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Dennis C. Mueller

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Abstract Gordon Tullock is one of the founders of the field of public choice, of the Public Choice Society, and of the Public Choice Center. He is a coauthor with James M. Buchanan of one of the true classics in the public choice field—*The Calculus of Consent*. He has been one of the field’s most prolific scholars, with his research spanning virtually all dimensions of the public choice field. This article surveys his major contributions.

Keywords Public Choice · Logrolling · Majority rule · Optimal majority · Rent seeking

Gordon Tullock can easily be said to have been one of the founders of the field of public choice. The Center for Study of Public Choice at its various locations has been a destination for scholars and students interested in this field for almost 40 years now. Tullock and James Buchanan formed the core of the Center over its first quarter century of existence. The Center hosted the first workshops on public choice out of which both the Public Choice Society and the *Public Choice* journal grew.

Gordon Tullock was both chief editor and chief referee of *Public Choice* over its first quarter century of existence. During his tenure as editor the turnaround time at the journal was often less than a week. An avaricious reader, Tullock would read a submission upon receiving it, and immediately decide whether to publish it. If he accepted it, it would typically be without demanding changes. Ah, those were the days!

The most important reason to classify Gordon Tullock as a founder of public choice, however, is that several of his articles and books have become classics and have shaped the field’s development profoundly. Although the field of public choice would certainly have come into existence, had Gordon Tullock never lived, its development would have been quite different, and it would have been a much less interesting area of study.

Among the giants in public choice, indeed in economics more generally, Tullock is unique in not having a Ph.D. in economics or a related field. His highest degree is in law. His background in law has led to several books and articles in that area, and one of his many

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honors is the Leslie T. Wilkins Award in 1982 for his *Trials on Trial* (1980a). As important as his work in jurisprudence is, I shall not discuss it in this article, as it falls outside of my definition of public choice. The same is true of many of his other contributions within economics, as, for example, Tullock's first publication, a *Journal of Political Economy* article on hyperinflation in China, and outside of it such as his very interesting work in social biology.

Gordon Tullock has published over 20 books, co-edited numerous others, and published hundreds of scholarly articles.¹ It would be impossible to review in detail this great body of work. I shall confine my review, therefore, to a few of the seminal pieces that contributed greatly to the development of the public choice field and to Tullock's reputation as one of the academy's best minds. I begin with Gordon Tullock's first article that can be identified with public choice, which, unsurprisingly, turned out to be a seminal contribution.

1 Tullock on majority rule

"Problems of Majority Voting" (Tullock 1959) must have been written while Tullock was a post-doctoral fellow at the Thomas Jefferson Center for Political Economy of the University of Virginia. It appeared some 50 years ago in the *Journal of Political Economy*. One of the problems with the majority voting rule exposed by Tullock is that it can lead to redistribution from one segment of the community to another even for collective actions that are ostensibly intended to achieve allocative efficiency. Tullock illustrated this problem with an example of 100 farmers. Groups of 4 to 5 farmers in a county share small side roads feeding into main highways. The obvious way to pay for the maintenance of each trunk road is for the 4 to 5 farmers who use a particular road to pay for its maintenance. Some set of implicit taxes on the small group of farmers must exist, which would lead them unanimously to agree to share the costs of maintenance. A second possibility would be for the county to repair all of the roads. Once again a set of taxes, now on all 100 farmers, must exist, which would lead to unanimity on a proposal to maintain all roads. But if the county uses the simple majority rule to make collective decisions, unanimity is not required. If the farmers are the only voters, 49 of their votes are effectively wasted under that rule. Realizing this, a sagacious farmer should approach another 50 farmers and suggest that they substitute a proposal to repair only the roads that they use for the proposal to maintain all roads, with the funds for the new proposal coming from a tax on all farmers. Under the new proposal the tax burden on the 51 farmers will be lower, since only half of the roads are being maintained, while their benefits from the expenditures remain the same. Thus, the 51 farmers will vote to repair only the roads that they use out of general county revenue, and there will effectively be a redistribution from the losing coalition of 49 to the winning coalition of 51. The use of the simple majority rule to decide public good issues will result in improvements in allocative efficiency combined with redistribution.

