

Economists' interest in collective decision after World War II: a history

Beatrice Cherrier

beatrice.cherrier@gmail.com

(CREM, Université Normandie)

Jean-Baptiste Fleury

jbfleury@gmail.com

(THEMA, Université de Cergy-Pontoise)

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1. Introduction¹

In the fall of 1988, John Pencavel, then editor of the *Journal of Economic Literature*, embarked on a thorough revision of the classification system for economic literature, the JEL codes. Drawing on Dennis Mueller's *Public Choice* textbook, he proposed to create a "D6. Economic Welfare and Public Choice" section within the *Microeconomics* category. D6 was to include cost-benefit analysis, externalities and property rights, normative criteria and their measurement, as well as three entries on normative theory, positive theory and empirical studies in public choice. Gordon Tullock soon complained that the tentative scheme was "downgrading" his field, which was previously an independent subcategory. In reaction, the classifiers contemplated the creation of a section within *H. Public Economics*, but it was felt that the public economics had nothing to say on the "connection between policy and political institutions," and that neither "free rider" problems nor Clark taxes and Groves mechanisms belonged there (Cherrier 2015).

It was Roger Noll who eventually suggested the addition of a whole new section within the *Microeconomics* category. It was, he explained, the only way to do justice to the five percent of the profession who shared "a theme and method: analyzing public sector outcomes on the basis of the economic model of individual behavior, [...] make explicit connection between policy and political behavior" and "aid in the advancement of work on policy making." The new section was to cover social choice theory, the theory of teams, economic

¹ We thank Roger Backhouse, Fabio Padovano, Alain Marciano, Steve Medema and the participants into HISRECO,

models of political processes, bureaucracy, and policy analysis of the Tabellini-Alesina type. Finding a name proved tricky. Noll wanted to call the new section neither *Public Choice* (“to avoid association with the political views of Gordon and Jim Buchanan”), nor *Political Economy* (too Marxist), nor *Political Economics* (a term he believed had wide currency only at Stanford and Caltech and might therefore sound parochial). He thus settled on *Collective Decision-Making*, a wording that he thought was in limited currency, yet “neutral” and consistent with a section that seek to “list everything published that looks at political aspects of policy or at collective choice processes.”

As this anecdote shows, collective decision or choice is thus a sizeable yet elusive concern for economists. What the term refers to and covers exactly is hardly made explicit by those who use it (see for instance Sen 1970). Social choice theorists routinely define it as the study of voting mechanisms. Public choice economists traditionally consider that collective decision encompasses all “non-market decision making,” the expression they had originally chosen to name their community. Yet, there is strong disagreement among them as to whether state intervention should be construed as deriving from, alternative to or even betraying collective decision. Likewise, collective decision is sometimes conceived as encompassing the market, and sometimes conceived in opposition to it. Kenneth Arrow (1951) viewed voting and market mechanism as alternative methods for making social choice. But the late 1950s, Paul Samuelson wrote to Richard Musgrave that he “considered the market mechanism as one special kind of voting system.”² Economists interested in collective decision have thus used several expressions in their work, including social choice, public choice, team, committee, or group decisions. Social choice and public choice characterize research topics but also communities, with the consequence that they overlap but are not synonymous with collective decision. Our object is also made elusive because it is often defined as a mechanism whereby a group of individuals with different preferences and valuations agree on a candidate, a public equipment, a goal, an investment, a tax rate, and so forth. Yet, as Hausman (2011) points out, notions of preferences, values and choice are often difficult to disentangle.³ Finally, those

² Mueller (1976, 2003) explains that collective decision arise from market failures, and frames “the theory of the state, voting rules, voter behavior, party politics, the bureaucracy, and so on” in terms of collective decision in a direct or representative democracy. Tideman (2006) defines collective decisions as the coordination of intended actions by members of a collectivity. He proposes a taxonomy of collective choice procedures and norms in which he distinguishes between those procedures designed to achieve assent to the decision (consensus, trade or extortion) and procedures requiring agreement to their use (authority, contest, voting).

³ In his survey of the concepts of preferences, values and choice, he explained that (1) economists have usually defined preferences in terms of valuations and (2) usually believe that agents choose the alternative that is at the top of their

theorists, experimentalists, mechanism designers who have studied the public economy, voting, bureaucracy, constitutions, taxation, public goods, etc. have often focused on information, coordination, allocation or preference-revelation, rather than collective decision *per se*.

The purpose of this paper is thus to track and explain economists' rising, yet elusive and unstable interest in collective decision processes after World War II. Several historians have associated the rise of collective decision in social sciences with the Cold War. Amadae 2003, for instance, claims that grounding democratic processes and public policy-making into rational choice theory was a deliberate move by a small set of economists and political scientists mostly associated with RAND to rescue the foundations of American democracy from the Soviet threat. We believe that such narrative should be complemented by the study of another aspect of economists' identity. Although they were undoubtedly interested in the philosophical aspects of collective choice, they were also practitioners increasingly involved in the daily business of policy design and evaluation, so that even most theoretical works were informed by concerns with practical policy-making.

Our claim is that economists' interest in collective decision has also been shaped by the transformation of their relation to policy-making. It emerged in the late 1940s and 1950s as a response to the dilemma created by their growing involvement with policy, one that required working with normative criteria at a time when the pressures exerted by natural scientists, conservatives, McCarthyites and liberal politicians alike motivated economists to develop a "value-free" analysis. A result of this trend was the development of a concern with collective decision within public bodies, groups, firms, parties, etc., which flourished in the 60s as economists faced the challenge of legitimizing or de-legitimizing government intervention in an age of domestic and international conflict. The development of new approaches –positive and normative, axiomatic, institutional, experimental- led to the fragmentation of the study of collective decision in specific fields during the 1970s. As modeling strategies such as the use of social welfare functions to study taxation or the use of game-theoretic models stabilized in the 1980s, concerns for collective decisions tended to be overshadowed by the focus on information, coordination, preference revelation and strategic behavior.

preference ranking. He concludes that choices, preferences and valuations are difficult to disentangle in economic models.

2. Wars, value dilemmas in policy-making and the emergence of collective decision

In the interwar years, economists were debating the relative merits of those systems coordinating producers and consumers' plans through the adjustment of prices (markets) or through a central planner's decisions (socialist planning). The values underpinning such policy decisions were openly discussed: Abba Lerner's conclusion that state intervention should be rooted into consumer sovereignty was challenged by Maurice Dobb and Oskar Lange, the former arguing that individual preferences should be sidestepped to the benefit of transcendental values (see Peart and Levy 2008 for an overview of these debates). Whether it was the task of the economist to discuss such values was also a matter of debate. On the one hand, Abram Bergson (1938, 323 and ft2), then a young Harvard PhD, regarded "the determination of prevailing values for a given community [as]... a proper and necessary task for the economist," and Georges Stigler (1943) more explicitly urged economists to venture beyond the boundaries of positive economics and discuss "applied ethics."⁴ On the other hand, many economists agreed with Lionel Robbins's 1932 admonition that they should shy away from working with values and, more specifically, with his dismissal of interpersonal utility comparisons.⁵ John Hicks and Nicholas Kaldor, among others, consequently developed what would later be called a "New Welfare Economics," in which Pareto's definition of an optimal allocation of resources was extended to situations in which welfare losses could potentially be compensated by wealth transfers. Representing individuals' preferences as ordinal utilities, they derived conditions for the maximization of welfare (equalization of marginal rates of substitutions, of marginal costs and prices) without comparing individual utilities directly.

As made clear by the socialist calculation debates, an "organicist" (to use Buchanan's terms) view of the State then prevailed, so that the values guiding its action were not conceived as deriving from individual choices. Economists' concern was thus not to question

⁴ "At the level of economic policy, then, it is totally misleading to talk of ends as individual and random; they are fundamentally collective and organized...the economist may properly exceed the narrow confines of economic analysis. He may cultivate a second discipline, the determination of the ends of his society particularly relevant to economic policy.... applied ethics" (Stigler 1943, 358).

⁵ Robbins ([1932]1935, 137) argued, for instance, that the economist should refrain from making statements such as "transfers from the rich to the poor will increase total satisfaction."

the legitimacy of the social planner's objective function. Their technical apparatus aimed at evaluating the effect of such and such policies on citizens' welfare, so as to study the comparative merits of public policies and market outcomes. It was the objective that Bergson had in mind when he constructed his social welfare function. In his 1938 article, he introduced it as a tool for "stat(ing) in a precise form the value judgments required for the derivation of the conditions of maximum economic welfare." It took all possible variables which could influence people's welfare and returned a ranking in which all configurations of the economic system were unequivocally considered 'better', 'worse' or 'indifferent' to others. Economists' value judgments subsequently imposed further constraints on the shape of this function, and enabled the determination of optimal conditions to be reached, he explained. Paul Samuelson, who had graduated from Harvard in these years, subsequently devoted the 8th chapter of his thesis – published as *Foundations of Economic Analysis* in 1947 – to the examination of such "value judgments." He focused on consumer sovereignty, cases where prices were not included in the explanatory variables, and "a more controversial value judgment [...] that the welfare function is [...] symmetrical with respect to the consumption of all individuals" (Samuelson 1947, 224-227).

