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ECONOMIC MAN AS MODEL MAN: IDEAL TYPES, IDEALIZATION AND CARICATURES

BY
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Economics revolves around a central character: "economic man." As historians, we are all familiar with various episodes in the history of this character, and we appreciate his ever-changing aspect even while many of our colleagues in economics think the rational economic agent of neoclassical economics is the same kind of person as Adam Smith's economic man. The fact that this is a familiar history means that I can focus on a few salient examples—a "short" history, rather than a complete history—to provide the raw material for my account which has a more specific agenda than simply a history of economic man. My aim is to re-consider the history of economic man as a model man. This leads to two further questions: What kind of a role has this model man played in relation to the science he inhabits? And, how can we characterize the processes by which economists have arrived at their model characters?

To illuminate this history of economic man, I adopt ideas from philosophy about how scientists arrive at models and use them in science. Of course, economists have always had their own ideas about such matters. So in effect, there are two intersecting strands in this account: one is how economists have discussed their strategies in creating these characters, and the other is how philosophers of science have—at the time and since—labeled and thought about such strategies. These discussions, from the economists and from philosophers, will enable us to explore the usefulness of the concept of idealization, a standard way of thinking about model construction in philosophy of science. They will also allow us to consider model man as an ideal type (using Weber's concept) or as a caricature (to follow Gibbard and Varian's label). These analytical labels—ideal

London School of Economics, Houghton Street, London WC2A 2AE. This account draws for its historical material on my 1997 paper "The Character of 'Rational Economic Man'." I am grateful to Margie Morrison for prompting me to explore the question of economic man as a model, and for the support of the *Wissenschaftskolleg* during that historical work. The philosophical analysis has been developed for this Presidential Address given to the History of Economics Society, June 2005 at the University of Puget Sound (and a slightly more extended analysis will appear as a chapter in my forthcoming book). Given the familiarity of the historical material to the members of the Society, my footnoting and referencing are largely restricted to the analytical agenda. And, among many relevant papers presented at the 2005 conference, members will, I hope, forgive me for referencing only one, by a Young Scholar, Huascar Pessali. I thank Sheldon Steed for his ever-patient research assistance during this last year; and particular thanks also to Margie Morrison, Harro Maas, Roger Backhouse, Mauricio Suaréz, Bruce Caldwell, Margaret Schabas, and Emma Rothschild for their very helpful comments.

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types, idealization, and so forth—relate to questions about the status of models and their construction that are sometimes evident, and sometimes lie below the surface, but always remain important in the historical discussions about economics as a science.[1] My account is concerned then with constructions of the *persona* of economic man, how he has changed over the last 250 years, how far we can regard that character as a model, and with reflections on his role in the changing science of economics.

I. CHARACTER-BUILDING: SMITH AND MALTHUS

Let us begin with the complex portrait of economic man that was built up by the Scottish moral philosopher and founder of "classical economics," Adam Smith. It is often thought by economists that Smith, in his *The Wealth of Nations* (1776), was responsible for foisting self-interested economic man onto economists. Albert Hirschman's (1977) wonderful account of how the "passions" which ruled men's behavior in ancient times came to be replaced by the "self-interest" motivation in modern times seems to be exemplified in Smith's account. But, as historians of economics, we know that it is a mistake to think that self-interest is all there is to Smith's central economic character. Smith's economic man shows himself to be a complex mixture of instincts, talents, motivations, and preferences. Self-interest is a necessary motivation but by no means a sufficient depiction of this portrait, for all of his character traits are vital to Smith's account of how the economy works. I begin this account with Smith because although he painted a portrait of economic man, I do *not* regard his characterization as a model man: Smith's portrait acts here as a foil to give a sharper focus to the model man constructions that come in later economics.

Smith's account begins, as is well known, with a description of a pin factory to show how a surplus is created for exchange through the division of labor. This process depends both on instincts (or propensities) and on talents. First, *propensities*: man has a natural propensity to "truck, barter and exchange" according to Smith. This is in sharp contrast to the non-human world, where self-interest is sufficient on its own to explain behavior: "Nobody ever saw a dog make a fair and deliberate exchange of one bone for another with another dog" (Book I, chapter II). Second, *talents*: initial small differences in individual talents between people leads to a division of labor among men. Once again Smith uses a negative comparison with dogs to point out what it means to be human: "By nature a philosopher is not in genius and disposition half so different from a street porter, as a mastiff is from a greyhound" (Book I, chapter II). It is these solely human behavioral characteristics which generate the complex economy he describes. The desire to exchange, and the exchange itself, accentuate initial differences in talents; the consequent division of labor increases productivity, creating a surplus of production, further exchange, and further division of labor. Thus, talents and the exchange propensity combine to generate wealth, for it is the division of labor that forms the essential mechanism by which a surplus is created and opulence (wealth) is spread throughout the nations.

[1] The much discussed question about the realism of assumptions and the use of models to make inferences to the world will not be part of my agenda here.

Motivations and preferences are equally important. Take *motivations:* even if the primary motive of economic action is self-interest, it is endowed with fellow-feeling, for economic exchange is civil and mutually advantageous, not exploitative, and war-like. And there is a series of motivations in economic behavior related to the virtues of self-command: prudence (the ability to foresee the consequences of actions), parsimony (to save in order to reap later), and reasoning (to guide action towards an achievable end.) These three motivations, taken together, create investment, upon which the extension of the division of labor depends. Finally, let us take *preferences*: Smith's man likes to avoid risk, he has a love of the country over the town, and prefers his homeland to overseas. This combination of his preferences determines the order of investment in the economy: first, country agriculture; second, home manufacturing, and; third, overseas trade. This order of investment, taken at the aggregate level, is a necessary requirement in Smith's theory of natural economic development (for example, Book III, chapter I). It also has the unintended beneficial consequence that it maximizes home employment and so increases the wealth of the nation in aggregate (Book II, chapter V).

Smith is regarded as the first systematiser of economic principles, and we can see from this brief outline how the process of wealth creation and its spread through the nations depends on the multiple characteristics of economic man: his motivations, propensities, talents, and preferences. He is "thickly" described, to use a phrase that has haunted both recent historiography and anthropology. But though Smith's portrait is broadly and deeply drawn, it was not considered a realistic portrait by his contemporaries. On the contrary, it was regarded by fellow scholars, such as Thomas Reid, as a fictional construction to motivate a virtuous story about commercial society.[2] As such, Smith's account began by persuading us that the fundamental propensity to truck, barter, and exchange was somehow a natural given as a way to draw us into his world picture.

Yet Smith's character—fictional though it may be—does *not* in my mind constitute a model man. Not all fictional characters constitute models, just as not all analogies form models. As a construction, the character is simply too complicated to reason with, and so Smith's economic man character does not function as a model in his economics. We can link the individual motivations with particular outcomes (e.g., prudence and investment) but cannot trace the full outcome of each of the character traits on their own because they interact with each other and link up with so many other characteristics and circumstances.

It is not just the complexity of the character that causes this problem. It is also due to the way that the classical system is conceived in terms of individuals and laws. Although Smith's thick description of motivations suggests that causal power lies at the level of the individual, we cannot gauge the outcomes of any one person's behavior. Individual volition is characterized as part of group behavior, e.g. the behaviour of men as buyers or sellers, or as capitalists or laborers, as landlords or farmers. Even for Marx, a classical economist in many respects, the capitalists' are induced by the competitive economic system to exploit workers. Members of the group behave in a like manner, and it is the effects of their actions in aggregate that form the laws of classical economics. For example the law of subsistence wages, the Malthusian laws of population, and Marx's thesis of capitalist cycles are necessarily constituted

[2] I thank Harro Maas for his helpful discussion of this point.

and apply only in the aggregate. These laws emerge as the unintended consequences of individuals' actions at the level of groups or classes; so it is at the various aggregate levels in classical economics where we find the abstract laws of political economy operating, not at the level of the motivations or behavior of individuals.

Thus, individual motivations, propensities, and the actions that follow, are essential for the economic world to go around and determine the sort of world it is, yet individuals are powerless in the face of the governing economic laws: the "iron" laws of nineteenth century political economy. Because of the complex character of economic man, and because the connection between individuals and aggregates often have an unintended consequence relation, we, too, as economists have difficulty in tracing the relationship between one individual and those iron law outcomes. This classical economics is not a science in which a model man can easily function.

