

A Short History of Economics As a Moral Science*

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Introduction

Economics grew out of moral philosophy and eventually became one of the moral sciences. At some point the mainstream of economics became detached from the moral sciences and then from morality itself. I will argue that this detachment from moral concerns is not part of the tradition of economics. It emerged only during the present century.

There are two major reasons why economics has become detached from moral concerns. First, the natural sciences came to be seen as successful, and the attempt was made to emulate that success in economics by applying natural science methods, including mathematics, to economic phenomena. Second, the self-styled economic science came to adopt positivism, which ruled out moral issues from science itself. These points will be demonstrated below.

It is a widely held view today among mainstream economists that economics is free from any ideological, theological, or moral philosophy. One commentator on the role of ethics in mainstream economics has stated:

The "scientification" of economics ... has led to a separation of economics from its ethical roots. The "mainstream economics" of the twentieth century fully accepts this separation. Economic theory is seen as a positive science which has to analyse and to explain the mechanisms of economic processes.... Important as ethical valuations ("ought"-statements) may be, they should not form part of the economist's research programme.¹

Similarly, a recent commentator on the role of positivism in economics argued this way:

Most economists today ... would agree that the claim of an economic

theory free from values is essential in establishing the scientific nature of the discipline. A positive, value-free economics, in the sense of not relying on any particular set of value judgments or on any philosophical or psychological framework, is generally seen as ideal. This approach has crucially influenced important branches of economics such as microeconomic theory.²

Many others have expressed similar views.³

Modern economics stresses rational calculation, the baser material objectives, and scientific neutrality on moral issues. But these foci can easily slip into something else. For example, one of the leading microeconomists, David Kreps, says that “a sparse set of canonical hypotheses—... greed, rationality, and equilibrium—became the maintained hypotheses in almost all branches of [economics].”⁴ The slip into the assumption of “greed” is easy to make.

What is the moral effect of promulgating this view on the behavior of economics students? Experiments have been conducted to see whether humans cooperate or attempt to “free ride”⁵ in a range of situations. In one study it was found that people were generally cooperative or public spirited, except for a group of first-year graduate economics students: The latter were less cooperative, contributed much less to the group, and found the concept of fairness alien; the economics students were “much more likely to free ride” than any other group tested.⁶ On this same study, Hausman and McPherson comment: “Learning economics, it seems, may make people more selfish.”⁷ More recently, Frank, Gilovich, and Regan found in their experiments that students of economics, unlike others, tended to act according to the model of rational self-interest and concluded that “differences in cooperativeness are caused in part by training in economics.”⁸ This conclusion leads them to recommend that economists “stress a broader view of human motivation [than rational self-interest] in their teaching.”⁹ By producing selfish and uncooperative individuals one may think that there is evidence for the actual detachment of economics from ethics.

The essay that follows shows the genesis of economics as a moral science and chronicles some of the developments in mainstream economics that metamorphosed the discipline to the point where moral concerns are now irrelevant. The first section presents a brief overview of the connection between economics and moral philosophy before Adam Smith. The second section presents some brief points about Adam Smith’s science of economics. The third section turns to the developments in economics from Smith’s time until 1900. The fourth section sketches the developments during the present century. The final section presents a summary of the argument.

Pre-Smithian Economics

Economic matters have been discussed throughout human history but the notion of an independent science of economics only arose relatively recently, perhaps since the mid-1700s. Until that time economics was generally discussed as a subordinate part of a broader study of political, moral, and theological matters.

Aristotle's treatment of economics is to be found in the *Nicomachean Ethics* and the *Politics*. In the Aristotelian tradition, economics is part of a broader inquiry into ethics and politics. From about 1240 A.D., when Aristotle was rediscovered in Western Europe, the Scholastics used the *Nicomachean Ethics* as one of the leading textbooks and it was through this study of moral philosophy that Scholastic economics emerged: Scholastic economics was Aristotelian economics.¹⁰ The Scholastics saw economics as a subordinate part of the broader theological/moral concerns.¹¹ For example, the disputes over the legitimacy of usury were based on moral concerns.¹²

Scholasticism remained influential in European universities for centuries. Even when it was replaced by more modern, natural law views (of Grotius and Pufendorf), the place of economics changed little. In the European universities of the 1700s economics was taught as part of moral philosophy.¹³ The example that I know best is the lectures at the University of Glasgow of Francis Hutcheson, the teacher of Adam Smith. If we can judge from his *A Short Introduction to Moral Philosophy*, there were two parts to his lectures. The first part dealt with virtue. The second part, "the law of nature," had three units: private rights, economics, and politics.¹⁴ Economics was seen to operate within the "law of nature," or jurisprudence, which, in turn, operated within moral philosophy.

So far, one group has been omitted from this history of the development of economic thought: the group of pamphleteers, later called mercantilists by Adam Smith,¹⁵ who operated from the fifteenth to the eighteenth centuries. They were usually active businessmen who wished to influence government policy. As is well-known, the goal of the mercantilists was to increase their own wealth and the wealth of their nation through the extensive use of government intervention. The details of their theory need not concern us;¹⁶ but "Mercantilism involved ... a marked break with the ethical attitudes and instructions of Aristotle and of Saint Thomas Aquinas and the Middle Ages in general."¹⁷ In this quotation, Galbraith argues implicitly that the emergence of the mercantilists marked the point where economics broke with the moral sciences. While they were influential in economic policy, it is not clear that they dominated thinking on economic matters within universities.

Economics had been conceived as a moral science and remained so in universities. Outside of universities, and to some extent inside, economics was moving away from that approach: it was “escaping” from the moral and ethical concerns of the past. The conventional view is summarized by Boulding in this way: “economics ... only became a science by escaping from the casuistry and moralizing of medieval thought.”¹⁸ Next I turn to Adam Smith in order to investigate the claim that he completed that “escape.”¹⁹

Smith’s Moral Economics

Most commentators²⁰ claim that modern economics began with Adam Smith (whose major contributions were made between the late 1750s and 1790), even though the reason for their conclusion varies. Many see his *Wealth of Nations* as the foundational document because it was here that a separate science of economics began that self-consciously broke from moral philosophy and theology.²¹ More precisely, during the present century Smith has been interpreted by positivists who seek to find in his work what they themselves believe, and not surprisingly they find there a value-free science, which is based on the “fact” that humans behave in a rationally self-interested manner. That view, however, has come under criticism recently. The proper interpretation of Smith’s work is important because of its pivotal role in the history of the discipline of economics.²² In this section I will attempt to support the newer view.