Limiting maintenance to only half of the side roads reduces the tax-price paid for another dollar of maintenance to the 51 farmers in the winning coalition. This should induce them to demand more to be spent on maintenance of their roads than they would agree to, if they bore the full costs of maintaining their own roads. Thus, the use of the simple majority rule can lead not only to a redistribution from members of the losing coalition to the winning coalition, but also to a *misallocation* of resources as the winning coalition chooses to spend

¹Much of Gordon Tullock's work is reprinted in the ten volumes edited by Charles Rowley (2006).

more than the optimal amount on the public good, because they do not bare the full costs of their decision.

Indirectly, Tullock's demonstration of the properties of the simple majority rule also constitutes an indictment of the kind of geographic representation that exists in countries like the United States. The ideal level upon which to decide the amount to be spent on a given side road is the small community of 4 or 5 farmers who use it. Rational self-interest should lead to a collective decision benefitting all under the unanimity rule. If the maintenance decision is shifted up to the county level, each small community of farmers has an incentive to get the county to pay for the maintenance and thereby to shift part of the costs to others in the county. Thus, the use of geographic representation combined with the simple majority rule leads to over-centralization of collective decisions, misallocations of resources and redistribution within the larger community.

Perhaps no topic in all of public choice has received more attention than the analysis of the properties of the simple majority rule. Gordon Tullock's examination of its properties was one of the first and most important contributions to this literature. A decade after its publication in the *JPE* it was reprinted in *Readings in Welfare Economics*, a book sponsored by the American Economic Association and edited by Kenneth Arrow and Tibor Scitovsky (1969).

2 The calculus of consent

The *Calculus of Consent* is one among a handful of early contributions to public choice that can truly be called a *classic*. Indeed, this book by James Buchanan and Gordon Tullock (1962), along with the classics by Kenneth Arrow (1951), Anthony Downs (1957), Mancur Olson (1965) and a few others, can be said to have defined the public choice field. Its most important accomplishment at the time of its publication was to demonstrate the power of applying the analytical tools of economics to the study of political institutions.

Today the attraction of adopting this approach seems obvious to both economists and a large cohort of political scientists, but in 1962 it was both original and radical. Noted scholars, such as Brian Barry (1965, 1970), wrote books criticizing the use of rational actor models to study democracy, focusing specifically on the works of Downs and Buchanan and Tullock. Although resistance to this methodology still exists among some political scientists, rational actor models have—at least in the opinion of this writer—amply demonstrated their value.² What began as a revolution and almost a paradigmatic shift is today common practice.

Beyond demonstrating the value of the public choice methodology, I can identify four lasting contributions to the public choice literature from the *Calculus of Consent*. I take up each in turn.

2.1 The two-stage model of constitutional democracy

The *Calculus of Consent* introduced the distinction between the constitutional stage, where the rules of the political game are chosen, and the post-constitutional stage, where the political game gets played. The rules chosen at the constitutional stage were to last for a long

²One of the more recent attacks on the use of rational actor models to study political behavior is the book by Green and Shapiro (1994). For rebuttals to Green and Shapiro see several of the essays in Friedman (1996) and Mueller (2003: Chap. 28).

period of time, and thus the drafters of the constitution were assumed to be uncertain about their own particular advantages and disadvantages under a given set of rules. Buchanan and Tullock assumed that this uncertainty was sufficient to produce unanimity at the constitutional stage on a particular set of rules. Thus, Buchanan and Tullock introduced a kind of veil of ignorance of the type that John Rawls (1971) would later invoke to produce unanimity on the features of a social contract.³ Rawls's veil was much thicker than that of Buchanan and Tullock, however, and thus blocked out much information that would be needed to design a constitution.⁴ In the theory of Buchanan and Tullock, the constitution was a form of social contract that defined the political institutions of a community.

The notion that democracy is a two-stage process with considerable uncertainty at the first stage has been adopted by numerous writers since the publication of *The Calculus* to help explain why particular voting rules might be chosen that would maximize the expected utility of all citizens.⁵ The two-stage approach to the study of political institutions has even given rise to a sub-branch of public choice called *constitutional political economy*, with its own journal of the same name. This conceptualization of the political process is clearly one of the more important and lasting contributions of *The Calculus*.

