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Between Political Inquiry and Democratic Faith: A Pragmatist Approach to Visualizing Publics¹

Abstract. In the post-War decades political science in the United States has been animated by two seemingly incompatible aims. On the one hand, the discipline is committed to scientific inquiry interpreted in largely positivist terms. On the other hand, the discipline aspires to generate knowledge that might improve democratic politics. I start by sketching pragmatist interpretations of social and political inquiry, of democratic politics, and of how the two are related. Problems of complexity and visibility emerge as central to those interpretations. I then indicate how Edward Tufte's theoretical analysis of data graphics and the visual politics of the AIDS activist group ACT UP offer examples of how it is possible to envision complex social and political phenomena in ways that might sustain a democratic relation between inquiry and politics.

Introduction

For the past half century or so political science in the United States arguably has been characterized by two aims that stand in considerable tension. On the one hand, American political scientists have aspired to generate knowledge that might inform democratic politics and governance. On the other hand, they have sought after a brand of political *science* conceived along vaguely positivist lines. The political consequences of this tension are troubling.

Repeatedly, successive schools in American political science have been caught between desires for research that affirms and assists meaningfully democratic self-governance and desires for research that develops full causal accounts of politics, usually on a model from the natural sciences. The tension arises in part because such causal accounts tend deterministically to deny any consciously self-directed agency to the phenomena they study. A science of human political behavior thus can seem to debunk the self-understandings of democratic participants and the meaningfulness of their conscious choices. Much of the apparently most "scientific" work in political science has carried such a debunking message, intentionally or not. Sometimes democratic commitments have been made to appear foolish in light of the ignorance of voters, the apparently inescapable power of economic, military, and professional elites, and the decisive role of technological, economic, demographic, linguistic, geographic, and climatic forces largely beyond conscious human control. Political scientists have implied that effective governance, if possible at all, requires scientific skill and empirical knowledge beyond the grasp of most citizens. Hence the assignment of extensive governmental powers to experts (like social scientists) has been made to seem preferable. These positions have frequently been advanced in highly techni-

¹ I presented a much earlier version of this paper to a seminar in the Political Science Department at The University of Florida. I thank Larry Dodd for arranging that opportunity and all those who attended for their comments and skepticism. I thank Susan Orr for very extremely helpful comments on a more recent version.

cal language impenetrable to most citizens, who may therefore decide that politics is beyond them (Smith 1997, 256-7).

In what follows I suggest that this enduring tension reflects an overly narrow and pervasive, if often tacit, positivist conception of the tasks of social and political research.² I will identify some of the tools at hand – in particular, data graphics – that, approached in a pragmatist fashion, might significantly mitigate the tension between scientific legitimacy and political relevance. In doing so I do not fully characterize an alternative pragmatist conception of inquiry. I merely suggest that a pragmatist approach might significantly mitigate the tension that informs contemporary political science.

Stacking the Deck?

A skeptical reader might object at the outset that invoking pragmatism simply is a way of embracing one side of the predicament I've just sketched. For pragmatists often ground their commitment to democratic politics precisely in a confident – some might claim, naïve – estimation of common individuals and their capacities. This is evident, for instance, in Dewey who asks:

For what is the faith of democracy in the role of consultation, of conference, of persuasion, of discussion, in formation of public opinion, which is in the long run self-corrective, except faith in the capacity of the intelligence of the common man to respond with commonsense to the free play of facts and ideas which are secured by effective guarantees of free inquiry, free assembly and free communication (Dewey 1939, 242)?

But it is true as well of more recent pragmatists. So, for instance, Roberto Unger begins a recent political manifesto like this:

The World remains restless. It has not despaired of finding a better way to fulfill the central promise of democracy, which is to acknowledge the constructive genius of ordinary men and women (Unger 2009, vii).

Yet not all pragmatists readily embrace the democratic faith Dewey and Unger articulate. One need only think of Richard Posner (2003) among avowed contemporary pragmatists to see that this is so. But one also can identify pragmatists who apparently demur from the “democratic faith” much earlier on. In “The Fixation of Belief,” for instance, Peirce (1877) lays out four ways of settling our beliefs in the face of problematic experience and the sort of doubt it generates. As is well known, he sketches the “method of tenacity,” the “method of authority,” the “*a priori* method,” and the “method of science,” arguing for the superiority of the latter relative to the other three. There is no need to recount his argument in detail here. It is instead important simply to note that Peirce is especially concerned about the method of authority – which consists basically in various coercive means of imparting and sustaining political and theological orthodoxy. He concludes despairingly: “The method of au-

² My own diagnosis of this tension suggests that, to a considerable extent, our contemporary predicament reflects the complex, distinctive ways that positivism inflected the discipline of political science in the United States in contrast to the way the discipline formed in other countries. The details of this historical process are beyond the scope of the present paper. For relevant background see Hauptmann, 2005 and Adcock and Bevir 2010.

thority will always govern the mass of mankind”³. The distance between Peirce’s pessimistic assessment and the “faith” pragmatists from Dewey to Unger express seems especially great insofar as Peirce explicitly depicts the method of authority as an invitation to social, religious and political oppression (Peirce 1877, 16-18,23).

Peirce’s frank political pessimism – and it is unavoidably political insofar as the problem of fixing belief plagues not just individuals but communities and that the allure of the method of authority represents what Peirce (1877, 23) calls “the path of peace”, albeit a coercively policed one, for any such community - might take some contemporary pragmatists by surprise. For something of a local consensus exists among contemporary pragmatists that their philosophical commitments regarding, say, meaning, knowledge or truth, have literally *no* political implications⁴. Peirce likely would have found that stance puzzling. After all, he depicts widespread inability or unwillingness to embrace the pragmatist commitments of fallibilism, anti-skepticism, and consequentialism embodied in the scientific method as conducing to authoritarian politics. There is, then, some reason to see him as committed to the converse claim, namely that those who endorse those commitments are thereby committed too to an anti-authoritarian politics.

Regardless of whether Peirce – actually or hypothetically – would draw such an inference, Dewey surely did. He insisted, for example, that if “the pragmatic idea of truth has itself any pragmatic worth, it is because it stands for carrying the experimental notion of truth that reigns among the sciences . . . over into political and moral practices” (Dewey 1911, 110). He subsequently depicted this imperative as the culmination of a more general shift in the locus of cognitive and intellectual authority in modern societies.

[T]he pragmatic conception of truth . . . places upon men the responsibility for surrendering political and moral dogmas, and subjecting to the test of consequences their most cherished prejudices. Such a change involves a great change in the seat of authority and the methods of decision in society (Dewey 1948, 160).

Dewey believed that this shift had largely been accomplished in many domains of human endeavor, especially those dealing with the natural world. In that respect he differs from Peirce whose assessment was clearly much less sanguine. That said, Dewey complained that “men” have proven reluctant to make this change when it comes to confronting social, economic and political problems⁵. And he saw this reluctance itself as a political problem, the resolution of which is central to the emergence of a robust democratic order.