Smith was deeply affected by his exposure to Hutcheson and consequently—when he became professor of Moral Philosophy at Glasgow University—followed a similar pattern to that adopted by his teacher. As Smith’s student John Millar explained, in Smith’s course on moral philosophy there were four parts: natural theology, ethics (published as *The Theory of Moral Sentiments*, first edition 1759), justice (published posthumously as *Lectures on Jurisprudence*), and finally, “political regulations which are founded ... [upon] expediency, and which are calculated to increase the riches, the power, and the prosperity of the state” (and largely published as *The Wealth of Nations*, first edition 1776).²³ For Smith, economics (or what he called political economy) was situated within this grand scheme of moral philosophy.²⁴

A brief statement about Smith’s first book—*The Theory of Moral Sentiments*—is required here. This book was published well before the more famous *Wealth of Nations* but its doctrine is not supplanted by the later work, which deals with economic matters more directly. The first book sets out a moral system that provides both a general framework for the economic realm and insights into specific economic themes.

In the presentation of his system of morals Smith discusses a wide range of

virtues.²⁵ This list includes the lower, commercial virtues of “prudence, vigilance, circumspection, temperance, constancy, [and] firmness.”²⁶ In this context Smith speaks of the lower²⁷ of two types of prudence: “the care of the health, ... fortune, ... rank and ... reputation of the individual.”²⁸ This sounds like the type of rational calculation that is the focus of mainstream economics and the positivistic interpretation of Smith. But for Smith, prudence is not a “fact” or datum; it is one of the lower virtues within his broad moral system. The prudent man, Smith tells us, must sacrifice present pleasure for future pleasure and this “self-command” is approved of by Smith’s “impartial spectator,” the judge of moral sentiments.²⁹ Even within *The Theory of Moral Sentiments*, capital accumulation—which is a central feature of Smith’s *Wealth of Nations*—is discussed and placed within a moral framework.³⁰

Another virtue that Smith discusses in *The Theory of Moral Sentiments* is justice. His view of justice is restricted to commutative (not distributive) justice. This type of justice is not that demanding, hindering us “from hurting our neighbour,” but it is essential for the preservation of society.³¹ Breaches of justice require punishment. The importance of justice for Smith’s economics will be discussed below.

Finally, the highest virtue for Smith is benevolence.³² This fact may be of particular interest to those graduate students of economics, discussed earlier in the paper, who were so influenced by the model of rational self-interest, or “greed,” as Kreps says.

Now let us turn to Smith’s *Wealth of Nations*. While Smith’s view that economic growth “should be the normal state of society” separates him “from the debates of the earlier moralists,”³³ who saw the stationary state as ideal, Smith did retain concern for morality within his economics.³⁴ Economic growth was itself intimately connected with morality; this is seen in both the moral effects and in the moral prerequisites of growth.³⁵

TABLE 1: THE INTELLECTUAL FRAMEWORK OF *THE WEALTH OF NATIONS*³⁶

Virtue	Location in <i>Wealth of Nations</i>	Economic Manifestation
Justice	Books I and IV	Free Trade
Prudence	Books II and III	Capital Accumulation
Benevolence	Book V	No Alienation

Consider the table above that lists some of the Smithian virtues and their

economic manifestation within *The Wealth of Nations*. Smith saw his major policy task in *The Wealth of Nations* as attacking the restrictive mercantilist system and promoting free trade.³⁷ But free trade means reciprocity or commutative justice. Smith is famous for his defence of freedom of trade internationally and domestically, but this does not reduce to the rule of unfettered self-interest: Exchange occurs within the moral framework established in his first book. Smith summarizes his ideal “simple system of natural liberty” this way: “Every man, *as long as he does not violate the laws of justice* is left perfectly free to pursue his own interest in his own way.”³⁸ For another commentator, this “points clearly to a moral dimension in [Smith’s] economics.”³⁹

Smith also makes it clear that capital accumulation plays a central role in economic growth—the objective of political economy mentioned previously.⁴⁰ As a means to the end of political economy, capital accumulation must be promoted. This, in turn, requires many of the moral attributes such as prudence, which were mentioned earlier.⁴¹

In addition, we see in Smith an analyst who uses the moral framework to criticize the alienating workings of the commercial economy. Some of the strongest moral criticisms of existing society ever made are to be found in *The Wealth of Nations*;⁴² Smith’s economics is not apologia for the *status quo*. There is neither the sharp fact/value distinction of later economists who adopted positivism, nor a “divorce between economics and ethics.”⁴³

In Smith’s hands economics served a moral purpose: His economics is a “moral science” in the truest sense.⁴⁴ The struggle for Smith’s soul is crucial for many participants. If it can be shown that the positivistic, narrowly self-interested interpretation is false, the proponents of these views have to look elsewhere for support. While these proponents may claim that Smith was misguided, this would represent a considerable change from the prevailing strategy of eulogizing him.

Classical and Early Neoclassical Views on Economics As a Moral Science

This section covers some of the major developments in economic thought from Smith’s time to the beginning of the present century. During this period, political economy gradually emerged as a profession with specialist clubs, professional associations, journals, and chairs at universities. Along with this professionalization went a gradual narrowing in the scope of the discipline, and political economy became economics. Part of the explanation for these changes lies in the claim that specialization would produce major gains in social thought. But at the same time, the view emerged that economics was not just specializing, it was adopting the new methods of the natural sciences. The

use of mathematics was seen as central to this endeavor. Finally, during the nineteenth century, the potential for a break with the moral sciences emerged, when it became clear that the practitioners in the moral sciences were not adopting the methods of the physical sciences. In many cases the methods were found not to be suitable.⁴⁵ The distinction emerged between the methods used in the moral and the physical sciences and economics aligned—to a varying degree over time—with the latter, in the period up to the present century.

With this background in mind, let us now continue our chronology. The next leading figure in the discipline after Smith was the Reverend Thomas Malthus (whose main contributions were made between 1798 and 1834). He became the first professor of political economy in England. As one might expect from a minister, he saw economics as a moral science and followed explicitly in the tradition of Smith. While he was the dominant figure in political economy for a period, he soon was challenged by the emergence of David Ricardo (whose economic contributions were made between 1810 and 1823). Ricardo's *Principles of Political Economy and Taxation* (1817) created a huge impression, catapulting him to leadership.