2.2 The optimal voting rule

What voting rule would a group of rational actors choose at the constitutional stage? Buchanan and Tullock (1962) exploited the assumption of uncertainty at this stage to offer a novel approach for answering this question. The major objection to using the unanimity rule to make collective decisions is that it takes too long to reach a decision. Buchanan and Tullock generalized this idea by introducing *decisionmaking costs* into the choice of a voting rule, costs that were assumed to increase as the required majority to pass an issue increased. Decisionmaking costs were, however, not the only costs to consider when choosing a voting rule. If they were, then the optimal voting rule would be dictatorship, since one-person rule minimizes decisionmaking costs. As the required majority falls, the likelihood that one is on the losing end of a collective decision increases. Thus, a collective decision that leaves me worse off constitutes a kind of negative externality that I bear, because of the community's decision. Buchanan and Tullock named the costs imposed on losers from a collective decision the *external costs of collective decisionmaking*. In contrast to decisionmaking costs, the external costs of collective decisionmaking would fall as the required majority to pass an issue increased. The optimal voting rule minimized the sum of these two costs.

Exactly what the optimal required majority would be would depend on the different slopes of the two costs curves. If the curves were smooth and continuous, the optimal majority could be almost anything. In particular, there was nothing in the selection process proposed by Buchanan and Tullock implying that the optimal majority would be the simple majority rule. Thus, their analysis of the choice of a voting rule at the constitutional stage indirectly constituted a criticism of the ubiquitous use of the simple majority rule.

³Rawls had introduced the concept of the veil of ignorance in an article published in the late 1950s, but Buchanan and Tullock did not become aware of the concept until Rawls's book appeared in 1971.

⁴For a discussion of the implications of assuming different degrees of thickness for the veil of ignorance, see Mueller (2001, 2003: Chap. 26).

⁵See discussion and references in Mueller (1997).

2.3 The simple majority rule

Tullock's article, "Problems of Majority Voting," discussed in Sect. 1 above, reappears as a chapter in *The Calculus*. Demonstrating the arbitrariness of the choice of the simple majority rule and the disadvantages of this rule can thus be regarded as yet another, lasting contribution of *The Calculus*. Although they were probably not the first ones to notice that a normative justification for the simple majority rule required a kind of equal intensity assumption—the gain to a winner if an issue passes must equal the loss to a loser—Buchanan and Tullock were among the first to make the necessity for this assumption explicit.⁶

2.4 Logrolling

Political scientists had observed for many years that members of Congress "trade votes" and had coined the term *logrolling* to describe this trading process. Among political scientists, trading votes was regarded as almost as bad as buying and selling votes, and thus the fact that Congress engaged in vote trading was regarded as a bad thing. Logrolling—vote trading—is an obvious topic for an economist to analyze, and Buchanan and Tullock applied their analytic powers to it.

Just as individuals in a Walrasian market would trade away items that they placed little value on for items that they valued highly, Buchanan and Tullock reasoned that legislators would trade away votes on issues that they regarded to be of little importance to their constituents for votes on more important issues. Thus, just as trading in goods markets increases everyone's welfare, trading votes should increase everyone's welfare. Vote trading allows Members of Congress to reveal the *intensity* of their preferences on different issues, which they cannot do voting each issue independently, and thereby increases the total gains from voting.

The analysis of logrolling in *The Calculus* received considerable attention and helps explain why public choice drew unfavorable comments from some non-economists. Something that *everyone knew was bad*—logrolling—was now claimed to be good by two upstart economists who had the audacity to enter political scientists' territory.

The discussion of logrolling in *The Calculus* spawned a large literature. Some claimed to show that logrolling indeed did improve social welfare (e.g., Coleman 1966), others claimed the opposite (e.g., Riker and Brams 1973). Suffice it here to say that the conditions under which logrolling does improve welfare are more complicated than the discussion in *The Calculus* leads one to believe. Nevertheless, Buchanan and Tullock deserve considerable credit for opening up the subject and showing its importance.⁷

3 Rent seeking

For much of the first two-thirds of the 20th century, the welfare analysis of monopoly was straightforward. Monopolists earned rents to be sure, but these constituted pure transfers from consumers to the monopolists and thus had no effect on social welfare. The only social costs of monopoly were the lost consumers' surplus triangles created by the reduction of output under monopoly. In 1954, Arnold Harberger presented some estimates of the losses

⁶Buchanan and Tullock (1962: 128–130). Rae (1969: 41, n. 6) makes this assumption in his proof of the optimality of the simple majority rule. See also the proof in Mueller (2003: Chap. 26).