Pragmatists from Peirce onwards have understood that processes of resolving doubt and establishing reliable belief reside “not in the individual merely, but in the community” (Peirce 1877, 16)⁶. Yet, in general, pragmatists have paid insufficient attention to the institutional arrangements necessary to coordinate and sustain those processes. Had they done

³ Peirce issues this as much as an accusation as a description: “For the mass of mankind, then, there is perhaps no better method than this. If it is their highest impulse to be slaves, then slaves they ought to remain” (Peirce 1877, 23,18).

⁴ See for instance, Posner (2003, 44,55) and Rorty (1998, 228–43).

⁵ This is a recurrent complaint in *The Public & Its Problems* (Dewey 1927, 101, 169, 175). Compare his subsequent remarks on the displacement of religious authority by science (Dewey 1934, 31-2, 74f). One might argue that subsequent developments make him look overly sanguine. But Dewey would reply that the resurgence of religiously based conviction is, in large part, a symptom of our failure to persevere along the path of inquiry.

⁶ Compare: “But in fact, knowledge is a function of association and communication; it depends upon tradition, upon tools and methods socially transmitted, developed and sanctioned. Faculties of effectual observation, reflection and desire are habits acquired under the influence of the culture and institutions of society, not ready-made inherent powers” (Dewey 1927, 158).

so, they might have noticed not just Dewey's profession of "faith", but also the crucially important caveat that he places on his commitment to the democratic ideal. As Dewey insists:

Democracy is a personal way of life controlled not merely by faith in human nature in general but by faith in the capacity of human beings for intelligent judgment and action *if proper conditions are furnished* (Dewey 1939, 242, stress added).

And those conditions, as Dewey made clear in the passage I cited earlier, consist in institutional arrangements that can provide "effective guarantees of free inquiry, free assembly and free communication". In other words the pragmatist view of knowledge, truth, and meaning – properly philosophical concerns – entails in a more or less direct fashion a concern for political institutions. That is a consequence that pragmatists have left woefully unexplored. And it is not one I will explore here in any general way⁷. For present purposes I instead wish simply to point out that the pragmatist approach I endorse (and to which I refer above) does not so much focus on the "intelligence of the common man" or "the constructive genius of ordinary men and women" in the abstract as on the institutions and practices necessary to sustain the full exercise of that intelligence or genius. This focus, I suggest, will allow us to mitigate the tension that characterizes much of contemporary political science.

Within this broad terrain I adopt a quite particular focus, namely on the resources available for communicating the specialist knowledge that emerges from social and political research. I am hardly the first to devote attention to this topic. Dewey indeed spends the latter chapters of *The Public & Its Problems* arguing that enhanced and elaborated institutions and practices of social inquiry and especially the communication of the results of that inquiry are crucial tools for remedying the problems besetting publics in the contemporary world. Likewise – and inspired by Dewey – Phillip Kitcher (2006) has more recently sketched the outlines of such an institutional arrangement – what he calls an Inquiry-and-Information System (IIS) – and sketches too the ideals that should inform the way that system operates. In complex modern societies, he claims, the components of an IIS are charged with disseminating as well as with generating and certifying information and ideas. And a set of ideals – significance and transparency – govern our assessment in any given society both of the components of the IIS as it currently exists and operates and the aspirations of those who inhabit that society for how they might be refined or augmented. By focusing not just on how our practices of inquiry generate reliable knowledge but also on how such knowledge is disseminated, this line of pragmatist thinking offers a remedy to the too narrow conception of social and political research that I noted at the outset.

Envisioning Complexity as a Political Problem

On a pragmatist view "science, like politics, is problem solving" (Rorty 1998, xxi)⁸. This does not mean that either practice can be derived from or reduced to the other. It

⁷ I have done so at length elsewhere. See Knight and Johnson (2007; 2011).

⁸ For two a more general depiction of science as a problem solving activity see Laudan (1981). And for a recent disagreement on whether social inquiry is properly characterized in problem solving terms see the exchange between Shapiro (2004) and Norton (2004). Shapiro defends a "problem driven" conception of inquiry in contrast to at the "method driven" approach he believes dominates much of political science. As is common with conceptual fashions in the discipline, this one risks being inflated into a dichotomy that will stymie rather than further

means only that, ideally, they are informed by an overlapping family of commitments. We might read *The Public and Its Problems* as a sustained attempt to navigate the troubled entanglement of politics and inquiry in contemporary society. Indeed, Dewey explicitly claims that the basic problem confronting inchoate publics in contemporary America is an “intellectual” one that might be mitigated by finding more useful ways by which scientific, and especially social scientific, inquiry can enter in to and inform democratic politics.

Nothing I have just said implies that pragmatists embrace the vaguely positivist conceptions of inquiry that informs much political research. In a well-known passage from *The Public and Its Problems* John Dewey offers the following observation:

The prime condition for a democratically organized public is a kind of knowledge and insight which does not yet exist. In its absence, it would be the height of absurdity to try to tell what it would be like if it existed. But some of the conditions which must be fulfilled if it is to exist can be indicated. We can borrow that much from the spirit and method of science even if we are ignorant of it as a specialized apparatus. An obvious requirement is freedom of social inquiry and of distribution of its conclusions (Dewey 1927, 166).

From there Dewey proceeds to discuss the various intellectual and institutional obstacles that he sees blocking the emergence of this as yet non-existent mode of knowledge. As he makes clear, however, the emergence of systematic, ongoing social inquiry is important not so much for its own sake but for its political consequences, for its anticipated impact on the formation of democratic publics. I do not aim to discuss this larger topic here. Instead, I want to focus on how and where Dewey concludes his discussion.

One aspect of the matter concerns particularly the side of dissemination. It is often said, and with a great appearance of truth, that the freeing and perfecting of inquiry would not have any especial effect. For, it is argued, the mass of the reading public is not interested in learning and assimilating the results of accurate investigation. Unless these are read, they cannot seriously affect the thought and action of members of the public; they remain in secluded library alcoves, and are studied and understood only by a few intellectuals. The objection is well taken save as the potency of art is taken into account. A technical high-brow presentation would appeal only to those technically high-brow; it would not be news to the masses. Presentation is fundamentally important, and presentation is a question of art. A newspaper which was only a daily edition of a quarterly journal of sociology or political science would undoubtedly possess a limited circulation and a narrow influence. Even at that, however, the mere existence and accessibility of such material would have some regulative effect. But we can look much further than that. The material would have such an enormous and widespread human bearing that its bare existence would be an irresistible invitation to a presentation of it which would have a direct popular appeal. The freeing of the artist in literary presentation, in other words, is as much a precondition of the desirable creation of adequate opinion on public matters as is the freeing of social inquiry (Dewey 1927, 182-3).

While contemporary pragmatists have devoted considerable attention to the topic of social and political inquiry, to the best of my knowledge those discussions neglect almost completely the crucial importance Dewey assigns here to matters of dissemination and

understanding just insofar as it neglects the extent to which science progresses by surmounting methodological problems.

presentation⁹. The argument I sketch in this paper is an initial (read tentative, speculative) effort to spell out some consequences of that neglect.

