

Thomas Schelling

Dissent is a synonym for disagreement. Kenneth Boulding's (1957) distinction between dissent from the orthodoxy of economic thought and dissent from the economic institutions themselves provides a useful initial categorization of disagreement in the field of economics: a dissenter disagrees with the mainstream (whatever that is) of academic economic ideas, customs, or methodology or a dissenter disagrees with his country's economic system.

Dissent from the economic institutions of a society can be based on moral grounds for many of those who strongly disagree with the way in which an economic system operates do so for profoundly ethical reasons. Socialists see our capitalist system as exploitative of the working class and unfair to women and minorities. They complain that unfettered capitalism degrades our values, environment and society. Such moral dissent is not based on the practical consideration that a socialist economy would function better than a capitalist economy. Rather, the objection is entirely philosophical. Capitalism exploits workers, never mind that the living standards of the working class were higher in capitalist countries than in economies professing to be based on socialist principles.

There can also be dissent from an economic system on purely intellectual grounds. This type of dissent is made for

practical, utilitarian reasons and lacks the overtly political content of moral dissent. Libertarians believe that our economy is insufficiently laissez-faire; there is far too much government interference with the beneficial, natural workings of the market. Such governmental interference is undesirable because it produces suboptimal results. The libertarian dissent from central banking, for example, is largely based on the premise that the U.S. banking system during the free banking era was, contrary to popular wisdom, actually quite stable, and certainly, the economy was less inflation-prone than it has been under the Federal Reserve System (Rockoff 1975; Rolnick and Weber 1983; Selgin and White 1994).

The distinction between moral and intellectual dissent is not sharp. Leftists would undoubtedly claim that a truly socialist economy, besides being morally superior, would perform better than a capitalist one while the libertarian dissent against central banking is conditioned by their philosophical distrust of government. In the end, the classification of heterodox thinking as intellectual dissent or moral dissent is a matter of the writer's rhetorical emphasis.

[Figure 1 about here]

The focus of this volume is on dissent from mainstream academic economics. Here, too, an intellectual/moral division is operative. Moral dissent is based on a philosophical or

political rejection of mainstream economics. Marxists, as an example, see neoclassical economics as justifying a morally objectionable economic system (Green 1977). Intellectual dissent lacks this political content. Instead, the appeal, once again, is to its practical or utilitarian advantages. Robert Fogel (1964; Fogel and Engerman 1974), with his explicit use of economic methods to study historical questions, engaged in intellectual dissent from the traditional methods of economic history. Writing about his methodology, which wed neoclassical economics and econometrics to pose counterfactual questions, Fogel (1964 pp. vii-viii) argues that 'while most historians will agree that the subject matter . . . is drawn from their domain, some will reject the methodology as alien to the spirit and purpose of their discipline. But if history is to attempt to reveal what actually happened in the past, then the methodology . . . cannot be dismissed.'

One form of intellectual dissent from mainstream academic economics is over the appropriate models and assumptions or, to crib from John Neville Keynes, over method, 'the logical processes specially appropriate to the study - that is, the methods of investigation and proof' (Keynes 1955 p. 2). Those who dissent from the method of mainstream economics believe that the kind of economics that is taught in our universities and colleges provides inadequate tools for understanding economic

reality. The Keynesian Revolution was a revolution in method. Keynes (1973 p. 3) argued that

the postulates of the classical theory are applicable to a special case only and not to the general case. . . . Moreover, the characteristics of the special case assumed by the classical theory happen not to be those of the economic society in which we actually live, with the result that its teaching is misleading and disastrous if we attempt to apply it to the facts of experience.

So too with rational expectations: Lucas and Sargent (1978 pp. 49-50) claim that the predictions of Keynesian economics

were wildly incorrect, and that the doctrine on which they were based is fundamentally flawed. . . . The task which faces contemporary students of the business cycle is that of sorting through the wreckage, determining which features of that remarkable intellectual event called the Keynesian

Revolution can be salvaged and put to good use, and which others must be discarded.

Dissent from the methods of mainstream economic analysis can also be based on moral or essentially philosophical grounds. The Austrian tradition as represented by Hayek (1952) has been critical of the mechanical application of the principles of the natural sciences to the social sciences. The scientific method (formulate and test a hypothesis which is then either rejected or not rejected) is valid only if facts can be verified objectively and externally from human perception. Social scientists, including economists, are concerned with people's perceptions of facts which, by necessity, are subjective. There are no objective facts in the realm of the social sciences. Thus, the application of the scientific method to economics is invalid and amounts to scientism.