In Smith's economics then, we have a well-rounded, if fictional character, for whom economic motivations have a causal power but these do not lead us directly to the laws. This is not a model man for whom we can think of testing the outcomes of his behavior pattern by a counter-factual thought experiment, one in whom we can conceive that the character might be otherwise than it is and see what difference this means. The exception to this position among the early classical economists is found in Thomas Malthus's work, who indeed does use his characterized man in this way. For Malthus, economic man was a somewhat narrower figure and crucially, his self-interest and "reasoning power" is more often overwhelmed by his natural proclivity to create children (see Malthus 1803). The interaction between these two motives of economic self-interest and sexual drive, in conjunction with some simple assumptions about the laws of human and non-human natural reproduction, were sufficient to create a theory of cycles: between poverty with vice, and satisfaction at subsistence level, in the lives of the working poor.

Malthus's man is a character with whom we can think. He is a model man in the sense that he is thin enough in characterization for us to reason with. He has simple motivations, from which we can derive population and economic outcomes. He can be used as a model to reason about counterfactually to other outcomes: Malthus tells us that if man used his foresight and reasoning power to restrict his family, population laws would be different (and so Malthus lauds the benefits of education.) As Malthus also tells us: we *should* see the outcome of his behaviour in the world around us, but we will not find the oscillations he theorized as there are too many other disturbing features in the world that interfere. This is the standard problem of classical economics, and the reason we don't see the classical laws of economics empirically validated. Nevertheless, here we find hints in Malthus's economics as to the future career of economic man as a model man, simple enough to reason with, and so someone who functions as a model in economics.

II. MILL'S *HOMO ECONOMICUS*, WEBER'S IDEAL TYPES, AND MENGER'S HUMAN ECONOMY

A far more conscious narrowing in the characterization of economic behavior came with the philosopher and political economist John Stuart Mill's creation of *homo*

economicus, a character explicitly restricted in his emotional range to economic motivations and propensities. In his *On the Definition of Political Economy* (1836),[3] Mill defines the science of economics as follows: "It does not treat of the whole of man's nature as modified by the social state, nor of the whole conduct of man in society. It is concerned with him solely as a being who desires to possess wealth and who is capable of judging of the comparative efficacy of means for obtaining that end" (1836, p. 321).

Mill characterized economic man as desirous of wealth and with the ability to obtain that end effectively. In defining the domain of political economy separate from other fields, Mill concentrated on only those aspects of man's behavior which come under the realm of economics. Among those motives, Mill believed that there is only one constant positive motivation, namely, a desire for wealth, accompanied by only two "perpetual" negatives: the dislike of work and the love of luxuries. Mill downgrades the Malthusian sexual motivation that creates population increase to an important, but non-perpetual, motivation. Here is the character sketch known as Mill's *homo economicus*:

> It makes entire abstraction of every other human passion or motive; except those which may be regarded as perpetually antagonizing principles to the desire of wealth, namely, aversion to labour, and desire of the present enjoyment of costly indulgences. These it takes, to a certain extent, into its calculations, because these do not merely, like [our][4] other desires, occasionally conflict with the pursuit of wealth, but accompany it always as a drag, or impediment, and are therefore inseparably mixed up in the consideration of it (1836, p. 321-22).

In Mill's *homo economicus*, we already see signs of economists' willingness to caricature their central character, for here we have the portrait of a lazy, miserly, but entirely effective Scrooge.

It is significant that Mill introduced this *homo economicus* character in his treatise on method for the character was consciously introduced to make economics into a science, not because any "political economist was ever so absurd as to suppose that mankind are really thus constituted" (1836, p 322). Mill argued that only by both delimiting the scope of the subject domain of economics and defining what is essentially economic behavior can we construct a scientific account. So, of course, the portrait painted had to be consistent with Mill's definition of classical political economy as "The science which treats of the production and distribution of wealth, so far as they depend upon the laws of human nature" (1836, p. 318). This thin characterization of economic man was very powerful within that system: for example, Mill argues that the institutions important to economic behavior also flow from this primary desire to possess wealth (e.g., laws on property are institutions designed by man to further his success in accumulating wealth).

Mill's process for arriving at this *homo economicus* might well be described as following a simplification or (isolation) strategy, subtracting away a whole lot of

[3] There are two edition of this essay: 1836 and 1844, with some minor differences between them. The 1844 edition is reprinted in Mill's *Collected Works*, Vol. IV (1967), with the changes since 1836 indicated. Among various treatments of this work, see Persky (1995) and Whitaker (1975) about the role of economic man as discussed here.

[4] Mill referred to "our" desires in his 1836 version of the essay, but dropped this in the 1844 version.

non-economic aspects of human behavior to focus on the narrowly economic, and then limning the constitution of economic man according to a hierarchy of essentially economic motives. But Mill himself understood the definition as being the result of a process of "abstraction" (as we see above), and political economy being an "abstract science" (1836, p. 325), like geometry, a science of definition, assumption, and deduction.

De Marchi and Hamminga (1994) discuss this notion of abstract science in the more general context of laws rather than of *homo economicus*. They suggest that classical authors' understanding of "abstract" was that it offered a more generalized account. But, as they point out, this in turn is open to at least two further interpretations, which are equally relevant in thinking about *homo economicus*. For some classical authors, it meant that such a character has general descriptive or explanatory reach that it is applicable almost *everywhere* (with minor exceptions). For other authors, Mill included, it meant that the character is not applicable *directly* anywhere in the real world because *nowhere* is such a person to be found. In Mill's view, economics was not only an abstract science, but at the same time a science of tendency laws,[5] wherein general laws applied to the concrete cases of the world must always be modified by an account of the many specific causes: "That which is true in the abstract, is always true in the concrete with proper *allowances*. When a certain cause really exists, and if left to itself would infallibly produce a certain effect, that same effect, *modified* by all the other concurrent causes, will correctly correspond to the result really produced" (Mill 1836, pp. 326–27).

"Abstract" has many connotations, and the process of abstracting in the classical tradition is associated not just with generalizing, but also with conceptualizing. For example, Smith attributes an abstract character to labor, the labor that features so strongly in classical economists' labor theory of value, in order to finesse an explanation of how different kinds of labor that can not easily be compared can nevertheless be understood to determine exchange values: "The greater part of people, too, understand better what is meant by a quantity of a particular commodity than by a quantity of labor. The one is a plain palpable object; the other an abstract notion, which, though it can be made sufficiently intelligible, is not altogether so natural and obvious" (Smith 1776, Book I, chapter V, p 27). We see something of this concept-forming sense, too, in Bagehot's later description of Mill's *homo economicus* as dealing:

> not with the entire real man as we know him in fact, but with a simpler, imaginary man—a man answering to a pure definition from which all impairing and conflicting [i.e., non-economic] elements have been fined away. The abstract man of this science is engrossed with one desire only—the desire of possessing wealth, not of course that there ever was a being who always acted as that desire would dictate, any more than any one thinks there is in nature a world without friction (Bagehot 1898, p. 97–98).

Of course, *homo economicus* is imaginary just because he is not comprehensively described, but the connotation of "pure definition" also points us to this other sense of abstract: that in defining away the non-economic, we are left with a more strongly concentrated notion of economic behavior.

[5] See Cartwright (1989), Hausman (1992), and De Marchi and Hamminga (1994).

This kind of concept-forming abstraction might be likened to the notion of an "ideal type," an analytical label most closely associated with the work of the great German social scientist of the early twentieth century, Max Weber.[6] He referred to economics in one of his descriptions of ideal types as:

> a scientifically formulated pure type (an ideal type) of a common phenomenon. The concepts and "laws" of pure economic theory are examples of this kind of ideal type. They state what course a given type of human action would take if it were strictly rational, unaffected by errors or emotional factors and if, furthermore, it were completely and unequivocally directed to a single end, the maximization of economic advantage. In reality, action takes exactly this course only in unusual cases, as sometimes on the stock exchange; and even then there is usually only an approximation to the ideal type (1913, p. 96).