A few economists attempted to relate policy objectives to individual preferences and choices, but they eventually concluded that such exercise either fell outside the boundaries of economics, or was too abstract and impractical as a guide for policy-making. Inspired by the continental tradition of Adolph Wagner, Antonio De Viti De Marco, Knut Wicksell and Erik Lindahl, the newly emigrated Richard Musgrave (1939) considered a more integrated theory of taxes and public expenditures that would emphasize a "voluntary exchange" relationship between the individual and the state rather than the traditional "ability-to-pay" vision characteristic of American public finance theorists, such as O.C. Brownlee and Allen, Hugh Dalton, and Henry C. Simons. Yet he quickly abandoned such approach he found of "little practical significance," if only because individual were in practice *constrained* to pay taxes, and because of the underlying competitive price assumption. A "planning approach" to public finance was preferable, he reflected. Problem was, this approach raised the question of how individual tastes would be combined into the "social value scale" necessary for the determination of taxes by the planner. Such issue was one for psychologists, he warned, so

that economists should take collective wants as given.⁶ Finding out the optimal provision of public goods similarly led Howard Bowen to inquire how public decision could be made consistent with individual preferences. One solution was to resort to the voting process, that he (1943, 33) considered as “the closest substitute for consumer choice.” Bowen identified some voting procedures in which the decision of the “modal vote” approximated the optimum allocation point, and others in which the inability to reveal information led to suboptimal results. Overall, he concluded that majority voting was often unreliable, sometimes “hopeless” and “virtually useless.” It “can seldom be regarded as an unequivocal indication of public desires,” he lamented. If “legislators, elected or appointed administrators, dictators, etc.” wanted to find out “the points of intersection between the curves of total marginal substitution and average (or marginal) cost,” they should better resort to other types of revelation mechanisms such as “polls, questionnaires, interviews, budget investigations, and other devices involving samples” (pp. 42-43).

Intellectual debates on the proper values to guide government intervention – and on the legitimacy of economists in discussing these – were however swept aside by the outbreak of World War II, the reconstruction and the ensuing mounting of Cold War tensions. In the United-States where many European economists found refuge, 1939 opened an era when the legitimacy of government planning was never questioned. Public expenditures rose from \$9.5 billion to \$93 billion in 1945, from 12% of the GDP in 1942 to 42.1 in 1945 (CEA 2008). Overnight, the government found itself in charge of devising new weapons (aircrafts, radars, nuclear bombs) and efficient ways to use them against the enemy, allocating national resources to organize production efficiently on an unprecedented scale, funding the war effort by levying taxes and borrowing, and preventing prices from soaring. Whether in charge of identifying the right amount of taxes at the *Treasury* (Milton Friedman) or at the *Department of Commerce* (Howard Bowen), of containing inflation at the *Federal Reserve Board* (Richard Musgrave), of improving resources allocation and quality control at the *Office of Strategic Services, the Statistical Research Group* (Friedman, Stigler, Jimmie Savage) or at the *National Planning Board* (Samuelson), virtually every economist in the United-States was suddenly thrown into the daily business of policy-making, compelled to identify the proper means to fulfill the government's ends.

⁶ “A theory of determination of group preferences is an important part of a general theory of social want satisfaction, but it may be separated from the economic problem of planning for the satisfaction of collective wants,” he reflected (Musgrave 1941, 323).

The immediate postwar context consolidated the government's unprecedented involvement in the society and the economy, notably by the Employment Act of 1946, which also institutionalized the economist's role as a forecaster and policy-advisor through the establishment of the Council of Economic Advisors and the Joint Economic Committee (Bernstein 2001, Backhouse 2010). This, together with the structural econometrics methods developed by those European *émigrés* recruited at Cowles, spurred the development of input-output analysis and large macroeconomic models. The Cold War additionally entrusted economists with permanently guarantying efficient production management.

Performing their tasks without inquiring much on the origins and justifications of the government's objective function (see Schorske 1997, 296) proved more difficult in the postwar context.. As new regimes of scientific funding emerged, natural scientists such as MIT physicians Vannevar Bush and Karl Compton routinely pointed to social scientists' inability to produce value free knowledge. In spite of efforts by social scientists, among whom NBER's Wesley Mitchell and agricultural economist Edwin Nourse to advance the idea of an essential unity of natural and social sciences, the *National Science Foundation* was established in 1950 without a social sciences division (Solovey 2013). Funding for economic research largely came from military agencies and major philanthropic foundations, especially the Ford Foundation, and all of these emphasized problem-oriented research, quantification, theoretical and mathematical underpinnings, and, most importantly, scientific neutrality and value free analysis (Backhouse 2010, Crowther-Heyck 2006, Amadae 2003).

Public intellectuals and politicians, in particular McCarthyites, added to the suspicions against value-laden analysis.⁷ Not only was the very idea of government planning associated with a Soviet-like means of social organization, but economists' previous participation to New Deal policy initiatives involving social welfare regulations, labor relations, social security, and agricultural planning, made them especially vulnerable to value-bias accusations. Keynesian scholars were increasingly suspected, such as Bowen, then chair of the department of economics at the University of Illinois (see Solberg and Tomlinson 1997), and econometrician Lawrence Klein, who had links to the communist party until 1947, flew to Oxford in the early 1950s. Textbooks spreading Keynesian ideas, such as Lorie Tarshis's and Samuelson's *Economics* were also attacked (see Giraud 2013). This postwar context provided a strong

⁷ For a different view of the influence of McCarthyism on economics, see Weintraub 2016.

impetus, in economics as in sociology and political sciences, for the development of “value-free” analysis (e.g. Bender 2006).⁸

Economists’ attempt to build a *New Welfare Economics* devoid of any value judgment was, however, increasingly deemed unsatisfactory. Firstly, as Tibor Scitovsky showed, this approach could yield inconsistent results. But a second (and related) line of criticism, found in a number of contributions of the 1940s and early 1950s, was that such an approach “cannot be used as a guide to social policy” (Arrow 1951).⁹ When addressing public policy issues from a scientific perspective, it seemed that most economists would follow Samuelson's (1947, 221) cautious statement about the social welfare function that “without inquiring into its origins, we take as a starting point for our discussion a function... which is supposed to characterize some ethical belief – that of a benevolent despot, or a complete egoist, or 'all me of good will', a misanthrope, the state, race, or group mind, God, etc.” Thus, while most of them were not prepared to endorse Gunnar Myrdal's claim that economists should work with explicit value premises, they nonetheless acknowledged that some values were necessary to guide their policy analysis.¹⁰

A way out of this value dilemma was to point to some form of consensus found in the American society. Musgrave (1948, 388) kept discarding the “social philosophy” problem of the determination of ends, but nevertheless retained as a policy objective “the requirement of a tax structure which is ‘good’ in the sense of contributing most to the maintenance of high employment and price-level stability,” one he believed consensual and minimal. Friedman (1948, 246), who had worked with a Keynesian income-expenditure framework during the war, similarly remarked that: “the basic long-run objectives, shared I am sure by most economists, are political freedom, economic efficiency, and substantial equality of economic power”. And while Samuelson (1947, 224-227) acknowledged that getting rid of values was a

⁸ On political science, Bender (2006) writes: “The political scientist David Easton has found in McCarthyism a stimulus for the development of a more scientific and objective political science, for it provided a “protective posture for scholars.” It was, he suggests, a gain for political science, even if “for the wrong reasons”.

⁹ Arrow was not alone. Samuelson (1947, 250) wrote that “concretely, the new welfare economics is supposed to be able to throw light on such questions as to whether the Corn Laws should have been repealed” only to point out that it “gives no real hue to action. Boulding (1952, 1) likewise insisted that “the contribution of welfare economics to the discussion of economic policy... is not too encouraging,” partly because it is not “a realistic guide to social policy.”⁹ As all of them reluctantly acknowledged, policy-analysis inescapably required working with values.

¹⁰ In his landmark analysis of the causes of racial discrimination, *An American Dilemma* (1944), Myrdal brought up the values premises (what he called the “American creed”) of U.S. society, namely the democratic ideals that allegedly formed the heart of American institutions, in order to show how segregation was incompatible with such creed.

“delusion,” he contended that the values usually imposed on the government's social welfare function were “more or less tacitly acknowledged by extremely divergent schools of thoughts,’ and “characteristic of much modern thought of the last century... typical of the beliefs of the classical and neo-classical economists.”

A few economists across the epistemological and political spectrum however began to develop another conception of the State that did not force an idiosyncratic notion of “public interest” onto citizens, but, rather, implemented citizens’ collective choice, that is, a choice derived directly from their own preferences for such and such policy. “State decisions are, in the final analysis, the collective decisions of individuals,” James Buchanan (1949, 498) wrote, adding that the state had “no ends other than those of its individual members.”¹¹ In their 1953 book, the political scientist Robert Dahl and the economist Charles Lindblom (1953, xxi) asked “what are the conditions under which numerous individuals can maximize the attainment of their goals through the use of social mechanisms?” Such vision was also echoed by Kenneth Arrow. Collective choice ought to be built solely in the basis of individual preference, he argued, thereby rejecting “mysticism” and “the organism approach to social problems” (Arrow 1950, 133). In his famous theory of public expenditures, even Samuelson (1954, 387) later used the same words to dismiss the existence of “mystical collective mind.”

Social objective functions derived from the aggregation of individual choices? The emerging concern with collective decision

If policy ends were to be grounded in individual preferences, then one had to inquire on the appropriate mechanism whereby individual preferences could be aggregated into a common social objective. Because they were drawing on political science as well as economic insights, Dahl and Lindblom were able to consider a large range of collective decision and coordination processes “through which the [...] values [...] can be maximized whenever scarce resources are significantly involved” (54). More specifically, they listed the market, polyarchy

¹¹ A Jstor search indicates that from 1940 to 1950, only 14 papers used the wording “collective choice” or “collective decision”. And none of them except Buchanan’s paper were the work of an economist using such wording to characterize the state as such. Other papers used the wording to characterize individuals being coordinated, for instance when referring to the saving behavior. Interestingly, collective decisions were addressed before 1940, for instance by Musgrave (1939).