Moral dissent from mainstream methods often has an implicit if not explicit political basis. One of the reasons for the rapid acceptance of the marginal utility theory of value by the economic mainstream was its political appeal.

It was the rise of Marxism and Fabianism in the 1880's and 1890's that finally made subjective value theory socially and

politically relevant; as the new economics began to furnish effective intellectual ammunition against Marx and Henry George, the view that value theory really did not matter became more difficult to sustain (Blaug 1973 p. 13).

It should be emphasized that dissent from mainstream academic economics need not be accompanied by dissent against capitalist economic institutions. Beginning with Veblen (1919), the Institutionalist literature reads as nothing more than a series of complaints about neoclassical economics, yet Institutionalist economists do not practice dissent from capitalism.

There is a second form of intellectual dissent from mainstream economics. This consists of those economists who may or may not accept the methods of mainstream economic analysis but are concerned with questions not traditionally studied by mainstream economists. This concern with unorthodox subject matter is dissent over the scope of economics. Scope refers to 'the distinguishing features of the phenomena with which it deals, and the kind of knowledge that it seeks concerning these phenomena' (Keynes 1955 p. 2). Such diverse economists as Gary Becker (1957; 1964; 1976; 1981), with his application of

microeconomic reasoning to discrimination, crime and the family and Mancur Olson (1965; 1982), with his rational choice examination of interest group formation and its effects, can be classified as practicing intellectual dissent from the scope of economics.¹ It is important to emphasize that those who dissent from the scope of mainstream economics do not necessarily disagree with its methodology and conclusions. This type of dissent is strictly over subject matter.

Dissent over the scope of economics can also be morally based. Marxists are concerned with topics generally ignored by the mainstream such as the workplace, the economics of education, sexism, racism, and military expansion. They 'seek to illuminate the relationships between capitalist institutions and the various forms of oppression' (Edwards, Reich, and Weisskopf 1978 p. xii). The use of the word "oppression" betrays the moral foundation and political agenda of this dissent.

At first blush, it would appear that Thomas Schelling is included in a volume on dissenting economists solely because of the stunning scope of his research. In general terms, he has made pathbreaking contributions to the theory of bargaining and conflict management and to the theory of interdependent choice and behavior. Specifically, he has done research on nuclear strategy and arms control (Schelling 1960c; 1966; Schelling and Halperin 1961), organized crime and extortion (Schelling 1967;

1984g), addiction and self-control (Schelling 1980; 1992a), racial segregation (Schelling 1971a; 1972), global warming (Schelling 1990b; 1992b), energy policy (Schelling 1979), environmental protection (Schelling 1983), foreign aid (Schelling 1955), the value of human life (Schelling 1968) and this is only a partial list. Schelling's uniqueness is evident in the fact that he has published in journals as disparate as the American Economic Review, the Bulletin of the Atomic Scientists, the American Journal of Public Health and Space Times.

Upon closer examination, there is also a methodological element to Schelling's dissent. While his dissent from mainstream neoclassical economics is not over the adequacy of its tools for understanding economic reality, Schelling does aim to reorient consumer demand theory and game theory to be more cognizant of the actual behavior of agents in the real world.

The dual nature of Schelling's dissent can be experienced by closely examining his trio of articles on self-command (Schelling 1980; 1984b; 1984d) for they contain all the essential characteristics: unorthodox subject matter, a subtle probing of the deficiencies of mainstream economic theory and an attempt to remedy them, some memorable illustrations and an eye towards practical, real world applications of theoretical analysis. This line of research developed out of his studies of how people try to influence the behavior of others as he came to see that it was

similar to how they try to influence their own (Iglehart 1990 p. 110). Schelling calls on economists to recognize that opting to constrain one's future choices can be a rational choice. He draws our attention to the problem by describing the dilemma of the pregnant woman who requests that anesthesia be withheld during delivery, pleads for it during delivery and denies it again at the next delivery. And, when Schelling was young, he decided to emulate Admiral Byrd and toughen himself by removing one blanket from his bed.

That decision to go to bed one blanket short was made by a warm boy; another boy awoke cold in the night, too cold to go look for a blanket, cursing the boy who removed the blanket and swearing to return it tomorrow. But the next bedtime it was the warm boy again, dreaming of Antarctica, who got to make the decision, and he always did it again (Schelling 1984d p. 8).