Ricardo saw economics as a technical rather than a moral subject: "It is not the province of the Political Economist to advise: He is to tell you how to become rich, but he is not to advise you to prefer riches to indolence, or indolence to riches."⁴⁶ For Ricardo, the subject was neutral between ends. Ricardo saw political economy as a narrow subject that used deductive logic to draw conclusions from a set of abstract and unrealistic assumptions.⁴⁷ As he saw it in his *Principles*, "the principal problem of Political Economy" concerned the distribution of a *given* output between rent, profit, and wages.⁴⁸ Political economy, he implied, was "a strict science like mathematics."⁴⁹ Even though Ricardo used very little mathematics in his *Principles*, one commentator suggests that the Ricardian influence in economics produced a "methodological revolution," moving the discipline away from the Smithian position.⁵⁰ My provisional conclusion is that Ricardo did not see economics as a moral science.⁵¹

Malthus, despite the impact of Ricardo, continued along the path that he had been travelling. Contrary to Ricardo, he saw "the causes of the wealth and poverty of nations" as "the grand object of all enquiries in Political Economy."⁵² Ricardo's notion of the discipline was "very confined" and would convert it "from a science that I [Malthus] have always considered as the most practically useful, ... into one which would merely serve to gratify curiosity."⁵³ In his *Principles of Political Economy* (1820) Malthus stated that "the science of political economy bears a nearer resemblance to the science of morals and politics than to that of mathematics."⁵⁴ In 1827, in his *Definitions in Political Economy*,

apparently in reference to Ricardo and his followers, Malthus stated: "It has sometimes been said of political economy that it approaches to the strict science of mathematics. But I fear that it must be acknowledged, *particularly since the great deviations which have lately taken place from the definitions and doctrines of Adam Smith*, that it approaches more nearly to the sciences of morals and politics."⁵⁵

Did this methodological perspective affect the content of Malthus's economics? The moral approach was important in his analysis and policy prescriptions. In Malthus's political economy there was an "agrarian bias" that suggested not only that the productivity of agriculture was greater than that of manufacturing but also that the agricultural life in the country was morally better than city life.⁵⁶ Malthus refers to the "unwholesome manufactures" that prevail in the towns; towns are unhealthy and full of vice; in short, the "unwholesomeness of towns ... must be considered as a species of misery."⁵⁷ Given these views, it matters a great deal whether agriculture or manufacturing is the leading sector in economic growth. In the latter case, economic growth may conflict with the moral health of the lower classes. He argues that economic growth was "too dearly purchased" if it came at the cost of, amongst other things, "unhealthiness and immorality."⁵⁸ It was in light of Malthus's assessment of the economic, political, and moral consequences of the economic growth he expected to follow from liberalizing agricultural trade that he prescribed trade protectionism. His protectionist stance, demonstrated in his views on the Corn Laws, came from his dynamic analysis of the process of economic growth (ruled out by Ricardo's analysis), incorporating the moral effects of this growth on the population. It is instructive that Ricardo condemned Malthus for introducing these "moral effects" into the discussion of a technical issue.⁵⁹

As we can see, Malthus's view contrasted sharply with Ricardo's.⁶⁰ This was an important battle in the history of economics as a moral science. Keynes viewed Malthus, but not Ricardo, as part of the "tradition of humane [or moral] science."⁶¹ Winch calls Malthus a "Christian moral scientist."⁶²

After Ricardo and Malthus, John Stuart Mill (whose contributions were made from the 1820s until 1873) took over as the leading political economist. Unfortunately, he seems to contradict himself in various ways, making interpretation difficult: he appears to be more Ricardian in formal methodological statements than in practice.⁶³

What was Mill's philosophy of science? Mill argued that the "Moral Sciences" are backward compared to the physical sciences but that this defect can be remedied "by applying to them the methods of Physical Science, duly extended and generalised."⁶⁴ His formal methodological view distinguished

science (what is) from art (what ought to be): “Now, the imperative mood is characteristic of art, as distinguished from science. Whatever speaks in rules, or precepts, not in assertions respecting matters of fact, is art.”⁶⁵ With regard to art he held to the utilitarian goal of increasing the happiness of mankind.⁶⁶

Next, we turn to the consequences of Mill’s view of science for political economy. Most of his discussion refers to the science of political economy, which is a “separate science,” albeit tied to moral philosophy.⁶⁷ But Mill also refers to the art, or applied science, related to the theoretical science of political economy: “The mere political economist, he who has studied no science but Political Economy, if he attempts to apply his science to practice will fail.”⁶⁸ A wider knowledge of other sciences was necessary in order to make public policy. According to Mill’s methodology, the political economist as a scientist is limited to scientific questions of “what is,” but throughout his *Principles of Political Economy* (first edition of 1848) he reverts to the Smithian approach, repeatedly crossing the line between science and art.⁶⁹ Mill is not a positivist for various reasons: He did not hold that political economy is value-free; science and values are not radically distinct; social science and political economy help to improve man’s condition.⁷⁰

As a science, political economy is an abstract science of prediction and control but it is not an exact science like the physical sciences; it “cannot be a science of positive predictions, but only of tendencies.”⁷¹ Mill did see some use for mathematics in social science, as demonstrated by his use of some equations in his *Principles*.⁷² But the usage of mathematics had to be within strict bounds.⁷³

Finally, Mill was the first to articulate the notion of an “economic man,” who is assumed in the science of political economy to be a wealth maximizer.⁷⁴ But the economic man is a deliberate simplification needed for the purpose of constructing a theory about human activity in the realm where the production of wealth is central. This construct is relevant “only with those parts of human conduct which have pecuniary advantage as their direct and principal object.”⁷⁵ The wealth maximization assumption is valid only within a certain domain.

Did Mill’s political economy serve a moral purpose? As we can see from the discussion above, the formal answer is no. But let us look at what Mill does in practice. At the beginning of a chapter on wages in the *Principles*, Mill indicates that his political economy is relevant to the question: “How is the evil of low wages to be remedied?”⁷⁶ There are policies that can be recommended to overcome this social “evil.” In Mill’s discussion of the stationary state (where the return on capital was so low that no net capital can be accumulated) that lie at the end of history for commercial society, he recommended a policy to improve

the outcome for the citizenry. While most economists had seen the stationary state as a dismal end because wages are driven down by population, Mill argued that this could be avoided by “a conscientious or prudential restraint on population.”⁷⁷ In an unsigned review, he went so far as to claim that “political economists, as a class” had discovered “the road to happiness” and have “produced a plan by which a large addition may almost immediately be made to human happiness.”⁷⁸ Mill does present us with a moral science of economics. Nevertheless, his moral science (especially given his formal methodology) is probably not as deep as Smith’s.

With the passing of Mill, classical economics came to a close. William Stanley Jevons (whose major contributions were made in the 1870s and early 1880s) was an important figure in the transition from classical political economy to modern economics. Jevons set out to overthrow, in a revolutionary fashion, the prevailing Millian economics.⁷⁹ Most of his criticism referred to the labor theory of value associated with “Ricardo-Mill economics,” but he also took a more dogmatic view than Mill on many methodological issues.⁸⁰

Jevons saw an extended analogy between economic science and the physical sciences. His was an attempt at a social physics: where the “physical sciences have their basis more or less obviously in the general principles of mechanics,” economics “must be pervaded by ... the tracing out of the mechanics of self-interest and utility.”⁸¹ A mechanical and mathematical approach to economics was the theme of his major work *The Theory of Political Economy* (first edition 1871). Methodologically, it was a step away from Mill toward that of Ricardo.⁸²

Jevons placed great stress on the statistical base and the improvement in the techniques of economists. The problems of economics could largely be overcome, he thought, because the lack of a “perfect system of statistics ... is the only ... obstacle in the way of making economics an *exact science*”; once the statistics have been gathered, the generalization of laws from them “will render economics a science as *exact as many of the physical sciences*.”⁸³ The other requirement was great usage of mathematics. While the classical economists used very little mathematics,⁸⁴ Jevons insisted that “Economics, if it is to be a science at all, must be a mathematical science” and helped to move the discipline in that direction.⁸⁵ Galbraith comments upon the quotation above: “From a mathematical science, moral values are obviously extruded.”⁸⁶ This oversimplifies matters, but there is some foundation to Galbraith’s claim. A moral science seems harder to achieve once the emphasis is upon mathematics, if only because technique comes to be the central focus.