Weber believed that ideal types were useful in theorizing and, though not directly applicable, were still extremely helpful in enabling understanding of the social scientist's world, not because it could be directly applied, but as a benchmark device:

> The ideal type concept will help to develop our skill in imputation in *research*: it is no "hypothesis" but it offers guidance to the construction of hypotheses. It is not a *description* of reality but it aims to give unambiguous means of expression to such a description.
>
> It is a conceptual construct (*Gedankenbild*) which is neither historical reality nor even the "true" reality. It is even less fitted to serve as a schema under which a real situation or action is to be subsumed as one *instance*. It has the significance of a purely ideal *limiting* concept with which the real situation or action is *compared* and surveyed for the explication of certain of its significant components (1904 [1949], pp. 90, 93).

Fritz Machlup (1978) follows the notion of ideal types through the German-speaking communities' discussions of the later nineteenth century. One of his most helpful observation on this nineteenth century literature is that the ideal type notion is neither ideal nor a type in the common meanings of those terms—"ideal" refers not to some elements of perfection, but as an adjectival form of "idea"; "type" refers not to a classificatory kind we meet in the world, but to "a mental construct of imagined (and often imaginary) aspects of imagined (and often imaginary) persons, of their actions and reactions, and of processes, events, or material things presumed to result from these actions and reactions" (Machlup 1978, p. 213). Weber himself (1913, p. 98) argues that although it is the "facts of experience" which lead to such generalizations, the ideal type so constructed are "pure fictions" (1917, p. 44). Machlup treats Mill's *homo economicus* as an ideal type, and our familiarity with that character helps make the point that the sense of "imaginary" we need here for these ideal types is not that of a science fiction—science in the service of fiction—but rather of a fiction in the service of science.

[6] I refer here to the generic notion of ideal types, not to the specific one associated with Weber's work on the relationship between Protestantism and capitalism.

One of the authors whose work and approach Weber respected and referenced with approval was Carl Menger, founder of the Austrian School of economics.[7] Menger's ideal type economic man is located in his concept of the individual or "human economy" (in contrast to the "national economy" of the historical school' economists. Menger starts from what he takes to be the most vital elements of human economy, namely:

> premeditative activity aimed as satisfying our material needs . . . The direct needs of each economic subject are given in each case by his individual nature . . .The goods available to him are strictly given by the economic situation of the moment . . . Thus, *the starting point and the goal of every concrete human economy are ultimately determined strictly by the economic situation of the moment* (1883, p. 217).

Menger's economic man character was one who aimed and acted to satisfy his or her needs, given limited knowledge and given the constraints of his or her situation of the moment. His strict type of human economy was surely an ideal type, but the character of his model man was not "ideal" in quite the sense implied by Weber (above) in discussing economic ideal type behaviour as unaffected by errors, and so of a certain perfection.[8] In fact, Austrian school economists have always believed that it is an important part of the character of being human to have limited knowledge, and we should understand that feature to be a part of their ideal type portrait of economic man. Machlup is correct then, that we should not therefore conflate, in this nineteenth century period anyhow, the notion of an ideal type as being any kind of a perfect ideal (though it may become more applicable for twentieth century economics).

Weber's ideal types are generalizations constructed from experience, but create abstract, conceptualized fictions. Ideal types don't necessarily form usable scientific models (Weber's own ideal type in his historical/sociological work on capitalism being one example), just as not all fictions nor analogies do. Once again—as in the Malthus case earlier—it comes down to whether the ideal type is exactly and simply enough formed to manipulate and use in economic reasoning. Mill's *homo economicus* might be understood as an ideal type according to Weber's notion, just as can Menger's "human economy." And, though the characters are very different—a wealth seeker and a needs satisfier—both constructs form something like a model man, for both were thought to be useful in constructing the exact laws of economic theory.[9] Yet their processes of creating their model man construction are very different.

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[7] See Weber (1908/1975). The historical relationships between Weber and Menger are nicely drawn in Bruce Caldwell's recent book (2004) on Hayek.

[8] But as Caldwell (2004) points out, the assumptions used by Menger to discuss prices—the point of discussion in Weber = s piece—were rather different, for here he made an un-Austrian assumption that allowed the markets to work more perfectly than would be possible given limited knowledge.

[9] Machlup interprets Menger as distinguishing between "strict" (ideal) types and real types, suggesting a further distinction between *homo economicus* as a strict type with no counterpart real types, and other ideal types like "free market price," which have corresponding real types in observable, regular phenomena (1978, pp. 255–56; see also his commentary pp. 230–32 and Menger 1883, Appendix VI). (See also Mäki 1997.) It is possible that this latter kind of ideal type might be used in relation to observable phenomena for Machlup reports the vehemence of contemporary arguments over whether the ideal type may also be, or is in contrast to, a real type and whether it is possible to regain the concrete from the ideal type.

Menger describes his approach as follows:

> to ascertain the *simplest elements* of everything real, elements which must be thought of as strictly typical just because they are the simplest. It strives for the establishment of these elements by way of an only partially empirical-realistic analysis, i.e., without considering whether these in reality are present as *independent* phenomena; indeed, even without considering whether they can at all be presented independently in their full purity. In this manner theoretical research arrives at empirical forms which *qualitatively* are strictly typical. It arrives at results of theoretical research which, to be sure, must not be tested by full empirical reality (for the empirical forms under discussion, e.g., absolutely pure oxygen, pure alcohol, pure gold, a person pursuing only economic aims, etc., exist in part only in our ideas) (1883, pp. 60–61).

In Menger's political economy work of 1871, these "real simplest" elements were successively composed into his account and explanations of economic man's reasoning and behavior contingent upon his situation. It is not just subtracting or simplifying or isolating, but growing his concept of human economy by composing the definitions of the simplest element in sequence to arrive at the ideal type economic behavior.[10] From such introspective observation and thoughtful, logical method, he believed general or exact laws of economics could be obtained of the "phenomena of *abstract economic reality*" but not of the "*real*, in part extremely uneconomic, phenomena of human economy" (Menger 1883, p. 218). Thus, Menger's reference to simplest elements is misleading, for the process Menger follows in his political economy writings are, if anything, the opposite of simplifying.

III. IDEALIZATION AND JEVONS'S CALCULATING MAN

These processes of arriving at models of man have been variously understood and portrayed here to involve definitional work, theoretical speculation, and observing activity. But there is no one term that can describe succinctly how this has been done. The process can be depicted either as a more descriptive analysis: generalizing and simplifying or isolating; or as a more invasive analysis: abstracting and idealizing. These terms have different connotations.

The more descriptive analysis seems to be implied in two terms: "Generalizing" indicates the possibility of picking out the characteristics generally found in all cases and making a portrait from these while leaving out the particularities which differ between cases. This might be understood as producing something like a typical economic man in the sense of the average, but without the statistical method or overtones of Quetelet's "average man". "Simplifying" or "isolating" (as, for example, in von Thünen's *Isolated State*) are both subtracting notions: they suggest starting from a complex real world case and stripping away most of its elements, leaving a simplified portrait of certain characteristics of interest to the scientist.

[10] This seems not quite the same notion as the compositive definitional mode that Bruce Caldwell sees as the way Austrians scholars get to aggregate accounts.

In comparison our two other terms seem to imply a more invasive analytical approach: "Abstracting" implies drawing out or extracting from the materials the most salient elements for study, and in doing so, providing a portrait in terms of conceptual materials. "Idealization" indicates a process of choosing and focusing on one idea (or concept set), maybe even to create the most perfect version (as in the ideal), of the object of study.

But whereas these four notions can be distinguished and labeled as rather different processes, it is not always so easy to put an accurate label on the processes used in these nineteenth-century examples. Recall that we first described Mill's *homo economicus* as a process of subtraction or simplifying, but that Mill himself thought of it as a process of abstraction. It seemed both were involved simultaneously to create the "pure" definition of his economic man. Whether Menger's process is best described as one of generalizing, isolating or abstracting, or even idealizing, is also a moot point. Neither generalizing nor isolating seems quite to fit the description—maybe again it is a joint process: this time of abstraction and idealization.