⁷For surveys of the literature on logrolling, see Stratmann (1997) and Mueller (2003: 104–112).

from monopoly in the United States, which gave rise to a cottage industry of studies trying to measure the size of the “Harberger triangles.”

In 1967a, Gordon Tullock published an article that called into question the exclusive focus on deadweight-loss triangles caused by monopoly and the conclusion being drawn in the literature from Harberger-type studies that monopolies and tariffs produced trivial welfare losses.⁸ Tullock began by pointing out that there are certain transaction costs associated with administering tariffs and antitrust policies that should be counted as part of their social costs. Customs offices must be manned to monitor the quantities and values of imports. Coastguard boats must be sent out to catch smugglers, and so on. Such costs alone may dwarf the welfare losses represented by the triangles created by the wedge between market price and (marginal) cost.

These transaction costs are only a part of the rent-seeking story, however, and not the most important part. Behind every monopoly stands some economic institution—a patent, trademark, license, a tariff or import quota—which creates and protects the monopoly. These licenses or privileges to monopolize have an economic value equal to the present discounted value of the rents they produce. They constitute a valuable asset in the monopolist’s possession. Other economic actors thus have an incentive to lobby to acquire such an asset by, say, challenging the legality of a patent in court, or inventing around the patent. The investments these other actors make to transfer or displace the monopolist, if successful, will simply bring about a redistribution from the original monopolist to the new one. They constitute a waste of resources and, thus, a welfare loss for society. The main message of Gordon Tullock’s path breaking article was that those concerned with the welfare losses due to monopoly should not only try to measure the size of the welfare triangles monopoly creates, but also should take account of the rent *rectangles*.

Similarly, when it comes to trade, a quota, which allows an importer to buy goods on the world market and sell them domestically at a price above the world price, has a value equal to the difference between the two prices times the amount of the quota—again a rectangle.

This article appeared in 1967 in the *Western Economic Journal*, a respectable journal at the time, but not one that many economists usually read. Perhaps for this reason, the significance of Tullock’s contribution went unnoticed until 1974, when Anne Krueger published an article in the *American Economic Review* that contained essentially the same analysis of monopoly welfare losses as Tullock’s article contained. Neither Krueger nor the *AER*’s referees appear to have been aware of Tullock’s prior contribution. It was Krueger who coined the term *rent seeking*, and it was her article that ignited the profession’s interest in this topic. Since 1974 there have been literally hundreds of articles about rent seeking published.⁹

In 1980b, Gordon Tullock published an essay that set forth a methodology for analyzing rent-seeking contests. The probability that a given rent seeker wins the contest and becomes the monopolist, π_i , was assumed to equal her investment in rent seeking, I_i , raised to the r th power, divided by the summation of all rent-seeking investments each raised to the same r th power.

$$\pi_i = \frac{I_i^r}{\sum_{j=1}^n I_j^r}$$

If $r < 1$, the contest exhibits diminishing returns to investment, $r = 1$ implies constant returns, and $r > 1$ implies increasing returns to investment. This way of characterizing rent

⁸Tullock (1967a).

⁹For surveys of this vast literature see Nitzan (1994), Tollison (1997), and Mueller (2003: Chap. 15). Collections of the more important articles in the field include Buchanan et al. (1980), and Congleton et al. (2008).

seeking has become the workhorse modeling technique in the vast theoretical literature on rent seeking.

Although many public choice scholars have made important contributions to the rent-seeking literature, the impact of the concept extends far beyond the public choice literature. Economic rents arise in almost every economic activity, and where they exist losses due to rent seeking are predictable. Consider the case of Michael Jordan, probably the greatest basketball player of all time. Jordan earned millions of dollars during his career. Most of this income must be regarded as an economic rent, since his value in his next best occupation was undoubtedly far below his value as a basketball player. (He tried his hand at baseball one year, but was not even good enough to make the major leagues.) Across the United States, and increasingly across the world, young boys and often girls spend countless hours playing basketball in the hopes that they will be the next Michael Jordan someday and earn millions of dollars. All of the time they spend developing their skills (minus the value of the health benefits from exercise and the sheer pleasure of playing the game), when they could be studying English or chemistry, should be counted as part of the social costs of rent seeking that arise, because there are only a few people in the world who can command the salary of a Michael Jordan.