(democracy), hierarchy, and bargaining.¹² The Scottish economist Duncan Black likewise proposed to blend economics and political science into a theory of committee decisions in order to “contribute to the development of the theory of trade-unions, the firm, and the cartel; and to provide the basis for a theory of the equilibrium distribution of taxation or public expenditures” (Black 1948a, 23, see also Guilhot & Marciano 2016).¹³ Against the former pessimism of Bowen (1943), Black (1948, 1959) demonstrated that simple majority voting could yield interesting results for those looking for optimal decisions. Under the restrictions that individual ordinal preferences were single-peaked, committee decisions following a simple majority rule resulted in a political equilibrium, defined as the collective ranking derived from individual ones, which would lead to the choice corresponding to the one of the median voter.¹⁴ With such an approach, the criterion to assess the rationality of a collective choice was shifted away from Pareto and traditional welfare economics. Here, a rational collective choice would elect the candidate that “stands highest on the average on the electors’ schedules of preferences” (Black 1949, 159).

Black’s encouraging analysis notwithstanding, economists found their early efforts to study the properties of collective decisions rule and to use them as a basis for policy making utterly discouraging, especially in the case of normative analysis. The multiple approaches they developed were all riven with difficulty. In his *Social Choice and Individual Values* monograph, Arrow attempted to displace the focus of welfare economics away from the definition of a collective welfare criterion and towards the issue of how society chooses the value-judgments that shape the Bergson-Samuelson function. What immediately garnered attention, however, was his (im)possibility theorem stating that no collective choice could satisfy the rationality conditions *and* another set of five conditions further restricting the domain of collective choice—for instance that the social welfare function should not be imposed on individuals or be dictatorial. Some colleagues tried to sidestep his result, such as Baumol 1952 or Kemp 1953, but other welfare economists did not feel impacted by the monograph. Arrow’s new intellectual framework and associated language, as well as his

¹² For instance hierarchy could “be used to remedy the deficiencies of the price system” (213).

¹³ Note that Black wasn’t focused on the competition of political parties, but chose as illustrations many different situations, such as the choice of college curricula, the “proposal... to establish a to factory manufacture a certain good” (1950, 511), or choosing a certain price for a product, the “output for a certain period, or the wage rate of labor, or the height of a particular tax, or the legal school-leaving age” (1948a, 24).

¹⁴ The commonly accepted story tells that this result came to Black almost as a revelation as he was playing around with diagrams, at Warrick Castle in February 1942, while “firewatching in case of air raids” (e.g. Amadae 2003).

axiomatization of individual preferences as complete and transitive ordering was much discussed, but within a restricted community. It largely shaped the emerging voting literature in the 1950s (e.g. May 1952, McGarvey 1953, Farquharson 1956).

In his widely influential 1954 paper on public finance, Samuelson rather emphasized implementation problems. Should the provision of public goods be based on individual preferences, he explained, the state would stumble on agents' incentive to lie about the information needed to identify the optimal amount to produce. Samuelson's comments dealt with collective decision's implementation, but indeed addressed a more general problem regarding the coordination of economic agents and the provision of public goods. It went in the same direction as Howard Bowen's conclusions drawn a decade earlier about the limits of demand revelation processes. In a way, Samuelson's short paper stood as yet another impossibility theorem, this time dealing with the practical implementation of optimal and value-free collective decisions.

Buchanan's contribution to these early attempts to revamp government intervention as a collective decision process consistent with individual preferences stood against Arrow's and Samuelson's contributions. Buchanan argued that Arrow's impossibility theorem could only apply to market processes or majority vote if they were considered as social welfare functions. Yet, as practical processes of decision-making, they were nothing like that to Buchanan. Arrow was, thus, guilty of conceiving the group with the property of an individual. This was, to Buchanan (1954), yet another instantiation of the "organismic" approach to the state that most economists used and which he had criticized as early as 1949. Ultimately, such an organismic approach to the state did not square with his views regarding how to ground public decision on individual preferences only. Buchanan's approach to collective decision-making implied a different way to position the economist *vis à vis* the citizen. In that, it also testified to his willingness to exert influence on how economists saw themselves taking part in the process of policy making. Buchanan notably criticized Samuelson's and, more generally, the economist's approach to the provision of public goods, on the grounds that it betrayed a view of the economist as an omniscient scientist, which was able to identify Pareto-improving policies. Buchanan, on the contrary, thought that the economist was incapable of such predictions and the analysis should always start with a "presumption of ignorance." Thus, the political economist could only expose to the citizen the various effects of different policy

decisions, while Pareto-improving policies would only be decided after unanimous agreement of citizens on the policy to be implemented, an idea he took from Wicksell.¹⁵ Yet, this stance as a “positive political economist” contributed to separate him from many other economists at the time. Very few public finance economists would have followed Buchanan’s 1951 claim that Wicksellian unanimity was as practically implementable as other schemes, and that individuals would voluntarily contribute to the provision of public goods (e.g. Musgrave 1941). Thus, on the matter of practical implementation, Buchanan could not disagree more with Samuelson (see Marciano 2013).

Overall, only a few economists in the 1940s and early 1950s inquired on the study of collective decision making. And throughout this early research, important problems regarding implementation and aggregation of individual preferences were identified. To a number of these scholars, a way out of those problems relied on resorting to some sort of consensus. The similarities of individuals’ values and the resulting stability of the American society were systematically emphasized. Dahl and Lindblom argued that, because of some kind of “social indoctrination,” citizens shared a common set of values which encompassed freedom, rationality, democracy, subjective equality, security, and progress.¹⁶ Arrow (1950, 339) conceded that the five conditions restricting the domain of social choice were value-judgments, but they were “apparently reasonable” expressions of “the doctrines of citizens’ sovereignty and rationality in a very general form” (Arrow, 1950, 339).¹⁷ Disagreements also arose among those scholars, notably with Buchanan’s stance, though his approach emphasized that individuals were able to practically reach a consensus on a collective decision that was Pareto improving.

¹⁵ On balance, Wicksell’s proposal hardly seems more impractical and unrealistic than many of the more sophisticated modern proposals for the application of the marginal cost pricing rule,” he concluded (Buchanan 1952, 178).

¹⁶ Lindblom (1997, 246) remembers that the wide majority of political scientists in the 1940s and 1950s relied on a set of undisputed axioms, among which the notion “that stable governments requires the consent of the governed; that some degree of agreement on values, at least among elites, is necessary for stability.” According to Smith (1997) although these studies of political behavior re-emphasized the role of the individual, they shifted from “an emphasis on scientific analyses (of systems [David Easton], group politics [Robert Dahl], and incrementalist decision-making [Lindblom])... to explicitly normative efforts to further democracy” (Smith 1997).

¹⁷ For instance, “we certainly wish to assume that the individuals in our society be free to choose, by varying their values, among the alternatives available,” he wrote (p. 338).

3. Government intervention, individual preferences and collective decision in an age of domestic conflict

A theoretical emphasis on the costs and limits of collective decision

Although the literature on collective decision remained marginal in the 1950s, the theoretical developments brought by Arrow and Black regarding the necessity of grounding public decisions on individual preferences were increasingly considered as potentially fruitful insights. This trend was illustrated by Musgrave's change of mind. In 1959, he published the *Theory of Public Finance*, arguably the most prominent synthesis on public policy for the decade to come. Motivated by the "search for the good society" (vi), he believed that the field of public finance would guide the "intelligent and civilized conduct of government and the delineation of its responsibilities" which were "at the heart of democracy." Black and Arrow's works on voting had shown that it was perhaps possible for public finance economists to consider again the voluntary exchange approach that Musgrave had discarded in his previous work. He conceded : "I have reversed my original view [...] that the theory of the public household need not concern itself with how social preferences scales are determined. As I see it now [...] the theory of the revenue-expenditure process remains trivial unless these [the social preferences] scales are determined" (p74). The determination of the optimal amount of public goods, for instance, was to be achieved through democratic voting, and the determination of government's budget was seen as "a special application of the general problem of social choice" (116). Musgrave therefore devoted some chapter to the discussion of democratic and voting processes. He acknowledged that majority rules presented limitations, but nevertheless concluded that it was the best collective decision process. The decisions taken aimed at marginal shifts rather than "the whole array of social wants," he explained, and, provided that one was willing to accept interpersonal utility comparisons ("made continuously" by real agents anyway), it yielded results akin to the maximization of collective utility. To warrant his intuition that democracies were, in practice, stable systems, he further noted that "evidence on measurable characteristics of people... lends credence to the assumption that there is a fair degree of similarity among individuals living in a given society" (108-109), an argument reminiscent of the "consensus" advocated throughout the 1950s.

Yet, in the 1960s, Musgrave's optimistic appraisal of majority voting was not shared by a number of his colleagues. Indeed, one important development of economic scholarship on collective decision was the explosion of positive investigations of actual decision processes, which would, for the most part, underline the many problems and inefficiencies they raised. The early developments of Public Choice analysis were made possible by the efforts of Buchanan and Tullock to organize a community revolving around the University of Virginia and, in the late 1960s, the Virginia Polytechnic Institute, to further this trail-blazing research. This nascent community was made of economists but welcomed contributions by political scientists and philosophers as well, shaping an interdisciplinary approach that maintained its consistency thanks to the development, by Tullock notably, of the "Conferences on Non-market Decision Making" and of an associated committee and journal from 1963 onward (see Medema 2000). The name of the journal and community was changed to *Public Choice* in 1967, and in 1970, the new approach was endowed with a separate JEL code (317), a sign of their institutional maturity.