Everyday examples of tricks people play on themselves to make them do things they ought to or to prevent themselves from doing things they should not include placing the alarm clock across the room, Christmas saving clubs and counting to ten when

angry. These examples demonstrate that there may be utility gains from denying freedom of choice and ignoring revealed preferences. A person may act to restrict her options in violation of what she knows will be her preference at the time the behavior is to take place in order to dictate her own later behavior. This phenomenon of attempting to exercise control over one's own future behavior by frustrating one's future preferences Schelling labels anticipatory self-command.

Schelling (1984d p. 5) asserts that

this phenomenon of rational strategic interaction among alternating preferences is a significant part of most people's decisions and welfare and cannot be left out of our account of the consumer. We ignore too many important purposive behaviors if we insist on treating the consumer as having only values and preferences that are uniform over time, even short periods of time.

This emphasis on the significance of self-control and changing preferences is an attempt to expand the horizons of consumer theory beyond the narrow view represented by Stigler and Becker (1977). Schelling (1980 p. 98) writes that 'we should not

be surprised that people act as if they were not quite singular individuals with unique identities and values and memories and sensory perceptions that display smooth continuity over time.' He links the problem of self-command to a struggle between an individual's two selves who differ fundamentally over a particular issue for which there is no way to determine which behavior maximizes their collective utility. He suggests that the art of self-control be recognized as part of economics (Schelling 1980 p. 100). Schelling (1984b p. 93) makes this dissatisfaction with textbook consumer theory explicit:

I suggest that the ordinary human being is sometimes . . . not a single rational individual. Some of us, for some decisions, are more like a small collectivity than like the textbook consumer. . . . If we accept the idea of two selves of which usually only one is in charge at a time . . . 'rational choice' has to be replaced with something like collective choice.²

An appropriate model of consumer behavior would be capable of handling instances of anticipatory self-command. Schelling (1984d) describes some strategies with which the different selves

compete for command, for example, relinquishing authority to someone else, arranging rewards and penalties, committing or contracting, or employing a buddy system. Throughout this series of papers, Schelling does not belittle the value of neoclassical demand theory. His purposes are to call attention to a common behavior it ignores and to appeal to economists to build that behavior into their models, thereby exhibiting dissent over both the scope and method of mainstream consumer theory.

Schelling (1984b) also explores the ethical and social policy implications of the exercise of self-command. 'If somebody now wants our help later in constraining his later behavior against his own wishes at that time, how do we decide which side we are on?' (Schelling 1984b p. 87). In the original movie version of Moby Dick, there was a scene in which Ahab, immediately after losing his leg, begs not to be burned by a blacksmith holding a hot iron to cauterize the stump. Despite his loudly expressed wishes, crewmen hold Ahab down as the iron is applied. The next scene shows Ahab happy to be alive, and there is no sign that any disciplinary action was taken against the blacksmith or the crewmen.

Which Ahab do we help? Do we aid the Ahab being tortured by the hot iron or do we help the Ahab who'll contract gangrene and die from an uncauterized wound? Is his life worth the pain? Economic theory provides no basis for us to choose, and nearly

all of us lack the personal experience to imagine ourselves in Ahab's place. Such a concern with ethics is unusual for an economist and is another example of Schelling's dissent from the scope of economics.³

One behavior over which an individual's selves come into conflict is the use of addictive drugs. Nicotine is one of the most addictive substances, and Schelling has done a variety of research into cigarette smoking. He notes that cigarettes and nicotine have characteristics distinct among addictive drugs (Schelling 1992a). They are cheap, quickly available, portable and storable. There is no impairment of any faculty and no danger of overdose and the damage is slow in arriving. It used to be appropriate to smoke anywhere. Polls indicate that a majority of smokers would elect to deny themselves the possibility of smoking another cigarette. Yet, the addictive qualities of nicotine and some of the characteristics of cigarettes explain why the smoking self prevails and efforts to quit often fail. The self which would like to stop smoking manifests itself, though, whenever a smoker wears a nicotine patch, makes a public vow to quit, or supports a smoking ban.⁴

This is the essence of Schelling's dissent: he poses new questions and examines unexplored areas in a way that combines dissent over scope and dissent over method. His methodological dissent consists of broadening the scope of mainstream theory to

encompass real world behaviors either by incorporating these behaviors into existing models or by utilizing different modes of analysis. By far his most influential work has been the application of game theoretic analysis to international relations. The Strategy of Conflict (Schelling 1960c) uses game theory to analyze bargaining between states, focusing on the exploitation of potential force instead of its actual use. Schelling emphasizes that the same general principles can be used to study any conflict situation in which there are some outcomes that are worse for both sides and the ability of one party to achieve his objectives is dependent on the decisions made by the other party such as maneuvering in traffic, designing an agenda for a meeting or disciplining children.

