" to the lexicon, put the point thus:

> If, as is sometimes assumed, the incentive to accumulation were the want of subsistence or of physical comfort, then the aggregate economic wants of a community might conceivably be satisfied at some point in the advance of industrial efficiency; but since the struggle is substantially a race for reputability on the basis of an invidious comparison, no approach to a definitive attainment is possible (Veblen 1967 [1899], p 32).

the full and complete satisfaction of absolute needs lead us to devote our energies to other realms?

Nicholas Xenos (1989, p 46) solves the puzzle by suggesting that for Keynes relative needs have a very different character in the age of capital accumulation from the character they will acquire after the age of abundance has arrived. These needs are functional to the accumulation of capital and the growth of output. Just like greed and the other vices which we must for the time being call virtues, envy serves an economic purpose in motivating individuals to maximum exertion and effort. The desire to improve one's relative status is the engine that drives the economic train. [8]

In short, as long as absolute needs remain unfulfilled, avarice, greed, and envy are functional in promoting hard work, accumulation, and economic growth. Keeping up with the Joneses benefits the non-Joneses as well as the Joneses. People benefit not only from their own hard work, but also from the growth in the stock of machines and other forms of capital. An increased and improved capital stock increases productivity even if people work no harder, and higher productivity allows a higher standard of living all around.

It is thus a good thing for society that individuals do not get together to limit consumption to the fulfillment of absolute wants! In the language of economics, the positive externalities, the incentive effects of relative consumption, outweigh whatever negative externalities rivalry produces.[9]

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[8] Though this idea is generally associated with Thomas Mandeville's early 18th century *Fable of the Bees*, the thought was clearly in the air a generation earlier. Nicholas Barbon, John Houghton, and Dalby Thomas all expressed the same idea before the end of the 17th century (Appleby 1977, pp 170-171). Barbon argued that it

> is not Necessity that causeth the Consumption, Nature may be Satisfied with little; but it is the wants of the Mind, Fashion, and desire of Novelties, and Things scarce, that causeth Trade (quoted in Appleby 1977, p 171).

Thomas added that luxuries were not sinful, but "true spurs to Virtue, Valour and the Elevation of the mind, as well as the just rewards of Industry" (quoted in Appleby 1977, p 171).

[9] Half a century apart, James Duesenberry (1949), and Robert Frank (1999) noted the important *negative* externalities in a static, timeless, model: if increases in your consumption make everybody else want more, then increasing your consumption may *reduce* social welfare. These externalities have important welfare consequences: to the extent consumption is relative, taxes may make people better off even in the most extreme case in which nothing good comes from the corresponding public expenditure. To a first approximation, a proportional income tax leaves everybody in exactly the same *relative* place as before. And if incentive effects lead people to work less, as mainstream economics suggests, people will by and large benefit from greater

But once the age of abundance arrives, envy and similar unsavory motives are no longer functional, and Keynes implicitly assumes that relative needs accordingly will fade away. Emulation may continue, but it will be transformed: “We shall honour those who can teach us how to pluck the hour and the day virtuously and well, the delightful people who are capable of taking direct enjoyment in things, the lilies of the field who toil not, neither do they spin.”

Xenos would thus compound Keynes’s economism by imputing to him a naïve functionalism: once relative needs no longer serve a legitimate social purpose, they will cease to exist. Instead of trying to keep up with the Joneses in the consumption of BMW’s and jacuzzis, we will try to match Mr Jones in meditation and Ms Jones in awareness of the beauty of the world around us. How the requisite psychological transformation, and dare I say it, spiritual transformation, might take place is not even raised as a question, much less answered.

The affinity between Keynes and Marx has been noted, and both are part of a broader tradition of utopian thinking born of the Enlightenment. John Kenneth Galbraith’s two-volume *magnum opus*, *The Affluent Society* (1958) and *The New Industrial State* (1967) is the latest work, and perhaps the last, in this line. Like Marx, Galbraith recognizes that the economy will not wither away just because we possess sufficient resources to fulfill our absolute needs. Galbraith, again like Marx, sees the main obstacle as the power of producers, but for Galbraith it is not the power of the capitalist class but the power of the “technostructure,” a group comprising "all who bring specialized knowledge, talent or experience to group decision-making. This, not management, is the guiding intelligence—the brain of—the enterprise” (1967, p 71). For these folks, status, identity, and creativity—their whole lives, not just their economic well-being—are bound up with the corporation. They will not let go of the very meaning of their lives just because it is in our economic capability to fulfill our absolute needs!

Where Marx saw revolution as the answer, or at least a precondition for the transformation that would emancipate us from the economy, Galbraith put his faith in the ability of the university to shape the men and women of the future. Scientists and social scientists in particular occupied a critical place in the care and feeding of new recruits to the technostructure. This critical position gives the academic establishment a power and influence disproportionate to its numbers, indeed a power that might be used to subvert the commitment of the technostructure to more and better of ever more useless things. A third of a century after the publication of *The New Industrial State*, the university has yet to show itself as a plausible white knight that might rescue us from the

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leisure. Bringing everybody’s consumption down a notch is like making the crowd at a football game sit down. We see as well as when we all stand up, with less effort.

technostructure, or rather the technostructure from itself. Galbraith's contribution lies not in his proposed solution, but rather in his recognition of non-economic obstacles to an age of abundance.

Keynes was dead wrong. Economic growth will not lead to the conquest of scarcity. Absolute needs will always exceed the means to fulfill them. And even if absolute needs could be met, relative needs will not conveniently disappear once they are no longer functional in motivating growth and the fulfillment of absolute needs.

Yet Keynes here, as so often is the case, is provacative in the best sense of the term. He asks us to reflect on two fundamental questions. First, why are relative needs so deeply embedded in our psyche?[10] And why do absolute needs continue to press on us so hard?

We take up each of these questions in turn.

Why Did Rivalry Get Channeled into the Economy?

The short answer is that the barriers to expressing rivalry through economic means eroded over the 15th and 16th centuries. No better illustration of this erosion exists than the rise and fall of sumptuary laws, laws enacted from the 14th century onwards as a way of controlling display. Dress was the first and most visible indicator of one's station in life, and had previously been governed by norms which assigned different forms of dress to different social orders.[11] By the 14th century, these social norms were evidently failing to enforce dress codes, for it was in this century that English monarchs first got into the business of legal prescriptions on matters of dress.[12]

Where did the merchant ever get the idea that he might be as worthy as a knight and morally entitled to the same show of self-worth? Or the well-to-do peasant the idea that he was as good or better than a down-at-the-heels lord? Why did social inferiors cease to accept their inferiority and begin to proclaim their equality in the way they dressed? I have briefly sketched an answer to these questions in Ch 2 which hinges on the breakdown of the manorial economy and the feudal polity; the challenge to received wisdom of the Reformation and of exploration and the

[10] Relative needs are more varied than Keynes's definition suggests, more complex than simply having more than the next guy. One reader of an early version of this paper pointed out that his pre-teen didn't want more Nikes than his friends; rather, he had to have *his* pair of Nikes as the ticket of admission to his peer group. There is an extensive literature on various forms of relativity in consumption. A pioneering paper is Harvey Leibenstein (1950).

[11] I remember travelling to the erstwhile Soviet Union in the 1980s and thinking how much easier it was to read an individual's social class from his or her dress there than under capitalism!

beginnings of empire; the elaboration of new technologies for fighting wars and diffusing ideas; and the beginnings of a new economy based on manufacture and centered in towns and cities. For present purposes perhaps the most important phenomenon is that from the 16th century on, manufacture and commerce grew at a historically unprecedented rate, as did towns and cities in which manufacture and trade were centered. The accompanying anonymity further undermined the operation of social norms and distinctions that could operate only in a face-to-face society.