It is hardly surprising that Jevons felt that the discipline of political economy ought to become the discipline of economics or economic science. In 1879 he

argued for this in the second edition of his *Theory*.⁸⁷ By itself, the name change helped to narrow the focus of the discipline, but its effect on the concern for morals was probably minimal. Two final points should be made about Jevons. First, he held a sharper fact/value distinction than Mill, Malthus, and Smith. Second, following Mill, he accepted the “Utilitarian theory of morals”; but Jevons employed his own version of it that amounted to a type of hedonism.⁸⁸

Marshall (whose major contributions were made from the mid-1880s until the mid-1920s) took over as the leading economist but he opposed Jevons in many areas. The former has been called the first of the neoclassical economists and many have said that he was a grand synthesizer.⁸⁹ Marshall is an interesting economist and his views on the nature of economics are complex, as we will show.

Marshall supported Jevons’s call for the adoption of a new name for the discipline. For him, economics is a “separate science” with pure and applied aspects, “[a]nd it is better described by the term ‘Economics’ than by the term ‘Political Economy.’”⁹⁰ It is not surprising that Marshall’s major contribution was called *Principles of Economics*, rather than *Principles of Political Economy* as the classical economists called their works. The name change for the discipline eventually followed and has come to be almost universally accepted.

For Marshall, the name change was part of a wider battle, namely, the independence of economics from the Moral Sciences Tripos and History Tripos (tripos are similar to what we would call majors) at his university, Cambridge. Like Jevons, he argued that economics was actually more like the natural sciences: It “aspires to a place in this group of the [physical] sciences.”⁹¹ In his Inaugural Address as a professor at Cambridge, in 1885, Marshall began this long fight for independence, arguing that “what is most wanted now” in economics is “the power of keeping the head cool and clear in tracing and analysing the combined action of many causes”; this power usually comes from “a severe course of work in the more advanced [natural] sciences.”⁹² He calls for the scientifically trained to enter economics directly but regrets that the suitable candidates would be dissuaded from doing so because of the “metaphysical studies” that they would be compelled to undertake in the Moral Tripos.⁹³ Eventually, in 1903, Marshall achieved his aim with “the establishment of a separate School and Tripos in Economics and associated branches of Political Science.”⁹⁴

The impression one gets from this is that Marshall was a dogged opponent of economics as a moral science. However, it turns out to be more complex. Let us start again by investigating why Marshall thought that economics needed more independence. What were the purposes or functions of economics? The functions of economics are: “to collect, arrange, and analyse economic facts,

and to apply the knowledge, gained by observation and experience, in determining what are likely to be the immediate and ultimate effects of various causes; and ... [following Mill] the Laws of Economics are statements expressed in the indicative mood, and not ethical precepts in the imperative mood."⁹⁵ Sometimes Marshall says that the economist may give advice on practical matters but by doing so "he does not speak with the voice of science."⁹⁶ In other words, Marshall's formal position, following Mill, was that economics is concerned with facts and not values, or policy. We will see shortly that this was not Marshall's position in practice.

Like Jevons, Marshall held that the "field of work" of economics "gives rather greater opportunities for exact methods than any other branch" of social science; "economics [is] more exact than any other branch of social science" and thus a "training in mathematics is helpful" for the economist.⁹⁷ Nevertheless, in "sciences that relate to man [such as economics] exactness is less attainable" than in the natural sciences.⁹⁸ Economics deals with "man as he is" and "concerns itself chiefly with those motives which affect, most powerfully and most steadily, man's conduct in the business part of his life."⁹⁹ In this realm the business motives can be measured "with some approach to accuracy; and which therefore are in some degree amenable to treatment by scientific machinery."¹⁰⁰

Despite his enthusiasm for the natural sciences, Marshall had significant reservations about the use of mathematics in economics and consequently relegated his diagrams and algebra to footnotes and appendices. In a letter to another economist, he described his method of doing economics as follows: "(1) Use mathematics as a shorthand language, rather than as an engine of inquiry. (2) Keep to them till you have done. (3) Translate into English. (4) Then illustrate by examples that are important to real life. (5) Burn the mathematics. (6) If you can't succeed in 4, burn 3. This last I did often."¹⁰¹ Marshall follows Mill both in the formal, narrow notion of the realm of "economic science," and in the restricted scope of mathematics in the discipline.

The final issue is whether, in practice, Marshall's economics served a moral purpose. The problem, as Marshall saw it, was that there was no sharp line between science and art.¹⁰² After defining what constitutes economic science, he then enunciates another list of "practical issues which, though lying for the greater part outside the range of economic science, yet supply a chief motive in the background to the work of the economist."¹⁰³ The list is impressive, including: "How should we act so as to increase the good and diminish the evil of economic freedom, both in its ultimate results and in the course of its progress? ... Taking for granted that a more equal distribution of wealth is to be desired, how far would this justify changes in the institutions of property, or limitations

of free enterprise even when they would be likely to diminish the aggregate of wealth?"¹⁰⁴

Marshall does deal with these normative themes along the way in his *Principles*; as well as economic science, policy or art is discussed in this work.¹⁰⁵ Not being a positivist, Marshall felt able to refer, in his *Principles*, to the "kindly meant recklessness of the poor law," which lowered "the moral and physical energy of Englishmen."¹⁰⁶ As Marshall's economics supported free markets, and the overthrow of these laws, it promoted the increase of "moral and physical energy." Finally, consider the moralizing of his Inaugural Address: "It will be my cherished ambition, my highest endeavour, to do what ... I may, to increase the number of those, whom Cambridge ... sends out into the world with cool heads but *warm hearts*, willing to give some at least of their best powers to *grappling with the social suffering around them*."¹⁰⁷

In short, there is a moral tone that comes through in Marshall.¹⁰⁸ My conclusion is that, for him, economics was a mathematical *and* moral science. This combination was, of course, ruled out by Galbraith. But in the hands of Marshall's followers the diagrams and mathematics soon moved from the notes to the text. In addition, as Marshall's moral tone was not an integral part of understanding the principles of neoclassical economics, his ethical concerns were dropped.