It is perhaps best to start by offering an expansive rendering of Dewey's claims. Read narrowly, the passage I've just invoked would restrict our concern to "literary" matters. I think that would be a mistake. And I think there are at least two reasons Dewey and more contemporary pragmatists should avoid making it.

In the first place, Dewey himself invites an expansive reading by speaking nearly immediately of the role of "art" more generally. He observes that "The function of art has always been to break through the crust of conventionalized and routine consciousness". Putting aside the question of whether that is an accurate characterization of the role art in fact has played in society (which I seriously doubt), he is here speaking not just of *literary* genres but of art *per se*. With respect to the dissemination of inquiry, he then goes on as follows:

The highest and most difficult kind of inquiry and a subtle, delicate, vivid and responsive art of communication must take possession of the physical machinery of transmission and circulation and breathe life into it. When the machine age has thus perfected its machinery it will be a means of life and not its despotic master. Democracy . . . is a name for a life of free and enriching communication. It had its seer in Walt Whitman. It will have its consummation when free social inquiry is indissolubly wedded to the art of full and moving communication (Dewey 1927 183, 184).

It seems clear that Dewey would countenance an expansive reading of his claims about art as including not merely literary, but visual media. There is, regardless, nothing in his discussion to preclude such a reading.

Second, it is crucial to recall that Walter Lippmann - arguably Dewey's primary interlocutor when he wrote *The Public and Its Problems* - was especially concerned with vision, with the capacity, or lack thereof, that ordinary men possess to *see* political phenomena¹⁰. Lippmann opens *The Phantom Public* with the following passage:

The private citizen today has come to feel rather like a deaf spectator in the back row, who ought to keep his mind on the mystery off there, but cannot manage to keep awake. He knows he is somehow affected by what is going on. Rules and regulations continually, taxes annually, and wars occasionally remind him that he is being swept along by great drifts of circumstance.

Yet these public affairs are in no convincing way his affairs. They are for the most part invisible. . . . He lives in a world that he cannot see, does not understand and is unable to direct (Lippmann 1927, 3-4).

Lippmann, of course, is in many ways charitable toward his fellow citizens. He thinks they have plenty of good reasons not to focus on public affairs. Citizens rightly are otherwise preoccupied with their jobs and families and other concerns considerably closer to home. That, though, is a matter of motivation, of where our interests might most commonly lie.

Lippmann nonetheless is quite clear that public affairs are complex and so obscure in their own right. It is, on his account, simply very difficult to see the social, political and

⁹ Recent discussions of social and political and social inquiry from a pragmatist vantage point include Knight and Johnson (1999), Topper (2000), Festenstein (2001), and Johnson (2006).

¹⁰ On Dewey and his debate with Lippmann see Westbrook (1991, 275-318) and Ryan (1995, 201-20).

economic relations in which we are enmeshed and this, he thinks, is an invitation to partiality.

Modern society is not visible to anybody, nor intelligible continuously and as a whole. One section is visible to another section, one series of acts is intelligible to this group and another to that (Lippmann 1927, 32).

About this Dewey would hardly disagree. Here is his familiar diagnosis of the “the eclipse of the public” in modern democracies.

Indirect, extensive, enduring and serious consequences of conjoint and interacting behavior call a public into existence having a common interest in controlling these consequences. But the machine age has so enormously expanded, multiplied, intensified and complicated the scope of the indirect consequences, has formed such immense and consolidated unions in action, on an impersonal rather than a community basis, that the resultant public cannot identify and distinguish itself. And this discovery is obviously an antecedent condition of any effective organization on its part. Such is our thesis regarding the eclipse which the public idea and interest have undergone. There are too many publics and too much of public concern for our existing resources to cope with. The problem of a democratically organized public is primarily and essentially an intellectual problem, in a degree to which the political affairs of prior ages offer no parallel (Dewey 1927, 126).

A few pages later he elaborates on this view, tying the “intellectual” problem he has identified into the difficulties that complex modern interactions pose for members of inchoate publics who might try to perceive how important, enduring, indirect consequences generate their common interests.

The local face-to-face community has been invaded by forces so vast, so remote in initiation, so far-reaching in scope and so complexly indirect in operation, that they are, from the standpoint of the members of local social units, unknown. Man, as has been often remarked, has difficulty in getting on either with or without his fellows, even in neighborhoods. He is not more successful in getting on with them when they act at a great distance in ways invisible to him. An inchoate public is capable of organization only when indirect consequences are perceived, and when it is possible to project agencies which order their occurrence. At present, many consequences are felt rather than perceived; they are suffered, but they cannot be said to be known, for they are not, by those who experience them, referred to their origins. It goes, then, without saying that agencies are not established which canalize the streams of social action and thereby regulate them. Hence the publics are amorphous and unarticulated (Dewey 1927, 131).

Members of a public, in other words, often will *feel* their predicament without accurately recognizing its causes or consequences. The difficulty they confront revolves around visibility, around being able to *see* their common predicament as a first step toward addressing it in a concerted way¹¹. The failure to adequately confront that difficulty results, on Dewey’s view, in apathy, ideological bluster, emotional reaction and, generally, misdiagnosis of the public and its problems.

It is important to be clear here. I am not claiming that Dewey and Lippmann are, after all, agreed in their assessments of contemporary democracy and its vicissitudes. They are

¹¹ This, of course, might well involve finding ways either to sustain certain sorts of indirect consequences that they deem beneficial or to mitigate consequences they deem negative.

not¹². Where Lippmann, for instance, emphatically endorses a technocratic solution for what he takes to be the malaise of democracy, Dewey rightly castigates that proposal as utopian, denying that it is either warranted or likely to succeed¹³. Rather, I am seeking only to establish that despite their political divergence, both theorists identify problems of *complexity* and *visibility* as obstacles to democratic politics¹⁴. That, I believe, affords initial warrant for the argument that follows.

Tools For Revealing Complexity

I want to take up the problem of visualizing complex social, political and economic phenomena. Such phenomena are in many cases aggregate ones. Political scientists have increasingly addressed the uses of graphical representations for analyzing quantitative data and for conveying the results of their analyses to professional audiences¹⁵. These valuable and innovative studies tend to focus rather narrowly on the methodology – the “nuts and bolts” as it were – of constructing this or that sort of graphic. They also tend to be concerned with communicating with other social scientists or, perhaps, with members of the legal profession or policy-makers. I want to shift the focus somewhat in order to highlight several theoretical premises that, I think, sustain these studies and that may prompt us to adopt a more expansive view of our potential audience. In this way it may be possible to see how the visualization of complexity – especially as it is embodied in aggregate phenomena – is a key route by which political inquiry can enter more effectively into democratic politics.

My initial focus is on the work of Edward Tufte, himself a lapsed political scientist, who has explored with great insight the cognitive and aesthetic tasks of communicating quantitative information¹⁶. Tufte clearly operates precisely at the junction of visibility and complexity. He emphatically punctuates the epilogue to the first of his books on the topic as follows:

¹² For an updated version of something resembling Lippmann’s view see Hardin (2009). Empirical political scientists, of course, have made much over the years about the putative ignorance of regular citizens. I will not pursue that debate here. other than to note two plausible avenues of response to skeptics.