One symptom of the change was an expanded effort to impose sumptuary laws. In pre-modern Europe, the *bourgeois gentilhomme*, the townsman affecting the airs of a noble, might have been cured of his pretensions by ridicule,[13] but the growing size and importance of towns and cities and the growing anonymity of urban life made it more difficult to enforce social sanctions.

Sumptuary laws were a total failure, meeting the same fate as the laws that prohibited the consumption of alcoholic beverages on US soil in the early years of the past century. The significance of these laws is not their effect but rather what they tell us about social decay, namely, that the principles that underlay the order of medieval society no longer functioned. Sumptuary laws are a sign of social breakdown, an indication that the internalized regulating mechanism has stopped working, that social sanction no longer is effective. Once it ceases to be unthinkable for a bourgeois to appear in public dressed like a noble, the game of controlling display by legislation is clearly up. From then on, the economy offers not only access to goods but a ladder to climb up (or fall down) in the social hierarchy. With the breakdown of medieval society, rivalry gets channeled into the economy, not because of human nature but because of the erosion of the social constraints that once limited the role of wealth as a counter in the game of social status.

It is not my contention that scarcity exists only in conjunction with modernity. It is rather that scarcity takes on a specific form in the modern world and comes to dominate our lives. Suppose, for the sake of argument, that the 17th century English philosopher Thomas Hobbes was right when he argued that competition, diffidence (mistrust in today's English), and glory are universals (Hobbes 1968 [1651], ch 13, pp 183-188). Suppose, with Hobbes, that rivalry is basic to the human condition.[14] Nonetheless, the *means* by which we compete, the *means* by which we demonstrate our diffidence, the *means* by which we achieve glory—vary from society to society.

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[12] These 14th century laws were a compromise: merchants might dress like knights, but only if they were five times as rich ("Dress," Encyclopedia Britannica On-line, 2001).
[13] Across the Channel from England, an older countryman of the author of *Le Bourgeois Gentilhomme*, complained of imposters "who dress like a gentleman… corrupting our ancient discipline" (Antoine de Montchretien, *Traicte de l'Oeconomie Politique* (1889 [1615]) p 60; quoted in Lebergott, 1993, p 4).
[14] A point I am willing to stipulate, as the lawyers say, but not to concede.

Rivalry may be expressed through oratory or song, mistrust may be expressed through spells and witchcraft, admiration may be sought through display of physical courage on the battlefield or intellectual adroitness in the seminar room. It is peculiarly modern to channel this rivalry into the economy.

This is not to say that *all* rivalry is channeled into the economy. The modern era has had its share of war, athletic spectacle, and academic display. Rather, the point is that in modernity the economy emerges as a prime site for the expression of rivalry, as wealth becomes the measure of human worth.

There is another difference between modern and pre-modern scarcity: scarcity becomes generalized. Isolated and incommensurable scarcities have characterized human existence since time out of mind. Remember Joseph, who made his name interpreting Pharaoh's dream and laying up grain against the famine it foretold. In the world of the Modern West we no longer have scarcities—indeed the greatest scourge, famine, has long since been eliminated. Instead we have one big scarcity, Scarcity with a capital S. Scarcity structures our existence: since everything is interconnected, everything is scarce.

How does this interconnection come about? Once consumption becomes relative, the specifics of goods become more important in some ways but less important in others. If you are hungry, no amount of silk or jewelry will answer your need. But if the need is for display, then goods are much more fungible. We may strive to keep up with the Joneses in some dimensions but not in others. That is part of the story, the demand side so to speak. The other part of the story, the supply side, is the growth in commerce and monetization of the economy, which facilitates the substitution of goods and services for one another. King Midas may have thought he would never have a problem because he would always be able to exchange his gold for other commodities. The poor fellow was simply ahead of his time. In the modern world such exchange is indeed possible.

Finally, scarcity becomes Scarcity because the means become available to alleviate Scarcity. This sounds paradoxical but Karl Marx and Sigmund Freud separately came up with the same explanation of the paradox, albeit at different levels. Karl Marx (1970 [1859], p 21) said "Mankind inevitably sets itself only such tasks as it is able to solve." Freud somewhere made a similar remark, I believe, about individuals undergoing psychoanalysis, to the effect that the ego only allows those problems to emerge which it possesses the capacity to resolve. The point is that only when the engine of production was sufficiently well developed could the genie of Scarcity be let out of the bottle. Not until the conditions were in place to meet desire at least half way could

rivalry be safely channeled into the economy.[15] Only in the 17th century did the European economy become sufficiently oriented towards expansion that demon Scarcity could be tamed by god Growth.[16]

Hobbes's war of all against all was in the first instance a struggle over a fixed economic pie. The struggle for power becomes an economic struggle because, according to Hobbes, "The value, or worth of a man, is as of all other things, his price; that is to say, so much as would be given for the use of his power" (1968 [1651], ch 10, p 151). Hobbes and his 17th century contemporaries finessed this struggle by proposing that right policy would increase the pie overall, so that everybody could have a bigger piece—ignoring the relative nature of power. The love affair with trickle down began in earnest, and Growth has been chasing Scarcity ever since. But like the mechanical rabbit at the dog races, Scarcity has always managed to stay comfortably ahead of its pursuer.

One reason is that producers have found it advantageous to manipulate consumers. The need to keep up with the Joneses is promoted by advertising and other forms of persuasion that together form the peculiarly modern art of salesmanship. Mid 20th century critics like John Kenneth Galbraith (1958) and Dwight Macdonald (1962 [1953]*) may have exaggerated the power of salesmanship, but there can be little doubt that marketing reinforces the demand for goods that we value because others have them. Advertising teaches us what will truly allow us to keep up with the Joneses. In Galbraith's words, "[advertisers] are effective only with those who are so far removed from physical want that they do not already know what they want" (1958, p 158).[17]

Modernity and Absolute Needs

The relativity of needs is one piece of the puzzle of why scarcity persists in an age of abundance. But it can't be the whole story since absolute wants keep growing too. This section explores this part of the puzzle.

Product innovation is one reason. New goods continually come on the market and only gradually diffuse throughout the population. Today's luxury, enjoyed by a small fraction of the population, becomes tomorrow's mass necessity. In 1900, a negligible fraction of the American population

[15] Half way because to some extent people compare themselves not with others but with themselves or their parents some time back. To this extent, the game of growth is not zero sum—everybody can be a winner! See Benjamin Friedman (****) and Marglin (1975, p ****)

[16] The anthropologist George Foster (1965) described the various ways in which poor benighted Third World communities connive to keep Scarcity at bay because they have not figured out how to get the genie of growth out of the bottle.

[17] A very informative account of want creation in the half-century from 1880 to 1930 is *Land of Desire* by William Leach.

owned automobiles. By 1989, 83 percent of urban families and 89 percent of rural families owned cars. Three percent of American families had electricity at the beginning of the century, compared with 99 percent in 1960 and 99+ percent today. In 1910, 46 percent of white families and 71 percent of black families in American cities shared a toilet with at least one other family; in 1989 the figure was less than 1 percent for white and black alike urban dwellers alike.[18] All these goods are closer to the absolute than the relative pole, and one could go on and on: the 20th century expansion of the array of goods and services on offer would have been incredible to earlier generations.

It would be easy to stop with a technological explanation of the growth of absolute wants, but it would be a mistake to do so. Technology explains *supply*, but what explains *demand*? Why does *stuff* play such an important part in our lives? Here is where the culture of modernity and in particular individualism come in. *In societies in which the individualistic is the dominant map, commodities—goods and services purchased in the market—become the means of solving existential problems.*

One example will serve to illustrate if not to make the point. It is generally recognized that over much of the last century cities became increasingly unattractive and undesirable places for living, not to mention for raising a family. Whereas in the 19th, and perhaps even in the first decades of the 20th, century the amenities of urban life improved markedly, in the latter part of the past century cities became increasingly deficient, dirty, and dangerous. The solution, for some at least, was escape to the suburbs. Suburban homes may involve a certain amount of conspicuous consumption, but they also serve absolute wants. In the absence of strong communities, people are unable to take joint action to solve social problems. Lacking “voice,” individual "exit" may be the only solution (Hirschman 1970).