Buchanan and Tullock's 1962 *The Calculus of Consent* is a good illustration of what the community of scholars would look into. *The Calculus* was explicitly aimed at sketching out a theory of collective choice based on methodological individualism. To avoid regression *ad infinitum*, Buchanan and Tullock focused on the process whereby a consensus is reached on those constitutional rules which in turn frame individual and collective decisions. Their aim was normative: to offer a theory of what the government ought to be. To reach certain collective outcomes, individuals choose between market interaction and collective decision-based governmental intervention. While the costs engendered by market failures were rather well-known, they argued that collective-decision procedures were also costly: in a world where individuals showed significant differences in their preferences and aspirations, a less-than-unanimity rule imposed costs on the defeated minority. Unanimity is Pareto-optimal, but reaching a consensus can be long, costly, and sometimes impossible. Rational individuals thus balance the costs of those external effects generated by the market with the costs of having them corrected by a collective decision, so that the size and scope of government intervention should reflect the minimization of these "interdependence costs."¹⁸

¹⁸ Buchanan and Tullock supports a system in which individuals have the possibility of vetoing state intervention so that a consensus cannot be reached when the costs deriving from the voting process are greater than external costs

Interestingly, the normative analysis of the *Calculus* and the contractarian bent reflective of Buchanan's thinking were fed by the positive analysis of the costs and benefits of many collective choice procedures (majority votes, qualified majority, etc.) and institutions such as bicameralism vs unicameral legislatures that were central in Tullock's research.¹⁹ From the late 1950s-on, important contributions added to Black and Tullock's analyses of collective decision process in a wide array of social organization. For instance, Anthony Downs's *An Economic Theory of Democracy* (1957), used spatial competition *à la* Hotelling, to show that the result of political competition would lead a two-party system to lean towards the center of voter's preferences distribution, echoing the median vote theorem. But in some cases where preferences would show strong heterogeneity, or when there would be more than two parties, cyclical majorities and dangers of political instability could arise. He also concluded that since voting was costly, there was some paradox to see rational individuals actually voting, unless voters have a strong preference for democracy. Other contributions to the positive analysis of group decision-making addressed topics such as bureaucratic behavior, budgeting processes, and other specific decision-making rules, while the studies of majority voting and winning coalitions were complemented by the work of political scientists such as William Riker.

Buchanan and Tullock's approach also illustrated the rise of a new way to criticize government intervention. The development of an economic analysis of the way collective decisions were made allowed the direct comparison of individual and collective decisions. Thus, in a context of increasing government spending and intervention on economic and social life, the early public choice literature established that economists could not criticize market failures and consider the State as a possible solution to them (or even as having an important role in stabilizing the macroeconomic situation) without considering the flip side of the coin, that is, collective decision costs. One obvious point developed by Buchanan and Tullock lied in the tyrannical aspect of majority decisions without log-rolling: government decisions could be criticized because they didn't reflect the will of the citizens, for instance because they could not allow a minority to express the intensity of their preferences. Majority voting could be conceptualized as the external effects of some individuals' behaviors on others. Research on rent-seeking, bureaucratic behavior, majority cycles, and rational

generated by market activity. Independently of Coase, they also analyze cases when the costs of voluntary contractual arrangements are the smallest (Marciano 2013).

¹⁹ This follows Buchanan's stance as a "positive political economist" described above.

abstention, further nurtured such criticisms by showing the potential inefficiencies of collective decision making in reflecting citizen's tastes. But there was also a constitutional critique of government intervention, especially for Buchanan and Tullock. More precisely, these authors lamented on the increasing size of the government in American society, which amounted to a gradual shift of economic activities away from the market and towards the realm of collective decision. This was, to them, equivalent to a change in the constitutional rules which needed the unanimous consent of the population, a change that had not been clearly and publicly discussed.

In short, both positive analyses identifying the problems of collective decision-making, and normative analyses trying to solve some of them, produced a rather grim picture of government and collective decisions up to the mid-1970s (Mueller 1976).²⁰ Moreover, Buchanan and Tullock's appreciation that the state had to reflect individual preferences, and could not be regarded as pursuing some public interest loosely defined, was only an element of the broader picture painted by the early public choice literature. By systematically applying the assumption of rational self-interest agents to the study of how individuals interacted within groups, these economists opened many black boxes—e.g. governmental bodies, parties, clubs, but also firms, trade unions and other small and large groups. In doing so, their outlook emphasized how heterogeneous individual values were, and led to a criticism of the view that the group as a whole could be represented by a single objective function to be maximized.²¹ Their analysis was emptying the relevance of resorting to some set of commonly shared values, of notions such as the "public interest". In opposition with economists' tendency to emphasize the similarities between individuals' values in the previous decade, this new generation of studies was built on the premises that conflict was pervasive in human organizations. This outlook echoed the transformation an American society riven with domestic violence and contestation in the 60s.

²⁰ As Mueller (1976, 424) concluded in his review of the Public Choice literature: "The positive literature is riddled with demonstrations of the instability, inefficiency, or irrationality of various voting outcomes; the normative literature by impossibility proofs."

²¹ "Most conspicuous by its absence in most of the modern literature on political conflict resolution is the imputation of a super-ordinate goal to political organizations. Except for some students of international relations, most modern observers have viewed concepts of the "general will," "national interest," or the "common interest" as unsatisfactory concepts in the development of a theory of how political systems behave. "Public interest" as a theoretical tool suffers from the standard problems of superordinate goals. It is almost impossible to make it simultaneously meaningful, stable, and valid. Because of such difficulties and because the existence of unresolved conflict is conspicuous in political systems, students of such systems have moved heavily toward process descriptive case studies of specific political organizations or decisions" (March 1962, 671).

Government choices reflecting citizens' choice? The difficult task of applied economists

As the 1960s unfolded, conflict became a pervasive feature of the American institutional and social setting. In addition to international conflict, domestic ones mounted. After the publication of such books as Michael Harrington's *The Other America* (1962), the country progressively realized that in the midst of plenty and affluence, a significant portion of the population was left behind. The racial problem was not far: although desegregation had started in 1955, the Civil Right movement kept on mounting, and the 1964 Civil Right Acts divided the country. Urban riots soared and civil disorder made the headlines. From the mid-1960s on, the students massively joined the "movement", which provided academics with a first-rate view on society's tensions, as unrest disrupted the peaceful order within university campuses (see Anderson 1995). The tensions were, thus, not only racial, but generational as well. The students were standing against the values of the Cold War generation, and, as a consequence, were massively opposed to the War in Vietnam. Finally, the consensus on policy ends that characterized the debates among economists in the 1950s began to shatter as they argued about the proper goals for macroeconomic and microeconomic policies more openly than a decade before. Debates between Friedman on the one hand, Tobin, Solow, Taylor and post neo and new Keynesian on the other, highlighted disagreement on the importance of pursuing long-term efficiency or short-term stabilization, or whether taming inflation was a realistic goal for the Federal Reserve.

At a time of growing discontent, Lyndon Johnson's *Great Society* programs, whose cornerstone was the *War on Poverty*, offered to rethink public policy. The conflicting society in which American economists were working created tensions at the theoretical as well as applied level: "all kinds of social scientists, practicing social workers and the like did not seem to agree on the diagnosis; they certainly didn't agree on the cures. It was quite clear that poverty had . . . many faces, that to talk of some cutoff below which everyone was a glob had no programmatic meaning at all because you were talking about widely disparate groups, and that a single magic answer was not to be found", reflected William Capron then a member of the CEA (in Jardini 1996). This, interestingly, pushed towards the development of important policy innovations, which were developed with a strong concern for how they would follow as closely as possible the preferences of individuals.

One innovation came out of the Community Action Programs (CAP), whereby local development corporations “would involve local communities in the design of systematic, local planning for its own self-help, and, out of this experience, developing recommendations for a longer-term program for an attack on poverty which would form the basis for legislative and administrative actions that need to be taken by the various levels of Government” (Jardini 1996, see also Sundquist 1968, Aaron 1978, 29). This innovative bottom-up and empowerment processes, though, were soon perceived by Johnson as conflicting with the centralized guidance of economists at the Bureau of Budget and Department of Defense. To many, the empowering actions of the CAP were nurturing unrest, encouraged protests and, overall, had destabilizing effects. Thus, Johnson approved the development of yet another important innovation for public decision making, the Program Planning and Budgeting System (PPBS) to promote the rationalization of his War on Poverty policies (Fleury 2010, Jardini 1996). Drawing on systems analysis developed by the economists Charles Hitch and Roland McKean, PPBS promised that a value-free conception of policies was possible. It notably reorganized departments budgeting in terms of goals instead of inputs, goals which were given to executives (heads of federal agencies), allowing for a thorough cost-benefit evaluation of various governments programs (Olson 1970). While PPBS was being extended to many government agencies, Johnson’s administration’s intervention on poverty, education, urban renewal, social insurance, environment, congestion or fighting crime “virtually created a new and well-funded discipline: policy analysis” (Jardini 2013, ch11), and strongly supported the development of cost benefit analysis. The many economists summoned to set up cures to poverty, or the urban and environmental crisis, could not escape, then, from thinking about how to legitimize the normative criteria underpinning their policy choice at a time when relying on some notion of “public interest” or “value consensus” seemed less and less possible. Yet, the continued work on Arrow’s impossibility theorem, by social choice and public choice scholars, as well as the emphasis put on the shortcomings of virtually all theoretical and existing collective decision procedures did nothing to lift the growing burden weighting on those applied economists.