First, I will note that the matter hardly has been settled in the favor of ‘realists.’ The authors of one recent review insist that “despite ongoing concerns about the ignorance and irrationality of voters, a growing body of recent work shows that the average citizen may be more informed than initially thought” (Wlezien and Soroka 2007, 812).

Second, and more ambitiously, a pragmatist might sidestep the entire debate as it is currently framed. She might instead challenge the presumption that survey instruments as typically deployed are a reliable means of ascertaining public opinion or knowledge on political matters. For an argument of this sort see Sanders (1999).

¹³ For an extension of Dewey’s skepticism about technocratic arrangements see Knight and Johnson (1999).

¹⁴ This is not the place for a theoretical examination of the vagaries surrounding the notion of complexity. For present purposes the following conception will suffice: “Complex outcomes are neither simple patterns nor completely random. They are longer, interesting structures. This approach gives us an exclusionary test for complexity. Complex outcomes are those that cannot be classified as equilibria, simple patterns or random. This approach works pretty well” (Page 2011, 27).

¹⁵ See Jacoby (1997; 1998), Epstein, Martin and Schneider (2006), Epstein, Martin and Boyd (2007), and Kattellic and Leoni (2007). In a related vein, Brady (2011) has championed the importance of spatial diagrams in political inquiry.

¹⁶ To date Tufte has self-published four volumes on what he calls “analytical design” (Tufte 1990; 1997; 2001; 2006). The relevant secondary literature on Tufte’s work is sparse. In particular, his views seem to have generated virtually no sustained discussion in political science. This is true even of the work mentioned in the immediately preceding footnote. See, however, Grady (2006) and Zachary and Thralls (2004).

What is to be sought in designs for the display of information is the clear portrayal of complexity. Not the complication of the simple; rather the task of the designer is to give visual access to the subtle and the difficult - that is,

the revelation of the complex (Tufte 2001, 191).

Tufte offers myriad examples of good and bad design, a set of principles of “graphical integrity” meant to insure that design variation maps data variation rather than the reverse, and much advice about how to maximize (within reason) the data-ink ratio in, and so enhance the efficiency of, visual displays. All of this specific advice, however, is parasitic on a single underlying commitment, namely to an instrumental view of visual displays. Tufte endorses this commitment in the introduction to the same volume. “At their best, graphics are instruments for reasoning about quantitative information” (Tufte 2001, 9,91). Graphs and other sorts of visual display, in other words, are not simply ways of representing data, or conveying information, or presenting “the facts”. Like other components of inquiry, they are, on a view that pragmatists will embrace, tools we use to think with as we attempt to navigate the natural and social worlds. And, as with our theories, concepts, classifications, measures, and techniques more generally, we typically assess data graphics according to how well they work in meeting our aims. Virtually all of Tufte’s particular recommendations, unsurprisingly, revolve around how to create and refine graphical displays in ways that will enhance rather than hinder our capacity to think about complex problems we encounter¹⁷.

In this regard, Tufte, sometimes tacitly, often explicitly, endorses a problem-solving approach to inquiry that places a premium on producing sound explanations and assessing them in terms of their consequences (Tufte 2006, 131; 1997, 27-53)¹⁸. And he breaks problem-solving down into a set of more modest, if still crucially important tasks, for which visual displays of various sorts can prove useful. As he says:

The purpose of evidence presentation is to assist thinking. Thus presentations should be constructed so as to assist with the fundamental intellectual tasks in reasoning about evidence: describing the data, making multivariate comparisons, understanding causality, integrating a diversity of evidence, and documenting the analysis. . . . *The principles of analytical design are derived from the principles of analytical thinking* (Tufte 2006, 137).

One not-so-obvious way that visual displays can assist our thinking is to prompt us to address conceptual problems. This often will involve talking about things that remain unobservable. So, for instance, Tufte rightly notes that “understanding causality” requires that we identify and trace plausible causal mechanisms (Tufte 1997, 53). Those mechanisms

¹⁷ “Here it is enough to note that notions, theories, systems, no matter how elaborate and self-consistent they are, must be regarded as hypotheses. They are to be accepted as bases of actions which test them, not as finalities. To perceive this fact is to abolish rigid dogmas from the world. It is to recognize that conceptions, theories and systems of thought are always open to development through use. It is to enforce the lesson that we must be on the lookout quite as much for indications to alter them as for opportunities to assert them. They are tools. As in the case of all tools, their value resides not in themselves but in their capacity to work shown in the consequences of their use” (Dewey 1948, 145). Compare Laudan (1990, 102-6) and Johnson. (2006; 2010).

¹⁸ At times, Tufte is inclined to talk about the aim of inquiry as discerning “Truth.” Among pragmatists the intimate relation of truth and inquiry is both commonly acknowledged and highly contested. For instance, Richard Rorty, Hilary Putnam, Cheryl Misak and Robert Brandom each offer sophisticated but quite distinct formulations of the relationship. Following Tufte down this path is beyond the scope of this paper. For a reliable tour of the terrain see Bernstein (2010).

typically consist in entities and activities that we cannot observe, at least in any direct sense¹⁹. They are crucially important to social and political inquiry insofar as without them our “theories” often remain so poorly specified that it is difficult to know whether whatever *data* we might have can, in fact, provide *evidence* for or against the claims we are making (Tufte. 2006, 128-9, 142-3)²⁰. And they are crucial to democratic politics insofar as our appreciation of indirect consequences is informed by our capacity to identify and explore sometimes-intricate causal connections.

While Tufte’s views seem to underwrite a broadly pragmatist understanding of social and political inquiry, at least two important concerns remain. First, it is unclear how far Tufte would push his own views concerning analytical design for the visual display of data and information - whether, that is, he is concerned primarily about influencing policy-makers or about having an impact on the formation of publics more generally. Second, there is what may perhaps be a prior question regarding what for present purposes I will call the motivations, of both those who create graphic displays and those who view them. Despite the uncertain priority I will take up these matters in turn.

My first concern boils down to whether Tufte would endorse something like Lippmann’s restricted, technocratic view of democracy or something more like the expansive conception of democracy that Dewey endorsed²¹. To the best of my knowledge he never offers his views on the matter one way or the other. Even if, in fact, he would endorse the former, nothing in particular prevents his views on analytical design from informing a pragmatist account of the latter sort. In other words, regardless of Tufte’s own political views, his principles of graphic design do not entail a technocratic vision. Indeed, at least three features of Tufte’s approach in fact impel him in a democratic direction.

First, when diagnosing the sources of various shortcomings in graphical practice, especially the sorts of “chartjunk” that divert attention from the substantive point to the design features of a visual display, Tufte repeatedly identifies as perhaps the most important problem the tendency of designers to underestimate viewers, to assume they are unsophisticated and unable and disengaged²². In that sense, the principles of analytical design Tufte advocates are meant to mitigate the obstacles to clear thinking that poor graphical practice pose, thereby increasing the likelihood that people might actually use the displays effectively²³. And in that sense too he seems to share something resembling the confidence pragmatists from Dewey to Unger place in the potential intelligence of common citizens. Second, Tufte

¹⁹ On this point see Johnson (2006; 2010) and the large body of prior work on which those papers build.