Belief in the power of commodities—suburban homes in the present example—need not be simply a form of fetishism nor a form of false consciousness, as Marxists often claim, but a realistic assessment of the available options. The mistake is not the idea that *being* is based on *having*, but to suppose that this is the human condition rather than an artifact of the limited range of options available in modern society.

Health care provides another example of a good which clearly lies on the absolute side of the divide between absolute and relative wants: no one, to the best of my knowledge, has ever

[14] All figures in this paragraph from Lebergott (1993).

wanted a triple bypass because Mr Jones down the street just got one. Or because advertising seduced him into wanting the delights of the operating room or the pleasures of convalescence.[19]

To be sure, health care is not purely absolute. You or I might feel the need for cosmetic surgery because Mr Jones has just had a hair-transplant or Mrs Jones a face-lift. This points up that relative needs and absolute needs are better thought of as categories for organizing our thinking than as categories etched in stone.[20] Health care highlights the importance of innovation on the supply side,[21] but for our purposes it is more important for what we can learn about the demand side, particularly about the role of individualism.

How do we economists analyze the demand side in the health-care sector? Hobbes again led the way: though there may be no agreed-upon ends, no highest good, he posited that we all can agree that death is the supreme evil. Hobbes in fact went even further: since life is the pre-condition of attaining any of our other ends, we will do anything to prolong life. The obvious difference between then and now is that in Hobbes's day there was precious little that one could do to prolong life no matter the extent of one's resources. A second difference is that today's economics is based on trade-offs, including the trade-off between longer life and other goods.

Formally, the problem becomes the choice of an optimal life span. The representative individual maximizes life-time utility as a function of quality of life and length of life. At its most simple, quality of life is expressed as a numerical magnitude associated with each moment of time, and life-time utility is simply the sum of this series of numbers over one's whole life from the starting point at birth to the terminal point at death. Quality of life depends in turn on two variables, ordinary consumption and health. We can solve for the optimal life span: the optimal time of death for an individual is defined by the length of life (a choice variable in the model) at which life-time

[19] Immediately before noting that we are at the mercy of advertising precisely because we do not know our own minds, Galbraith reminds us that absolute wants preclude advertising: "A man who is hungry need never be told of his need for food" (1958, p 158).

[20] Friends in India tell me that when by-pass surgery came to Delhi, it became for a time the thing to do to keep up with the Singhs.

Cigarette smoking nicely illustrates the difficulty of separating actual goods into two hard and fast categories. If, for the teenager and the pre-teen neophyte, cigarette smoking is mostly about emulation, the craving for tobacco becomes an absolute need once a kid becomes addicted. But that is not the end of the matter: the addict has considerable choice about *which* container his dose of nicotine comes in, so the relativity of needs re-asserts itself. The youngster becomes open to persuasion: Marlboros will make him a real man, Gitanes a café intellectual, and Virginia Slims will make *her* into a modern woman "who has come a long way, baby."

[21] Over the last 40 years, health care has grown from 5 to 15 percent of personal consumption expenditure in the US (Bureau of Economic Analysis, Department of Commerce). The share of Medicaid and Medicare expenditures in Gross Domestic Product, now at 5 percent, is expected to triple over the next half century (*Business Week*, May 21, 2001, p 81).

utility is maximized. Life span becomes a choice because the individual can allocate his resources between consumption goods and investment in health. Consumption goods promote the quality of life directly while investment in health may (or may not) in the first instance lower quality of life, but pays back the investment in some combination of later quality of life and longer life.[22]

This formulation elides many problems, such as the difference between preventive medicine and treatment which responds to a diagnosis of disease. It also lumps consumption into a single good, despite the evidence of different health consequences of different types of consumption. It oversimplifies by ignoring the complex relationships between quality of life at different moments of time. But for all its simplicity, it captures the way mainstream economics—and arguably modern individuals—approach health-care decisions.[23]

In this model, under plausible assumptions about production, individuals will never be satiated in consumption goods. To see this, suppose to the contrary that the utility of the last bit of consumption (its "marginal" utility) is zero. At the same time suppose that investment in health still has a pay-off at the margin in terms of either improving the quality of life or extending the period over which a positive quality of life can be sustained. Then, despite consumption satiation, the optimizing individual will use all the resources at his or her disposal as long as it pays to invest in health. But the marginal returns from health expenditure exceed the zero marginal return from ordinary consumption. So it pays to re-allocate one's budget in the direction of more health and less consumption. Optimizing individuals equate the marginal returns per dollar of expenditure in the two areas, with both marginal returns positive. Satiation in one area—defined as the point where the marginal return is zero—can only come at the same time as satiation in the other.

So long as there is a prospect for even very small extensions of life expectancy or improvements in the quality of life by investing in health, satiation will never come in either realm. As long as medical technology improves over time, the returns to health investment will continually grow and provide an attractive outlet for expenditure, which will prevent people from reaching satiation in ordinary consumption goods as well.

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[22] An operation for early stage cancer may lower the quality of life during convalescence, but the expectation is that the operation will pay off in terms of higher quality of life down the road, as well as a longer road to go down.

[23] This is a simplification but not a caricature. See, among others, Michael Grossman (1972, 1998), Walter Ried (1998), and Martin Forster (2000).

This model does not *logically* rule out the possibility of satiation. The point is rather that satiation cannot come unless and until the possibilities for expanding the reach of medical technology are exhausted. The underlying empirical assumption is that technical progress in medicine will continue.

It thus sounds like technology is the culprit, if that is the word, not individualism. To be sure, there is a strong empirical assumption about the "production function" for health,[24] but the present story is about demand rather than supply. The conclusions of the standard model depend as much on the framework of the individual weighing investments in health care against consumption as they do upon the assumption of a high rate of technological change in health care.

But is there any other way to think about health-care decisions? If technological progress in health care offers an ever expanding array of interventions, will we not take advantage of them—once we have the resources to do so? Not necessarily. Suppose the objective is not to maximize life-time utility but to sustain the community. This is not to suggest a callousness or indifference to individual human life, but a different set of priorities. Conceivably, the individual returns to health care expenditures might be outweighed by the effects of these interventions on the community. Even if health care were free, the cost in terms of undermining the community might be unacceptable.

We don't have to imagine an example. We have already seen a tragic one in the Amish community which let a baby die rather than compromise its independence as a community.

Conclusions

This chapter has sought to explain how modernity has created both the possibility and the impossibility of abundance. The possibility part is well understood. Modernity unleashed an unprecedented and unparalleled growth of productivity and thus a potential abundance unimaginable in earlier epochs. It wasn't so long ago that it would have seemed loony to imagine that it might be possible for 2 percent of the population to feed the remaining 98 percent, with quite a bit left over for export. But that is the reality in the United States today. [25]

[24] Health economists polled by Victor Fuchs a few years ago overwhelmingly agreed with the view that "The primary reason for the increase in the health sector's share of GDP over the past 30 years is technological change in medicine." Others polled—economic theorists and practicing physicians—were not so sure (Fuchs 1996, p 8).

[25] Even if we add in those who produce the fertilizers, pesticides, equipment, fuel, and other off-farm purchases that go into agricultural production, as we should, it is still a very small fraction of the labor force that feeds the rest of us.

But no matter how productive we become, abundance remains an impossibility so long as wants are boundless.

The unboundedness of wants has two sides to it. One, the economic sphere has become a primary site for expressing rivalry, a site in which worth is displayed by wealth. Two, individualism has become the dominant map of social organization.