Although there is an obvious difference between processes which take away elements thought to be extraneous and others which grow definitions, the terminology used is in large part a matter of the fashion of the times. Twentieth century commentators, particularly philosophers of science, have mostly used the term "idealization" to refer to all these kinds of processes of abstraction that result in scientific models, and they often like to define various kinds of idealization. In doing so, they effectively lay out a list of possible directions for model making. For example, Uskali Mäki (1992), who prefers to use the generic term isolation rather than idealization, gives a comprehensive analysis and taxonomy of the different kinds of "theoretical" isolation in economics: isolations made for theorizing reasons. Nancy Cartwright (1989) uses the more generally used term idealization, and offers an analysis of isolations directed more toward reasoning about causes in the observable world.[11]

In comparison with these current philosophers' use of the terms, our nineteenth-century makers and users of ideal types tended to use the term "abstraction" (it is an "actors' term" to use the sociologists' of science expression), regardless of the process of construction. This gives to the historian the task of unpacking what is meant, and we have seen how different Menger's and Mill's processes were and how difficult it is to characterize them. Let me focus now on a late-nineteenth-century shift in the kind of activity involved in these processes of model-making, which suggests why the term idealization becomes a more historically useful label from this point, even if "abstracting" was a more descriptively accurate label for the processes used by Mill and Menger.

William Stanley Jevons (1871) paints economic man as a calculating consumer, his motivations and actions are defined in psychological terms that are fundamentally unobservable yet causally powerful in the larger economic system. Jevons's portrait was inspired by the economistic moral principle of utilitarianism and his belief that

[11] Mäki's theoretical isolation (1992) is in contrast to "experimental isolation," or the method by which experimenters control conditions to isolate an experimental procedure, as discussed by De Marchi and Hamminga (1984). McMullin refers to both thought experiments and actual experiments as versions of causal idealizations (controlling for specific causes) which is close to the interests that Cartwright (1989) has in getting at capacities in the world by using models.

economic behavior should be characterized in the formal language of mathematics. Jevons's "calculating man" is one of the characters who helped launch the so-called "marginal revolution" in economics (an event well-known to historians of economics). Menger's "choosing man," also a character from the marginal revolution, is another. As I suggest later, these two can be understood as the ancestors of mid-twentieth-century economics' rational economic man.

Like Mill, Jevons explicitly dealt only with the economic motivations of man. Whereas Mill's classical economics had rested upon laws of production and distribution and had rejected the existence of any economic laws of consumption, for Jevons: "Economics must be founded upon a full and accurate investigation of the conditions of utility; and, to understand this element, we must necessarily examine the wants and desires of man ... it is surely obvious that economics does rest upon the laws of human enjoyment" (Jevons 1871, p. 102). This is a move away from Mill's man's desire to accumulate wealth in the form of goods or money, towards man gaining enjoyment or utility from consumption of such goods (thus replacing the constant positive motive found in Mill's *homo economicus* with one of his negative motives).

Calculation and psychology go along together here for Jevons's economic man is a pleasure seeker—he "maximizes utility" from consumption. He began with Jeremy Bentham's psychologically based account of utility, with its seven dimensions: intensity, duration, certainty/uncertainty, propinquity/remoteness, fecundity, purity, and extent. Jevons regarded the last three as being relevant for moral theory, but not relevant for the "simple and restricted problem which we attempt to solve in economics" (p. 95). He reduced the remaining four to only two dimensions of feeling, namely, the duration and intensity of pleasure (or its negative, pain) in order to represent diagrammatically the dimensions of pleasure into a two-dimensional space. With the amount of good along the horizontal axis and utility on the vertical, Jevons depicted how man gains pleasure from consumer goods and how that pleasure—or utility gain—declines with successive units of the good consumed based on the physiological principle of satiation.

Jevons reduced Bentham's dimensions of utility into a more manageable number not only to present it graphically, but in order to mathematize his treatment of the consuming feelings and decisions of economic man.[12] By adopting mathematical conceptions and methods from mechanics (by using calculus to depict the total amount of utility from consumption, and the final degree due to the infinitesimal changes in utility of marginal successive consuming decisions), Jevons gave exact form to economic man's behavior. It is not just that Jevons uses mathematics in the presentation of his theory, but he implies that man makes such calculations for himself, that is, his brain uses such mathematics to determine his economic decisions as part of his weighing up, comparing, and deciding how to maximize his utility from consuming: "Now the mind of an individual is the balance which makes its own comparisons, and is the final judge of quantities of feelings" (p. 84). When faced with choice between two goods, the consumer mentally weighs the utility from successive

[12] Bentham's (1789) scientific claims involved a reductionist theory of mind that sensations (pleasures/pains) lead to mental associations and that pleasure is homogenous and quantifiable. Although he used mathematical metaphors: "felicific calculus," "axioms of mental pathology," etc., he did not formulate these ideas mathematically.

degrees of consumption of the different goods until they are equal, where they can be exchanged at the margin (and this in turn gives exchange ratios and so relative prices of goods).

Jevons defines utility not as a quality within goods, but as "a *circumstance of things* arising from their relation to man's requirements" (1871, p. 105), that is, as a relation between goods and man, so that calculating man's utility valuations—preferences and weighings—are neither observable nor measurable. For all this exactitude depicted in the graphs and mathematics, man's behavior is portrayed in terms of that are fundamentally internal and known only to the subject. Unlike Mill's *homo economicus*, we cannot find Jevons's individual calculating man's, ideal type, behavior directly in the marketplace. Whereas Mill's picture of *homo economicus* still seems to refer to observable behavior that might be accessed objectively by a commentator, Jevons's calculating man is an introspective character, whose subjectively registered feelings we cannot access. It is only literary license that allows Dickens to give us access to Scrooge's wealth-seeking motive from his external behavior *and* to see him weighing past and future pleasures against pains in his Christmas dreams!

Jevons, by this process of mathematizing utility thinking, created a new portrait of calculating man and took economic man into the laboratory of mathematics to characterize his behavior with a new level of exactitude and to investigate the laws of his behavior. This move into mathematics is more broadly significant; it opens the question as to whether moves into formal representations such as geometry, algebra, and so forth offer abstractions of a markedly different kind. In a classic paper, McMullin (1985) writes about the arguments over Galileo's use of mathematics in natural science investigations, arguments that go back in various forms to differences of opinion between Aristotle and Plato. This difference depends upon whether we understand the Book of Nature for economic science to be written in mathematics or not.

Just as McMullin argued that "Galileo took for granted that his geometry provided the *proper* language of space and time measurement, and that arithmetic would suffice for *gravità*" (1985, p. 253), Jevons took it for granted that "*our science must be mathematical, simply because it deals with quantities*" (p. 78). And Francis Edgeworth (1881), the brilliant mathematical Irish economist, believed that such quantities did not need to be numbered and argued that "at least *the conception of Man as a pleasure machine* may justify and facilitate the employment of mechanical terms and Mathematical reasoning in social science" (1881, p. 15). From Jevons's point of view, the laws and elements of economics were mathematical, so, naturally economists' portrait of economic man should also be written in the language of mathematics. Thus, Jevons's calculating man (or Edgeworth's pleasure machine) is an abstraction or ideal type within the mathematical conception of economic man.[13] In this view, we can portray Jevons's interpretation of pain as negative pleasure (and his transformation of two "circumstances" of pleasure and pain—intensity and duration) as quantities on a two dimensional plane so that each experienced value of pleasure or pain could be plotted by Cartesian coordinates, as idealizations consistent with the mathematical world of economics. Interpreting the intensity of pleasure (or the variations

[13] This position is, I believe, supported by the various accounts of Jevons and mathematics, see Schabas (1990), Peart (1996), and Maas (2005).

in utility) as varying continuously with its duration (or amount of the good), so that calculus could be used, is another idealization consistent with the mathematical conception of economic man and his behavior.