Schelling reaches the startling conclusion that 'in bargaining, weakness is often strength, freedom may be freedom to capitulate, and to burn bridges behind one may suffice to undo an opponent' (Schelling 1960c p. 22). It can be an advantage to have bound oneself to a particular negotiating position. A bargain is reached when one side believes that the other will not make any further concessions; one side concedes because he thinks the other will not. Bargaining strength rests in convincing your adversary that you will not concede any further. Schelling describes three tactics for binding oneself to a position from

which retreat is impossible: an irrevocable commitment, the threat and the promise.

An irrevocable commitment demonstrates a party's reservation price. Suppose one wishes to persuade someone that he will not pay more than \$16 000 for a house with a \$20 000 asking price. 'If both men live in a culture where "cross my heart" is universally accepted as potent, all the buyer has to do is allege that he will pay no more than \$16,000, using this invocation of penalty and he wins' (Schelling 1960c p. 24), unless the seller beats him to it by saying "\$19 000 is as low as I'll go, cross my heart".

A threat of mutual harm can be used to proclaim one's own reservation price to the other party. For example, one oligopolist can threaten to cut his price if his competitor does. Like an irrevocable commitment to a bargaining position, the threat to carry out a promise of mutual harm needs to be persuasively communicated to the other party in order to have value as a bargaining tactic. It can be useful then for the threat to be carried out in steps, with each step more severe than the previous, in order to convince the other party of its credibility.

Whenever an agreement leaves any incentive to cheat, a convincing and self-binding promise can make the agreement enforceable. Consider a kidnapper who would like to release his

victim if he can be assured that the victim will not turn him in. 'If the victim has committed an act whose disclosure could lead to blackmail, he may confess it; if not, he might commit one in the presence of his captor, to create the bond that will ensure his silence' (Schelling 1960c p. 44).

Wage bargaining, tariff negotiations, cartels, international treaties, out-of-court settlements, a real estate agent and her customer are all obvious face-to-face bargaining situations. However, the set of bargaining games is far richer than these examples of explicit bargaining. Schelling is also concerned with tacit bargaining in which communication is incomplete or impossible:

You are to meet somebody in New York City.
You have not been instructed where to meet;
you have no prior understanding with the
person on where to meet; and you cannot
communicate with each other. You are simply
told that you will have to guess where to
meet and that he is being told the same thing
and that you will just have to try to make
your guesses coincide (Schelling 1960c p.
56).

The absence of face-to-face communication does not mean, however, that a mutually beneficial agreement cannot be reached. The same principle that generates a stable outcome in explicit bargaining is at work in tacit bargaining situations. Both require a convergence of the participants' expectations on the point from which each expects the other not to concede. An irrevocable commitment provides such a focal point in explicit bargaining. In tacit bargaining, outcomes that enjoy prominence, uniqueness, precedent or some rationale that makes them qualitatively different from other possible outcomes can bring expectations into convergence. Thus, a majority of Schelling's sample chose to meet at the information booth in Grand Central Station.

His analysis of the importance of focal points for the coordination of expectations leads Schelling (1960c p. 162) to argue that, contrary to the methodological fashion then and now, 'the mathematical structure of the payoff function should not be permitted to dominate the analysis' of bargaining games and that 'though it may difficult to derive scientific generalizations about what it is that serves [the] need for coordination, we have to recognize that the kinds of things that determine the outcome are what a highly abstract analysis may treat as irrelevant detail.' Calling for more empirical study of mixed-motive bargaining games he writes, 'one cannot, without, empirical

evidence, deduce what understandings can be perceived in a nonzero-sum game of maneuver any more than one can prove, by purely formal deduction, that a particular joke is bound to be funny' (Schelling 1960c p. 164).