One can, of course, argue that there are some social gains from all of this competition and skill development. Basketball players today have greater skills than players had 50 years ago (and are a great deal taller on average). The Boston Celtics circa 2009 would blow the Celtics of 1959 off the court (in no small part because of the height advantage). But this alone does not imply great social benefits from the rent-seeking investments of basketball players. Do Celtics fans in 2009 get more enjoyment from seeing their team win than did fans in 1959? If not, then the social costs from rent seeking in this “industry” are large indeed. Extend these calculations to other sports, to the entertainment industry more generally, to medicine and, let us be honest, to academe and one begins to appreciate the sheer magnitude of the costs of rent seeking.

Typing the words “rent seeking” into EconLit on July 20, 2009 brought up 16,764 entries, yet another indicator of the importance of this topic. The concept of rent seeking has to be regarded as one of the most significant developments in economics over the last half century.

4 Toward a mathematics of politics

In the year 1967b, Gordon Tullock also published the book, *Toward a Mathematics of Politics*.¹⁰ This book would have been better named, *Toward a Geometry of Politics*, as it is filled with diagrams, mostly depicting two-dimensional issue spaces, and analyses of the various paradoxes and solutions to these paradoxes that arise in voting games. The book opens with an interesting chapter on voter preferences. It is followed by several chapters describing problems of voting cycles and ways around these problems. Of these Chap. 3 entitled, “The General Irrelevance of the General Impossibility Theorem,” is the most interesting and important. The title is an obvious and provocative challenge to Kenneth Arrow’s (1951) famous impossibility theorem and the vast literature that it spawned. It reproduces an article published in the *Quarterly Journal of Economics*.¹¹ In it Tullock shows that even when cycling exists, as it almost always does in a two-dimensional issue space, it is likely to be confined to a small area around the center of the distribution of voter ideal points.

¹⁰Tullock (1967b).

¹¹Tullock (1967c).

The logic behind the argument is as follows. Assume that all ideal points in a two-dimensional issue space are distributed uniformly within a circle. All indifference curves are concentric circles around voter ideal points. If we draw a tangent to the circle through some point P on its boundary, then the assumption of circular indifference curves implies that all voters will prefer P to any point outside of the line through P . Now draw the perpendicular to the line through P at the point P , and move slightly inside the circle to a point B on the perpendicular. B can defeat P and it can also defeat all of the points outside of the tangent through P , which P can defeat. P can thus be said to *dominate* B .

Moving further into the circle along the perpendicular through P and B , we shall come to still more points that dominate both P and B . The center of the distribution of ideal points, C , is one such point. Indeed, the assumption that all ideal points are uniformly distributed within a circle implies that all lines through C are median lines, and thus that C is an equilibrium under the simple majority rule.¹² This equilibrium will disappear if there are bumps and troughs in the distribution of ideal points within the circle, but so long as the bumps are not towering mountains and the troughs are not giant chasms, the intuition of the argument holds. The preponderance of median lines will cross in a small area around the center of the circle, and in the absence of an agenda setter who tries to lead the committee far from the center, one can expect cycling to be confined to this area.¹³ With cycling confined to a small area of the distribution of ideal points, “most voters will feel that new proposals are splitting hairs, and the motion to adjourn will carry.”¹⁴

In a footnote, Gordon Tullock mentions receiving “a very kind letter” from Professor Arrow who “expressed a desire for ‘a stronger and stricter statement.’” Tullock lamented that he too would like to come up with “a mathematical proof, but [had] been unable to do so.” He expressed the hope that “perhaps some reader will be able to repair the deficiency.”¹⁵ The deficiency was repaired more than a decade later, when Nicholas Miller (1980, 1983) discovered the *uncovered set*. This set contains points like B above, which dominate (cover) other points. As the number of ideal points in a given area grows, the uncovered set shrinks toward the center of the distribution of ideal points.¹⁶ Although the mathematical reasoning underlying the concept of the uncovered set is quite different from Tullock’s geometric demonstrations, the intuition is quite similar. As with rent seeking, Tullock was the first to happen across an important idea, but his development of it was such that the profession did not grasp its importance.

Toward a Mathematics of Politics closes with a chapter on proportional representation. In it Tullock puts forward the novel idea that members of Congress be given votes in Congress proportional to the number of votes they received in the election. The intuition behind the proposal is straightforward. If twice as many citizens voted for Smith than voted for Jones, why should Jones’s vote in Congress receive the same weight as Smith’s? The principle of one man, one vote at the level of the citizens must imply that Smith receives twice as many votes in Congress. More generally, one could think of replacing the kind of proportional representation that exists in most European countries in which *parties* compete for votes across the polity and take seats in proportion to the number of votes that they receive with one in

¹²See, Enelow and Hinich (1984: Chap. 3) and Mueller (2003: 92–93).