As a general rule, human societies, including pre-modern Europe, erect formidable obstacles to expressing rivalry in economic terms. It is generally understood, or rather intuited, that economic rivalry imperils social cohesion. The society that took root on English soil in the 17th century, and has spread to Europe, North America, and beyond in the intervening centuries—modern society—is the exception. Even before this society was firmly implanted, it was argued that, having unleashed the forces of growth, consumption was no longer a zero-sum game. Winning no longer meant that someone else must lose (Appleby 1977).

The discovery of growth did more than diminish the necessity of restricting economic rivalry. The pursuit of wealth actually became a plausible basis for social cohesion, and success in this pursuit the only distinction that mattered. As the bumper sticker puts it, "He who dies with the most toys wins."

Modernity also undermines the promise of abundance by giving disproportionate legitimacy to individualism. Even for goods that are not relative in nature, the individualistic worldview promotes scarcity. As long as commodities are a primary means of solving existential problems, goods will be scarce. No better example exists than health care. As long as longevity or a higher quality of life are commodities, there is no way that health care could cease to be scarce for the individual, short of a halt in the progress of medical technology. There is no limit on an individual's desire for health care except the other goods he or she has to give up for the sake of better health, so neither health nor ordinary consumption goods can be superfluous. In this calculus the claims of the community must get short shrift and the values that support community will correspondingly atrophy.

But the individualistic calculus itself is not the only way to think about consumption, be it of ordinary goods or of health care. We think about consumption in a particular way because we are the products of a particular history and culture, not because human beings are programmed to think in this way. It is not, as Keynes suggested, that we can rethink the premises of society once we have "enough." Rather, we shall have enough when we rethink the premises of modernity.

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CHAPTER NINE
SYSTEMS OF KNOWLEDGE AND IDEOLOGIES OF KNOWLEDGE

The term *algorithmic knowledge* is used here for a particular form of knowledge characterized by rational deliberation, indeed the system of knowledge appropriate to a calculating, maximizing *homo economicus.* In counter point with algorithmic knowledge is *experiential knowledge*, a distinct form of knowledge characterized by its dependence on the intuition, insight, and hunch born of experience.

Algorithmic knowledge and experiential knowledge are distinct ways of understanding, perceiving, apprehending, and experiencing reality. I should emphasize at the outset that I have no criticism to make of algorithmic knowledge as *one* system of knowledge. On the contrary: I would argue that we would not be human without our command of algorithmic knowledge. The problem is rather the claim made on behalf of algorithmic knowledge that it is *all* of knowledge, from which stems its proclivity to crowd out other, equally important, systems of knowledge. While algorithmic knowledge is essential to our humanness, so is experiential knowledge. Indeed, it is our ability to combine experiential and algorithmic knowledge that sets us apart both from other animals and from computers: animals have experiential knowledge and machines have algorithmic knowledge, but only we humans have both. Oliver Sacks's clinical histories (1985) are at once moving as well entertaining evidence for the grotesque, bizarre, and even tragic distortions of human beings that result from a loss of either experiential or algorithmic knowledge.[26]

But I get ahead of my story; we cannot very well explore the relationships between different systems of knowledge before I lay out what I mean by this terminology. First, let me be more clear about what a knowledge system is *not*: the term does not refer to a specific domain of knowledge. Economists and physicists, chemical engineers and personnel managers, deal with different domains of knowledge. But this in no way prevents us from sharing a common practice (or a common ideology) with respect to the systems of knowledge we employ.

By *system of knowledge* I mean a distinctive ways of organizing, disseminating, and modifying knowledge, and the power relationships that govern participation in the system. My argument consists of three propositions: first, that knowledge and action are everywhere and at all times

[26] Needless to say, this view of human knowledge makes me skeptical of the possibilities that artificial intelligence can imitate the human mind. Until we understand more about how human beings are able to integrate experiential and algorithmic knowledge, we can hardly hope to do so in a machine.

based on a combination, a synthesis, of at least two knowledge systems, algorithmic and experiential knowledge—and perhaps others; second, notwithstanding this symbiosis in practice, ideologically the modern Western culture that emerged in the 17th century has elevated algorithmic knowledge to a superior position, sometimes to the point that experiential knowledge is regarded not simply as inferior knowledge, but as no knowledge at all. Except to the extent that knowledge born of experience can be justified by algorithmic knowledge, it remains superstition, belief, prejudice. The third proposition is that the ideological hierarchy of knowledge has had a powerful influence on the way algorithmic and experiential knowledge interact in practice, rendering experiential knowledge illegitimate and even invisible.

The emphasis on self-interest, calculation, and maximization in economics reflects the ideological dominance of algorithmic knowledge. The very notion of calculation and maximization, be it of profit or utility, is proper to algorithmic knowledge and, indeed, incoherent within experiential knowledge. The devotion of the economics profession to maximization reflects more a prior commitment to the superiority of algorithmic knowledge than a serious attempt to unravel the complexities and mysteries of human motivation and behavior. The commitment is in short ideological, a point to which I will return later in this chapter.

I have found it useful to characterize systems of knowledge in terms of four dimensions: epistemology, transmission, innovation, and power. A particular system has its own theory of knowledge, that is, its own epistemology; its own rules for acquiring and sharing knowledge; its own distinctive ways for changing the content of what counts as knowledge; and, finally, its own rules of governance, both among insiders and between insiders and outsiders.

Why *system*? The point of the term system is twofold. Its first purpose is to suggest that epistemology, transmission, innovation, and politics are not attributes of knowledge in general but characteristics of particular ways of knowing. There is no single epistemology, but specific epistemologies which belong to distinct ways of knowing. Equally there are distinctive ways of transmitting and modifying knowledge over time. And a particular way of knowing may go along with different power relationships among the people who share knowledge and between insiders and outsiders.

The links among the several characteristics by which we describe a system of knowledge are a second reason for using the term *system* in the present discussion. How we know and how we learn and teach, how we innovate and how we relate politically—these characteristics of knowledge mutually interact, as well as interacting with the basic constructions that underlie each particular way of knowing.

The difference between algorithmic and experiential knowledge begins with the distinctiveness of their epistemologies. I have said that algorithmic knowledge can be identified with rationality. Its form in the modern West is knowledge based on logical deduction from self-evident first principles, Euclidean geometry and the Cartesian method perhaps being the canonical exemplars. The Western form of algorithmic knowledge thus combines induction and deduction. Induction plays an important role in determining first principles (like parallel lines never meet), and deduction in reaching conclusions at some remove from these first principles (like the Pythagorean theorem). "Logical deduction" implies proceeding by small steps with nothing left out, nothing left to chance or to the imagination. Thus, besides the mathematical theorem, the computer program comes to mind as a model of algorithmic knowledge.

Observe that the necessity for induction to establish first principles for this form of knowledge raises the issue of whether there can be, even as an ideal type, such a thing as pure algorithmic knowledge. The problem is that the notion of self-evidence requires a form of experiential knowledge—how else do we recognize what is “self evident”? How do we distinguish illumination from delusion? (This is of course the question that plagued the Reformation: the Protestants thought to build an algorithmic Christianity on the basis of self-evident first principles, but the principles were continually contested, sometimes violently. Even Euclid's axioms have turned out with the passage of time to be less self-evident than had once been supposed—we now have a variety of geometries, each with its own axiomatic basis.)

Let us look more closely at the distinguishing features of the epistemology of algorithmic knowledge. First, algorithmic knowledge is analytic. It decomposes, breaks down, a body of knowledge into its components. It is thus directly and immediately reproducible. It is fully articulate, and within algorithmic knowledge it may be said that what cannot be articulated does not even count as knowledge.