In this section I have shown that there were major disputes between economic theorists about the nature of the discipline. The battles between Malthus and Ricardo, Jevons and Mill, and Marshall and Jevons, confirm that the status of economics as a moral science was in flux. While there were shifts during the period, economics remained a moral science to some degree, at least until the present century.

The Decline After Marshall of Economics As a Moral Science

In this section I wish to make a few brief remarks on the decline of economics as a moral science. A full treatment cannot be given because of spatial limitations.

Toward the end of the last century, even with Marshall's missionary leadership, the mainstream of the discipline came under considerable criticism from humanists over the apparent lack of ethical concern in economics. According to Coats, the economics of the day was widely held to epitomize man's inhumanity to man, and "the demand for a more humanistic approach to economic and social problems, one that took full account of ethical considerations ... was a recurrent theme in the literature of the period."¹⁰⁹ The drift of economics away from a moral science was evident, and condemned, yet the impact of these

attacks was minimal. How did this drift manifest itself during the present century?

Let me begin with the fact/value distinction. The methodology of Mill and others, that defined what economic science does, was accepted more rigorously. Consequently, in practice, moral concerns were removed from economic texts. Positivism is a factor here. The positivistic methodological works of Robbins¹¹⁰ and Friedman¹¹¹ did influence the profession. Robbins's approach to positive economics defined interpersonal comparisons of satisfaction as subjective and thus outside of the realm of economic science; this had a negative effect not merely on welfare economics but on the nature of economics as a moral science.¹¹² Where Smith taught that, at least some, preferences could be investigated and classified within the catalogue of virtues, these days preferences are said to be "given"; it is not legitimate to inquire into how these preferences are formed; and interpersonal comparison of preferences is disallowed.¹¹³ Not much of the Smithian legacy remains here. While economists still tend to skip over methodological issues, the distinction between normative and positive issues is routinely mentioned in the first class period or two of introductory courses in economics. The impression is given that economics deals with facts and the means to the end given by others. Solow says that "between 1940 and 1990 ... economics became a self-consciously technical subject."¹¹⁴ Hence, economists are properly conceived of as technicians. As technicians, however, they were not very competent. There was a slippage from the assumption of utility maximization, to wealth maximization, and ultimately to the explicit adoption of "greed" as the operational microeconomic assumption.¹¹⁵ In addition, the radical Chicago economists tried to extend the economic model into the study of nontraditional areas (the very areas outlawed by Mill and others) such as the economics of crime, marriage, suicide, adoption, and so on.¹¹⁶

Second, there were significant changes in the role of mathematics in economics. The Jevonian view came to dominate. There has been a dramatic increase in the use of mathematics in economics; econometrics has emerged as an integral part of most Ph.D. dissertations in economics.¹¹⁷ The 1970 Nobel Prize winner, Ragnar Frisch, was one of those who took up the statistical task given by Jevons. Frisch stated that: "The English mathematician and economist Stanley Jevons (1835-1882) dreamed of the day when he would be able to quantify at least some of the laws and regularities of economics. Today—since the break-through of econometrics—this is not a dream but a reality."¹¹⁸ The claim of economics to be a mathematical (and natural) science is often associated with the development of econometrics. With regard to the capacity of economics "to make correct predictions," Friedman said that "positive economics is, or

can be, an 'objective' science, in precisely the same sense as any of the physical sciences."¹¹⁹ The balanced views of Mill and Marshall—on the role of mathematics, and the capacity for precise prediction, in economics—have been dropped. More important, a mathematical science of economics came to be seen as the logical *alternative* to a moral science of economics. Mathematics won the battle and has continued to win all of the skirmishes.

Third, the notion of economics serving a moral end has been ruled out by positivism. Positivism ruled out moral philosophy, including utilitarianism (which had been widely accepted in the discipline). The narrowing in the scope of the discipline was significant. This is evident in the curriculum of any economics department. New mathematically based sub-disciplines of information economics and game theory have emerged, and economic history and the history of economic thought have been forced out.¹²⁰ These curriculum developments reflect the changes in what is seen within the profession as "essential" training. The decline of history of economic thought as a part of graduate economics education is especially disturbing, as this is the one area where the notion of economics as a moral science is likely to be discussed. It is hardly surprising therefore that in modern neoclassical works one almost never sees morality mentioned. In the rare case that it is, in the context of a discussion of externalities,¹²¹ no defence of morality is provided; it is just one of several ways to "internalize externalities."¹²² Once all the moral concerns are stripped away, only rational calculation remains, which I indicated above is easily translated into "greed."

Finally, in reading the great economists one gains a sense of their "feel" for the discipline. This intangible notion comes out partly in their approach to mathematics. According to Keynes, Jevons's *Theory of Political Economy* was "simple, lucid, unfaltering, chiselled in stone where Marshall knits in wool."¹²³ A parallel can be drawn between Jevons's work and the uncompromising approach of Ricardo. The softer touch is a sort of prerequisite to the entry of ethical considerations. If one brings this dimension into the evaluation, it appears to me that economists these days are more like Jevons and Ricardo than the moral economists like Smith, Malthus, Mill, and Marshall.

In this section I have tried to show that during this century there was a further narrowing in the discipline (with the exception of the Chicago "imperialists"). There was also a strong methodological tendency toward positivism in the discipline. This continues to the present day. Mathematics came to be used arrogantly. Further, moral issues were put on the margin, or more usually, excluded altogether.

Conclusion

After the introductory remarks, I set out in the first section a brief history of economics before Adam Smith, showing that it was generally (with the exception of the mercantilists) conceived of as a part of moral philosophy. In the second section I presented elements of the new interpretation of Smith, which show the latter as a developer of economics as a moral science. In the third section of the paper I showed that even after Smith, up to the beginning of the present century, a number of leading economic theorists conceived of economics as a moral science, either in theory or in practice. In the fourth section I sketched the decline of economics as a moral science. The key factor was the emergence and influence of positivism. The current view of the detachment of economics from moral science and morals, in particular, is alien to much of the history of the discipline.

I agree with Amartya Sen, the surprising winner in 1998 of the Nobel Prize for Economics, who says that the nature of economics "has been substantially impoverished by the distance that has grown between economics and ethics."¹²⁴ Unlike the tradition since Marshall, Sen seems to think that economics can be a mathematical *and* a moral science. There is a case for the serious reconsideration of the way that economics is taught. It is to be hoped that journals such as the present one will forge some headway in making professionals seriously consider, once again, economics as a moral science.

Notes

* The author would like to thank Anthony Waterman, Alan Duhs, Rodney O'Donnell, Richard Kleer, and Athol Fitzgibbons for helpful suggestions with sources and Gary Buurman for comments on the text. The usual caveats apply.

¹ Kurt W. Rothschild, *Ethics and Economic Theory* (Aldershot, UK: Edward Elgar Publishing Company, 1993), 16.

² S. A. Drakopoulos, "Origins and Development of the Trend Towards Value-Free Economics," *Journal of the History of Economic Thought* 19, 2 (1997): 286.

