



Public goods theory from eighteenth century political philosophy to twentieth century economics *

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Abstract. Some scholars have studied Mancur Olson's legacy by investigating the effects of his research on the social sciences (McLean, 2000). Others have scrutinized the logical and empirical implications of his theories (Sandler, 1992; Marsh, 1976; Chamberlin, 1974; Frohlich and Oppenheimer, 1970). A third group have quietly claimed that his greatest work, *The logic of collective action*, was little more than a popularization of earlier ideas (Dowding, 1997; Chamberlain, 1966). This paper attempts to exonerate Olson of the latter claim by reviewing the major contributions to collective action theory before his time and comparing them to *The logic of collective action*.

1. Introduction

In memoriam, Dennis Mueller wrote "With Mancur Olson's work, again in stark contrast to much else that gets published, the value of the whole is always much greater than the sum of the parts" (Mueller, 1998: 532). Perhaps Mueller was right. Perhaps we should value the forest of Mancur Olson's *The Logic of Collective Action* (hereafter *Logic*) much more than the trees. Decades of research have shown that the details of *Logic* were either wrong or special cases. Researchers have criticized its claim about group size and group success (Frohlich and Oppenheimer, 1970; Chamberlin, 1974; Esteban and Ray, 2001), its claim about the exploitation of larger actors by smaller ones (Sandler, 1992), and the alleged importance of selective incentives in group formation (Marsh, 1976; Moe, 1980). At the same time, the big picture appeared to be the book's strength. Some scholars found the overall argument so persuasive that they attributed Olson with discovering the free-rider problem (Brand, 1983; Baldwin, 1989) and described his book as "nothing short of a revolution" (Alt, 1999: 2).

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But if we value the forest in Olson's work more than the trees, then we are faced with a conundrum. *Logic*'s greatest contribution appears to be the free-rider problem, yet theories of free-riding behavior pre-dated his work. How can we claim that Olson made forest level contributions to the free-rider problem when the forest was already understood?

This paper attempts to answer that question by investigating the theories of collective action that predate *Logic*. In particular, it follows the development of collective action theory from Hume to Olson, isolates the contributions of *Logic*, and characterizes the progression as one of protracted discovery. Although it is clear that the free-rider concept originated long before *Logic*, Olson's articulation, generalization, and application of the idea were part of his discovery.

2. Collective action in modern political thought

2.1. *David Hume*

One of the first theorists to address the free rider problem in modern political thought was David Hume.¹ Hume ([1739–40] 1978: 534) argued that people are primarily motivated by their own interests and passions: "Nothing is more certain, than that men are, in a great measure, govern'd by interests, and that even when they extend their concern beyond themselves, 'tis not to any great distance." Individual's want justice, but they pursue their immediate interests when justice and personal interests conflict.

Hume used this notion to predict how individuals would contribute to a group effort. He wrote:

Two neighbors may agree to drain a meadow, which they possess in common; because 'tis easy for them to know each others mind; and each must perceive, that the immediate consequence of his failing in his part, is, the abandoning the whole project. But 'tis very difficult, and indeed impossible, that a thousand persons shou'd agree in any such action; it being difficult for them to concert so complicated a design, and still more difficult for them to execute it; while each seeks a pretext to free himself of the trouble and expence, and wou'd lay the whole burden on others (ibid.: 538).

This passage contains three important features. First, it shows that Hume recognized the conflict between individual and collective interests and attributed the conflict to something like free-riding behavior. Second, it demonstrates some recognition that smaller groups are more likely to succeed than larger ones, as Olson would later claim (Olson, 1965: 33, n. 53).² Third, it

describes the collective action problem similar to an assurance game, where individuals gain from mutual cooperation but choose to defect when they anticipate that others will defect as well.