But if the Book of Nature for economics is *not* written in mathematics, Jevons's mathematization of the portrait is in itself an idealization of a particular kind: "Mathematical idealization is a matter of imposing a mathematical formalism on a physical [for us, economic] situation, in the hope that the essentials of that situation (from the point of view of the science one is pursuing) will lend themselves to mathematical representation" (McMullin 1985, p. 254). In this case, we would portray Jevons's reduction and transformation of Bentham's ideas on utility into two-dimensional geometry and differential calculus as mathematical idealizations. That is, the mathematical forms are imposed for convenience of the representation and its subsequent usage, rather than because mathematics is the form in which economic man's behavior is best and most accurately represented and within which language idealizations may be made.

Whether economic man lent himself naturally to a mathematical portrait, or whether he was constrained by mathematical idealization and whether such a representation was valid, and for what purposes, were all subject to continued argument, but not ones we shall follow up here.[14] It is more relevant to point out that this combination of attributes—the psychological treatment of motivations, economic man's calculating mentality, and the mathematical nature of Jevons's depiction—had longer-term implications for the way economists go about the task of abstracting. This is why Jevons is so often lauded as one of the founders of "modern" economics (see Maas 2005). By his kind of work, methods of theorizing ideal types became inextricably linked with "formalizing," that is with changing the language of economics from the informal and hugely nuanced possibilities of expression in our verbal languages to the more constrained forms but more powerful reasoning we associated with mathematics. After Jevons, economic man has to be characterized in ways consistent with a mathematical treatment of his qualities, or if not that, reforms to his character served the purpose of formalizing other parts of economics as we shall see.

Where does this calculating man model sit in relation to the laws of economics? In the new conception of man in marginal economics, and in the neoclassical economic theory which grew out of it, the individual seems to have a greater causal power for the laws of economics operate at the level of the individual, not the aggregate as in classical economics. Unfortunately, we cannot see them at the individual level, as Jevons carefully explained when he laid out his mathematical theory of marginal utility: "The laws which we are about to trace out are to be conceived as theoretically true of the individual; they can only be practically verified as regards the aggregate transactions, productions, and consumptions of a large body of people. But the laws of the aggregate depend of course upon the laws applying to individual cases" (Jevons 1871, p. 108–109). Even worse, the aggregate is found not by the addition of individuals following similar courses of action (as in classical laws, for example, in creating Malthusian population cycles), but from the combination of the actions of individuals

[14] The relations of mathematics and economics are of course dynamic, an important consideration in these arguments. See Weintraub (2002).

following the same laws of behavior but with different preferences for goods, subjectively judged. Thus, each and every valuation decision by the individual calculating man can make a difference to the aggregate outcome.

We see this clearly explained by Edgeworth (1881), who incidentally appears to have been responsible for naming the calculating man an economic "agent." Edgeworth stresses the ability of each individual, with different tastes and different initial amounts of goods, to contract freely in the marketplace. This enables him to explore the effect on market outcomes of adding successive individuals: for example, using the diagram that became the Edgeworth Box. Equally, we can see the power of each individual in the formal account of general equilibrium by the French marginalist, Leon Walras: if the preferences for just one good by just one of all the calculating consumers in the economy changes, the demand for that product changes, and the prices of all the other products may also change because of the way these calculating individuals are linked together into the equilibrium account. This makes it well nigh impossible to think of going back from any individually isolated behavior to the real world as Mill had proposed. Powerless though that makes the economist, his individual calculating man is not just a character inhabiting marginal economics, but the most causally powerful feature it has.

IV. KNIGHT'S SLOT-MACHINE MAN AND THE ART OF CARICATURE

Whereas Jevons had provided a vestige of economic motivation in his idealized calculating model of man, it was the main American exponent of neoclassical economics, Frank Knight (in his thesis of 1915, published in 1921) who worked out the details which allowed calculating man to play his full role in the formal neoclassical theory of the economy. Menger had already gone part way in this direction by arguing that in using economic man in a theory such as price theory, it must be assumed that economic subjects do not act in error nor without information about the situation (p. 71). Knight's move was a much more positive one. He argued that only by endowing calculating man with *full* information about everything in the economy (rather than limited information), and with *perfect* foresight about the future (rather than the uncertainty that Jevons had left out of his account), could the individual person make the necessary calculations that would allow him to judge accurately what actions to take in buying, selling, and consuming. And, only by assuming that there were infinitely many of him, and that each acted independently of the others, could neoclassical analysis depict the perfectly competitive economy necessary to arrive at an equilibrium outcome which maximized aggregate utility.

Knight was the first to admit that a world peopled by such individuals was no longer a simplification, but an "heroic" abstraction: "The above list of assumptions and artificial abstractions is indeed rather a formidable array. The intention has been to make the list no longer than really necessary or useful, but in no way to minimize its degree of artificiality, the amount of divergence of the hypothetical conditions from those of actual economic life about us" (Knight 1921, p. 81). While the classical economists had pared down to Smith's well-rounded *homo economicus*, marginal and neoclassical

economists such as Knight exaggerated certain of his characteristics—his calculating ability and his "perfect knowledge"—to create a more idealized model of economic man.

These exaggerations were "necessary" not for understanding man in "actual economic life" but in order that economic man could play the part required of him in the overall mathematical theory of the economy being constructed by the neoclassical economists.[15] In fact, Knight adopted his portrait because, like Mill, he argued that scientific economics placed severe limitations on the treatment of man. In order to arrive at definite analytical results about the workings of markets, the outcomes of perfect competition, and the economy as a whole, the scientific domain and method of economics is restricted to dealing with a more fully idealized economic man, not with either a simplified or abstracted man, nor with actual people. Though the argument is similar, Knight's portrait is very different from Mill's. The highly idealized model man that Knight created was specially designed to live in the highly idealized mathematical world of neoclassical economic theories.

The issue of knowledge is a critical one for Knight. Despite, or rather because of all that knowledge, Knight's model economic man has no intelligence: "With uncertainty absent, . . . it is doubtful whether intelligence itself would exist in such a situation; in a world so built that perfect knowledge was theoretically possible, it seems likely that all organic readjustments would become mechanical, all organisms automata" (p. 268). Weber had pinpointed this same question of information as a requirement of acting in a "logically 'perfect' way" in the context of a discussion of what it meant to act rationally, and thus to establish what real people would do by comparison, rather than as a requirement of a broader theoretical aim (1917, p. 42). For Knight, the point was not to establish what real people would do, but what this model man would do inside an economic theory. Knight (later) portrayed this idealized economic man as a slot machine: "The Economic Man neither competes nor higgles . . . he treats other human beings as if they were slot machines" (Knight 1947, p. 80), not even a one-dimensional man, but a purely impersonal utility maximizing agent (as economists now say), a pleasure machine that experiences no pleasure and has no vices, virtues, desires, or children, no propensities, talents, or preferences.

Knight insisted that this ideal figure of economic science does not help to describe actual economic behavior, and so cannot be used for socially useful economic analysis or policy interventions. Knight was committed to liberal democracy and wrote moral commentaries describing man's actual economic behavior in which he explicitly denied that the slot machine economic man of his analytical work had any realistic import (see Knight 1923, Emmett 1994). Although these two domains of his economics were largely separate, there was also a more realistic economic man character in his portrait of the American economic way of life.[16] Knight was perhaps the first economist to describe competition as an in-built human urge or instinct, one that motivates his description of economic man. This characterization of real economic

[15] Interestingly, Knight's definitions are verbal despite the mathematics role that the character played. See Giacoli (2003) on the way in which Weber foresaw this requirement.

[16] Knight was following in the same path as the American marginalist J. B. Clark who strove to understand both the role of the social group in valuing goods, and to provide an account of the marginal principles in production as distributing fair and so just returns to both laborers and investors (see Morgan 1994).

man in terms of some very powerful basic instinct is similar in kind to Smith's propensity to truck, barter, and exchange.