³ See Jeffrey T. Young, *Economics As a Moral Science: The Political Economy of Adam Smith* (Cheltenham, UK: Edward Elgar Publishing Company, 1997), 4; John K. Galbraith, *A History of Economics* (London: Hamish Hamilton, 1987), 124.

⁴ David M. Kreps, "Economics: The Current Position," *Daedalus* 126, 1 (1997): 59. See also Anthony M. Yezer, Robert S. Goldfarb, and Paul J. Poppen, "Does Studying Economics Discourage Cooperation? Watch What We Do, Not What We Say or How We Play," *Journal of Economic Perspectives* 10, 1 (1996): 178.

⁵ In the study "'free riding' refers to the absence of contribution toward the provision of a public good by an individual, even though he or she will not be excluded from benefiting from that good. The free-rider hypothesis is based on the assertion that under such conditions it is irrational to voluntarily contribute." Gerald Marwell and Ruth Ames, "Economists Free Ride, Does Anyone Else?" *Journal of Public Economics* 15 (1981): 296.

⁶ *Ibid.*, 306.

⁷ Daniel M. Hausman and Michael S. McPherson, "Taking Ethics Seriously: Economics and Contemporary Moral Philosophy," *Journal of Economic Literature* 31 (1993): 674. See, also, Marwell and Ames, "Economists Free Ride, Does Anyone Else?" 309; Robert H. Frank, Thomas D. Gilovich, and Denise T. Regan, "Does Studying Economics Inhibit Cooperation?" *Journal of Economic Perspectives* 7, 2 (1993): 159.

⁸ Frank, Gilovich, and Regan, "Does Studying Economics Inhibit Cooperation?" 170.

⁹ *Ibid.*, 170–71. This article led to a response by Yezer, Goldfarb, and Poppen (see note 4) and a rejoinder by Frank, Gilovich, and Regan, "Do Economists Make Bad Citizens?" *Journal of Economic Perspectives* 10, 1 (1996): 187–92.

¹⁰ Odd Langholm, *Price and Value in the Aristotelian Tradition* (Berlin: Universitetsforlaget, 1979), 11–36.

¹¹ Barry Gordon, *Economic Analysis Before Adam Smith* (London: Macmillan Publishing Company, 1975), 157.

¹² *Ibid.*, 187–243. See also O. F. Hamouda and B. B. Price, "The Justice of the Just Price," *The European Journal of the History of Economic Thought* 42, 2 (1997): 191–216.

¹³ E. Ray Canterbury, *The Literate Economist* (New York: Harper Collins, 1995), 42.

¹⁴ See Ian S. Ross, *The Life of Adam Smith* (Oxford: Clarendon Press, 1995), 53.

¹⁵ Adam Smith, *An Inquiry Into the Nature and Causes of the Wealth of Nations*, ed. R. H. Campbell and A. S. Skinner (Oxford: Oxford University Press, 1976 [orig. pub. 1776]), Book IV. Hereafter referred to as *WN*.

¹⁶ The most famous summary of their views is given in Eli F. Heckscher, *Mercantilism*, 2nd ed., trans. Mendel Shapiro (London: George Allen & Unwin, 1955).

¹⁷ Galbraith, *A History of Economics*, 37.

¹⁸ Kenneth E. Boulding, *Economics As a Science* (New York: McGraw Hill, 1970), 117.

¹⁹ The closest to a quotation along these lines is Donald Winch, *Adam Smith's Politics* (Cambridge: Cambridge University Press, 1978), 187.

²⁰ See, for example, Milton Friedman and Rose Friedman, *Free to Choose* (Harmondsworth, UK: Penguin, 1980), 19.

²¹ Chapter 5 of I. H. Rima's *Development of Economic Analysis* (Homewood: Richard D. Irwin, 1972) is entitled "Adam Smith: From Moral Philosophy to Political Economy." See also George Stigler, *The Economist As Preacher* (Oxford: Basil Blackwell, 1982) and Athol Fitzgibbons, *Adam Smith's System of Liberty, Wealth, and Virtue* (Oxford: Clarendon Press, 1995), 7–8.

²² See Alan Duhs, "Five Dimensions of the Interdependence of Philosophy and Economics Integrating HET and the History of Political Philosophy," *International Journal of Social Economics* 25, 10 (1998): 1492–98.

²³ As quoted in R. L. Meek, D. D. Raphael, and P. G. Stein, "Introduction," in Adam Smith, *Lectures on Jurisprudence*, ed. R. L. Meek, D. D. Raphael, and P. G. Stein (Oxford: Oxford University Press, 1978), 3.

²⁴ On the other hand, Smith's *Wealth of Nations* may have had an "unintended and quite unplanned" effect of "establishing political economy as an independent subject." T. W. Hutchison, *On Revolutions and Progress in Economic Knowledge* (Cambridge: Cambridge University Press, 1978), 5–6.

²⁵ See James E. Alvey, "Adam Smith's View of Moral Education in Commerical Society," in *Proceedings of the Joint Conference of the Australasian Political Science Association and European Union Studies Association of New Zealand, Christchurch, New Zealand, September 28–30, 1998*, vol. 1, ed. Amber Bianchini, Jill Dolby, and Martin Holland (Christchurch: APSA/EUSANZ, 1998), 6–8.

²⁶ Adam Smith, *The Theory of Moral Sentiments*, ed. D. D. Raphael and A. L. Macfie (Oxford: Oxford University Press, 1976 [orig. pub. 1759]), VII.ii.3.15. Hereafter referred to as *TMS*.

²⁷ The higher version refers to statesmanship. See Smith, *TMS*, VI.i.15; Alvey, "Adam Smith's View of Moral Education in Commerical Society," 7.

²⁸ Smith, *TMS*, VI.i.3.

²⁹ *Ibid.*, VI.i.11.

³⁰ *Ibid.*, I.iii.3.5.

³¹ *Ibid.*, II.ii.1.9. See also II.ii.3.3–4.

³² *Ibid.*, I.i.5.5.

³³ Young, *Economics As a Moral Science*, 130. See also pages 154 and 164–65.

³⁴ The following assert that Smith's economics must be conceived within a moral framework: Duhs, "Five Dimensions of the Interdependence of Philosophy and Economics," 1497–98; Fitzgibbons, *Adam Smith's System of Liberty, Wealth, and Virtue*; and "The Moral Foundations of *The Wealth of Nations*," *International Journal of Social Economics* 24, 1/2/3 (1997): 91–104; and Young, *Economics As a Moral Science*.

³⁵ Smith, WN, Intro.4; I.viii.36; I.viii.42–4. Young, *Economics As a Moral Science*, 164–65. James E. Alvey, "Adam Smith's Moral Justification for Free Enterprise: Economic Growth," *Asian Economics* 67 (1988): 5–28.