Hume ([1739–40] 1978: 538) believed that “political society easily remedies both these inconveniences.” If magistrates have an immediate interest in their subjects, which Hume assumed, then magistrates can provide individual incentives to drain the meadow. “Thus,” Hume writes, “bridges are built; harbours open’d; ramparts rais’d; canals form’d; fleets equip’d; and armies disciplin’d; everywhere by the care of government” (ibid.: 539). Hume recognized that the collective action problem would obstruct the provision of these goods in the absence of enforcement. He foreshadowed Olson’s size thesis and described somewhat of a political entrepreneur, the magistrate, that would provide something like a selective incentive to assure that individuals would produce just and intrinsically valued outcomes.

2.2. *Alexander Hamilton and James Madison*

Shortly after Hume’s death, two American political theorists – Alexander Hamilton and James Madison – were starting to develop a similar theory of their own. As early as 1780, James Madison was observing states “separately rejudging the expediency” of the plans made by Congress because “the same distrust of concurrent exertions that has damped the ardor of patriotic individuals, must produce the same effect among the States themselves” (To Thomas Jefferson, Hutchinson et al., 1962, 2: 5–7).³

Madison was referring to state responses to requisitions under the Articles of Confederation. Requisitions were confederation requests for state monies, soldiers, or supplies, similar to an unenforced tax upon the states for national goods and services. Since the confederation frequently used these monies to produce public goods, like national defense and debt reduction (Dougherty, 2001), the system provided Hamilton, Madison, and other early Americans⁴ with the perfect opportunity to study free-riding.

It is interesting to note that Madison saw the free-rider problem more like an assurance game, while Olson and Hamilton saw it more like a prisoners’ dilemma (Dougherty 2003). When Madison described the free-rider problem, he almost always described a decision that hinged on the behavior of others. He wrote passages like, “one reason to prevent the concurrent exertions of all the States will arise from the suspicion, in some States, of delinquency in others” (Jensen, 1976, 9: 1144).⁵ If everyone else cooperated, then Madison’s archetype would cooperate as well. If some states defected – because of inability, tedious collection, or some other problem – Madison’s archetype would defect as well. In his mind, anticipating the behavior of others was critical to

the decision. If one or two defections were expected among a group, few (or no) actors would cooperate.

Olson, in contrast, usually described the collective action problem as a quasi-prisoners dilemma game. Olson (1965: 21) wrote, "Though all of the members of the group therefore have a common interest in obtaining this collective benefit, they have no common interest in paying the cost of providing that collective good. Each would prefer that the others pay the entire cost." For Olson, actors did not anticipate the actions of others. They preferred defection whether others cooperated or not.

Alexander Hamilton usually concurred with Olson. Although he wrote passages where free-riding resulted from the deficiencies of other states, he more frequently claimed that states had an incentive to free-ride when other states contributed or not. He declared, "Requisitions will ever be attended with the same effects. This depends on principles of human nature, that are as infallible as mathematical calculations. States will contribute or not, according to their circumstances and interests: They will all be inclined to throw off the burthens of government upon their neighbors" (Bailyn, 1993, 2: 830).⁶ For Hamilton states had unilateral incentives to defect in response to requisitions or U.S. trade policy.⁷

In addition to presenting basic theories of free-riding, Hamilton and Madison had some conception of selective incentives. Selective incentives are rewards or punishments for cooperative and non-cooperative behavior, respectively (Olson, 1965: 51). After observing free-riding behavior among states, Madison chaired a congressional committee that proposed to give the union the power to march the army into a delinquent state or to blockade its harbors if it did not comply with requisitions (Dougherty, 2003). This power would only be used against those states that were delinquent in their requisitions. Madison was so aware that punishments had to be selective, that he later accused Patrick Henry of wanting to impose punishment on those who had paid as well as those who had not (11 June 1788, Jensen, 1976, 9: 1146).

Between them Hamilton and Madison recognized the free-rider problem and the importance of selective incentives. Since their best descriptions are scattered throughout several works, neither man has been associated with the theory of collective action. The discontinuity of their writings and the lack of reference to Hamilton and Madison in the public goods literature suggests that their contributions were lost.⁸ Clearly, they did not influence Olson or any other twentieth-century economist.