²⁰ On the larger point made here see Johnson (2002; 2003).

²¹ For such a pragmatist conception of democracy see Knight and Johnson (2007; 2011). Tufte himself has recently taken a post in Washington as an adviser to the Recovery Accountability and Transparency Board, which is the federal government outfit charged with keeping track of where the economic stimulus money has gone. See Cohen (2010) and Yaffe (2011). The latter refers to Tufte as “the graphics guru to the power elite,” hence capturing one possibility.

²² “Worse is contempt for our audience, designing as if readers were obtuse and uncaring. In fact, consumers of graphics are often more intelligent about the information at hand than those who fabricate the data decoration. And no matter what, the operating *moral* premise of information design should be that our readers are alert and caring; they may be busy, eager to get on with it, but they are not stupid. Clarity and simplicity are completely opposite simple-mindedness. Disrespect for the audience will leak through, damaging communication” Tufte (1990, 34). See also Tufte (2001, 79-87, 136-7). Compare Epstein, *et. al.* 2006, 1851, 1861-64.

²³ Tufte, clearly, is making an aesthetic judgment as well as an empirical claim. Both aspects of his position are contestable. For some flavor of the discussion surrounding what he calls “chart junk” (purely ornamental, typically distracting features of a graphic) and its consequences see: Scott Bateman, et al. 2010. “Useful Junk? The Effects of Visual Embellishment on Comprehension and Memorability of Charts.” Accessible at <http://hci.usask.ca/uploads/173-pap0297-bateman.pdf> and Stephen Few. 2011. “The Chart Junk Debate,” which is available at <http://www.perceptualedge.com/>.

points out that effective visual displays can accommodate diversity of interest and ability among viewers.

Visual displays of information encourage a diversity of individual viewer styles and rates of editing, personalizing, reasoning, and understanding. Unlike speech, visual displays are simultaneously a wideband and perceiver-controllable channel (Tufte 1990, 31).

Insofar as pragmatists insist that in the circumstances of politics, collective decision-making must accommodate individuals who express an irreducible plurality of material interests, ethical commitments and cultural attachments, this feature of visual displays must be seen as a virtue²⁴. Finally, Tufte endorses a view of communication that encourages designers to experiment with graphics and to collaborate with their audiences. Here again, he insists that if one views one's audience as a collaborator, it is necessary to avoid underestimating them (Tufte 2001, 137).

In combination, this set of commitments place Tufte's views in some proximity to the "faith" that Dewey (1939) repeatedly expresses "in the capacity of human beings for intelligent judgment and action if proper conditions are furnished". And that faith, of course, provides all the grounding Dewey feels necessary for a belief in the possibility of "creative democracy". It hardly is over-reaching to suggest that among the requisite conditions are effective practices of inquiry and dissemination.

A second concern that arises from Tufte's writings revolves around the positivist impulse to police the boundaries of scientific inquiry and politics. Tufte prompts us to focus on the *uses* of visual displays, on who is creating and presenting graphical depictions of information, the purpose for which they are doing so, and the ethical, aesthetic and intellectual commitments that inform their enterprise. This is a rather massive topic. It raises the complex ways that "facts" and "values" are entangled in processes of inquiry (Putnam 2002). Much of contemporary political science is grounded in a faith – misguided in my view – that we somehow can evade such entanglement by asserting a stark dichotomy between facts and values²⁵. Yet Tufte's concern for the ways aesthetic values inform the communication of quantitative data – captured most obviously in the title to his latest volume *Beautiful Evidence* – suggests that neither he nor we can embrace such a dichotomy in any firm way²⁶. That concern, in turn, is intimately interwoven with his systematic preoccupation with ethical standards of "integrity" for visual displays and the "responsibility" of those who create and disseminate them²⁷. Tufte, it seems, lends credence to the view that the cognitive, the aesthetic and the ethical dimensions of inquiry are entangled in thorough-going ways. Obviously, we might – for particular purposes, at particular points – be able to separate them out. But there is no *dichotomy* between facts and values to insulate inquiry from politics. This becomes especially clear when we consider Tufte's assessment of particular graphics.

²⁴ On the circumstances of politics so conceived and their implications for democratic theory see Knight and Johnson (2011).

²⁵ In his presidential address to the Southern Political Science Association, Bond (2007, 899) offers a recent, fervent profession of this faith: "The beginning of scientific inquiry is the fact/value dichotomy." He places this claim first among the factors he takes to be the "key elements" of the scientific method. For recent, more or less dissenting views see Mihic, Engleman and Wingrove (2005) and Gerring and Yesnowitz (2006).

²⁶ Compare the stress Epstein, *et. al.* (2006, 1847-51) place on "clarity," "vividness," and "impact" all of which are values.

²⁷ "For Tufte, aesthetics is linked inextricably to moral and political issues as well as cognitive ones, and this is the master theme that flows through his books" (Grady 2006, 236). Crucially, Tufte ascribes responsibility not only to the purveyors of graphics but also to those who constitute their audience (Tufte 2006, 141).

Consider Tufte's discussion of two examples of what he deems excellent graphics and the purposes for which they were used. The first appears near the start of *Beautiful Evidence* (Tufte 2006, 22-3). It is an astonishing blueprint-like diagram of the slave ship *Vigilante*, a "terrible grid" that – given the horrors of the middle passage – amounts to "a portrait of individual suffering multiplied by 347 people and then millions". Tufte takes it from an 1823 engraving produced by J. Hawkesworth for a British anti-slavery publication. Put bluntly, among the first exemplar's Tufte offers us in his most recent work is a 19th Century *political* graphic aimed at helping create a public that might actively oppose the slave trade. This point is brought home by the explicit, very favorable comparison he draws between Hawkesworth's engraving and a second data graphic – Charles Joseph Minard's map of Napoleon's disastrous invasion of Russia.

Early on Tufte asserted that Minard's data-map "may well be the best statistical graphic ever drawn" (Tufte 2001, 40). At that time, he was preoccupied narrowly with its aesthetic and cognitive qualities – the efficiency and grace with which Minard captures how time, distance and temperature conspired to reduce Napoleon's invading force from nearly half a million troops to a mere ten thousand – and largely neglected the purposes for which he drew it. More recently, Tufte has come around to acknowledge that Minard's map too is a *political* graphic, an "antiwar poster" animated by Minard's horror at the "human costs of war" and drawn for the purpose of "memorializing the dead soldiers" who met their demise due to Napoleon's ambition and folly (Tufte 2006, 134,136)²⁸. Both Hawkesworth and Minard, then, produced data graphics, that, after roughly a century and a half, remain exemplary not just for the graphical integrity they embody but for the political commitment they convey. As exemplars of the principles of graphic design that Tufte extols, both also serve not just as displays of information but as instruments with which those who created them could prompt their audiences to think about large scale political events and from there, potentially at least, coordinate an effective response to the problems they depict²⁹.