³⁶ Fitzgibbons, "The Moral Foundations of *The Wealth of Nations*," 98.

³⁷ Smith, WN, IV. Adam Smith, *The Correspondence of Adam Smith*, 2nd ed., ed. Ernest C. Mossner and Ian S. Ross (Oxford: Oxford University Press, 1987), 251. Hereafter referred to as *Corr.*

³⁸ Smith, WN, IV.ix.51. Emphasis added.

³⁹ Richard Temple-Smith, "Moral Foundations of a Nation's Wealth: Adam Smith in the Classroom," Fifth Annual Teaching Economics Conference, July 3–4, 1997, Toowoomba, Australia. See also Fitzgibbons, *Adam Smith's System of Liberty, Wealth, and Virtue*, 187.

⁴⁰ Smith, WN, II.Intro.3 and II.ii.37. See also Fitzgibbons, *Adam Smith's System of Liberty, Wealth, and Virtue*, 145.

⁴¹ Young, *Economics As a Moral Science*, 45, 166–67.

⁴² James E. Alvey, "Adam Smith's Three Strikes Against Commercial Society," *International Journal of Social Economics* 25, 9 (1998): 1433–37.

⁴³ Young, *Economics As a Moral Science*, 5.

⁴⁴ *Ibid.*, throughout. Unlike "the perspective of modern positivism which still dominates the methodological views of mainstream economics," in Young's interpretation, Smith's economics "precluded neither normative inquiry nor normative conclusions." *Ibid.*, 8.

⁴⁵ John Maynard Keynes, *The Collected Writings of John Maynard Keynes*, 30 vols., ed. D. E. Moggridge and E. Johnson (London: Macmillan Publishing Company, 1973–1989), vol. 10, 181, note 2; vol. 10, 262.

⁴⁶ David Ricardo, *The Works and Correspondence of David Ricardo*, 11 vols., ed. Piero Sraffa and M. H. Dobb (Cambridge: Cambridge University Press, 1951–1973), vol. 2, 338.

⁴⁷ *Ibid.*, vol. 8, 184. Thomas Sowell, *Classical Economics Reconsidered* (Princeton: Princeton University Press, 1974), 120, 145–46.

⁴⁸ Ricardo, *The Works and Correspondence of David Ricardo*, vol. 1, 5; see also vol. 8, 278.

⁴⁹ *Ibid.*, vol. 8, 331. Strangely, Ricardo directly applied conclusions from his abstract models to policy advice. See Sowell, *Classical Economics Reconsidered*, 122.

⁵⁰ Hutchinson, *On Revolutions and Progress in Economic Knowledge*, chap. 2.

⁵¹ But compare Ricardo, *The Works and Correspondence of David Ricardo*, vol. 3, 120–23. Samuel Hollander, *The Economics of David Ricardo* (Toronto: University of Toronto Press, 1979), 484–87.

⁵² Letter to Ricardo, in *The Works and Correspondence of David Ricardo*, vol. 7, 122.

⁵³ Letter to Ricardo, *ibid.*, vol. 8, 286.

⁵⁴ Thomas R. Malthus, *The Works of Thomas Robert Malthus*, 8 vols., ed. E. A. Wrigley and David Souden (London: Pickering and Chatto, 1986), vol. 5, 5; see also vol. 6, 345.

⁵⁵ *Ibid.*, vol. 8, 5. Emphasis added. Malthus did allow some limited role for mathematics in political economy. See Samuel Hollander, *The Economics of Thomas Robert Malthus* (Toronto: University of Toronto Press, 1997), 985–86.

⁵⁶ Hollander, *The Economics of Thomas Robert Malthus*, 358–59. Donald Winch, *Riches and Poverty* (Cambridge: Cambridge University Press, 1996), 266.

⁵⁷ Malthus, *The Works of Thomas Robert Malthus*, vol. 1, 38, 41; see also vol. 1, 66–67; vol. 3, 442–43.

⁵⁸ *Ibid.*, vol. 3, 430–31; see 396. Winch says that Malthus feared that economic growth could be "purchased at too high a price in terms of national security, unhealthiness, instability, vice, and

misery. This lay at the heart of the moral dimension Malthus sought to add to political economy.” *Riches and Poverty*, 267.

⁵⁹ Ricardo, *The Works and Correspondence of David Ricardo*, vol. 2, 338. See Winch, *Riches and Poverty*, 336.

⁶⁰ See Deborah Redman, *The Rise of Political Economy As a Science* (Cambridge, Mass.: The MIT Press, 1997), 300–01.

⁶¹ Keynes, *The Collected Writings of John Maynard Keynes*, vol. 10, 86; see also Athol Fitzgibbons, *Keynes's Vision* (Oxford: Clarendon Press, 1988), 135–36.

⁶² Winch, *Riches and Poverty*, 6, note; see also 23, 287. A. M. C. Waterman, “Reappraisal of ‘Malthus the Economist’, 1933–1997,” *History of Political Economy* 30, 2 (1998): 295–96, 312.

⁶³ Alfred Marshall, *Principles of Economics*, 8th ed. (London: Macmillan Publishing Company, 1920 [orig. pub. 1890]), 637, note 1.

⁶⁴ John Stuart Mill, *Collected Works of John Stuart Mill*, 33 vols., ed. J. M. Robson (Toronto: University of Toronto Press, 1981–1991), vol. 8, 833.

⁶⁵ *Ibid.*, vol. 8, 943; see also vol. 4, 312.

⁶⁶ *Ibid.*, vol. 8, 951.

⁶⁷ *Ibid.*, vol. 4, 316–19. See Redman, *The Rise of Political Economy As a Science*, 357.

⁶⁸ *Ibid.*, vol. 4, 331. In a different context Alfred Marshall approvingly quotes a similar statement by Mill. Marshall, *Principles of Economics*, 636; see Mill, *Collected Works of John Stuart Mill*, vol. 10, 306; and vol. 13, 453.

⁶⁹ See *Ibid.*, vol. 8, 950. A. W. Coats, “Utilitarianism, Oxford Idealism and Cambridge Economics,” in *Economics and Ethics?*, ed. Peter Groenewegen (London: Routledge, 1996), 84.

⁷⁰ See Redman, *The Rise of Political Economy As a Science*, 349.

⁷¹ Mill, *Collected Works of John Stuart Mill*, vol. 4, 322; vol. 8, 898. See Redman, *The Rise of Political Economy As a Science*, 334–39.

⁷² Mill, *Collected Works of John Stuart Mill*, vol. 3, 610–12; see also vol. 10, 308–9.

⁷³ *Ibid.*, vol. 7, 620–21; vol. 8, 707–10; vol. 12, 36; vol. 17, 1862. Samuel Hollander, *The Economics of John Stuart Mill*, vol. 2 (Toronto: University of Toronto Press, 1985), 936–44.

⁷⁴ Mill, *Collected Works of John Stuart Mill*, vol. 4, 321–26.