Algorithmic knowledge is purely cerebral. Mind is separate from body, and algorithmic knowledge pertains to the mind alone. The statement "I feel there is something wrong with what you are saying," which is to say "I sense something is wrong, but I cannot articulate what or why" has no place within algorithmic knowledge.

Even when pressed into action, algorithmic knowledge is theoretical. Once the tentative and provisional nature of any axiomatic scheme is recognized, algorithmic statements are necessarily hypotheses. Indeed, without entering into the nuances of the debate between Karl Popper (1968) and his critics (Kuhn 1970; Lakatos 1970; Putnam 1974) it can be said that algorithmic knowledge

is geared one way or another to falsification and verification. Its very procedure, the insistence on small steps that follow immediately and directly upon one another preclude discovery and creativity. To discover or to create through algorithmic knowledge would be like the proverbial monkey typing Shakespeare: he might some day do it, but we would be hard pressed to find the wheat among the chaff.

Finally, algorithmic knowledge is impersonal. The interaction of the impersonality of algorithmic knowledge with an ideologically driven politics of knowledge should be noted. Impersonality easily slides over into uniformity and sameness, and from there into equality. Like the Christian God, algorithmic knowledge is impartial; it is in principle accessible to all on equal terms (Romans 2:11, Colossians 3:10-11). Thus algorithmic knowledge is not only theoretical knowledge, it becomes theoretical knowledge of theoretical equals. So far so good: who would not applaud a bias towards equality? The problem is that, as the elevation of the Jewish tribal deity to the status of universal God historically led Christians to deny the possibility of salvation to unbelievers, so the ideological elevation of algorithmic knowledge to superior status led to the disenfranchisement of those outside this system of knowledge. It is an easy political step to universalistic claims for algorithmic knowledge and only a tad more difficult a step to the view that those lacking in algorithmic knowledge are lacking in knowledge itself.

If algorithmic knowledge is another name for the knowledge acquired through our rational faculties, experiential knowledge runs the gamut from the authority of recognized masters (and mistresses) to one's own intuition. One way or another, however, lived experience is the core, either our own experience or the experience of those who have gone before. Opposed to the small steps of algorithmic knowledge are both received doctrine and the imaginative leap—the great aha!—which all at once enables one to fit the jig-saw puzzle together. Received doctrines and imaginative leaps are both knowledge of the whole, difficult to break down into parts. In contrast with the analytic nature of algorithmic knowledge, experiential knowledge is indecomposable.

Experiential knowledge is often difficult if not impossible to articulate. Those who possess it may be aware that they possess special knowledge, but their knowledge is implicit rather than explicit. It is revealed in production of cloth or creation of a painting or performance of a ritual or a forecast of economic activity, not in textbooks for student weavers, artists, priests, or economists.

Whatever the status of algorithmic knowledge with respect to the opposition between universal and local knowledge, the position of experiential knowledge is clear: it makes no claims to

universality. It is specialized in nature and closely allied to time and place. It always exists for a particular purpose at hand; experiential knowledge is contextual.

Experiential knowledge belies the mind/body dualism which is basic to algorithmic knowledge. Under experiential knowledge one knows with and through one's hands and eyes and heart as well as with one's head. Experiential knowledge is knowledge which gives due weight to Keynes's animal spirits, what Martha Nussbaum and Amartya Sen (1989: 316) have called the "cognitive role of the emotions." It is as well the knowledge of touch. Feeling, in both senses of the term, is central to experiential knowledge; it is at once both tactile and emotional.

Experiential knowledge is intensely practical, to the point that, as has been suggested, it reveals itself only through practice. This is not to deny the existence of an underlying theory, but the theory is implicit rather than explicit, not necessarily available, perhaps not even usually available, to practitioners.

Experiential knowledge is geared to creation and discovery rather than to falsification and verification. Even a mathematical theorem is largely the product of experiential knowledge, although the proof must, by the very requirements of the knowledge system on which mathematics is formally based, be cast in terms of algorithmic knowledge.

Finally, where algorithmic knowledge is impersonal, experiential knowledge is not and cannot be. It normally exists in networks of relationships and cannot be transmitted or even maintained apart from these relationships. The normal avenues of transmission—parent-child, master-apprentice, guru-shisha—are intensely personal.

The History of an Ideology

I have suggested that our ideology of knowledge, which prioritizes algorithmic knowledge, is at odds with our practice, which requires both algorithmic and experiential knowledge. Not only economics, but any activity, from repairing a motorcycle to proving a mathematical theorem, must necessarily combine algorithmic and experiential knowledge. This is a common feature of otherwise disparate cultures. Yet whereas non-Western cultures appear to strike an ideological balance roughly congruent with the actual coexistence of the two systems of knowledge, Western ideology glorifies the first and denigrates the second. Why?

The glorification of algorithmic knowledge in Western culture goes way back. I have elsewhere (Marglin 1990, 1996) used the Greek terms *episteme* and *techne* for what I have here called algorithmic and experiential knowledge. In part I used the Greek to allow me to treat different

forms of knowledge as black boxes that I could fill as I saw fit, something that is much harder to do with ordinary English words, which create—Humpty Dumpty to the contrary notwithstanding—certain expectations.[27] But there was another reason for the Greek: to signal the age of the dispute about knowledge.

There is even controversy among students of classical Greek civilization over how the terms *episteme* and *techne* were used and understood by different Greeks. A formal distinction between the two terms somewhat along present lines is made by Aristotle in the *Nicomachean Ethics* (1139b 14 - 40a 24), but the salient issue is less the precise nature of the distinction between the two than the subordination of the one to the other. Aristotle, it should be observed, is inconsistent in his usage of *techne* and *episteme* (see Nussbaum 1986: 444), and earlier writers, including Plato, appear to have used the terms almost interchangeably, at least in those areas that are of concern to the present inquiry (Lyons 1969, Nussbaum 1986: 444). In particular, Nussbaum ascribes to *techne* (pp. 94-96) many of the characteristics that I have not only ascribed to *episteme*, but have made pivotal in distinguishing between the two.

In searching for the roots of the Western ideology of knowledge, we can do worse than to start with class politics: insofar as *techne* referred to the craftsman's knowledge of production, it is to be expected that it would be subordinated along with the craftsman himself. But if Plato is any guide, the upper-class Greek conception of the craftsman must have been ambivalent: the craftsman figures prominently in the Platonic origin myth, creation itself being the work of a *demiurgos*, a craftsman; and the craftsman's *techne* appears and reappears in the Platonic dialogues as the model of purposive knowledge (Klosko 1986: 28, 41; Vidal-Naquet 1983: 293). The ambivalence may stem from a very real tension between the essential role of the craftsman and his knowledge to the well-being of the *polis* on the one hand and the inferior position of the craftsman on the other (Vidal-Naquet 1983: 289-316).

But more than power politics is at issue: Greek theories of knowledge, Jean-Pierre Vernant has suggested, led to the devaluation of technical knowledge, the artisan's *techne*, because production involved contamination of pure knowledge, which deals with the unchanging and the certain, by the unpredictable. Unlike *episteme*, technical knowledge deals with approximation, "to which neither exact measure nor precise calculation applies" (Vernant 1982 [1965]: 51). Thus

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[27] "'When I use a word,' Humpty Dumpty said, in a rather scornful tone, 'it means just what I choose it to mean - neither more nor less.'
'The question is,' said Alice, 'whether you can make words mean so many different things.'
'The question is,' said Humpty Dumpty, 'which is to be master - that's all.'"
Through the Looking Glass.

> Artisanal *techne* is not real knowledge. The artisan's...*techne* rests upon fidelity to a tradition which is not of a scientific order but outside of which would hand him over, disarmed, to chance. Experience can teach him nothing because in the situation in which he finds himself placed—between rational knowledge on the one hand and *tuche*, chance, on the other—there is for him neither theory nor facts capable of verifying theory; there is no experience in the proper sense. By the strict rules which his art necessitates, he imitates blindly the rigour and sureness of rational procedure; but he has also to adapt himself, thanks to a sort of flair acquired in the practice of his profession, to the unpredictable and the chancy, which the material on which he acts always has in greater or lesser degree (Vernant 1982 [1965]: 59).