They did not surrender, though. A number of them looked into possible bridges between theoretical economics and applied work. A characteristic example is the 1966 conference on the “analysis of the public sector” organized by Julius Margolis and Henri Guitton in Biarritz. It combined theoretical contributions by Samuelson, Musgrave, Marglin,

Amartya Sen, Edmond Malivaud and Joseph Dorfman with presentations of policy implementations by Lionel Stoleru (father of modern French planning), Hollis Chenery or V.P. Gloushkov. Margolis's introduction of the resulting 1969 volume, *Public Economics*, made it very clear that discussion had largely centered on the choice of an objective function to guide policy makers' decisions, and the process whereby these decisions were implemented. He contrasted two conceptions of the government's objectives: one he associated with political scientists, sociologists and applied economists, in which the government was considered as an independent social body endowed with its own view of the public interest, and one upheld by welfare economists in which the government's objective was represented as a social ordering deriving from the aggregation of individual preferences. He immediately added that the discussion between the two approaches can be blurred "if one believes that the political process is a mechanism by which individual preferences are aggregated," and becomes stronger "if one views the political process as a distinctly different form of resource allocation where the motive force is a view of public interest." Not everyone agreed: some economists, Guitton reflected, thought that it was their task to formulate citizens' values by the "assignment of value weights which would have been revealed by the market behavior" in the absence of market failure. He however pointed out that the cost-benefit practices developed by the US Department of Defense, in which the marginal value and production cost of public output are estimated and equated by public decisions makers, embody a political rather than economic aggregative conception of the public interest.

As it turned out, whether economists were allowed to formulate policy ends, and whether those should be grounded in citizens' or the government's choice was still an open debate within applied economics in those years, in particular among economists in charge of cost benefit analysis. A telling example is the Water Resources Council's attempt to redefine its procedures for the evaluation of water and related land resources projects in the late 1960s, which pitched two visions against one another. For Banzhaf (2009, 4), this illustrated the "methodological debate between... a more traditional approach emphasizing individuals' willingness to pay... and a new approach emphasizing the incommensurability of different types of benefits and the importance of political decisionmaking". Indeed, Haveman and Myrick-Freeman from *Resource for the Future* supported a reliance upon traditional cost-benefit analysis (hereafter CBA). They believed water resource management's multiple objectives could be collapsed in a single social welfare functions grounded in individuals'

preferences. Also, they doubted the political process provided a reliable way to define these objectives, as it was subjected to “pork-barrel, logrolling, and empire building.” On the other hand, those economists associated with Harvard’s Water Program, in particular Joseph Dorfman and Otto Eckstein, argued for a multiple objective approach to CBA. They believed water resources managements’ multiple objectives (food production, regional development, flood protection, health) to be irreconcilable. Also, Eckstein (1961, 449) argued, “[I]n no event should the technician arrogate the weighting of objectives to himself by presenting a one dimensional answer after burying the weighting process in a welter of technical details.” Going further, he suggested that the economist “interpret the desires” of the policy makers and maximize them. For Banzhaf 2009, then, the former group emphasized *consumer sovereignty*, while the later promoted a vision of *political sovereignty* in which elected officials represented the collective choice of citizens.

Similar debates took place in urban economics during the same period. RAND’s Roland McKean, the founder of the Planning-Programming-Budgeting System (PPBS) at the Department of Defense, defended the standard CBA approach by criticizing the use of “community objectives.” Yet, MIT welfare economist Jerome Rothenberg legitimized the use of CBA techniques to evaluate urban renewal programs by arguing that its associated aggregation procedure reflected the outcome of a democratic collective decision process. His methodology was to group citizens in homogenous clusters with respect to their interest in urban renewal. Each group was then to be weighted in the social welfare function according to its score in the last congress election: “it is assumed in this study that the social expression of value judgments about distribution are related... to certain central decision making processes, and that in a representative democracy governmental process bear elements of this centrality,” he wrote (Rothenberg 1967, 21-22).

In theoretical development as in practice, the problem that a number of economists faced during the 1960s was not merely to *take into account* citizens’ preferences into the choice of a policy, but genuinely to *derive* public decision from individual preferences. Whether government decision could or did reflect the outcome of a collective decision process became a pervasive question, but no definitive answers were given. Normative analysis was paired with burgeoning studies of the process whereby politicians, bureaucrats and groups of civil servant made decisions. Many flaws were identified: public decisions were usually

influenced by vested interests rather than citizens' will, policy objectives were irreconcilable, and it was not clear that the resulting costs of public intervention were lower than those associated with market failures.

4. Becoming mature, becoming estranged: the fragmented institutionalization of collective decision

By the end of the 1960s, it seemed that the normative and positive theoretical studies of collective decision mechanisms had pointed towards dead ends and limitations more than applicable mechanisms. In the 1970s, economists continued to investigate those problems involving voting cycles, strategic voting, free-riding, rent-seeking and related collective decisions shortcomings. Philosopher Allan Gibbard (1973) and Northwestern's Mark Satterthwaite (1975) independently extended Arrow's impossibility theorem to voting when there are at least two individuals and three candidates.²² Following Olson's work, free-riding had become central to numerous subfields in public choice theory (see Fontaine 2014 for a survey). The irrationality of voting, which had been raised by Downs, was taken over by Riker and his students Ordeshook in 1968. The evolution of Buchanan's contractarian approach was no less optimistic: his own experience of the turmoil of the 1960s had led him to reject, in the introduction of his 1975 *Limits of Liberty*, his previous belief that positive-sum institutional processes were the norm. "Zero-sum and negative sum analogues yield better explanation," he observed (Buchanan 1975).

The influence of public choice on more "traditional" areas of economics, namely industrial organization and macroeconomics, also resulted in a dire picture of collective decision-making. At the Chicago Center for Study of the Economy and the State, Stigler (1971) and Sam Peltzman (1976) investigated the effect of government regulation on economic activity (Nik-Khah 2011). The voting process was conceived as some form of redistribution toward specific groups, incurring deadweight losses. The consequences of the rent-seeking behavior of bureaucrats, pressure groups, and lobbies on macroeconomic policies also gained currency in macroeconomics: William Nordhaus, for instance, identified political business

²² note on the early contribution of Dummett and Farquahrson, and on how this issue dates back to Pliny the younger, see Salles 2011)

cycles in price and GDP data, with unemployment being the primary policy target before elections and inflation afterwards. These developments nurtured the shift in the political discourse regarding the comparison between the relative merits of the market and the government, giving credit to proposals favoring the former, and which would culminate in the late 1970s to Reagan's election, grounded in the belief that the "government is the problem".

Theory: a way out of collective decision shortcomings?

A new characteristic of the second-half of the 1970s, however, was the wave of optimism carried by a set of new theoretical breakthroughs that provided "exciting news ways of making collective decisions" (Tideman and Tullock 1976a). The demand revelation mechanism literature did not come initially from a direct concern with collective decision, but from a couple of papers published by Leonid Hurwicz in 1972 reopening the socialist calculation debate on the possibility of optimal decentralized allocation systems. Economists should not content themselves with examining the properties of existing mechanisms, Hurwicz argued, but also examine the properties of new sets of rules, called mechanisms, in particular regarding incentive compatibility. Such mechanisms had been investigated independently by William Vickrey and Edward Clarke, the latter looking for a solution to Samuelson's 1954 demand revealing problem. At Northwestern, Theodore Groves had completed a dissertation on the design of efficient incentives in Jacob Marschak and Roy Radner's "teams" and was working on the game-theoretic representation of a class of mechanisms whose participants were incentivized to reveal their true information because they had to bear the marginal costs of their action through transfer payments. Through his collaboration with his student Martin Loeb and with John Ledyard, who had completed his dissertation on resource allocation at Purdue before transferring to Northwestern, these revelation mechanisms were extended to the identification of the optimal allocation-taxation scheme for the provision of public goods to firms and citizens in a maximization framework. But it was Tideman and Tullock 1976b who reframed this stream of research as a "new and superior process for making social choices".

If virtually all these economists claimed to have overcome Samuelson's free-riding problem, Caltech's John Ferejohn and Morris Fiorina rather addressed the paradox of voting by showing that agents needed little incentive to vote if their maximization of expected utility decision rule was changed to a minimax regret decision. Around the same time, Amartya Sen

argued that Arrow's impossibility theorem could be avoided if the informational basis on which social choice rely was enlarged beyond Arrow's restrictive definition of social welfare functions. In an effort to rethink "the relation between the objectives of social policy and the preferences and aspirations of members of a society" (1970, 1), he campaigned for to the use of non-utilitarian information, such as intensity of preferences and distribution of utility, of limited as well as extended, ordinal as well as cardinal interpersonal comparisons of utility, of interpersonal preferences interdependence, and of a "veil of ignorance." He formally showed that the Pareto criterion cannot be upheld if individual are endowed with minimum liberty, opening the door to individual rights and justice issues in collective choice. The conjunction of new theoretical insights offered by Sen, Hurwicz, Groves and others spurred a flourishing literature spanning issues of domain restriction, manipulation (see Eric Maskin's early work on collective decision under uncertainty and cheat proof-game forms), implementation, fairness and justice. In an altogether different setting, Gary Becker 1983 also minimized Stigler and Peltzman's critical views of collective decision making by showing that pressure groups' competition for votes created a competitive political marketplace in which the excess burden of taxes and the deadweight costs of regulations were minimal.