2.3. John Stuart Mill

Fortunately, twelve years after Madison's death, John Stuart Mill ([1848] 1965) re-engaged the study. Like Hume, Mill argued in favor of a laissez-faire approach and found only the "narrowest" justifications for public intervention in the community (ibid.: 944). Among these were the public provision of roads, canals, and railways because these goods usually entailed monopolistic powers (ibid.: 955–956). He also believed that education should be provided publicly partly because widespread education helped individuals judge commodities and improved the accuracy of the market (ibid.: 947–950). None of these goods, however, were associated with collective action problems.

Other goods were. In section 12, Mill investigated a few cases where he believed collective action problems existed.⁹ In his first example, Mill described a laborer's decision to work nine hours rather than the usual ten in hope of producing a shorter work day. He started by reasoning that nine hours of work would be in the collective interest of all laborers, then writes:

A workman who refused to work more than nine hours while there were others who worked ten, would either not be employed at all, or if employed, must submit to lose one tenth of his wages. However convinced, therefore, he may be that it is the interest of the class to work short time, it is contrary to his own interest to set the example, unless he is well assured that all or most others will follow it (ibid.: 957).

This first statement is similar to the *right*-hand side of a 2×2 prisoner's dilemma. If no one else works less to change the labor standard, Mill's laborer has no incentive to work less either. In other words, an individual is best served by defecting from the movement when she expects others to defect. Mill continues:

If nearly all restricted themselves to nine hours, those who chose to work for ten would gain all the advantages of the restriction, together with the profit of infringing it; they would get ten hours' wages for nine' hours work, and an hour's wages besides (ibid.: 957).

The second statement is similar to the *left*-hand side of a prisoner's dilemma. Even when the other employees work nine hours and successfully obtain a new labor standard, individuals can gain by increasing their workload back to ten hours. In other words, individuals are best served by defecting when others contribute to the movement. If all think this way, the laborers will be back to ten hours of work – against their mutual desire for a shorter work day. Mill then finishes the thought with:

Assuming then that it really would be the interest of each to work only nine hours if he could be assured that all others would do the same, there might be no means of their attaining this object but by converting their supposed mutual agreement into an engagement under penalty, by consenting to have it enforced by law (ibid.: 958).

Combined these passages are incredibly complete. Mill recognized a conflict between individual and collective interests, he showed why individuals would deviate from collective objectives (both when others cooperate and when they do not), and he argued for the importance of enforcement. He concluded that shorter work days should not be expected by “spontaneous choice” (ibid.: 957).

Though Mill’s descriptions are remarkably thorough, they miss some critical aspects of modern public goods analysis. For example, some of his examples (including the one described here) contain clear aspects of lumpiness, which he does not describe. In other words, to obtain the shorter work day, a mass of laborers may have to act in unison to obtain a critical amount of slowdown, as in a step-good game.¹⁰ More importantly, Mill does not apply his reasoning to roads, canals, railways, and education – the examples he introduced earlier (Baumol, [1952] 1969: 190). He limits his collective action analysis to more contrived cases and misses its application to more general ones. This is because Mill did not have the same goods based understanding of the problem that allowed twentieth century economists to demarcate cases. Without such partitioning, Mill failed to recognize the greater significance of his own analysis.

3. Valuing public goods

3.1. The Voluntary Exchange Theorists

The problem received little attention until the turn of the twentieth century when German and Italian economists addressed the issue from a different angle. Rather than asking whether individuals would voluntarily contribute to collective interests, these theorists attempted to determine the proper way of valuing goods that were publicly provided. Since most believed that these values could be based on voluntary exchange, Richard Musgrave (1939) dubbed them “The Voluntary Exchange Theorists.” Scholars, such as Antonio De Viti de Marco, Eric Lindahl, Emil Sax and Knut Wicksell, argued that governments established tax shares and expenditures “as if” they were responding voluntarily to negotiations among individuals. With some modifications these negotiations could produce optimal results.