The kind of economic man that Knight constructed for neoclassical economists' theorizing, slot machine man, as I have labeled it, for it would seem odd to refer to a machine by a personal pronoun—can be described as an ideal type where our sense of the ideal is now one of perfection. In Knight's hands, economic man was more than just abstracted into a concept, he was heaped with important extra information and foresight—qualities noted by Weber but accentuated by Knight—to enable him to play the central role in the neoclassical system. It is not that his economic man offers a simpler or more abstract version of real man, but that features have been added to make the portrait more perfect in certain respects. Knight created the economic man of neoclassical economists' utopia. Weber had already recognized this exaggerating element in the process of arriving at economic ideal types[17]:

> Substantively, this construct [an exchange economy] in itself is like a *utopia* which has been arrived at by the analytical accentuation of certain elements of reality ... An ideal type is formed by the one-sided *accentuation* of one of more points of view and by the synthesis of a great many diffuse, discrete, more or less present and occasionally absent *concrete individual* phenomena, which are arranged according to those one-sidedly emphasized viewpoints into a unified *analytical* construct (*Gedankenbild*). In its conceptual purity, this mental construct (*Gedankenbild*) can not be found anywhere in reality. It is a *utopia* (1904, p. 90).

This process of exaggeration, or one-sided emphasis in the development of an ideal type is usually understood under the label of idealization where, going beyond the notion of abstraction, we now understand the notion of an 'ideal' not as something conceptual, but as a perfect instantiation of something.

But Knight's slot-machine man should also be understood as an idealization arrived at through the *addition* of fictions or falsehoods, in contrast to earlier versions of economic man arrived at by processes of isolation, generalization or even abstraction, all of which suggest, in some way or other, the filing away of real world elements. Taking away uncertainty fits with the analogy we saw earlier from Bagehot as a world without friction, and indeed, the frictionless plane is used as a standard example in philosophy of science to exemplify the notion of idealization. Just as we can make a distinction between the subtraction of error and the addition of information, we should rightly make a distinction between taking away uncertainty (recall that Jevons chose to ignore uncertainty) and adding foresight, as Knight does. It is this addition that makes the perfect economic man we see in Knight's characterization into the utopia that Weber notes in his remarks. Rather than call this as an idealization, I think it helps to recognize this under a different term: namely as a caricature model of man. As a caricature model, it has been used by economists to learn about the idealized (theoretical) economy, and it does so because it enables them to explore, within their theories, the economic behavior of man and its consequences in its most exaggerated form. It is significant that one of the few accounts of modeling to have emerged from philosophical studies of economics is the portrayal of models as caricatures by

[17] Machlup (1978) suggests us to that Comte also noted the use of exaggerations in this way; see his page 228.

Gibbard and Varian (1978), a portrayal made in response to the practices of neoclassical economics using Knight's slot-machine man.

What are the salient features of creating a caricature? A caricature relies on the artist taking a subjective view: it not only simplifies, but relies on a distortion or exaggeration of certain characteristics beyond the point of objective truth. The kind of caricature that just extends a nose or eyebrows so that we can put a name to the character is not what we mean here. It is the kind of exaggeration that takes a particular characteristic and exaggerates it to enable us to recognize something about the person's character. The *Spitting Image* puppet[18] of the past British Prime Minister, John Major, is more the kind of thing I have in mind. When this puppet presented Major as grey, not only in dress, but in skin and body color right through, the exaggeration captured an immediately recognizable double set of qualities in the politician: he was boring, and utterly reliably so, even—given his occupation—to the point of trustworthiness! This exaggeration of his grayness created an insight into his character.

The high art of caricature is reputed to have begun with Annibale Caracci, the Italian artist of the late sixteenth century, who is also credited with introducing the word:

> Is not the caricaturist's task exactly the same as the classical artist's? Both see the lasting truth between the surface of mere outward appearance. Both try to help nature accomplish its plan. The one may strive to visualize the perfect form and to realise it in his work, the other to grasp the perfect deformity, and thus reveal the very essence of personality. A good caricature, like every work of art, is more true to life than reality itself? (Quoted in Gombrich and Kris 1940, pp. 11–12).

The insight we gain from caricature comes from comparing that representation with our knowledge of the original for we must first recognize the similarity in character in order to go on to perceive the additional new understanding the exaggerations have brought to us.

Various earlier manifestations of economic man might be reinterpreted as caricatures in this informative sense. Mill's *homo economicus* is not interesting because he is a simplification of man, as all models will be, but because in simplifying him, his remaining features appear to become exaggerated and to epitomize to an extreme degree the essential characteristics of behavior conceived in classical economics. We recognize this economic man because we notice his similarity to behavior already known; from this similarity, we gain insight into the full-blown self-interested persona of later classical economics' man in the same kind of way that Dickens gave us insight into the mind of the miser in Scrooge. We must recognize the accurate portrayal of similar qualities in model man and actual man in order to appreciate the truthfulness from the fictional ones added by the economist. Knight's economic man, by exaggerating the most extreme characteristics assumed of importance in neoclassical economics, gives the professional economist as the audience (not the general reader now) insight into that neo classical economics.

[18] I refer here to the political satire TV show that appeared in Britain during the Thatcher and Major eras in which political figures appeared as rubber puppets.

Another reason why the notion of caricature models is particularly apt for economic models is that visual caricatures are associated with the comparative simplicity of cartoon representations. This was not always so. According to Gombrich and Kris (1940), it was only around the turn of the eighteenth to nineteenth centuries that this occurred (though there were certainly masters of the art before that time). As we have seen, economic man portraits since Mill's founding of *homo economicus* have followed his lead in a drastic level of simplifying. This simplicity (made on the grounds of scientific functionality), and subsequent exaggerations, have led other social scientists (and critical economists), to make fun of these economic man portraits in ways which reflect these caricature and cartoon qualities. For example, J. M. Clark observed that the marginal man of Jevons's variety was "absorbed in his irrationally rational passion for impassionate calculation" (1918, p. 24). We will see another example from J. M. Clark later.

V. RATIONAL ECONOMIC MAN

Though the neoclassical idealized model of economic man used by Knight was well-clothed with artificial assumptions about his knowledge and foresight, as we have seen, his underlying human character had become decidedly thin. The psychology of his character all but disappears in the mid-twentieth century, when he gains the label "rational." What we see here is a refocusing of the idealized and caricatured model of Knight, with a further idealization which shifts attention even further away from his internal character, yet focuses on his choices.

This may seem counter-intuitive. Economists have used two dominant notions of the word rational: one relates to reasoning behavior, the other to choosing behavior as Simon (1969) points out. In the early neoclassical economics of Knight, "rational" meant reasoned, goal-directed, activity, a notion which hardly differs from the reasoned pursuit of self-interest we find in the classical economics of Smith and Mill. It is rational in the second "choosing" sense, which is more closely linked to mid-twentieth-century neoclassical economics' portrait of economic man. And, in this twentieth century characterization, the choosing "rationality" of economic man had become a more important question than his motivations and desires.

This history has been told in various ways. Bob Coats (1976) tells how the late nineteenth century attempts to provide psychological underpinnings to economic behavior gave way in the twentieth century following attacks by pragmatic philosophers in the U.S. and the failure of measurement program in the UK. Nicola Giacoli's recent 2003 book, *Modeling Rational Agents*, using a similar cast that includes Fisher, Pareto, Slutsky, Hicks and Allen, writes of an "escape from psychology." Let me construct the account in a way not necessarily inconsistent with theirs but in terms of the distinction between Jevons and Menger and the developments that flow from them.

The marginal revolution had effectively put the problem of economic choice at the center of economic behavior. Jevons's analysis was concerned with how such decisions were made to mazimize utility from consumption assuming that utility was all one kind of stuff, so the nature of choice between different kinds of things received little attention from him. More is better than less, but beyond that,

Jevons's account was limited: he gave no way of choosing between equal utility-valued goods. Although Jevons's mathematical formulation of economic man is widely believed to be the basis for neoclassical economics in the twentieth century, his utility calculations provided only one strand. The second strand comes from the Austrian marginalist, Carl Menger (1871), who discussed individual and subjective valuation without any of the apparatus of utilitarian calculus, or of calculating mathematical man, or of the single-minded hedonism that seemed to characterize Jevons's account, or of the social aspects taken as central by J. B. Clark, the American marginalist.[19] In Menger's account, man is an economizer rather than a maximizer: given his particular situation, he satisfies different needs with different goods by choosing them in such a way as to satisfy those needs in a particular order (with necessities first, luxuries second, etc.). His subjective valuations (based on introspection) are concerned with choice between satisfying different needs given his constraints, rather than with calculating the standard units of pleasure from consuming different goods as Jevons's calculating man does. It is only in this Austrian marginalist tradition that we find an economic account of choosing.