Citing the poet Agathon, Aristotle summarizes the problem succinctly (*Nicomachean Ethics*, 1140a 20): "Art [*techne*] loves chance, and chance art," and this, if we follow Vernant's interpretation, must lower the status of *techne*.

The association of *techne* with chance recalls Pierre Vidal-Naquet's eloquent evocation of the opposition between order and disorder in the evolution of Greek thought and social institutions. Lacking a theory of probability, the Greeks identified chance with disorder, and knowledge of random variability was not knowledge at all (Hacking 1975). One might suggest that for the Greeks *episteme* was not only the knowledge system of science but the knowledge system as well of social order, and its attractions the attractions of stability. The craftsman and his *techne* represent—to borrow a phrase Vidal-Naquet employs in a different context—"disorder and the individual exploit." (1983: 174).

Worse, *techne*, certainly the artisan's *techne*, was bound up with *empeiria*, experience, and therefore further contaminated by its contact with the concrete and the practical. "*Empeiria*, experience,...is neither experimentation nor experimental thought but practical knowledge obtained by groping [*tâtonnements*]. To the extent it comes more closely into contact with the physically concrete, theory [i.e., *episteme*, SAM] loses its rigour and ceases to be itself. it is not applied to, but degraded in, facts" (Vernant 1982 [1965]: 52). Indeed, Plato appears to use the term *empeiria* to describe characteristics of craft production that I have described in terms of *techne*. In *Gorgias* (465a) Plato has Socrates say with respect to the art of cooking: "I say it is not an art, but a habitude [*empeiria*], since it has no account to give of the real nature of the things it applies, and so cannot tell the cause of any of them. I refuse to give the name of art [*techne*] to anything that is irrational." In *Philebus* (55d-e) Socrates asks his interlocutor to "consider whether in the manual arts [*cheirotechnikai*] one part is more allied to knowledge

[*episteme*], and the other less, and the one should be regarded as purest, the other as less pure." He goes on to assert, "[I]f arithmetic and the sciences of measurement and weighing were taken away from all arts [*techne*], what was left of any of them would be, so to speak, pretty worthless."

But whatever the names, the distinction between types of knowledge is central to Plato's philosophy. The *Republic* is categorical about the inferiority of the craftsman's knowledge. Socrates expresses the Platonic view in terms of the relation between the knowledge of the horseman who uses the bit and bridle and the craftsman who makes them. "Is it not true," Socrates asks, "that not even the craftsmen who make them know [how they should be made] but only the horseman who understands their use?" (601c). At issue is a difference not between *episteme* and *techne* but between *episteme* and *techne* on the one hand and *ortha doxa* (right opinion) on the other. Socrates continues:

> It follows, then, that the user must know most about the performance of the thing he uses and must report on its good or bad points to the maker. The flute-player, for example, will tell the instrument-maker how well his flutes serve the player's purpose, and the other will submit to be instructed about how they should be made. So the man who uses any implement will speak of its merits and defects with knowledge, whereas the maker will take his work and possess no more than a correct belief, which he is obliged to obtain by listening to the man who knows (601e).

The terminology may be different, but there is no question that the knowledge of the craftsman is of a different, and inferior, sort.

For Aristotle too the craftsman left to his own devices could lay claim only to an inferior grade of knowledge. Indeed Aristotle even takes over the parable of the flute maker and the flute player and with Plato stigmatizes the craftsman's knowledge as simply "right opinion." (*Politics* 1277b 27-30).[28] Aristotle believed that there could be an *episteme*—albeit an inferior one—of even the slave's work, an *episteme* for instance of cooking (*ibid*., 1255b 26-32). In this respect, Aristotle is the true precursor of Frederick Winslow Taylor (1856-1915), the father of scientific management.

It is evidently too much to assert that the conception of knowledge, and particularly of craft knowledge, held by certain Greek philosophers determined the Western conception for all time to come. In the first place, alternative readings of the Greeks are possible, as modern scholarship

has amply demonstrated. For instance, in contrast to the dominant reading of "the Greek" (that is, Plato's and Aristotle's) conception of knowledge as limited to that which is logically derivable from self-evident first principles, which is my notion of *episteme*, Nussbaum (p. 290ff) has suggested that Aristotle in particular had a much more elastic view. In Nussbaum's interpretation, Aristotle's conception of practical wisdom, the knowledge of life, differs from the *episteme* of mathematics and natural science precisely in its reliance upon the emotions, experience, and other aspects of what I have assigned to the realm of *techne*. In Nussbaum's reading, Aristotle assigns practical wisdom to a distinct plane from *episteme*, but it is not an inferior one.

It is significant however that such an interpretation has a relatively recent pedigree, whereas the dominant reading goes back at least to Thomas Aquinas. And the dominant reading, while a matter of interpretation, is hardly an invention out of whole cloth. The power of *episteme* in the modern West is hardly conceivable without deep roots in the past.

But one need not go all the way back to the Greeks to recover this past. Our Modern Western idea of algorithmic knowledge could have been cribbed from Descartes (and very likely was, albeit unconsciously—I thought I was copying Euclid), for it practically paraphrases the procedure for arriving at true knowledge expounded in the *Discourse on Method* and the *Meditations on First Philosophy* (Descartes 1980 [1637 and 1641]). But in a sense Descartes is a Greek once removed: mathematics was for him the model, and the model of the model was Euclid's geometry. Algorithmic knowledge mimicking the form of the mathematical theorem was the answer to the "disunity and uncertainty" of contemporary knowledge (Descartes 1980, editor's preface [Donald Cress], p vii), an answer resounding with "certainty, necessity, and precision."

The context in which Descartes elaborated his project is important, for it sheds light on the appeal of algorithmic knowledge. As for the Greeks, algorithmic knowledge was for Descartes and his times the answer to the disorder that threatened to undo society. I have sketched the relationship between the breakdown of the medieval synthesis and the rebirth of algorithmic knowledge in Ch 2, and I will only elaborate marginally here.

First, it is perhaps worth noting that the context in which the modern incarnation of algorithmic knowledge took hold was similar to the ancient one. The classicist E R Dodds characterized the transition from the Homeric to the archaic age which saw the birth of Greek philosophy as a period of a heightened sense of insecurity, "not a different belief but a different emotional reaction to the old belief" (Dodds 1951: 30). Undoubtedly, the rise in insecurity had many causes, but the

[28] But it is for "experts in the science of mensuration to elect a land surveyor and for experts in navigation to choose a pilot" (*Politics*, 1282a 9-10). Foolish consistency is the hobgoblin of little

political and economic upheavals that marked the 7th and 6th centuries BCE loom large in Dodds's account (Dodds 1951: 44ff). However, periods of political and economic insecurity came and went with monotonous frequency without giving rise to new ideologies of knowledge. So what was different about this particular period of insecurity? Because it seems to offer a parallel with the early modern period I am tempted to attach considerable importance to Dodds's suggestion that the breakdown of the family, specifically, the authority of the father, played an important role in the perception of growing social disorder. Personal authority is central to experiential knowledge and one of the attractions of algorithmic knowledge is precisely the challenge to this authority that it poses. Here, perhaps, we are seeing a precocious individualism strengthening, and being strengthened by, algorithmic knowledge.

In view of the central role that uncertainty plays in this story, it is also very much to the point that shortly after the death of Descartes, the intellectual attack on uncertainty and doubt took a decisive turn. As Ian Hacking (1975) tells the story, the modern idea of probability was born from the union of a stochastic conception of events with the new understanding of doubtful knowledge as differing in degree rather than in kind from certain knowledge. The first text to reflect these notions was the so-called Port-Royal Logic, Antoine Arnauld's *The Art of Thinking*, originally published in 1662.