⁷⁵ *Ibid.*, vol. 4, 327; see also 322–27.

⁷⁶ *Ibid.*, vol. 2, 367.

⁷⁷ *Ibid.*, vol. 3, 753.

⁷⁸ *Ibid.*, vol. 5, 758–59.

⁷⁹ William Stanley Jevons, *The Theory of Political Economy*, ed. R. D. C. Black (London: Penguin, 1970 [orig. pub. 1871]), 260.

⁸⁰ *Ibid.*, 71.

⁸¹ *Ibid.*, 50.

⁸² See Margaret Schabas, *A World Ruled by Number* (Princeton: Princeton University Press, 1990), 138.

⁸³ Jevons, *The Theory of Political Economy*, 84, 175. Emphasis added.

⁸⁴ Smith “saw no purpose for [mathematics] in his system.” Redman, *The Rise of Political Economy As a Science*, 217.

⁸⁵ Jevons, *The Theory of Political Economy*, 78.

⁸⁶ Galbraith, *A History of Economics*, 125.

⁸⁷ Jevons, *The Theory of Political Economy*, 48.

⁸⁸ *Ibid.*, 91. James E. Alvey, “Stanley Jevons: A Centennial Assessment,” in *William Stanley Jevons: Critical Assessments*, 3 vols., ed. J. C. Wood (London: Routledge, 1988), vol. 1, 357.

⁸⁹ See James E. Alvey and Richard Staveley, “The Value Assumptions Underlying Marshall’s *Principles of Economics*,” in *Alfred Marshall: Critical Assessments*, 8 vols., ed. J. C. Wood (London: Routledge, 1996), vol. 8, 356.

⁹⁰ Marshall, *Principles of Economics*, 32, 36.

⁹¹ *Ibid.*, 25.

⁹² Alfred Marshall, “The Present Position of Economics,” in *Memorials of Alfred Marshall*, ed. A. C.

Pigou (London: Macmillan Publishing Company, 1925), 171. See Keynes, *The Collected Writings of John Maynard Keynes*, vol. 10, 220–23.

⁹³ Marshall, “The Present Position of Economics,” 171. Jevons entered economics after working as a chemist. See Alvey, “Stanley Jevons: A Centennial Assessment,” 351–55; Keynes, *The Collected Writings of John Maynard Keynes*, vol. 10, 119.

⁹⁴ Keynes, *The Collected Writings of John Maynard Keynes*, vol. 10, 222. These days, economics departments are usually found in business schools rather than in humanities schools.

⁹⁵ Marshall, *Principles of Economics*, v.

⁹⁶ Marshall, “The Present Position of Economics,” 165. See also Alfred Marshall, *Principles of Economics*, 9th ed., ed. C. W. Guillebaud (London: Macmillan Publishing Company, 1961 [orig. pub. 1890]), 154.

⁹⁷ Marshall, *Principles of Economics* (8th ed.), 12, 644. See Richard Staveley and James E. Alvey, “The Philosophical Assumptions Underlying Marshall’s Economics,” in *Alfred Marshall: Critical Assessments*, 8 vols., ed. J. C. Wood (London: Routledge, 1996), vol. 8, 375.

⁹⁸ Marshall, *Principles of Economics* (8th ed.), 36.

⁹⁹ *Ibid.*, 22, 12.

¹⁰⁰ *Ibid.*, 12–13.

¹⁰¹ Alfred Marshall, Correspondence with Professor A. L. Bowley, in *Memorials of Alfred Marshall*, ed. A. C. Pigou (London: Macmillan Publishing Company, 1925), 427; see also pages 419–21, 427–29. His major reservations, however, concerned purely abstract work that was not applicable to the real world.

¹⁰² Marshall, *Principles of Economics* (8th ed.), 31, note 1; see also *Principles of Economics* (9th ed.), vol. 2, 153–54.

¹⁰³ Marshall, *Principles of Economics* (8th ed.), 34.

¹⁰⁴ *Ibid.*

¹⁰⁵ *Ibid.*, 660–61.

¹⁰⁶ *Ibid.*, 9; see also 594–95.

¹⁰⁷ Marshall, “The Present Position of Economics,” 174. Emphasis added. Samuelson and Nordhaus suggest that the “cool head” is linked to the “positive economic analysis” and the “warm heart” to the “normative value judgments.” Paul A. Samuelson and William D. Nordhaus, *Microeconomics*, 16th ed. (Boston: Irwin McGraw-Hill, 1998), 16, note.

¹⁰⁸ See Keynes, *The Collected Writings of John Maynard Keynes*, vol. 10, 200–201.

¹⁰⁹ Coats, “Utilitarianism, Oxford Idealism and Cambridge Economics,” 80. See also Marshall, *Principles of Economics* (8th ed.), 39.

¹¹⁰ Lionel Robbins, *The Nature and Significance of Economic Science* (London: Macmillan Publishing Company, 1936 [orig. pub. 1932]).

¹¹¹ Milton Friedman, *Essays in Positive Economics* (Chicago: University of Chicago Press, 1953).

¹¹² See Robbins, *The Nature and Significance of Economic Science*; and J. B. Davis, “Keynes’s View of Economics As a Moral Science,” in *Keynes and Philosophy*, ed. Bradley W. Bateman and John B. Davis (Aldershot, UK: Edward Elgar Publishing Company, 1991), 100–102.

¹¹³ Boulding, *Economics As a Science*, 119.

¹¹⁴ Robert M. Solow, “How Did Economics Get That Way and What Way Did It Get?” *Daedalus* 126, 1 (1997): 42.

¹¹⁵ Kreps, “Economics: The Current Position,” 59.

¹¹⁶ See Duhs, “Five Dimensions of the Interdependence of Philosophy and Economics.”

¹¹⁷ Solow, “How Did Economics Get That Way and What Way Did It Get?” 40–47.

¹¹⁸ Ragnar Frisch, “From Utopian Theory to Practical Applications: The Case of Econometrics,” *American Economic Review* 71, 6 (1981): 2–3. This was originally delivered as the 1970 Nobel Prize lecture.

¹¹⁹ Friedman, *Essays in Positive Economics*, 4.

¹²⁰ William J. Barber, “Reconfigurations in American Academic Economics: A General Practitioner’s Perspective,” *Daedalus* 126, 1 (1997): 93–94, 101. See also Kreps, “Economics: The Current Position,” 68–69.

¹²¹ Externalities refer to the discrepancies that can occur between social cost and private cost, and between private value and social value.

¹²² Gregory N. Mankiw, *Principles of Microeconomics* (Fort Worth: Dryden Press, 1998), 207.

¹²³ Keynes, *The Collected Writings of John Maynard Keynes*, vol. 10, 131.

¹²⁴ Amartya Sen, *On Ethics and Economics* (Oxford: Basil Blackwell, 1987), 7.