Experiments, mechanism design and policy-makers demands strengthen the ties between theoretical and implemented collective decision processes

During the 1970s, the intellectual milieu that had fostered the study of new collective decision mechanisms also provided new insights as to how they could be tested and implemented through the growing reliance upon classroom and lab experiments. Theoretical and experimental works were linked by institutional connections: a number of scholars were notably associated (through permanent or visiting position) with Purdue, where Vernon Smith and Charles Plott researched and taught in the 1960s, then Northwestern, where Ledyard, Groves, and Satterthwaite were recruited, and finally Caltech, where Plott moved in 1971, recruited Ferejohn, Fiorina, Ordeshook, and launched a stream of invitations.²³ Early experiments were directed toward the study of individual decision under uncertainty, but Plott had examined the provision of public goods in a pure public good economy in his

²³ Most of the details regarding the emergence of experimentation in economics, as well as mechanism design theory, are taken from Svorenck 2015, Lee 2014, Plott 2014.

dissertation, and wanted to apply Smith's experimental method for inducing preferences to collective decision-making. Together with Fiorina, he demonstrated the existence of an equilibrium-reaching process in voting group within a narrow class of environment in 1972. Riker, McKelvey, Ordershook, and several colleagues subsequently conducted experiments to understand how coalitions form in parliamentary games, how vetoes and the pairing of alternatives influence final decisions, and whether agents routinely free-ride. As Smith visited Caltech for the year 1973/74, he and Plott engaged in a series of experiments on alternative provisions for public goods.

At Northwestern in 1976/1977, Smith tested the convergence of the Ledyard-Groves mechanism during a classroom experiment. At first the experiment failed, then succeeded when Smith altered the information structure. This early example of test-bedding of a theoretical design convinced Ledyard that experimentalists could check their theoretical ideas and suggest new hypotheses. It also highlights how consistent Smith and Plott's conception of experiments was with the rising field of market design. Public choice theorists, experimentalists and market designers shared a common intellectual environment: Hugo Sonnenschein, Morton Kamien, and Thomas Muench graduated from Purdue in the mid-1960s, then joined Ledyard, Groves, Ehud Kalai, Roger Myerson, Bengt Holmstrom and Paul Milgrom at Northwestern's Center for Mathematical Studies in Economics in Management Science, which had been founded by Stanley Reiter in 1971. From the beginning, those experimentalists insisted that "slight change in procedures and organization [...] make enormous changes in the outcome" (Staff 1976, 6). They repeatedly explained that by controlling the environment, the institutions and the mechanisms, in order to observe and compare the behavior of agents in various settings, they engage in "institutional design" (see for instance Smith 1982). Those scholars were well aware of the important complementarities of their theoretical approach and experiments. The fact that such an approach gave the initial intuition for the development of agenda theory in Public Choice provides yet another illustration. In 1985, the Market and Organization working group in charge of establishing a priority list of economic topics for shrinking social science public funding took the example of the Walker mechanism to argue that a combination of experiments and theoretical work could yield huge improvement in policy efficiency (Lee 2014). The growing computerization -- of Smith's Economic Science Laboratory and Plott's Laboratory for Experimental and Political Science in the mid-1980s, and, later, of everyday

public and private institutions-- added to the contiguous move from axiomatics to Nash game theoretic and bayesian game theoretic framework continued to strengthened the ties between public choice oriented experimentalists and mechanism designers (see Roth 2002's opening statement).

Though the bulk of this mix of theoretical and experimental analysis of collective decision was explicitly aimed at tackling real-world mechanisms and policymaking (Guala 2005), its effective implementation was predicated upon the demands of clients – firms, union, regulation agencies, and policy-makers. And the policy regime which framed clients' demand was shifting, precisely towards solutions that put forward individual incentives and market-based solutions. Since the 1960s, the role of economists as policy advisers had significantly been expanded. The Johnson era had established the very idea that social policies should be vetted by some kind of cost-benefit analysis, and had institutionalized economists' expertise at the Office of Economic Opportunity, the department of Health, Education and Welfare, the Department of Labor's Office of Policy, Evaluation and Research, and many more locations (Berman 2016). Nixon demised PPBS management in 1970, but economists were still asked to work on new policy tools that would allow a better balance between market and government allocation, and a better estimation of the costs and benefits of regulations, especially during Ford's administration. Likewise, Carter's CEA chair, Charles Schultze, campaigned for government intervention favoring market-like incentives over "command-and-control" techniques. As explained by Berman (2016), the Office of Information and Regulatory Affairs established to promote such approach to regulation and market failures that turned into the armed wing of Ronald Reagan's "regulatory relief" policy.

The transformation of the policy-regime in that period created a demand for microeconomic tools. Cost benefit analysis produced by the Congressional Budget Office was made compulsory for any piece of legislation by law, and economists were required to design new mechanisms to regulate public as well as private activity. Economists were therefore in charge not only to stabilize the economy, but also to advise on proper ways to deliver public goods, and to implement more efficient ways of making collective decisions. One such example was the work David Grether, R. Mark Isaac and Plott conducted on the allocation of airports slots in the wake of the Airline Deregulation Act of 1978 (Grether, Isaac and Plott 1982; Plott 2014; Svorencik 2016). Slots had hitherto been allocated by scheduling

committees composed of airlines and Civil Aeronautic Board representatives. Unanimity was the rule, which resulted in coordination problems across airports, and coalitions were forged. Furthermore, experiments pointed toward the importance of the default rule and inefficient allocations favouring small players. The recommended replacement mechanism was based on regular sealed-bid one-price with a continuous aftermarket of “block transactions.” Ferejohn, Roger Forsythe and Noll 1982 likewise devised a mechanism to induce payment for public television programs, and experiments were additionally used to propose new mechanisms to regulate the pricing of natural gas transmission, the allocation of resources on a space station, and inland waterways transportation. The 1994 Federal Communication Commission’s auction for radio spectrum, which became the poster child for the success of mechanism design and the social usefulness of economics at large also underwent an experimental test bed stage before being implemented (Roth 2002, Guala 2001). Conducted by the Caltech team, it allowed the choice of the ‘simultaneous ascending-bid auction’ design favoured by Milgrom, Robert Wilson and Preston McAfee over the combinatorial auction plus sealed-bid package auction initially proposed by the FCC, the adjustment of some rule and the production of some baseline data to check the results of the first real auction.

A fragmentation of collective decision research in economics?

While the previous section suggests that a combination of theoretical and experimental breakthroughs, technical advances and political transformations definitely furthered the study of collective decision by economists, other forces acted toward fragmentation and marginalization. First, a consequence of the new policy-regime gradually established by Nixon, Carter and Reagan was the development of a contractual relationship in which economists acted as sellers of expertise (Fourcade 2009, Breslau 1997). Although this might have provided a favorable context for the development of the mechanisms above mentioned, the flip side of the coin was that the purchase of economic expertise by many institutions, private, public agencies, etc. comforted economists in their role of engineers taking the ends as given, instead of thinking more broadly about how these ends would reflect individual preferences or other criterion. For instance, Eric Maskin 2008 construed market design as a case of reverse engineering in which the expert begins with “identifying our desired outcome or *social goal*,” then design a mechanism to attain that goal, the definition of the goal has in fact often fallen outside his domain of expertise. And the goal economists have worked with

has systematically been identified as efficiency or optimality (Maskin 2008, Feldstein 1992).

As a consequence, with the exception of those aforementioned cases when the mechanism to be designed related to a voting scheme, collective decision moved to the background of economists' mind. The decisions of governmental agencies did not need to be interpreted as a result of consistent citizens' choice, while debates on free-riding, revelation and strategy-proof mechanisms often focused on coordination, information and allocation issues, not collective decision-making *per se*, becoming more technical in the process. The vision of the economist as an analyst, a technician, which Buchanan had so thoroughly opposed, is also echoed in Daniel Rodgers's 2011 characterization of the last quarter of the XXth century's social thought as an "era of disaggregation," an *Age of Fracture* in which intellectuals stopped thinking in terms of systems. "The market" has replaced "the social" as the primary means of describing human experience, he explained.

In addition, the community that had remained most closely focused on the positive and normative study of collective decision mechanism, social choice economists, was gradually marginalized. Social choice theorists largely remained faithful to refining the Arrowian research program through the study of restricted domains and committed to the theoretical identification of maximal strategy-proof and non-dictatorial domains. For that purpose, they increasingly worked with and became applied mathematicians. They also ventured into the analysis of justice and fairness issues through collaboration with philosophers. By the turn of the 1980s, editors of major journals became increasingly reluctant toward social choice submissions, perceived as too abstract and remote from economists' practical concerns (Sonnenschein 1979, quoted in Salles 2005). In reaction, Maurcie Salles and Prasanta Pattanaik created a new journal, *Social Choice and Welfare*. In a similar fashion, constitutional political economy, the field that remained central to Buchanan's research, was far from being the central theme of the bulk of research in public choice, which, among other things, added to its already broad agenda a strong empirical program to study institutions. Moreover, Buchanan's approach was increasingly perceived as outdated by more mainstream economists, even among public choice. His increasing references to the Austrian tradition, especially after he and the Center for Study of Public Choice moved to GMU, did not reverse the trend (see Marciano and Boettke 2015).