Hacking's work is a *tour de force,* brilliant as it is entertaining. But it errs, I think, in seeing probability as an attack on the idea, inherited from the Greeks, of knowledge as certainty. Hacking sees the Greek correspondence

knowledge:certainty = opinion:uncertainty

as being ruptured by the modern notion of probability. In Hacking's view probability shifts the boundary between knowledge and opinion so that knowledge can be brought to bear on uncertainty. Instead, Descartes and the Port-Royal logicians after him seem to me to affirm the boundary between knowledge and opinion but to break down the boundary between certainty and uncertainty so as to bring chance within the framework of certainty.

Probability is thus the opposite of an attack on certainty; it is an attack on *un*certainty. The probability calculus assimilates the uncertain into the realm of true, certain, knowledge. Uncertainty and approximation—hallmarks of experiential knowledge are banished by the certainty and exactness of algorithmic knowledge. Uncertainty becomes risk, the object of calculation and maximization, as experiential knowledge yields to algorithmic knowledge.

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minds.

Like the skeptics' project, the probabilists' didn't quite come off. Much has been achieved, as the insurance industry attests. Thanks to our understanding of probabilities, we can buy life insurance, fire insurance, and even medical insurance at more or less their actuarial value. But no amount of calculation can move the incalculable from the realm of experiential knowledge to the realm of the algorithmic. As Aristotle, citing the poet Agathon, put it, *techne* loves chance and vice-versa (*Nicomachean Ethics*, 1140a 20). In short, experiential knowledge is the knowledge system of uncertainty, and uncertainty is the blessing—or curse, depending on one's point of view—of life.

Ideology and Practice

None of this would matter if practice and ideology occupied water-tight compartments, but the economic ideology of knowledge is partially responsible for the failure of economics to offer convincing explanations of economic phenomena, and for the distortions in the prescriptions economics offers for the ills of the economy.

Take first the failure of economics to explain. There are of course many reasons for this failure. For one thing, our subject matter is exceedingly difficult, not the least because it changes practically before our very eyes (Galbraith 1967:409-412). The worlds studied by physicists and biologists change sufficiently slowly that Galileo and Einstein, Darwin and Haldane, confronted the same underlying phenomena. Interpretations might differ, but the structures being interpreted did not. By contrast economic structures have changed drastically, not only over 500 or 100 years, but within a generation. Chasing a moving target, economists are at a disadvantage relative to natural scientists.

This difficulty is compounded by the ease with which values, beliefs, and preconceptions rush in to fill the vacuum created by our ignorance. Since its beginnings economics has served the dual purpose of explaining economic arrangements and justifying (or criticizing) them. Adam Smith and Karl Marx were in many respects opposites, but in mixing up "positive" and "normative" purposes, they set the same standard for their followers.

Most of us willingly concede the role of ideology in theories we reject, while denying it for our own brand of truth. Perhaps it cannot be otherwise. A theory, after all, must be seen as at least a possible path to truth. And as long as truth and ideology are seen as polar opposites, inconsistent with one another, the denial of an ideological component becomes a necessary condition for the development of a theory.

Schumpeter's magisterial *History of Economic Analysis* makes the useful distinction between vision and analysis, between the "preanalytic act" which provides the "raw material for the analytic effort" (p. 41) and analysis itself. For Schumpeter, visions are necessarily suffused with ideology:

> ...vision is ideological almost by definition. It embodies the picture of things as we see them, and wherever there is any possible motive for wishing to see them in a given rather than another light, the way in which we see things can hardly be distinguished from the way in which we wish to see them (p. 42).

The role of analysis is to refine and test the vision

> The first task is to verbalize the vision or to conceptualize it in such a way that its elements take their places, with names attached to them that facilitate recognition and manipulation, in a more or less orderly schema or picture (p. 42).

Analysis also winnows the vision; Schumpeter continues

> But in doing so we almost automatically perform two other tasks. On the one hand, we assemble further facts in addition to those perceived already, and learn to distrust others that figured in the original vision; on the other hand, the very work of constructing the schema of picture will add further relations and concepts to, and in general also eliminate others from, the original stock. Factual work and "theoretical" work, in an endless relation of give and take, naturally testing one another and setting new tasks for each other, will eventually produce *scientific models*, the provisional joint products of their interaction with the surviving elements of the original vision, to which increasingly more rigorous standards of consistency and adequacy will be applied (p. 42).

In the end the grain of truth is separated from the ideological chaff:

> ...the rules of procedure that we apply in our analytic work are almost as much exempt from ideological influence as vision is subject to it. Passionate allegiance and passionate hatred may indeed tamper with these rules. In themselves these rules, many of which, moreover, are imposed upon us by the scientific practice in fields that are little or not affected by ideology, are pretty effective in showing up misuse. And, what is equally important, they tend to crush out ideologically conditioned error from the visions from which we start. It is their particular virtue, and they do so automatically and irrespective of the desires of the research worker. The new facts he is bound to accumulate impose themselves upon his schema. The new concepts and relations, which somebody else will formulate if

> he does not, must verify his ideologies or else destroy them. And if this process is allowed to work itself out completely, it will indeed not protect us from the emergence of new ideologies, but it will clear in the end the existing ones from error (p. 43).

Schumpeter might paraphrase Agathon to the effect "Ideology loves *techne*, and *techne* ideology." The advance from vision to analysis is the taming of experiential by algorithmic knowledge.

I take a different view. In the first place, opposing truth and ideology is in my view a methodological error. What is ideology, after all, but the unproved assumptions, beliefs, and values that must underlie *any* intellectual inquiry, or for that matter, any form of contemplation or action? Ideology need not be immutable; today's ideologies may become the subject of searching scrutiny tomorrow. But whatever the fate of today's particular ideologies, it is in the very nature of ideology that the issue of truth or falsity lies beyond our intellectual grasp, at least our algorithmic grasp. A core of assumptions—necessarily susceptible to ideology—remains in our theories no matter how much we might test and refine them. Imre Lakatos (1970) has distinguished between this inviolable core and a "protective belt" of auxiliary assumptions, the individual elements of which are continually being examined, amended, and even replaced if need be. This examination, amendment, and replacement is roughly what Thomas Kuhn's "normal science" is all about (Kuhn 1970). The point is that normal science, however much it may change the protective belt, leaves the core intact and inviolable. (Many economists discovered Lakatos in the 1980s—in the same way that M. Jourdain discovered prose—when they realized that resistance of the data to torture did not require them to give up cherished beliefs; the tests were, it turned out, of "joint hypotheses" drawn from the core and the protective belt, so it was always possible to disown the hypotheses from the protective belt and maintain the one(s) from the core.) As long as we deny the ideological component of our theories, we shall never transcend it.

But alongside the inherent difficulties of economics and the preconceptions we bring to it lies a methodological failure, namely, our insistence on explaining economic behavior in terms of algorithmic knowledge alone. I should reiterate that I have nothing against algorithmic knowledge—in its place. Its clarity and precision are rightly esteemed, and it is the language of choice for unambiguous communication. The problems arise not from algorithmic knowledge itself but from abuse of algorithmic knowledge, abuse which begins with confusing the system in which we communicate with the system we are communicating about, the system of knowledge of the playwright with the system of knowledge in which the actors operate. Amit Bhaduri's

distinction between how businessmen set prices and how economists think about price-setting (see the beginning of the previous chapter) is a step in the right direction.

Indeed, we might carry Schumpeter's opposition between vision and analysis one step further and distinguish vision from theory and theory from model. I would accept Schumpeter's characterization of vision as "preanalytic"—experiential in my language—and apply his notion of analysis as purely algorithmic (at least in its ideal type) to models. This leaves theory. For me, theory about human interaction should be a mixture of the experiential and the algorithmic—like real life. A good theory has enough algorithmic knowledge to concretize the vision and enough experiential knowledge to reflect the richness, mystery, and evanescence of the human condition.