Taking Data Graphics to the Streets

Tufte's reflections on visual displays of information and their uses afford a useful point of departure for contemporary efforts to bring inquiry into democratic politics. This claim may well elicit skepticism from those who strike a "realistic" pose regarding the prospects of an expansive conception of democratic publics. For such readers it is (at least) highly unlikely that we might overcome the distinction between "insiders" and "outsiders" that underwrites Lippmann's pessimistic political vision (Hannay 2005, 47-51,128-30). This is a provocative albeit commonplace position. It also is, in my view, unsustainable.

A pragmatist's initial impulse is to challenge the dichotomy between insiders and outsiders. While this is a sometimes-useful distinction, it is crucial not to allow critics of democracy to inflate it into a full-fledged dichotomy trailing in its wake a set of quasi-

²⁸ Tufte is somewhat less effusive of late, referring to Minard's map only as "*one of the best* statistical graphics ever" (stress added). He nonetheless relies on it as the sole vehicle for his exposition of "The Fundamental Principles of Analytical Design" (Tufte 2006, 122-39).

²⁹ As a more contemporary example here one might consider Sutcliffe (2002), which actually offers 123 graphics that capture one or another dimension of problem of inequality announced in the book's title. Sutcliffe explicitly announces his debt to Tufte in the introduction. Unfortunately, the small paperback, published by a left-wing press, hardly approximates the production values that would make the graphics especially powerful.

metaphysical, ultimately political commitments³⁰. In the case at hand, Lippmann's view would lead us to insist that the political world necessarily consists in two broad, mutually exclusive, largely impermeable categories of actors. On the one side are competing politicians and the experts on whom they call to rationalize their policies and preferences. On the other is a disengaged, largely ignorant citizenry. I will not rehearse Lippmann's argument. After all, even Dewey conceded that as a description of the actual political world Lippmann's portrait was reasonably accurate. What is at issue, however, is whether the bifurcation Lippmann identifies is, as he believes, a necessary feature of complex modern societies. Dewey surely thought otherwise. There is little reason to suspect that it is.

We might first insist that publics are, as Dewey tacitly concedes in his own usage, plural. We become members of some public or other on his account insofar as the consequences of interactions to which we are not ourselves a party impact us in persisting, important, if indirect ways. Any such public will remain "inchoate" until those who constitute it recognize their common interests and coordinate around them. This does not require, therefore, that we ascribe the vast capacities of the "omnicompetent citizen" (which Lippmann found so implausible) to the members of any coordinated public. And while Dewey rightly stresses the crucial role "representatives" play in coordinating publics, neither does it require that we subscribe to Lippmann's bifurcated view of the political world as unalterably composed of "agents" and "spectators" (Dewey 1927, 34-5, 76-77).

It is easy enough too not only to present a compelling counterexample to Lippmann's dichotomy but to offer one where visual displays of quantitative information – *data graphics* – played a crucial role in helping coordinate an inchoate public³¹. Consider the emergence of AIDS activism in New York specifically, but across the United States more generally during the mid-1980s. This was an emergent, internally diverse movement whose members integrated inquiry – including epidemiological, medical and social scientific research – into democratic politics in extremely innovative and effective ways. The point, in fact, is stronger. AIDS activists not only brought inquiry into democracy, but also brought a significant measure of democracy to the practice of scientific inquiry. In the process they both challenged extant structures of religious, media, scientific, business and political authority and became, in many instances, experts on the science and treatment of the disease (Epstein 2000). ACT UP, on this view, enacted a sometime volatile but intensely effective "combination of know-how and unruliness" that contested and redefined the boundary of inquiry and politics without seeking to efface the difference between the two domains (Reinhardt 1997, 168, 170).

In terms of concrete demands ACT UP sought (starting in 1987) to harangue, cajole, shame, and ridicule mainstream America – especially those occupying roles in our political, scientific and medical institutions – into recognizing and responding to the AIDS epidemic that was decimating not only communities of gay men, but women and racial minorities and the poor. ACT UP clearly wrestled with the heterogeneous character of the population susceptible to the disease, but they were single-minded about their basic, instrumental goal: "the central issue was getting AIDS treatments out of the NIH and FDA bureaucracies and

³⁰ Thus Dewey (1948, xxxi), for instance, decries "the whole brood and nest of dualisms which have, upon the whole, formed the 'problems' of philosophy." As Putnam reminds us such dichotomies tend to divide the world categorically while "ordinary distinctions have ranges of application and we are not surprised if they do not always apply" (Putnam 2002, 11).

³¹ Although ACT UP has declared its graphics to be in the public domain, they are in fact controlled by the New York Public Library, which charges significant fees of permission to reproduce the images. Readers can find the ACT UP archive by searching for "ACT UP" at <http://digitalgallery.nypl.org/nypldigital/index.cfm>. In addition, Crimp (1990) reproduces many of the graphics I discuss below.

into the bodies of those who are HIV-infected” (Crimp 1990, 37)³². Arguably a prerequisite to such challenges was the formation of a public - or more appropriately an overlapping series of local publics - in precisely Dewey’s sense of the word. And a primary dimension of that task was to render the epidemic and its sources visible to an audience – consisting of members of directly effected communities as well as those who remained relatively insulated – that often could not, but also often actively refused to see it (Gamson 1989). ACT UP sought to portray AIDS as an epidemic rather than, for instance, a morality tale or tragic human-interest story by diverting attention away from this or that stricken individual and onto mind-numbing statistics and obscured causal processes. Graphical displays of quantitative data played a key element in this strategy (Crimp 1990; 2003). Design professionals, often working in collectives within umbrella organizations such as ACT UP, produced a significant number of high quality data graphics aimed at prompting even more encompassing constituencies to recognize, identify and mobilize around common interests and concerns. Several features of this mobilization bear comment.

First, as was the case with Hawkesworth and Minard, we are dealing here with distinctly political graphics that rely centrally on quantitative data. We have simple descriptive statistics: “AIDS: 1 in 61” referring to the ratio of babies born HIV positive in New York City and “25% TEST POSITIVE” referring to the population incarcerated by New York State. Likewise, we have multivariate displays: “The Government Has Blood on Its Hands: One Aids Death Every Half-Hour” or, as the epidemic intensified, “. . . Every Ten Minutes”. But the aim here was less to present information than to illuminate, challenge and deflate the diffuse but potent moral and political norms that sustained the epidemic (Reinhardt 1997, 173; Gamson 1989). Here again, it is important to stress that data graphics are not simply ways of representing data, or conveying information, or presenting “the facts”. Like other components of inquiry, they are tools we use to think with as we attempt to navigate – and indeed, reconfigure - the natural and social worlds.