Most conspicuous was public economists' practice of making the process whereby agents agree on social goals exogenous to their models. This likely resulted from the technical transformation the field underwent from the 1960s onward. General equilibrium came to supersede partial equilibrium surplus analysis. Economists' attention shifted to optimal taxation, which led to the rediscovery of Ramsey's approach, the development of models with a representative agent and a government exhibiting an exogenous social welfare function, as in the seminal couple of papers by Diamond and Mirrlees (1971a and b). This transformation is best illustrated by the most cited public economics work of the 1980s, the graduate textbook Antony Atkinson and Joseph Stiglitz published in 1980 after a decade long work: *Lectures in Public Economics*.²⁴ The book, aimed at analyzing "in a systematic manner the principal consequences of... economic activities by the government and their relation to social objectives" (p. 3), is divided in a positive and a normative part. The two middle chapters of the book were devoted to the discussion of government's objectives. Ch10 closed the first part on the positive analysis of government policies, and is written as an attempt to make "the state's decisions endogenous rather than exogenous" by examining models in which public decisions are influenced by voters, political parties, legislators, and administrators"(11). It introduced the reader to voting, bureaucratic and interest group models. In particular, the authors examine whether voting mechanisms can efficiently aggregate individual preferences into some collective decision with certain properties. Chapter 11 opened the second part dealing with the normative analysis of state decisions, that is, "ways in which the objectives of the government have been formulated and the resulting criteria for decision making... investigate the sensitivity of the policies chosen to the formulation of objectives" (p12). It featured discussions of Nozick's "minimal state," Buchanan and Tullock's unanimity rule and Pareto efficiency, Rawlsian, utilitarian and Benthamite conceptions of state objectives, vertical and horizontal equity and cases where the two theorems of welfare break down. In the end, however, no discussions from these two chapters significantly influenced the bulk of the public economic scholarship presented in the book (and later spread in the profession). Positive public economics was tackled within a general equilibrium framework in which government decisions were considered exogenous, and public economists overwhelmingly came to write down models in which its objective is represented as a social welfare function. From Atkinson and Stiglitz's presentation, it clearly appears that the success of the tool relies

²⁴ Based on a cluster analysis of publication in the Econlit database, Claveau and Gingras 2016 have identified the textbook as the most cited document in the "public economics" cluster for the period 1980-1985.

on its tractability. The authors had succeeded in presenting all the alternative social objectives aforementioned as specific cases of social welfare functions, and in the process, pushed the determination of these objectives through a collective decision process outside the scope of their analysis.

Conclusion

While the study of collective decision stabilized in the 1980s, the topic remained quite elusive, and seems to have failed to become central in economic theory. The only field explicitly concerned with the positive and normative analysis of collective decision, namely social choice, was marginalized. Public choice economists expanded their interests in a large number of directions, but only a few of them, most notably Mueller 2006 and Tideman 2006, explicitly framed their field and its core concepts –free-riding, public goods, constitutions, rent-seeking– as dealing with the *collective decisions* made necessary by living in society and by market failures. The term has deserted economics curricula, so that the student willing to attend a “collective decision” course has to turn to political science or philosophy departments.²⁵ While acknowledging the development of social and public choice, public economists largely endorsed models in which the social objectives embodied in the government’s social welfare function were considered endogenous and aggregation was solved through representative agent modeling. The death of welfare economics was pronounced.

It is not to say that research on collective decision has been put to a halt. Each branch of collective decision studies seems to exhibit renewed interest for their foundational historical topic. This challenges John Elster and Aanund Hylland’s (1989, 1) concern that “formal theorizing in the social sciences is today in danger of becoming baroque”, that is, has grown highly technical but has yielded little new insights, and progressively lost touch with its initial *raison d’être*. For instance, social choice theorists are bringing their field closer to policy

²⁵ See for instance James Snyder’s “collective choice” course at MIT: <http://ocw.mit.edu/courses/political-science/17-812jcollective-choice-i-fall-2008/syllabus/> or curricula requirements at the department of Philosophy of Columbia (<http://philosophy.columbia.edu/content/major-requirements>). Collective decision courses in economics have survived at GMU (<http://econfaculty.gmu.edu/bcaplan/e854/econ854.htm>) and Penn (<http://economics.sas.upenn.edu/undergraduate-program/courses/econ-211-social-choicetheory>)

issues through empirical studies of elections, computational studies, and experimental studies of voting mechanisms such as storable vote (Casella 2012). Saez and Stancheva 2016 recently constructed generalized social marginal welfare weights which “reflect society’s concerns for fairness.” Why no endogeneization of the process whereby society’s preference is achieved is in order, it nevertheless represents a first move toward reopening the social welfare function blackbox in public economics.

Quadratic voting is yet another instance of such innovative attempts to relate theoretical innovation, mathematical formalism, and practical or policy application. From an historical perspective, it shares strong methodological ties with the Ledyard-Groves-Hylland-Zeckhauser tradition of devising strategy-proof mechanisms in which voters have to pay for the cost of their choice (Tideman 2016). With regards to our story, quadratic voting is an interesting case not only for its methodological inspiration in the Clark-Groves-Ledyard type of mechanisms. Its development illustrates how experimental economics developed alongside mechanism design, becoming a necessary complement for that research. Indeed, quadratic voting was very soon tested experimentally (see Lalley and Weyl 2015). Following the way Plott innovated the field of experimental economics in the late 1970s, that is, by putting various theories in competition against one another, experiments showed that quadratic voting performed better than one man one vote mechanisms (ibid.). Finally, Weyl and Posner (2014) explicitly frame this procedure as a solution to the practical problem raised, among others, by Buchanan and Tullock almost fifty five years ago, that majority voting implied some form of tyranny of majority. As this paper tried to substantiate, the concerns for collective decision making was strongly linked to the way economists approached policy making. As some of the papers for this conference illustrate, the interest of economists for quadratic voting goes beyond a simple intellectual or mathematical exercise, but has strong ties with concerns for reinventing policy making.

References

- Aaron, Henry J. 1978. *Politics and Professors: the Great Society in Perspective*. Washington: Brookings Institution.
- Adcock, Robert, and Mark Bevir. 2010. Political Science. In *The History of the Social Sciences Since 1945*, edited by Philippe Fontaine and Roger Backhouse. New York: Cambridge University Press.
- Amadae, Sonja M. 2003. *Rationalizing Capitalist Democracy*. Chicago: University of Chicago Press.

- Anderson, Terry H. 1995. *The Movement and The Sixties*. Oxford, New York : Oxford University Press.
- Arrow 1950. A Difficulty in the Concept of Social Welfare. *The Journal of Political Economy* 58:328-346.
- . 1951. *Social Choice and Individual Values*. New York: Wiley.
- Atkinson, Tony. 1993. The Journal of Public Economics at 21 Years and 50 Volumes: A Personal View. *Journal of Public Economics*.
- Atkinson and Stiglitz, [1980]1987. *Lectures on Public Economics*. New York: McGraw Hill.
- Backhouse, Roger. 2010. Economics. In *The History of the Social Sciences Since 1945*, edited by Philippe Fontaine and Roger Backhouse. New York: Cambridge University Press.
- Banzhaf, Spencer. 2009. Objective or Multi-Objective? Two historically Competing Visions for Benefit Cost Analysis. *Land Economics*. 85.1:3-23.
- Baumol, William. 1952. Review of Social Choice and Individual Values. *Econometrica* 20.1:110-111.
- . 1954. On the Concept of Social Welfare. *The Quarterly Journal of Economics* 68.2:233-252.
- Bergson, A. 1938. A Reformulation of Certain aspects of Welfare Economics. *The Quarterly Journal of Economics* 52 (2): 310–334
- Berman, E.P., 2016. From Economic to Social Regulation: How the Deregulatory Moment Strengthened Economists' Policy Position
- Bernstein, Michael A. 2001. *A Perilous Progress*. Princeton, New Jersey: Princeton University Press.
- Black, Duncan. 1948a. On the Rationale of Group Decision Making. *Journal of Political Economy* 56:23-34.
- . 1948b. The Decisions of a Committee Using a Special Majority. *Econometrica* 16:245-261.
- . 1948c. The Elasticity of Committee Decisions With an Altering Size of Majority. *Econometrica* 16:262-270.
- . 1949. The Theory of Elections in Single-Member Constituencies. *Canadian Journal of Economics and Political Science* 15.2:158-175.
- . 1950. The Unity of Political and Economic Science. *The Economic Journal* 60:506-514.
- . 1958. *The Theory of Committees and Elections*. Cambridge: Cambridge University Press.
- Boettke, Peter J. and Alain Marciano. The Past, Present, and Future of Virginia Political Economy. *Public Choice* 163:53-65.
- Boulding, K. 1952. *Welfare Economics*. In *A Survey of Contemporary Economics*, edited by Bernard F. Haley and Howard S. Ellis. Homewood, Illinois, Irwin.
- Bowen, H. R. 1943. The Interpretation of Voting in the Allocation of Economic Resources. *The Quarterly Journal of Economics* 58:27-48.
- Breslau, D. 1997. Contract Shop Epistemology: Credibility and Problem Construction in Applied Social Science. *Social Studies of Sciences* 27(3), 363-394.
- Buchanan, James M. 1949. The Pure Theory of Government Finance: A Suggested Approach. *The Journal of Political Economy* 57:496-505.
- . 1954a. Social Choice, Democracy and Free Markets. *Journal of Political Economy* 62:114-123.
- . 1954b. Individual Choice in Voting and The Market. *The Journal of Political Economy* 62:334-343.
- . 1958. *Public Principles of Public Debt*. Homewood, Illinois: Irwin.
- . 1959. Positive Economics, Welfare Economics, and Political Economy. *Journal of Law and Economics* 2:124-138.
- Buchanan and Tullock. [1962]1967. *The Calculus of Consent, 2nd edition*. Ann Arbor: The University of Michigan Press.