Schelling (1960c) aims to reorient game theory away from a simple classification of games into zero-sum and nonzero-sum by recognizing that nonzero-sum games can be either pure coordination games such as trying to meet someone somewhere in New York in which any agreement is preferred by both parties to a bargaining failure or mixed-motive bargaining games in which the parties have opposed interests but where there are particular outcomes that are worse for both of them. By ignoring this distinction and then abstracting away from communication and enforcement mechanisms, Schelling (1960c p. 119) charges, formal game theory has 'defined away some of the essential ingredients of typical nonzero-sum games.' It has nothing to contribute to such questions as what determines an efficacious threat or how do pedestrians crossing the street intimidate automobile drivers. Widening the scope of game theory to address such questions requires a change in method that recognizes a wider scope in the form of cooperative and mixed motive games and communication and enforcement mechanisms.

Schelling (1960c pp. 121-161) also identifies several strategic moves designed to influence 'the other person's choice

in a manner favorable to one's self, by affecting the other person's expectations on how one's self will behave' (Schelling 1960c, p. 160) that have been neglected by formal game theory and integrates them into a game theoretic framework. These include commitments, threats, promises and relinquishing the initiative so that the outcome depends solely on the other party's choice. If you've set it up properly, the other party's optimal choice is also the optimum for one's self.

The principle policy concern of The Strategy of Conflict and several subsequent publications is the USA/USSR conflict. It is far easier to destroy than to create. 'A house that takes several man-years to build can be burned in an hour by any young delinquent who has the price of a box of matches' (Schelling 1966 p. v). The power to hurt is bargaining power; to exploit that power is diplomacy. In bargaining, there must be some common interest even if it is only the avoidance of mutual harm. Given that both the United States and the Soviet Union had an interest in avoiding nuclear war because even the winner would suffer dreadful destruction, the threat of violence could be used to coerce or deter Soviet behavior. Nuclear weapons increased the potential costs of following through on a threat so the U.S. needed to persuasively commit itself to its deterrent threats. Part of making a credible commitment to a threat is 'a matter of resolve, impetuosity, plain obstinacy, or . . . sheer character.

. . . But it is hard to make it believed.' (Schelling 1966 pp. 42-43).⁵

Deterrence depends on our adversary's expectation that we will do what we threaten to do. Expectations of future behavior are dependent on past behavior. If previous threats were not carried out, there is no reason for an adversary to believe that the present threat will be either. Schelling's (1966 p. 56) California principle states that there is no way to let the Soviets take California and make them believe nevertheless that they cannot have the rest of the country. National boundaries have an all-or-nothing distinction. The effectiveness of deterrence outside of national boundaries hinges on attaching to other areas the status of a California, so American troops and their families are stationed in Germany to give Germany the status of California in the eyes of the Russians.

'Accidents do not cause war. Decisions cause war' (Schelling 1960b p. 293). A war that neither side really wants, an unpremeditated war, could occur if one side believes that the other is about to launch a surprise attack.⁶ As surprise carries an enormous advantage, it is beneficial to preclude it by striking first yourself. The significance of a surprise attack lies in the possible vulnerability of retaliatory forces. 'Thus schemes to avert surprise attack have as their most immediate objective the safety of weapons rather than the safety of people'

(Schelling 1960c p. 233). Deterrence against a surprise attack requires a credible second strike capability.

With that as the theoretical background, Schelling and Morton Halperin (1961) produced the classic study of arms control. Arms control is possible where there is a 'mutual interest in the avoidance of a war that neither side wants, in minimizing the costs and risks of the arms competition, and in curtailing the scope and violence of war in the event it occurs' (Schelling and Halperin 1961 p. 1). As weapon developments have continually enhanced the advantage of striking first, the best nuclear configuration is a second-strike destructive potential on both sides or, which is the same thing, the absence of a first-strike capability to eliminate retaliatory potential (Schelling 1989b p. 29). The foundation of peace is reciprocal vulnerability to a second strike (Schelling 1985/86). However, as land-based missiles are extremely vulnerable to a first strike and, thus, encourage a preemptive attack, Schelling (1987) favors an agreement to abolish land-based missiles, even unilaterally.

The most dangerous aspect of nuclear weapons has been the importance of striking first. Yet, through all the years of tension and mistrust, neither the United States nor the Soviet Union seized that advantage. Schelling (1989a p. 315) sees three factors that have contributed to preemptive stability. The first is the shared expectation that nuclear war is so unlikely that

even in a crisis, negotiation will be preferred to nuclear attack. Second is the universal conviction that nuclear weapons are not like other weapons. Third, and the most important arms control we have had, is the tradition of the non-use of nuclear weapons for 50 years (Schelling 1984g; 1989a; 1989b; 1991).