Thus, a second significant dimension to ACT UP’s visual politics was to not just present numbers but to address the properly conceptual tasks of reforming classifications and reformulating causal narratives. For example, we are told: “Women Don’t Get AIDS, They Just Die From It”, accompanied by the percentage of female AIDS patients who die from conditions not included in official definitions of the disease. More generally, the AIDS epidemic, as these graphics represent it, results not from a virus transmitted by ‘deviant’ sexual practices, but from the unconcern and, indeed, active complicity of economic, political, religious, and media entities, both individual and institutional. Hence: “KISSING DOESN’T KILL: GREED AND INDIFFERENCE DO”. And “Why is Reagan Silent About AIDS? What Really is Gong On at the Center for disease Control, the Federal Drug ADMINISTRATION and the Vatican?”. In that sense, by drawing attention to larger causal processes, ACT-UP shifted the locus of responsibility, or sought to, from HIV-positive persons onto the business executives, elected officials, bureaucratic functionaries, clergy and journalists who occupied positions in complicit economic, political, religious, and media institutions. The most potent logo, after all, identified the political causes of the problem. It reads not “HIV = DEATH”, but “SILENCE = DEATH”. In so doing, it invited viewers – indeed, invites them still - to think about the epidemic as a deep, broad “political crisis” and to transform lethal silence into action that might remedy *that* problem.

³² The acronyms Crimp uses stand for the National Institutes of Health and the Food and Drug Administration, both Federal government agencies. It is important to note that, in their confrontations with these agencies, AIDS activists were instrumental, for instance, in altering disease classifications and experimental treatment protocols in ways that expedited the availability of drugs (Epstein 2000).

Third, one significant dimension of the visual campaigns was the effort to establish that HIV is not a “gay” disease, and that the epidemic not only impacts individuals without discrimination - heterosexuals, women, ethnic and racial minorities, infants, and so forth - but does so in large numbers. An epidemic, after all, is an aggregate phenomenon. In other words, here “the public” seeking to identify and articulate its common concerns was both considerably larger and more heterogeneous than many considered it to be³³. ACT UP campaigns thus had multiple audiences:

“The graphics . . . codify concrete, specific issues of importance to the movement as a whole or to particular interests within it. They function as an organizing tool by conveying, in compressed form, information and political positions affected by the epidemic, to onlookers at the demonstrations, and to the dominant media. But their primary audience is the movement itself. AIDS activist graphics enunciate AIDS politics to and for all of us in the movement. . . . In the end, when the final product is wheat-pasted around the city, carried on protest placards, and worn on T-shirts, our politics and our cohesion around our politics become visible to us, and to those who will potentially join us” (Crimp 1990, 20)³⁴.

Both enterprises, communicating with those outside the movement and with those in – or potentially in – it, obviously were fraught with conflict and disagreement. And there is no need to diminish those conflicts or to overstate the movement’s success at surmounting them (Gamson 1989) to see that ACT UP nonetheless was extremely adept at mobilizing for its basic purpose of getting “drugs into bodies”.

Finally, it is easy enough to see that our theme of visibility is woven intimately throughout the politics of ACT UP. But our second theme – complexity – is central to their endeavors as well. AIDS activists confronted the intellectual and emotional task of grasping how the etiology of disease, the operation of social and moral norms, and the functioning of political-economic institutions interacted to threaten and indeed end the lives of large numbers of men and women. This brings the distinctive features of ACT UP data graphics into sharper focus. Consider the terms Crimp, in retrospect, uses to appraise the graphics that ACT UP deployed.

I think that maybe one of the great things that ACT UP was able to do was to figure out ways of putting a certain complexity into sloganeering. Silence Equals Death is an extremely vague, and at the same time, extremely resonant image text, that, I mean, the way I wrote about it in *AIDS Demo Graphics* was that it was partly because one doesn’t necessarily immediately know what it means; what that pink triangle is, for example; why it’s upside down, in relation to the way it was historically used; how it was historically used. That’s not all right there. And yet, it became incredibly resonant for that very reason. So I think that there are ways, graphically and textually, to constitute a certain complexity. And I think that that was one of the achievements of the graphic and other representational work that ACT UP did (Crimp and Shulman, 2007, 40).

On his account AIDS activists used graphics in much the way Tufte suggests, not to simplify but rather to reveal complexity. This is true not just insofar as ACT UP’s graphics, for instance, incorporated numbers, highlighted the common threat to diverse populations, and contested common ascriptions of causality. It is true too, as Crimp intimates, precisely

³³ On the significant tensions and difficulties involved here see Gamson (1989).

³⁴ Reinhardt (1997, 174) nicely elaborates on this point.

insofar as the group's defining logo establishes equivalence (literally mathematical) between two abstract, seemingly disparate concepts.

Conclusion

Many of the problems to which politics is addressed consist of aggregate phenomena – not just elections and budgets, but wars, migrations, famines, and so forth. (ACT UP explicitly draws comparisons between the AIDS crisis and both war and genocide). And many of the difficulties that members of democratic publics confront consequently demand the ability to grasp the sorts of complexity that large number pose. For “realists” like Lippmann and his intellectual progeny this demand is disabling. They presume that ordinary men and women are incapable of such vision. And they marshal the findings of social and political research to bolster their claims. Regardless of their intentions, therefore, political scientists risk contributing to a self-confirming, anti-democratic politics.

Dewey formulates the basis for a pragmatist reply to this predicament. “Capacities” he reminds us “are limited by the objects and tools at hand” (Dewey 1927, 210). I have, by offering a pragmatist interpretation of on Tufte's theoretical analysis of data graphics and the visual politics of ACT UP, sought to indicate what such tools look like and how they have in fact and might in the future continue to operate to sustain a democratic relation between politics and inquiry. I make no pretense that my argument is definitive. It is instead more of a provocation, a challenge to political scientists to reconsider the tension that, as I noted at the start, besets their discipline.

References

- Adcock, R., Bevir, M., (2010), “Political Science”, in *The History of the Social Sciences Since 1945*, edited by Roger Backhouse and Phillipe Fontaine, Cambridge: Cambridge University Press.
- Bernstein, R., (2010), *The Pragmatic Turn*, Cambridge: Polity Press.
- Bond, J., (2007), “The Scientification of the Study of Politics: Some Observations on the Behavioral Evolution in Political Science”, *The Journal of Politics*, 69: 897-907.
- Brady, H., (2011), “The Art of Political Science: Spatial Diagrams as Iconic and Revelatory”, *Perspectives on Politics* 9, 2: 311-31.
- Cohen, N., (2010), “Take \$787 Billion. Now Show Where It Is Going”, *The New York Times* (21 March).
- Crimp, D., (1990), *AIDS DEMOGRAPHICS* (with Adam Rolston), Bay Press.
- Crimp, D., (2003), “Gran Fury Talks to Douglas Crimp”, *ARTFORUM* (April) – Available online at <http://www.artforum.com/inprint/id=4466>.