- Casella, Alessandra. 2012 *Storable Votes. Protecting the Minority Voice*. OUP.
- Cherrier, B. 2015. "Classifying Economics: A History of the JEL codes," *Journal of Economic Literature*, forthcoming
- Claveau and Gingras, 2016. "Macrodynamics of Economics: a bibliometric history," working paper
- Council of Economic Advisers. 2008. Economic Report of the President. Washington, D.C.: Council of Economic Advisers.
- Cravens, Hamilton. 2012. Column Right, March! Nationalism, Scientific Positivism and the Conservative Turn of American Social Science in the Cold War Era. In *Cold War Social Science*, edited by Mark Solovey and Hamilton Cravens. New York: Macmillan.
- Crowther Heyck, Hunter. 2006. Patrons of the Revolution: Ideals and Institutions in Postwar Behavioral Science. *Isis* 97.3.
- Dahl, Robert A. 1961. The Behavioral Approach in Political Science: Epitaph for a Monument to a Successful Protest. *The American Political Science Review* 55:463- 772.
- Dahl, Robert A., and Lindblom, Charles E. 1953. *Politics, Economics and Welfare*. New York: Harper and Brothers.
- Debreu, Gerard. 1959. *The Theory of Value*. New Haven: Yale University Press.
- Downs, Anthony. 1957. *An Economic Theory of Democracy*. New York: Harper.
- . 1966. *Bureaucratic Structure and Decisionmaking*. Rand Memorandum. Manuscript.
- Farquharson 1956. Straightforwardness in Voting Procedures. *Oxford Economic Papers New Series* 8.1:80-89
- Feldstein, Martin. The Council of Economic Advisers and Economic Advising in the United States. *The Economic Journal* 102(414): 1223-1234
- Fleury, Jean-Baptiste. 2009. *L'extension de l'économie hors de ses frontières traditionnelles*. PhD Dissertation. Lyon, France.
- . 2010. Drawing New Lines: Economists and Other Social Scientists on Society in the 1960s. *History of Political Economy* 42(Suppl 1): 315-342.
- Fontaine, Philippe. 2014. Free Riding. *Journal of the History of Economic Thought*. 36.3:359-376.
- Fourcade, Marion. 2009. *Economists and Societies*. Princeton, NJ: Princeton University Press.
- Friedman, Milton. 1948. A Monetary and Fiscal Framework for Economic Stability. *The American Economic Review* 38.3:245-264.
- . 1968. The Role of Monetary Policy. *The American Economic Review* 58.1:1-17.
- Gibbard, Allan. 1973. Manipulation of Voting Schemes: A General Result. *Econometrica* 41.4:587-601.
- Giraud, Yann. 2013. The Political Economy of Textbook Writing: Paul Samuelson and the making of the First Ten Editions of Economics (1945-1976). *History of Political Economy* 46. 5.
- Guala, Francesco. 2001. Building Economic Machines: the FCC Auctions. *Studies in History and Philosophy of Science* 32.3:453-477.
- Guilhot, and Alain Marciano. 2016. Rational Choice as Neo-Decisionism: Decision-Making in Political Sciences and Economics after 1945.
- Harrington, M. 1962. *The Other America: Poverty in the United States*. New York: Macmillan.
- Hausman, Daniel. 2011. Preference, Value, Choice, and Welfare. Cambridge: Cambridge University Press.
- Jardini, David R. 1996. *Out of the Blue Yonder*. PhD Dissertation.
- Kemp. 1953. Arrow's General Possibility Theorem. *The Review of Economic Studies* 21.3:240-243
- Lalley, Steven P. Weyl, E. Glen. 2015 Quadratic Voting, working paper.

- Lange 1942 "The Foundations of Welfare Economics" *Econometrica* 10.3/4:215-228.
- Lee, Kyu Sang. 2014. What Mechanism Design Theorists Had to Say About Laboratory Experimentation in the mid-1980s. Draft Paper.
- Lindblom, Charles E. 1997. Political Science in the 1940s and the 1950s. *Daedalus: American Academic Culture in Transformation : Fifty Years, Four Disciplines*. 126:225-252.
- Little. I.M.D. 1952. Social Choice and Individual Values, *Journal of Political Economy* 60:422-432.
- March, James. 1962. The Business Firm as a Political Coalition. *The Journal of Politics* 24.4:662-678.
- Marciano, Alain. 2013. Why Market Failures Are Not a Problem: James Buchanan on Market Imperfections, Voluntary Cooperation, and Externalities. *History of Political Economy* 45.2: 223-254.
- Margolis, J. Guitton, H. (eds), 1969. *Public Economics: An Analysis of Public Production and Consumption and their Relations to the Private Sectors*. London: Macmillan.
- Maskin, Eric. 2008. Mechanism Design: How to Implement Social Goals. *American Economic Review* 98 (3): 567-76
- May, Kenneth O. 1952. A Set of Independent Necessary and Sufficient Conditions for Simple Majority Decision. *Econometrica* 20.4:680-684.
- McGarvey David. 1953. A Theorem on the Construction of Voting Paradox. *Econometrica*, Vol. 21, No. 4 (Oct., 1953), pp. 608-610.
- Medema, Steven G. 2000. Related Disciplines: The Professionalization of Public Choice. *History of Political Economy* 32(Suppl 1): 289-324.
- . 2011. Public Choice and the Notion of Creative Communities. *History of Political Economy Spring* 43.1: 225-246.
- Mirowski, Philip. 2002. *Machine Dreams: Economics Becomes a Cyborg Science*. Cambridge University Press.
- Mirowski, Philip, and Esther-Mirjam Sent. 2002. *Science Bought and Sold: Essays in the Economics of Science*. Chicago: The University of Chicago Press.
- Mueller, Dennis. 1976. Public Choice: A Survey. *Journal of Economic Literature* 14.2:395-433.
- Musgrave. 1939. The Voluntary Exchange Theory of Public Economy. *The Quarterly Journal of Economics* 53.2:213-237.
- . 1941. The Planning Approach in Public Economy: A Reply. *The Quarterly Journal of Economics* 55.2:319-324.
- . 1948. Fiscal Policy In Prosperity and Depression. *The American Economic Review*. 38.2:383-394.
- . 1959. *The Theory of Public Finance*. McGraw and Hill.
- Myrdal, Gunnar. 1944. *An American Dilemma: The Negro Problem and Modern Democracy*. New York: Harper.
- Olson, Mancur. 1965. *The Logic of Collective Action*. Cambridge, Mass: Harvard University Press.
- . 1970. An Analytical Framework for Social Reporting and Policy Analysis. *The Annals of the Academy of Political and Social Science* 388:112-126.
- Peart, Sandra, and Levy, David M. 2008. Socialist Calculation Debate. *The New Palgrave Dictionary of Economics*. Palgrave Macmillan.
- Peltzman, Sam. 1976. Toward a More General Theory of Regulation. *The Journal of Law and Economics*.19.2:211-240.
- Plott, Charles R. 2014. Public Choice and the Deveopment of Laboratory Modern Experimental Methods in Economics and Political Science. Social Science Working Paper 1383.

- Posner, Eric. Weyl, E.Glenn. Quadratic Voting as Efficient Corporate Governance. *Working paper*
- Reksulak, Michael, Laura Razzolini, William F. Shughart. 2013. *The Elgar Companion to Public Choice*. Cheltenham: Edward Elgar.
- Rodgers, Daniel T. 2011. *The Age of Fracture*. Cambridge, Mass: Harvard University Press.
- Robbins, Lionel. [1932]1935. *An Essay on the Nature and Significance of Economic Science*. London: Macmillan.
- Roth, Alvin E. 2002. The Economist as Engineer. Game Theory, Experimentation, and Computation as Tool for Design Economics. *Econometrica* 70.4:1341-1378.
- Rothenberg, 1967. *Economic Evaluation of Urban Renewal*. Washington: The Brookings Institution.
- Saez, Emmanuel. Stantcheva, Stefanie, 2016. Generalized Social Welfare Weights for Optimal Tax Theory. *American Economic Review* 106(1): 24-45.
- Salles, M. 2005. The launching of *Social Choice and Welfare* and the creation of the "Society for Social Choice and Welfare," *Social Choice and Welfare* 25(2)
- Samuleson, Paul A. 1947. *Foundations of Economic Analysis*. Cambridge, Mass: Harvard University Press.
- . 1954. The Pure Theory of Public Expenditures. *The Review of Economics and Statistics* 36.4:387-389.
- Satterthwaite, Mark. 1975. Strategy-Proofness and Arrow's Conditions. Existence and Correspondence Theorems for Voting Procedures and Social Welfare Functions. *Journal of Economic Theory* 10:187-217.
- Sen, Amartya K. 1967. The Nature and Classes of Prescriptive Judgments. *Philosophical Quarterly* 17.66:46-62.
- . 1970. *Collective Choice and Social Welfare*. London: Olivier & Boyd.
- Schorske, Karl. 1997. The New Rigorism in the Human Sciences 1940-1960. *Daedalus* 126: *American Academic Culture in Transformation: Fifty Years, Four Disciplines*.
- Smith, Roger M. 1997. Still Blowing in The Wind: The American Quest for a Democratic, Scientific Political Science. *Daedalus* 126: *American Academic Culture in Transformation: Fifty Years, Four Disciplines* pp253-287.
- Solberg, Winton U. and Robert Tomlinson, 1997. Academic McCarthyism and Keynesian Economics: The Bowen Controversy at the University of Illinois. *History of Political Economy* 29.1: 55-81.
- Solovey, Mark (ed.). 2013. *Shaky Foundations: The Politics-Patronage-Social Science Nexus in Cold War America*. New Brunswick, New Jersey: Rutgers University Press.
- Stigler, George J. 1943. *The New Welfare Economics*. *The American Economic Review* 33.2:355-359.
- . 1971. The Theory of Economic Regulation. *The Bell Journal of Economics and Management Science* 2.1:3-21.
- Svorencik, Andrej. 2015. The Experimental Turn in Economics. Phd Dissertation.
- Tideman, Nicolaus. 2006. *Collective Decision and Voting: The Potential for Public Choice*. Ashgate Publishing.
- Tideman, Nicolaus and Gordon Tullock. 1976. A New and Superior Process for Making Social Choice. *Journal of Political Economy* 84.6:1145-1159.
- Young, Kimball. 1945. Research in a Changing Society. *The American Journal of Sociology* 50:493-501.
- Weintraub, Roy, 2016. "McCarthyism and the Mathematization of Economics," *CHOPE working paper n°2016-18*