Another example of his concern with unusual subject matter is organized crime. 'Racketeering and the provision of illegal goods have been conspicuously neglected by economists' (Schelling 1967 p. 61). Since economic principles must operate in the underworld as well as in legitimate enterprises, Schelling (1967) undertook to analyze criminal behavior from an organizational perspective in order to explain why some criminal activity becomes organized and some does not. The answer turns on how strongly the law against that activity is enforced. There is some optimal degree of enforcement which attracts criminal monopoly. Without this level of enforcement, the criminal activity could not be profitable enough to invite monopolization. 'Organized crime could not, for example, possibly corner the market on cigarette sales to minors. Every twenty-one year old is a potential source of supply' (Schelling 1967 p. 74). When the sale of contraceptives was nominally illegal but the ban was not enforced, the supply was too large and monopolization too difficult for it to be profitable. Prohibition laws, on the

other hand, were enforced to the point at which bootlegging became the province of organized crime.

The interdependence of individuals in an urban society produces a new set of problems that cannot be solved by conventional economic analysis. One of these is racial segregation, and Schelling (1971a) uses a model which translates unorganized individual behavior into collective results to show that some segregation is the consequence of individual choices. Individual incentives and perceptions of difference can lead to collectively more racial segregation than any single person desires or than society itself finds desirable. If whites and blacks wish to avoid minority status, complete segregation is a stable equilibrium. Using dimes and pennies on a checkerboard, he (Schelling 1971b pp. 82-88) shows that even a moderate urge to avoid small-minority status, each person wants at least one third of his neighbors to be his race, can cause a nearly integrated pattern to unravel and highly segregated neighborhoods to form.

Schelling's (1971a) bounded neighborhood model concludes that complete segregation is the only equilibrium in societies with a black-white population mix like that of the United States. The model assumes a common definition of the neighborhood and its boundaries. A person is either inside the neighborhood or out of it. Everyone is concerned about the racial composition of the neighborhood but not the arrangement within the neighborhood and

everyone has a threshold proportion of blacks and whites. They will choose another location once the threshold is reached. If the median white and the median black will each live with equal numbers of blacks and whites, the only stable equilibria when the racial composition ratios surpass two to one in total population are all white and all black neighborhoods.⁷

When people's behavior is influenced by the behavior of others or when people care about the behavior of others 'there is no presumption that the self-serving behavior of individuals should usually lead to collectively satisfactory results' (Schelling 1978 p. 25). Racial segregation is one example. Choosing whom to send a Christmas card is another.

People feel obliged to send cards to people from whom they expect to receive them, often knowing that they will receive them only because the senders expect to receive cards in return. People sometimes send cards only because, cards having been sent for several years, cessation might signal something. People send cards early to avoid the suspicion that they were sent only after one had already been received. Students send cards to teachers believing that other

students do. Sensible people who might readily agree to stop bothering each other with Christmas cards find it embarrassing, or not quite worth the trouble, to reach such agreement (Schelling 1978 pp. 31-32).

Neoclassical economics covers the special case of free market transactions in which everybody affected is a voluntary participant. Extending the scope of economics to cover non-market interactions requires the employment of different methods of analysis. Schelling (1978) discusses five families of social science models which are useful for examining interactive and interdependent behaviors and which ought to be part of economists' tool kits. The first is the critical mass model in which people's behavior depends on how many are behaving a particular way. Once the measure of an activity exceeds a certain minimum level, the activity becomes self-sustaining. So, when there was open seating on my return flight from St. Lucia, a line did not form at the gate until a few people stood up at which time the remaining passengers quickly queued up. The market for lemons also illustrates critical mass. Self-fulfilling expectations models can be used to explain runs on banks. Self-enforcing conventions and the social contract are models three and four.