For example, the neoclassical vision is one of the market as a beneficent self-regulating system. The theory which comes out of this vision focuses on human interaction in markets governed by the price mechanism. The starting point is the atomistic self-interested individual whose unlimited desires run up against absolute scarcity. These individuals maximize and calculate to determine their respective courses of action in the marketplace, and their respective offers are regulated by the price mechanism. The theory investigates the conditions under which the actions of individuals are mutually consistent or inconsistent (the positive element of the theory). It also elaborates the sense in which the outcome can be said to be socially beneficial or harmful and suggests remedies for the harmful effects (the normative element). Finally, models—those of Walras, Arrow-Debreu, Samuelson, or Lucas—are particular algorithmic statements of the theory, designed either to reduce the theory to algorithmic terms or to highlight one or more specifics, such as overlapping generations or expectations.

By contrast, the Keynesian vision is the centrality of aggregate demand to the economy. Keynesian theory elaborates human interaction in markets in which the price mechanism plays a very limited role. Likewise the individual. The starting point is a division between active and passive classes—active capitalists and passive workers, active investors and passive savers. Investment demand plays a central role, as does uncertainty (perhaps it would be more accurate to say *because of* uncertainty). Scarcity is temporary. Instead of the price mechanism, Keynesian theory posits alternative mechanisms, such as capacity utilization (in *The General Theory*) or the distribution of income (in the *Treatise on Money* and in the work of Kyenes's British followers, particularly Joan Robinson's [1956, 1962]). Again, the purpose of the theory is to investigate the conditions of consistency, to evaluate outcomes, and to propose remedies. Keynesian models—those of Keynes himself, Harrod, Hicks, Robinson, Kalecki, Malinvaud, Barro-Grossman—once again serve either to epistemize the theory or to highlight specific issues.

The point is that in both cases it is the theories that ought to interest us. The models are means to apprehending the theories, not ends in themselves. Yet we characteristically become so wrapped up in our models, indeed, enchanted by them, that we lose sight of their purpose. In the extreme, we convince ourselves that it doesn't matter whether or not agents actually play by the rules of our models; or worse, we insist for reasons of isomorphic purity that agents' behavior conform to the algorithms of the model. The experiential knowledge of agents and the experiential knowledge of the theorist disappear equally from view.

To some the gravamen of the accusation so far amounts no more than the charge that economists are guilty of assuming procedural rationality to argue for substantive rationality (Simon 1976). Provided that substantive rationality itself is not at issue, this charge cannot amount to very much.

But that is precisely the point: substantive rationality is itself a property of algorithmic knowledge. It has no place whatsoever in experiential knowledge. This is not to say that behavior based on experiential knowledge is irrational; rather it is nonrational—the criterion of rationality, borrowed from another system of knowledge simply does not apply. One can say that saving and investment decisions are nonrational, but not that they are irrational.

So what? Even if agents operate largely in terms of experiential knowledge, what is wrong with describing their behavior in terms of algorithmic knowledge? What is wrong with "as if"? There are several reasons for rejecting the representation of experiential knowledge in terms of algorithmic knowledge even if we suspend judgment for the moment on the effectiveness of algorithmic economics. For one thing, now that the positivist euphoria has worn off, most of us are quite willing to admit that we are interested in understanding as well as, perhaps more than, in explanation (to use Max Weber's terms). But even within a positivistic framework, there are serious difficulties. If, like the physicist's or the biologist's worlds, the world of economic structures were unchanging, or changed very slowly, Friedman's dictum—that the assumptions do not matter as long as they "work"—might be extended to the system of knowledge itself: an algorithmic rendering of what is in fact experiential knowledge might turn out well judged on grounds of efficacy alone.

But economic structures change at such a rapid rate that we cannot trust that a model which captures the past will also predict the future. I think it was Abba Lerner who remarked that while we don't need to know how a car works to drive, it sure helps when it comes to fixing one.

Nonetheless, Friedman's method is undoubtedly superior to the rational expectations canon. I have considerable sympathy for the view that the economist's theory ought to be isomorphic to the agent's behavior, but it is more difficult to accept the dictum that it is agents who ought to shape up rather than theorists. It is at the very least more tolerant to allow agents their experiential knowledge even if we insist on representing this experience in terms of algorithmic knowledge. Better still would be to accept the virtue of isomorphism between theory and practice, but to turn Lucas on his head: to reflect agents' experiential knowledge in a theory that is as much experiential as algorithmic. Keynes, Schumpeter, and Marx remain worth reading today not for their algorithmic knowledge but for the insight and intuition into the workings of capitalism reflected in their theories.

The losses inherent in translating experiential into algorithmic knowledge are substantial. Rendering the experiential knowledge of coping with uncertainty into an algorithmic calculus of subjective probabilities, or rendering *The General Theory* into "Mr Keynes and the 'Classics'," is like rendering Shakespeare in French or Molière in English. (John Hicks himself came to feel something like this in his later years. See Hicks 1974:6 and Klamer 1989).

Worse. The loss is compounded by the distortions that take place under the influence of our unacknowledged ideological preconceptions. The absence of a self-regulating mechanism to ensure full employment of *The General Theory*, having become the liquidity trap of "Mr Keynes and the 'Classics'," is reborn as Paul Samuelson's neoclassical synthesis (1954), and finally ends its days as an anomaly of unanticipated government actions unsustainable in a world in which all of the people cannot be fooled all of the time.

In this respect the fate of "satisficing" provides a cautionary tale. Herbert Simon's response (1955, 1956) to the limitations of the algorithms of maximization in real world settings was to argue that people concentrate on finding satisfactory rather than optimal solutions. But translated from the experiential to the algorithmic, satisficing becomes just another form of maximization, an extended maximization that takes account of the costs of processing information, of calculating the benefits and costs of alternative courses of action. One is reminded of the fate of rebellion against the caste system in India. Rebels are assimilated as a new caste— the caste opposed to the caste system.

Recognizing the importance of uncertainty and the consequent role of satisficing will make some of our most cherished problems quietly disappear. Do businessmen maximize profits? Do households take account of future tax liabilities implicit in deficit spending? These questions, sensible as they are within the algorithmic framework of neoclassical economics, will likely be

regarded by future historians as the economist's equivalent of the scholastic concern with how many angels can stand on the head of a pin. Once the preponderance of uncertainty in any intertemporal context and the corresponding vagueness of returns and costs is acknowledged, it is hard to see these and similar questions as other than indicators of the limits of algorithmic knowledge.

I reiterate that my objections to economics as a system of knowledge would not matter very much if we economists were really concerned with consumers' choices between peaches and pears or producers' choices between soybeans and corn. The algorithmic model of maximizing behavior may not be faithful to actual human decision processes in these contexts, but it probably does little harm and may provide some understanding about the outcomes of the choice process even if it is of little use in understanding the process itself.

But economics is much more than peaches and pears, soybeans and corn. Even in a focus so narrow and short term as that of conventional macroeconomics, saving and investment are central elements of everyone's story, and consequently uncertainty must play a leading role. And coping with uncertainty is—I insist—predominantly a matter of experiential knowledge, and will remain one no matter how adept at climbing decision trees or manipulating subjective probabilities we might become. The difference between saving and peaches:pears or investment and soybeans:corn may be one of degree, but the degree is so great that quantity becomes quality; the uncertainties are so overwhelming that a purely algorithmic model breaks down completely. In such contexts the role of calculation may, as Keynes suggested in the *QJE* piece cited at the beginning of the last chapter, be limited to justifying what agents are inclined to do out of habit, convention, or intuition.

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