As historians of economics know well, we see a change in the definition of economics in the twentieth century. Once again, Weber makes an interesting point, taking Menger's concern with satisfying needs into a more general idea: "Specifically economic motives . . . operate wherever the satisfaction of even the most immaterial need or desire is bound up with the application of *scarce* material means" (Weber 1904, p. 65). This comes close to the standard twentieth-century neoclassical definition of economics as the science of the efficient use of scarce resources, for as Lionel Robbins announced in 1932, we are no longer concerned with "the causes of material welfare," or the creation and distribution of wealth, as were the eighteenth- and nineteenth-century classical economists, but with "human behaviour conceived as a relationship between ends and means" (p. 21).[20] This relationship had been voiced by Menger as attention to how a person's choices are always contingent upon a given situation. More generally, of course, the situation of scarcity can be defined as one in which choices *have* to be made.

Regardless of its causes, historians agree that this change in the definition of economics placed choices higher up the economics agenda, but there was also a crucial switch of focus from the marginalists' account of choosing to mid-twentieth century economists' notion of choosing. In the marginalists' conception (whether of Jevons or Menger), man's desires or his needs (respectively) are primary and they dictate his valuations and so choices. For mid-twentieth-century economists' rational economic man, it is valuations and choices which are dominant, and it is assumed that desires can only be maximized or satisfied by "rational" choices. This commitment to a new definition of economic man was expressed by Lionel Robbins:

> The fundamental concept of economic analysis is the idea of relative valuations; and, as we have seen, while we assume that different goods have different values at

[19] The American marginalist, J. B. Clark, had quite extended definitions of different kinds of utility and of the role of the social group in conjunction with individuals in determining valuations.

[20] Robbins references the Austrian tradition, and Caldwell discusses the relation of Robbins to his contemporary Austrians; see also Howson (2004) on the local roots of Robbins's thinking.

> different margins, we do not regard it as part of our problem to explain why these particular valuations exist. We take them as data. So far as we are concerned, our economic subjects can be pure egoists, pure altruists, pure ascetics, pure sensualists or—what is much more likely—mixed bundles of all these impulses. The scales of relative valuations are merely a convenient formal way of exhibiting certain permanent characteristics of man as he actually is (1932, p. 95).

Though Robbins expressed the mid-twentieth century's habitual lack of interest in embedding a psychological character in economic man, he takes pains to point out that this does not exclude individuals making relative valuations on the basis of their feelings of all kinds, including "virtue or shame," or even an interest in "the happiness of my baker" (p. 95, a clear reference to Smith's invisible hand argument); it is just that these are not of interest. J. M. Clark (an American institutionalist economist with a perceptive line of satire) characterized the situation thus:

> Our old friend, the "economic man," is becoming very self-conscious and bafflingly non-committal. Instead of introducing himself to his readers with his old time freedom, he says: "I may behave one way and I may behave another, but what is that to you? You must take my choices as you find them: I choose as I choose and that is all you really need to know." The poor thing has been told that his psychology is all wrong, and he is gamely trying to get on without any and still perform as many as possible of his accustomed tasks. He has become a symbol, rather than a means of description or explanation (1936, p. 9).

By making choices dominant over desires, mid-twentieth century economics effectively allowed economic man to have any type of motivations, provided he chose "rationally."

This switch follows from pushing out psychology, but the key analytical move is often taken to be Paul Samuelson's revealed preference formulation of utility. Samuelson's thesis (1938, published in 1947), written under the influence of operationalism, had got rid even of the indifference maps from theory in favor of the only thing he thought could be measured and known, namely, man's "revealed preferences."[21] Samuelson was explicit:

> *The utility analysis rests on the fundamental assumption that the individual confronted with given prices and confined to a given total expenditure selects that combination of goods which is highest on his preference scale*. This does not require (a) that the individual behave rationally in any other sense; (b) that he be deliberate and self-conscious in his purchasing; (c) that there exist any *intensive* magnitude which he feels or consults (1947, p. 97–98).

The critical question is: What does "behaving rationally" (in selecting that combination of goods that is highest on his preference scale) mean? Behaving rationally

[21] At the same time von Neumann and Morgenstern (1944-47) developed a measurement formulation for *expected utility* based on preference comparisons and assuming that risk was involved. Again man's preferences are revealed through his valuations. There are many aspects to the history of rational choice theory, and many interpretations of the history. The account here does not attempt to cover this broad ground, but to focus more narrowly on a change in the way economic man has been characterized.

in this analysis meant choosing more over less of a good, and that choices over a number of goods must be "consistent" and "transitive" (i.e., if A is preferred to B and B to C, then A must also be preferred to C). These are the characteristics that defined a "rational" choice and could be revealed through economic man's actions.

In the dominant American neoclassical economics of the mid-twentieth century, economists preferred to assume nothing about peoples' motivations, but to suppose that however arrived at, their choices are rational. "Rational economic man" is named so because he (chooses rationally." Here rationality is instrumental—economists claimed nothing about the people or their underlying feelings, preferences, and valuations as in marginal economics, let alone about their reasoned aims and motivations as in classical economics; and, as Robbins implied, economists don't even care. Neoclassical economists it seemed were interested only in consequences or outcomes, not causes. As Fritz Machlup has observed, this ideal type of economic man was "designed for interpreting observed *consequences* of men's actions," not for interpreting the actions themselves (Machlup 1978, p. 281). As Clark had already remarked in 1936 (see above), the character of rational economic man thus ceased to have any explanatory power over the causes of economic behavior.

Significantly, although economists' central character in the third quarter of the twentieth century no longer supported claims to explain the causes of economic behavior, neoclassical economists did claim it provided a guide to action. This follows from the fact that rational economic man is interested in consequences: "The rational man of pure theory is an ideal type in the sense not only of being an idealization where the theory holds without qualification but also of being a model to copy, a guide to action. In pointing out the way to satisfy a given set of ordered preferences, the theorist gives reasons for action" (Hahn and Hollis 1979, p. 14). The "reasons for action" are not in the initial feelings of the subjects, but are rationalized (or reasoned backwards) by the economist from looking at the consequences. Model man in this sense is no longer a perfectly distilled version of real man's economic behavior, but a normative model of economic behavior for real people to follow.

The reputation of this rational economic man was at its height in the 1970s. Hahn and Hollis epitomized the character's position with the consequence argument: "The pure economist's definition of rational choice is now this: Given the set of available actions, the agent chooses rationally if there is no other action available to him the consequence of which he prefers to that of the chosen action" (1979, p. 4). They then go on to show the implications of this in a number of well-defined theoretical situations. Their point is clear: neoclassical economics had built a body of theoretical results on the back of rational economic man, though one might well argue that their definition of rational choice didn't rule much out. Others have taken a somewhat different line, pointing out that model man and his rationality on its own did not get you very far in answering neoclassical economics questions about competition and markets. As Knight pointed out in his thesis way back in 1921, and as Arrow has argued more recently (1986), rational economic man is one leg of a three-legged stool. The individual rationality of economic man had to be combined with other basic tenets of modern economics—perfect competition and general equilibrium theorizing—to get those strong formal results. We might reasonably conclude that rational economic model man is an idealized mathematical character who must

behave perfectly in an idealized mathematical world of economic science, but even there, he was pretty helpless on his own.

VI. CHARACTERIZING MODEL MAN

This short history has been following the route by which economists adopted a model of man's economic behavior. We began by traversing through a series of increasingly narrowing portraits. From Adam Smith's rather rounded character—a fiction, but not yet a model—through Mill's model: *homo economicus*, to Jevons's calculating man, economic man portraits gradually became thinner during the nineteenth century. Each move was made as part of a simplifying strategy, to reduce the complexity of dealing with all human feelings and emotions and actions that flow from them and, at the same time to focus the attention on the explicitly economic aspects of man's behavior. This was the nineteenth century economists' answer to dealing with human behavior in a scientific way. It provided economics with a changing ideal type, a changing model of economic man. In each case, he was taken to represent real man, but had been pared down to focus on the picture of economic behavior in its simplest, purest, most abstract form, unaffected by other considerations, and thus ready for the construction of exact laws in economics. Taken literally he was regarded as a fictional character, but one whom it still seemed possible, by a process of observation and imagination, to compare back with real man, for abstraction focused attention on the quintessential economic behavior, and this offered the possibilities of introspection and analysis within this narrowed framework. This abstraction to a model man seemed to economists a sensible scientific strategy compared to the alternative social science approaches in the nineteenth century of studying real economic behavior of man with all his feelings and among his family, community, or nation.