¹³On the potential power of an agenda setter, see McKelvey (1976).

¹⁴Tullock (1967b: 41).

¹⁵Tullock (1967b: 163, n. 18).

¹⁶See discussion and references to subsequent literature in Mueller (2003: 236–241).

which *individuals* compete for votes across the polity and can cast votes in the parliament in proportion to the number of citizens who voted for them.¹⁷

5 The demand revelation process

In competitive markets individuals purchase a good up until the point at which their marginal utility from the good equals its price. Marginal rates of substitution between any pair of goods equal the ratio of their prices. The invisible hand of the market *reveals* individual marginal rates of substitution. The Pareto optimality condition for public goods requires, unlike that for private goods, that the *sum* of marginal rates of substitution equals the ratio of the price of the public good to the price of some representative private good. Paul Samuelson, who first derived the Pareto-optimality condition for public goods, famously stated at the end of his seminal article that “*no decentralized pricing system can serve to determine optimally these levels of collective consumption,*” (i.e., the Pareto optimal levels, Samuelson 1954: 182, italics in the original). In the early 1970s, several articles appeared which showed how such a decentralized pricing system could be constructed.

The first of these articles was by Edward Clarke (1971). His article was followed by an article by Theodore Groves (1973), who appears to have been unaware of Clarke’s contribution. Some time later it was revealed that William Vickrey already in 1961 had published an article containing the central feature of the demand-revelation process, although imbedded in a totally different context.

By the mid-1970s the importance of the breakthrough had become apparent to all. One of the best and most influential explications of the process was by Nicholas Tideman and Gordon Tullock (1976). The trick to getting individuals to reveal their demand schedules for public goods honestly was to use two taxes to decide the quantity of the public good. One tax was designed to pay for the public good, and the second tax was designed to induce people to reveal their preferences honestly. The second tax was not set equal to what a person said the public good was worth to her, since this would give her incentive to misstate her preferences, but to the *cost* her stated demand schedule imposed on the rest of the community. If, when her demand schedule was added to those of all other members of the community, the chosen quantity of public good changes, then this person’s *incentive* (second) tax would equal the cost of the change in quantity on the rest of the community. The amount of this tax would always be less than or at most equal to the benefit to the person from stating her true demand schedule, and thus she could never lose and would usually gain by being honest. Honest preference revelation is the dominant strategy under the demand-revelation process.

The demand-revelation process neatly ties together the analysis of the optimal voting rule in *The Calculus of Consent* and the question of determining the optimal quantity of a public good. As discussed above, Buchanan and Tullock introduced the concept of the external costs of collective decisionmaking in their analysis of the optimal voting rule.

Standard public finance theory tells us that we should impose a tax on any activity that creates a negative externality. When a person’s stated demand schedule for a public good changes the choice of quantity of the public good for the community, that person’s stated preference imposes a negative externality on the rest of the community. The incentive tax in the demand-revelation process is a form of Pigouvian tax on this externality, and like an ideal Pigouvian tax in brings about a Pareto optimal allocation of resources.

¹⁷I have called this system PR-persons in contrast to PR-parties (Mueller 1996: Chap. 8).

Although Tideman and Tullock did not invent the demand revelation process, their pedagogic contribution to this literature clearly revealed the importance of this innovation and contributed greatly to the mushrooming literature that grew up after the mid-1970s. For a change a contribution by Tullock revealed the great importance of an idea put forward by someone else, which the profession had neglected.

6 Miscellaneous

Being a bachelor all of his life, Gordon Tullock has not had the distractions of a spouse and children to interfere with his research. An avid reader with broad interests, he has been moved to write on many topics both within and outside of the field of public choice. In closing this discussion of Tullock's writings, I shall briefly mention a few of his other contributions to public choice, contributions which in my opinion have not had the same lasting impacts as the ones already discussed.