For example, Lindahl argued that if two asymmetric parties negotiated over an amount of governmental expenditure, they would end up at a variety of optimal and non-optimal outcomes. This was because “each party naturally tries to shift the equilibrium, within that interval, to its own advantage” (Lindahl, [1919] 1967: 171). But if the two parties had the same bargaining power, the outcome would settle in on “the standard position” where one party’s marginal valuation of the last dollar spent intersected with the other party’s marginal valuation of their last dollar spent. In other words, democratic processes, such as negotiations between parties, could lead to optimal results.

Lindahl then suggested that his description was a good approximation of real world processes. He wrote, “This proves that the actually existing graduation of taxation is in a sense the result of the same economic principles which cause the same goods to have the same prices on the free market” (ibid.: 173–174). For Lindahl, as well as the other Voluntary Exchange Theorists, governments mimicked markets. They produced roughly optimal outcomes through voluntary exchange.

The Voluntary Exchange Theorists focused their attention on optimal taxation, optimal expenditures, and how these optima could be obtained. They did not focus on whether individuals would voluntarily contribute to governmental projects nor how unorganized groups might respond to nonexcludable benefits. For these reasons they made larger contributions to the theory of public goods than they did to the theory of collective action.

3.2. *Paul Samuelson*

The problem of valuing public goods was making slow progress until Paul Samuelson addressed the idea in the early 1950s. Then he showed exactly why it was so difficult to solve. Many scholars, even today, credit Samuelson with the theory of public goods (Dowding, 1997; Downs, 1957). Like any great theorist, however, Samuelson’s work grew out of others. Modern political theorists, such as Hume, Madison, and Mill, worked out the free-rider idea; Voluntary Exchange Theorists, such as De Viti de Marco, Lindahl, and Wicksell, distinguished goods that were appropriate for private production from goods that were appropriate for public production; and Musgrave (1939), Bowen (1943), and Baumol ([1952] 1969) were making great strides toward establishing the mathematical conditions for optimal production of public goods before Samuelson.

None of these theorists made the distinction between private goods and public goods entirely clear but neither did Samuelson, at least not at first (Samuelson, 1954; 1955). Samuelson created the public good/private good terminology, but he based it on “jointness,” a term describing the indivisib-

ility of a good, rather than excludability.¹¹ Samuelson (1955) defined private consumption goods as those goods where total consumption equals the sum of each individual's consumption and public consumption goods as those where each individual consumes the same total. This was the critical distinction needed to derive the optimality conditions, but as Head (1962) pointed out, the important assumption was excludability, not jointness.

Samuelson showed that the Pareto-optimality conditions no longer hold when public goods are present. In the case of two private goods and two individuals, named 1 and 2, the optimality condition is $MRS_1 = MRS_2 = MRT$. But when one of the goods is public, the optimality condition changes from equality to $MRS_1 + MRS_2 = MRT$. The new condition has a disastrous effect on the market's ability to allocate goods because markets charge common prices for all consumers, yet these conditions require separate prices for each consumer.

As Samuelson pointed out, no decentralized pricing system would accomplish this task and voting or signaling systems would fail as well (Samuelson, 1954: 388; Head, 1962: 199–200). Self-interested individuals will always have an incentive to understate their true demand for public goods. In this sense, “the solution ‘exists’; the problem is how to ‘find’ it” (Samuelson, 1954: 389).

Samuelson had discovered the optimality conditions that Howard Bowen, Richard Musgrave, and The Voluntary Exchange Theorists were working toward. He showed what the optimum looked like when public goods were present and created the public good analogue to the fundamental theorems of welfare economics. Nevertheless, the major themes in *Logic* were not addressed by Samuelson any more than they had been addressed by The Voluntary Exchange Theorists.

4. Two harbingers

Any history of collective action theory would be incomplete without the contributions of James Buchanan and Anthony Downs. Both wrote about vastly different subjects, but their analysis had similar implications for *Logic*.