Schelling (1978) identifies the commons as a fifth family of social science models. The commons refers to situations in which people in the pursuit of their own interests so encroach on each other that collectively they might be all better off if they could be restrained, but no one has an incentive to practice individual self-restraint. Schelling has lately been concerned with policy problems of the global commons such as the greenhouse effect. A 3 degrees Celsius change in average temperature is expected to occur within the next hundred years, a variation in average temperature beyond any experienced within the last 10 000 years (Schelling 1992b p. 3). However, 'no climate changes are forecast that compare with moving from Boston to Irvine, California' (Schelling 1990b p. 258). The effect of global warming on the economic output of developed countries will be negligible, but undeveloped agricultural economies are much more vulnerable to global warming. So, while developed economies have no self-interest in curtailing carbon emissions, less developed countries cannot afford the economic cost to slow the greenhouse effect. In any event, all nations will likely try to free ride off the fossil fuel emission reductions of others. Schelling (1990b; 1992b) forecasts that the political likelihood of an international emission rationing regime is zero. Anyway, 'for the developing world, the increasing concentration of people is

probably more serious than the increasing concentration of carbon dioxide' (Schelling 1992b p. 7).

'Space has been mankind's latest frontier, and historically as frontiers became settled what had been freely available without limit becomes scarce' (Schelling 1990a p. 9). Schelling (1990a) considers whether space will soon become a commons. He doubts that during the next 25 years the geosynchronous orbit above the equator, in which a satellite is stationary in relation to the Earth's surface, will become so crowded with satellites that interference becomes a problem because it is likely that everything that can be usefully placed in that orbit in the next 25 years has already been thought of. He is less sanguine about the 25 years after that but still expects that what goes into orbit will improve the quality of life. Satellites will become a crucial part of command and control for Earth managing systems.

Despite having worked on many problems that fall outside the customary domain of economics, Schelling has never really abandoned the mainstream. He has never denounced the orthodoxy nor has he constructed an alternative to it. He has, instead, used the standard neoclassical assumption that behavior is rational to explore human behavior in a variety of contexts which have been overlooked by other economists. 'Like most economists I am attracted to this model, at least as a benchmark, because when it works we get a lot of output from minimal input using a

standard piece of intellectual machinery' (Schelling 1984c p. x). He is fascinated by cases where the rational behavior model does not seem to explain enough and by seemingly dissimilar situations in which similar principles are at work. It is when the standard neoclassical model does not explain enough that Schelling urges that it be broadened to take real world behaviors into account such as anticipatory self-command or, failing that, that new methods of analysis be adopted like his bounded neighborhood model of segregation.

Schelling's efforts to broaden the realm of academic economics, his dissent from its scope, have sometimes required a methodological dissent, but his intellectual dissent from mainstream economics is not a result of intellectual dissatisfaction. Rather, it results from his intellectual curiosity. The narrow economic aspects of a problem fail to hold his interest.

I have been in studies of smoking and health; the intriguing issues are not the economics of tobacco farming and tobacco taxes. I have been in symposia on medical ethics, like the 'right to die', and it was not the rising costs of hospital care that held my attention. I have helped with studies of

biomedical technologies, like selecting the sex of offspring, and the fascination is not in animal husbandry (Schelling 1984c pp. vii-viii).

NOTES

1. Becker (1993 p. 385) writes, 'My research uses the economic approach to analyze social issues that range beyond those usually considered by economists.'

2. Schelling (1984e) notes that, in addition to being a decision making organ, the mind is the place in which much of our consumption takes place.

3. Also, see Schelling (1984a).

4. Schelling has even done research into compliance with no-smoking laws. Rigotti, Bourne, Rosen, Locke, and Schelling (1992) and Rigotti, Stoto, Bierer, Rosen, and Schelling (1993) found that compliance with local no-smoking ordinances was low in two Massachusetts communities.

5. Schelling's (1966 p. 33) hunch that wars are more a contest of nerve and risk-taking and of pain and endurance than just a contest of strength is borne out by Maoz's (1983) finding that military capabilities are unrelated to the outcomes of interstate

disputes while resolve variables are consistently related to the outcomes.

6. To minimize the possibility of such a misunderstanding Schelling (1960a) proposes the formation of a surveillance force whose purpose would be to diminish the likelihood of unpremeditated war by observing the enemy's behavior, at the enemy's invitation, and to report home instantly.

7. Clark (1991) tests the Schelling bounded neighborhood model and finds that while the racial composition preference schedules have a different functional form than that suggested by Schelling, stable integrated equilibria are unlikely. Schelling (1972) models the process of neighborhood tipping.

Figure 1

Varieties of Dissent

dissent

from economic institutions

from academic economics

intellectual

moral over scope

over method

intellectual

moral

intellectual

moral

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