6.1 Bureaucracy

In 1965, Gordon Tullock published *The Politics of Bureaucracy*. This was the first treatment of bureaucracy by a practitioner of public choice and can thus be said to have brought this topic to the profession's attention. Until its publication, the study of bureaucracy had fallen largely into the domains of sociology and political science. Tullock shed a new light on the topic by assuming that bureaucrats, like consumers, voters and politicians, were rational actors pursuing their own set of goals. Chief among these, according to Tullock, was career advancement.

The Politics of Bureaucracy is filled with insights into the nature of bureaucracy and it obviously benefitted from an understanding of bureaucracy that Tullock gained while working in a bureaucracy (the Foreign Service) before taking up an academic career. But the analysis was largely informal. It did not try to develop a mathematics of bureaucracy, as Tullock would attempt two years later for politics. Much the same can be said of *Inside Bureaucracy*, a book published two years later by another giant in the public choice field, Anthony Downs (1967). Thus, both books have had a limited impact on the development of rational actor models of bureaucracy as Terry Moe has also observed.

Future work in public choice, however, did not build explicitly on either of these contributions. Their sweeping approach to bureaucracy did not provide a clear analytic focus for constructing new theories, nor did it suggest any productive strategies of formal modeling. Many found these books exciting, but no one knew what to do with them.¹⁸ Thus, it was left to William Niskanen (1971) to provide the public choice field with its first formal analysis of bureaucracy.

6.2 Revolution

Just as Gordon Tullock was the first person in public choice to write about bureaucracy, he was the first public choice scholar to write about revolution.¹⁹ The puzzle when studying revolution is why anyone would take part in one. If the cadre of revolutionaries is small, the

¹⁸Moe (1997: 457).

¹⁹Tullock (1971, 1974).

probability of its success is also small, and the risks to a participant are great making the expected benefits negative. If the number of participants in the revolution is large, its chances of success are greatly increased, but a single participant's marginal impact on the probability of success will be tiny. Given some costs or risks from participating, the utility-maximizing decision will be not to participate. The question of whether to participate in a revolution is similar to the question of whether to vote in a mass election where the probability that one's vote is decisive is infinitesimal. And the answer Tullock gave to the question is also similar—one participates in a revolution only if the private benefits from taking part in the revolution are sufficiently large to offset the costs of participation.

6.3 Federalism

Public finance scholars have devoted considerable attention to problems of *fiscal federalism*. Perhaps because public choice started as a kind of offshoot from public finance, federalism has also been a major topic of interest in this field. Once again, Gordon Tullock (1969) made one of the early important contributions in this area.

Tullock addressed the questions of the optimal scale of a governmental unit, and the optimal number of units in a federalist system. He began with the proposition that governments exist to internalize the effects of externalities. To benefit from or be harmed by a given activity, one must be near enough to the source of the externality to be affected by it. Thus, the determination of the optimal size of a government unit hinges on the nature of the external effects, which it is trying to internalize. Tullock noted that most or all activities undertaken by governments have *some* external effects that extend beyond the boundaries of the governmental unit responsible for internalizing it. For example, although most of the benefits from the services performed by the Chicago police department are enjoyed by residents of Chicago, Seattle residents also obtain some benefits, because some of them travel occasionally to Chicago, or have relatives in Chicago whom they would not want to see harmed. Thus, if all that was involved in internalizing external effects was to internalize all of them, the optimal size governmental unit for most activities would be the entire nation if not the world. Such a choice is not optimal, however, because diseconomies of scale in providing government services kick in at some point. The optimal size of government balances the gains from internalizing a greater amount of an external effect by increasing government size, against the diseconomies that eventually arise as the size of the government grows.

Tullock went on to point out that this is only part of the story. When a governmental unit provides a public good to all citizens in a given geographic area, all must consume the same bundle of characteristics of the public good. If a majority of the citizens prefers bundle *A* to bundle *B*, then *A* will be chosen using the simple majority rule, and those who prefer *B* will be worse off than if they had been in the majority. If it is possible to break the polity into two parts, however, welfare might be increased if the bundle *A* is provided to one part and bundle *B* to the other. Thus, with heterogeneous tastes for public goods, welfare may increase by providing different bundles of public goods to different subdivisions of the total population. Now we are at the opposite extreme of the first example, and it is possible that thousands of different governments would be required. There would be no way in which citizens could monitor and reward or punish their representatives in so many governments, and so we again must strike a compromise by balancing the gains from greater voter choice against the costs of running multiple governments. Tullock closed this essay with the provocative suggestion that more than one governmental unit might be optimal at a given level of government. For example, instead of having two state legislatures voting on the same bundles of public goods, one could deal with one set of issues like infrastructure, and the other with a different set of issues (education and health).