4.1. *James Buchanan*

Buchanan's (1965) seminal work on club goods was published the same year that Olson published *Logic*. Although neither work was based on the other, it is clear that both men exchanged drafts before publishing their works (Olson, 1965: 38, n. 58). In his paper, *An Economic Theory of Clubs*, Buchanan determined optimal club membership using a cost and benefit framework,

similar to Olson's. He concluded that the optimal number of users was finite and varied according to marginal benefits for the quantity of the good that was produced.

Buchanan's insight was to find a way in which the free-market might provide collective goods semi-optimally. In this way, his work was a natural extension of Samuelson (1954). Buchanan based his idea on the concept of a club good – a good where some individuals could be excluded while others were not – like community pools. Buchanan argued that club owners could fix their prices and expect new members to join the club as long as each member's marginal benefits were at least as great as his/her marginal costs. This would lead to optimal exclusion and cause those who valued the good to pay for it.

Buchanan, however, did not fully solve the problem that troubled pure public good theorists like Samuelson and Musgrave. Club owners could not exclude those whose marginal benefits exceeded marginal costs, nor would they want to. Hence, club goods would not be allocated according to marginal rates of substitution. The problem might be improved if there were sufficient clubs to provide enough goods for each marginal rate of substitution (Tiebout, 1956) but this might require as many clubs as there were individuals. For this reason, Buchanan's argument should be considered a partial solution to the valuation problem, not a complete one.

4.2. *Anthony Downs*

Samuelson, Musgrave, and others offered little more than a nod to the question of how individuals behaved when public goods were present. They claimed that public goods would *not* be provided optimally, but they did not determine how rational individuals would behave in response to public goods. Anthony Downs (1957: 170) was one of the first to fill the gap:

[P]rovision of national defense is a boon to every citizen; even if one citizen paid for it solely out of his own pocket, all the others would gain from it. Where citizens are numerous, each man finds it advantageous to refuse to pay for such indivisible benefits. Instead he assumes that other men will bear the cost and he will benefit. . . . This situation means that voluntary action cannot produce a Paretian optimum in a large society when collective goods exist.

Downs attributed this idea, or at least the last sentence, to Samuelson (1955). This may explain why scholars inaccurately credit Samuelson with the theory of free-riding behavior. Using the concept of universal free-riding as his starting point, Downs explained how rational ignorance and rational abstention might arise.

Take the latter for example, Downs argues that it is not rational for individuals to vote because the probability of affecting the outcome of the vote is so small that expected benefits from voting do not outweigh the costs of voting (in terms of time, costs of gathering information, etc.). Hence, universal free-riding is expected.

Although Downs developed this idea around a prominent step-good and created a clear rationale for why it would not be provided, he did not extend his idea beyond rational ignorance and the election of a preferred candidate. Social scientists could easily apply his work to other step goods, but they could not draw easy conclusions about other types of collective goods, such as police protection where benefits are incremental for each unit of the good produced.

Moreover, after claiming that it is not rational for individuals to vote, Downs attempted to save himself from this conclusion by claiming that rational individuals must be motivated by a desire to support democracy. He wrote, "voting is a necessary prerequisite for democracy; hence democracy is in one sense a reward for voting" (Downs, 1957: 270). But supporting democracy is a public good with all the same free-riding problems that he described before.¹² By replacing one public goods problem with another, Downs demonstrates both his understanding of the problem and his misunderstanding of the problem in the same chapter. Perhaps this is why Downs did not have the final say about collective action theory.