From late-nineteenth-century marginal economics onwards, we found these pure forms of economic behavior exaggerated to an extreme degree as model economic man became endowed with calculating power by Jevons, and given extraordinary amounts of economic knowledge and certainty to analyze the fullest effect of economizing behavior by Knight. In neoclassical economics of the mid-twentieth century, economic man held an idealized character, one no longer taken to represent real man, but to be an artificial character created by the economists. No longer one whose behavior could be imagined, and so understood partly at least through introspection, but a construction of artifice that took economists into the mathematics laboratory. Beginning with Jevons's calculating man, following though to Knight's slot machine man, to rationally choosing economic man, and finally Samuelson's revealed preference agent, economists constructed an highly idealized portrait of economic man in the sense of one more perfectly endowed with economic qualities according to the theory of the day.

During this historical process, the basic character of economic man went through several mutations. Mill reduced Smith's rounded character to a wealth seeker. Jevons changed him into a man seeking to maximize pleasure or utility from consumption, while Menger presented him as satisfying needs though sensible choices. While Knight depersonalized him into a slot machine, the neoclassicals ignored internal

character and just concerned themselves with his revealed behavior and rational choices. These changes in characterization were associated with the long run changes in economic beliefs, theories, questions and practices—in themselves contingent upon many other currents in scientific, political, economic and intellectual histories. These changes were not so much driven by paradigm change, but exemplified such changes.

I have treated each of the characters, from Malthus's portrait onward (but recall not Smith's), as a model of man. Unlike Smith's well-rounded portrait of economic man, these later models provide the object descriptions representing man's behavior that economists reason about and manipulate and use in their work. I have also commented, throughout the history, on the causal roles associated with these models of economic man. The causal capacities associated with earlier manifestations of model economic men, pictured by Malthus, Mill, and even by Jevons are those which were thought to change things in the economic world, and thus those causal powers were important in their theorizing. The motivations of Malthus's working man, the character of Mill's wealth-seeker, and even of Jevons's calculating man were understood to create changes in the real economy; that is why they formed part of the model used to reason with. Jevon's man is a cross-over point. His feelings were (finally) registered in prices in the market place, but his character was perhaps more valuable in the mathematics laboratory of the economist. From Jevons' calculating man, to Knight's slot machine, through much of the twentieth century history of rational economic man, economic man has lived primarily inside the economists' maths lab, representing and working as a set of causal capacities inside a mathematical model account of the world. Only in the last few decades when experimental economics has grown up and economic man has become the subject of laboratory investigation in economics, have the causal capacities associated with his character come to be seen once again to be representing something active in the world, as well as a model for theorizing.

Recounting the history in this particular way has also enabled me to discuss the processes of model construction. One way to describe ways of model making is to say that economic man models are built from observation, from introspection, and from theorizing.[22] These proved rather blunt descriptive categories, and the terminology of model building and construction not entirely apposite. For example, while some economic man characters, like those of Malthus and Mill, seemed to be more the result of observation, later ones, Mill again, and Menger, seemed also to be based on introspection. According to Maas (2005), Jevons's portrait was arrived at by a process of observation-experience and analogical theorizing. More recent characters, those of Knight and Samuelson, seemed to have resulted purely from theorizing. Using alternative ideas from the philosophy of science, I described economic model making as processes of generalizing, isolating, simplifying, abstracting and idealizing. Although these more nuanced terms helped us to understand better how economists made their models, we might still conclude, given the difficulty of labeling the processes used by Mill and Menger, that even these proved not so clear-cut in practice as we might wish. Yet using the combination of these process notions along with the

[22] There are, of course, other processes—for example, by analogy (see Morgan 1999).

accompanying labels of ideal types and caricatures has cast considerable insight into the changing character of economic man.

While these different notions and kinds of idealization form techniques for model making, they are not recipes that tell you what to choose and how to put them together to make the model, ideal type, or caricature. Rather, we should think of the multiple processes of abstraction and idealization as working on the theoretical and/or observational elements that have been chosen by the economist to go into the portrait. The choice of elements, the questions to be addressed with the model, and the set of beliefs and methods of the economist together determine the kinds of idealizations made. For example, an Austrian school economist of the early twentieth century would not have constructed by mathematical idealization to Knight's portrait of perfect knowledge any more than Knight would have idealized by composing definitions to create an economic man as a Millian wealth accumulator. These are spurious possibilities. Just as two eyes, a nose, and a mouth in particular places within a circle might be sufficient to provide a representation of a face to a growing child, the bits of an economist's portrait of economic man have to be placed together and cohere to make an account of man and his economic behavior that is recognizable within that economic tradition.[23] For this reason, even when these economic portraits seem to be based on observation, each one of these portraits also carries conceptual content and methodological implications, for such models of man provide the objects that economists use to represent man's behavior in their theories. Mill and Menger both believed that their character models of economic man helped them construct the exact laws of economics. Weber believed that ideal types were useful in theorizing and, though not directly applicable, were still extremely useful in enabling understanding of the social scientist's world, not because the ideal type could be directly applied, but as a benchmark device. In twentieth century experience of economics, it was taken for granted that the mathematical portrait of economic man could be slotted into sets of relationships to play the role of the individual in whatever problem was being modeled: an artificial man in the mathematical laboratory of the economist rather than one that gives us insight into the real economic world.

VII. FUTURE ECONOMIC MAN

If there is one thing this history teaches us, it is that economists' models of economic man will periodically change his character radically. And if the portrait of economic man is an indicator, we seem now to be the midst of another paradigm change. Rational economic man appears to be not quite such a strong character as neoclassical economists believed.[24] Nicola Giacoli's recent book (2003) examines how economists replaced perfect foresight with strategic thinking in game theory. Institutional economics has attacked the information problem and pictured model man in terms of his ability to make and keep contracts: Williamson's "contractual man" (see

[23] See Boumans (1999) for a pertinent discussion of the choice of elements and "recipe" notion of model-making.

[24] In another development, attempts to use the individual rational economic man as a "representative agent" to underpin macroeconomic theory have been found wanting (Kirman 1992, Hartley 1997).

Pessali 2005). Following attacks in the 1970s—on his consistency by Sen, and on his maximizing ability by Simon—economists have found good reasons to think about the various ways in which economic man's rationality might be limited or "bounded" (see Matthias Klaes and Esther-Mirjam Sent, 2005). These widespread recent developments began by taking rational economic man as the benchmark ideal, and then analyzing what might happen to model outcomes if he were not so perfectly "rational" as he is painted. Meanwhile, work within other social sciences on cognition and decision-making have contributed in chipping away at neoclassical economic man's rationality (see Sent 2004).

At the same time, ways of doing economics have changed. The development of behavioral economics (some kind of a re-splicing of economics and psychology), experimental work (on people's economic behavior in different kinds of situations), survey work (investigating how people feel about things economic and whether they are "happy"), and neurological investigations (into the physiology of economic behavior) are all becoming relevant and important. Economists are in the process, it seems, of refashioning their central economic character. It is not yet quite clear which way this will go. In conducting experiments *with* him and observing how he behaves, economists have come to treat economic man more like a laboratory rat than a mathematical construct. But by conducting experiments *upon* him to map his portrait via his brain waves, they seem to be in the process of creating a new biological model organism, one more like the laboratory mouse than the laboratory rat. All this activity will surely create a very different portrait of economic man. Judging by these recent developments, he may be a more well-rounded and more interesting character—a man who can learn, bargain, act strategically, has memory, and may even be happy. This would be a far cry from the dismal science portrait given us by Malthus, whose economic man suffered from cycles of starvation and the ill-effects of vice, although, like Malthus's conception, these modern approaches suggest a return to a biological or physiological analysis of man's behavior.

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