6.4 Why so much stability?

The problem of cycling under the simple majority rule has been a central issue in public choice from its very beginning when Arrow published his famous impossibility theorem. Indeed, if one counts Condorcet as the founder of public choice, it has been around for more than 200 years.²⁰ The literature is replete with proofs of theorems showing that equilibria using the simple majority rule are extremely unlikely.²¹ Yet legislatures do not seem to go around in circles when they make decisions using the simple majority rule. Why not? This was the question posed by Tullock in a provocative article published in 1981. One of the answers to the question was given by Tullock himself in 1967b as discussed above in Sect. 4. Tullock offered still other possible answers in his 1981 article, but the importance of this article for the development of public choice is not so much the answers it gave to the question, but the posing of the question itself. Numerous articles and books have appeared since 1981, which have wrestled with this question.²² Although most of these have been written by people within the public choice field and have used its methodology, some, like Green and Shapiro (1994), have even used the apparent stability of political systems to attack the whole approach to the study of politics using the assumption that voters and politicians are rational actors. Here, as so often in his career, Gordon Tullock opened up a very important, one might say controversial line of research.

7 Conclusions

Typing the name of Gordon Tullock into Google Scholar on July 20, 2009 brought up 8,770 citations to Tullock's works. It is thus impossible to exaggerate the importance of Tullock's research for the development of the field of public choice. This article has attempted to give the reader a glimpse at some of his most important contributions. A thorough analysis of all of his research would need to run to hundreds of pages.

Gordon Tullock's name has often been mentioned as a possible Nobel Prize winner. When one scans the expanse of his research, one is hard pressed to come up with an explanation for why he has not received the prize. I shall close this article with a bit of speculation on this question.

Over the first couple of decades of his academic life, Gordon Tullock was the quintessential, politically incorrect gadfly. When going for a cup of coffee at the Public Choice Center in the early 1970s, one might be confronted by Tullock with the question, "why are you in favor of the minimum wage?" Should one protest that one really is not a supporter of this policy, Tullock would treat this as an attempt to evade the question. The speed with which he posed questions and parried answers was such that few could keep up with him, and no one ever defeated him in such a debate.

Tullock often asked women whether they realized that they earned less than men, because they were inferior to men. Some women were amused by this question and the repartee that ensued, but many stomped off in a rage. While most economists enjoyed these lively exchanges, and certainly this one did, others, especially those not trained in economics, were often not amused. Thus it came to pass that Gordon Tullock was denied a promotion to full

²⁰Condorcet (1785/1976).

²¹See discussion and references in Mueller (2003: Chap. 5).

²²See, for example, Mueller (2003: 114–126).

professor at the University of Virginia in the late 1960s, and left for Rice University. James Buchanan was so incensed by the university's decision that he took off for UCLA.

The late 1960s was a time of great turbulence at American universities, and almost immediately upon Buchanan's arrival at UCLA students began to occupy buildings and engage in other acts unbecoming an institution of higher learning. Buchanan soon departed. Although his departure was a great loss for UCLA, it was a lucky break for the public choice field, since he and Gordon Tullock were soon reunited in Virginia, this time at the Virginia Polytechnic University in Blacksburg, where they presided over the Public Choice Center.

Gordon Tullock mellowed considerably with age, but even in his later years has on occasion been able to get under some people's dander. This is the only explanation I can give for why he has not won a Nobel Prize. Rent seeking has to be regarded as one of the most important and innovative ideas in economics over the last 50 years. The importance of the topic exceeds that of other innovations in economics for which the Nobel Prize has been given. Tullock's article was unquestionably the pioneering contribution to this field. If a prize were given for rent seeking, then Gordon Tullock would have to be one of its recipients. I have long thought that a joint prize to Tullock and Anne Krueger should be awarded. Krueger did invent the concept independently of Tullock and gave it its name. Beyond this contribution, Krueger is a leading figure in the area of development economics. And—less we forget—only one woman has ever won a Nobel prize in economics, and she, although certainly worthy of the prize, is not an economist. Tullock's sharing the Nobel Prize for economics with the first woman economist to ever receive one would be an act of poetic justice, if there ever was one. It seems obvious at this juncture, however, that this will never happen. A pity.

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