5. The logic of collective action

Samuelson, Musgrave, and others showed that public goods would be sub-optimally supplied, Buchanan showed that partially excludable goods would improve efficiency, and Downs showed why rational voters would free-ride. Olson went at least one step further. He argued that the nonexcludability of collective benefits would cause widespread free riding in a variety of settings. "Just as it was not rational for a particular producer to restrict his output in order that there might be a higher price for the product in his industry," he wrote, "so it would not be rational for him to sacrifice his time and money to support a lobbying organization to obtain government assistance for the industry" (Olson, 1965: 11). Cartels, unorganized labor, and interest groups were all afflicted with the problem. Not only did Olson show that free-riding would prevent groups from obtaining optimal outcomes, as did his predecessors, Olson made predictions about what would happen in the absence of selective incentives or institutional constraints. His loose arguments applied to step goods and to continuous function goods, in a manner that was accessible to a broad audience. In other words, Olson never lost the forest for the trees.

Although the forest in *Logic* was clear, Olson admitted that the details were somewhat muddled. Using a cost-benefit framework, Olson concluded that the rational contribution depended upon group size and group symmetries. In large, symmetric groups (like labor movements) everyone would free-ride. In small, asymmetric groups (like cartels) some actors might contribute. Olson based these conclusions on the fraction of group benefits that an individual gained. This fraction led him to results that varied by group size and group symmetry, rather than marginal benefits and marginal costs.¹³ Such imprecisions led to the strongest criticisms of his work (Frohlich and Oppenheimer, 1970; Chamberlin, 1974; Sandler, 1992).

Since asymmetries in individual benefits might encourage some individuals to contribute while others free rode, Olson also concluded that there was a tendency for smaller actors to exploit larger ones (his exploitation hypothesis). In privileged groups the actor which gains the most benefit has an incentive to contribute while others do not. Hence there is “a surprising tendency for the ‘exploitation’ of the great by the small” (Olson, 1965: 35).

Finally, Olson made some interesting conjectures about the importance of selective incentives (his by-product hypothesis). He argued that the benefits obtained from collective goods, such as lobbying efforts, were mere by-products of the selective incentives that encouraged individuals to join. For example, the American Medical Association (AMA) provided valuable lobbying efforts for doctors within the medical industry, but these benefits were nonexcludable and would not encourage individuals to contribute (Olson, 1965: 138–141). The reason that individuals joined the AMA, Olson argued, was to obtain private inducements, such as lower malpractice insurance, a copy of the professional journal, and admission to educational conferences. These benefits only came with membership and they were the true reason why individuals contributed. Making sure that rewards were only given to contributors and punishments were only given to noncontributors was the secret to large group success.

6. Conclusion

In claiming that Olson’s contribution was the forest not the trees, it may seem like the contributions of modern political theorists such as Hume, Hamilton, Madison, and Mill were ignored. These authors developed theories of free-riding behavior, they understood selective incentives, and between them they offered a number of useful applications. If their ideas were prominent in the mid-twentieth century, it might seem that Olson had little to add to the general understanding of the collective action problem.

But these ideas were not prominent. Most of these theories were hidden in a mass of written works that were totally disregarded until Olson gave them relevance again. As Thomas Kuhn puts it, science is not a “process of accretion” (Kuhn, 1970: 3). It contains discoveries that are of little relevance for the time, deemed unimportant, and later rediscovered (Darden, 1991).

The same is true for the theory of collective action. Hamilton and Madison may have developed their understanding of free-riding behavior without direct contact from Hume or from each other (Dougherty, 2003). Olson arrived at a similar conclusion without reference to either man.¹⁴ Although Olson addressed the public goods problem from an angle similar to modern political theorists, he did not plagiarize them. He discovered the same ideas anew and went much deeper in the analysis. For this reason, the development of collective action theory should be viewed as protracted and disjoint. Many contributed to collective action theory but Olson made large contributions as well.

Olson was not a popularizer. A popularizer renders a developed idea intelligible to a broad audience. Arthur Miller (1981) popularized Albert Einstein, but Olson popularized no one. Olson was the first to realize that collective action theory applied to social movements, interest groups, and international organizations, and he was the first to comprehensively articulate the problem in a general form in the twentieth century. He created a reasonable series of hypotheses about asymmetric benefits and exploitation that were not introduced before. Only his free-riding hypothesis, group size thesis, and arguments about selective incentives (which usually arose in the context of government compulsion) appeared before *Logic*. When they did appear, they were applied more narrowly than Olson applied them and lacked a careful explanatory mechanism for which Olson set the tone. In addition to isolating potentially important details that stimulated a variety of research, Olson’s insight on the big picture was part of his legacy.