- Crimp, D. – Shulman, S., (2007), “Complexity Into Sloganeering”, Interview #74, *ACT-UP Oral History Project*. – Available online at http://www.actuporalhistory.org/interviews/interviews_13.html
- Dewey, J., (1911 [1998]), “The Problem of Truth”, in *The Essential Dewey* (Vol. 2), edited by Larry Hickman & Thomas Alexander, Indianapolis: Indiana University Press.
- Dewey, J., (1927), *The Public & Its Problems*, Athens: Swallow Press.
- Dewey, J., (1934), *A Common Faith*, New Haven: Yale University Press.
- Dewey, J., (1939 [1993]), “Creative Democracy – The Task Before Us”, in *Political Writings*, edited by D. Morris & Ian Shapiro, Indianapolis: Hackett.
- Dewey, J., (1948), *Reconstruction in Philosophy* (Enlarged Edition), Boston: Beacon Press.
- Epstein, L., Martin D., Schneider M., (2006), “On the Effective Communication of the Results of Empirical Studies, Part I”, *Vanderbilt Law Review* 59: 1811-187.
- Epstein, L., Martin D., Boyd, C., (2007), “On the Effective Communication of the Results of Empirical Studies, Part II”, *Vanderbilt Law Review* 60: 101-46.
- Epstein, S., (2000), “Democracy, Expertise, and AIDS Treatment Activism”, in *Science, Technology, and Democracy*, ed. D. Kleinman, New York: State University of New York Press.
- Festenstein, M., (2001), “Inquiry as Critique: On the Legacy of Deweyan Pragmatism for Political Theory”, *Political Studies* 49: 730-748.
- Gamson, J., (1989), “Silence, Death and the Invisible Enemy”, *Social Problems* 36: 351-67.
- Gerring, J., Yesnowitz J., (2006), “A Normative Turn in Political Science?”, *Polity* 38: 101-33.
- Grady, J., (2006), “Edward Tufte and the Promise of a Visual Social Science”, in *Visual Cultures of Science*, ed. Luc Pauwels. Dartmouth College Press.
- Hannay, A., (2005), *On the Public*, London: Routledge.
- Hardin, R., (2009), *How Do You Know? The Economics of Everyday Knowledge*, Princeton: Princeton University Press.
- Hauptman, E., (2005), “Political Science/Political Theory: Defining ‘Theory’ in Postwar Political Science”, in *The Politics of Method in the Human Sciences: Positivism and Its Epistemological Others*, ed. by George Steinmetz, Duke University Press.
- Jacoby, W., (1997), *Statistical Graphics for Univariate and Bivariate Data*, London: Sage Publications.
- Johnson, J., (2002), “How Conceptual Problems Migrate: Rational Choice, Interpretation, and the Hazards of Pluralism”, *Annual Review of Political Science* 5: 223-48.
- Johnson, J., (2003), “Conceptual Problems as Obstacles to Theoretical Progress in Political Science: Four Decades of Political Culture Research”, *Journal of Theoretical Politics* 15: 87-115.

- Johnson, J., (2006), "Consequences of Positivism: A Pragmatist Assessment", *Comparative Political Studies* 39: 224-52.
- Johnson, J., (2010), "What Rationality Assumption? Why 'Positive Political Theory' Rests on a Mistake", *Political Studies* 58: 282-99.
- Kastellec, J., Leoni E., (2007), "Using Graphs Instead of Tables in Political Science", *Perspectives on Politics* 5: 755-71.
- Kitcher, P., (2006), "Public Knowledge & the Difficulties of Democracy", *Social Research* 73: 1205-24.
- Knight, J., Johnson, J., (1999), "Inquiry Into Democracy", *American Journal of Political Science* 43: 566-89
- Knight, J., Johnson J., (2007), "The Priority of Democracy", *American Political Science Review* 101: 47-60.
- Knight, J., Johnson, J., (2011), *The Priority of Democracy: Political Consequences of Pragmatism*, Princeton: Princeton University Press/Russell Sage Foundation.
- Laudan, L., (1981), "A Problem-Solving Approach to Scientific Progress", in *Scientific Revolutions*, ed. by Ian Hacking, Oxford: Oxford University Press.
- Laudan, L., (1990), *Science and Relativism*, Chicago: University of Chicago Press.
- Lippmann, W., (1927), *The Phantom Public*, Transaction Publishers.
- Mihac, S. – Engleman, S. - Wingrove, E., (2005), "Making Sense In and Of Political Science - Facts, Values and 'Real' Numbers", in *The Politics of Method in the Human Sciences*, ed. by George Steinmetz, Duke University Press.
- Norton, A., (2004), "Political Science as a Vocation", in *Problems and Methods in the Study of Politics*, ed. Ian Shapiro, *et. al.*, Cambridge: Cambridge University Press.
- Page, S., (2011), *Diversity And Complexity*, Princeton: Princeton University Press.
- Peirce, Charles., (1877 [1997]), "The Fixation of Belief." In *Pragmatism: A Reader*, edited by Louis Menand, New York: Vintage.
- Posner, R., (2003), *Law, Pragmatism & Democracy*, Cambridge: Harvard University Press.
- Putnam, H., (2002), *The Collapse of the Fact/Value Dichotomy and Other Essays*, Cambridge: Harvard University Press.
- Reinhardt, M., (1997), *The Art of Being Free*, Ithaca: Cornell University Press.
- Rorty, R., (1998), *Philosophy & Social Hope*, London: Penguin.
- Ryan, A. (1995), *John Dewey and the High Tide of American Liberalism*, New York: W.W. Norton.
- Sanders, L., (1999), "Democratic Politics and Survey Research", *Philosophy of the Social Sciences* 29: 248-280.
- Shapiro, I., (2004), "Problems, Methods and Theories in the Study of Politics, or: What's Wrong With Political Science and What to Do About It", in *Problems and Methods in the Study of Politics*, ed. Ian Shapiro, *et. al.*, Cambridge: Cambridge University Press.

- Smith, R., (1997), "Still Blowing in the Wind: The American Quest for a Democratic, Scientific Political Science", *Daedalus* 126, 1, 253-287.
- Sutcliffe, B., (2002), *100 Ways of Seeing an Unequal World*, Zed Press.
- Topper, K., (2000), "In Defense of Disunity: Pragmatism, Hermeneutics and the Social Sciences", *Political Theory* 28: 509-539.
- Tufte, E., (1990), *Envisioning Information*, Chelshire: Graphics Press.
- Tufte, E., (1997), *Visual Explanations*, Chelshire: Graphics Press.
- Tufte, E., (2001), *The Visual Display of Quantitative Information* (2nd Edition), Chelsea: Graphics Press.
- Tufte, E., (2006), *Beautiful Evidence*, Chelsea: Graphics Press.
- Unger, R. M., (2007), *The Left Alternative*, New York: Verso.
- Westbrook, R., (1991), *John Dewey and American Democracy*, Ithaca: Cornell University Press.
- Wlezian, C., - Soroka S., (2007), "The Relationship Between Public Opinion and Policy", in *The Oxford Handbook on Political Behavior*, ed. Russell J. Dalton and Hans-Dieter Klingemann, Oxford: Oxford University Press.
- Yaffe, J., (2011), "The Information Sage", *Washington Monthly* (May/June).
- Zachary, M. - Charlotte T., (2004), "An Interview with Edward Tufte", *Technical Communication Quarterly* 13: 447-62.