Notes

1. Two theorists that appear to have addressed the problem before Hume are Thomas Hobbes, *Leviathan* and Jean-Jacques Rousseau, *On social contract*, Book I, Ch. 7.
2. Hume’s reasoning is different from Olson’s. Hume believes that large groups fail primarily because it is difficult to “concert” and “execute” the drainage of a field among many individuals. Free-riding plays only a secondary roll. Olson argues that large groups fail primarily because of the free-rider problem.
3. For a more thorough description of Madison’s understanding of the collective action problem see Dougherty (2003).
4. The most notable of these, and “possibly” the link between Hume and the two Americans was Joseph Galloway – a lawyer from Philadelphia and well-reasoned loyalist (Dougherty, 2003).

5. Also see To Jefferson, 3 October 1785 (Hutchinson et al., 1962, 8: 373–374).
6. Also see Alexander Hamilton to James Duane, 3 September 1780 (Syrett et al., 1962, 2: 406; Federalist 15; and Federalist 16).
7. For Hamilton's observations that states were free-riding on trade policy see The Continentalist No. VI, 4 July 1782 (Syrett et al., 1962, 3: 99–106). Also of interest is his views as receiver of the Continental tax (Dougherty, 2001: 64–66).
8. To the best of my knowledge the founder's understanding of the collective action problem was first recognized in Dougherty (2001) and elaborated on in Dougherty (2003).
9. In addition to the case described here, Mill applied his theory to: the Wakefield system of colonization (ibid.: 958–959), the decision to rob or defraud one's peers (ibid.: 959–960), and the collective provision of lighthouses and buoys (ibid.: 968). The theory behind each of these examples was essentially the same.
10. Step-goods are public goods that produce benefits only when a critical mass of contribution has been reached, such as an election where a voter receives public benefits from his favorite candidate winning only if the candidate secures a plurality of the vote.
11. Samuelson (1954) described "private consumption goods" and "collective consumption goods." A year later, he changed the terminology to "private consumption goods" and "*public* consumption goods," which he later shortened to their current forms in Samuelson (1958).
12. Although civic duty could explain voting if Downs defined civic duty as benefits received from the *act* of participating, Downs clearly rejects this notion. He states that "the difficulty with such arguments is that they rationalize everything. If it is rational to vote for prestige, why is it not rational to vote to please one's employer or sweetheart? Soon all behavior whatsoever becomes rational because every act is a means to some end the actor values. To avoid this sterile conclusion, we have regarded only actions leading to strictly political or economic ends as rational" (Downs, 1957: 276).
13. At one point Olson refers to the privileged individual and at another point he refers to the privileged group. Contrast his statements on pages 28–29, which describe the response of a single actor, with his statements on pages 35–36, which describe the rational response of actors in plural. In honor of Olson, I attempt to sort out what followed from his framework in the appendix of Dougherty (2001: 183–192). Using the core of his cost and benefit analysis, it is rational for a single actor to contribute or for no actor to contribute – regardless of group size. This depends on whether benefits exceed costs for positive quantities of the good, whether the single actor has more benefits than all other actors, and whether actors have sufficient endowments to make such contributions. Actors, in plural, would contribute only when more than one of them gain the same benefits and these same benefits are the largest obtainable benefits for the group. Of course, such results apply to public goods with summation technology and no income effects.
14. Olson seemed to have Wicksell in mind when he wrote *Logic*, but his references to Hume and Mill suggest that he added them after Rawls read a draft of the book (Olson, 1965: 33, n. 53; 102, n. 12, respectively). Hamilton and Madison were not cited and presumably had no impact on Olson.

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