

# Weak Feedback, and Minimal Differentiation in Research Spontaneous Orders: Consequences and Responses

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**Abstract:** Science and other fields of research spontaneous orders like the market economy. Research orders differ from the market due to the pursuit of reputation as opposed to profit, the role of a paradigm in shaping research in a discipline, and the consumption of research primarily by the producers. These features of research orders lead to two problems relative to the economic order, weak feedback due to the location of most researchers in most disciplines within universities, and minimal differentiation or a bias against heterodox schools of thought within a discipline. This paper discusses the origins, consequences, and possible responses to the problems of weak feedback and minimal differentiation in research orders. Direct intervention by boards of trustees or legislators for public universities is unlikely to improve feedback without crippling academic freedom, but government agencies do provide an important channel of feedback as demanders of research. Private foundations and donors can act to increase differentiation of the research product by supporting dissident scholars, and may provide a means for strengthening feedback by directly funding research.

**Keywords:** Spontaneous order, market processes, scientific research, feedback mechanisms, foundations.

## 1. Introduction

Science and other fields of research clearly have the characteristics of an emergent or spontaneous order. As Polanyi (1962) discusses, scientists decide independently which problems to attack and how, with feedback mechanisms serving to coordinate activity. And yet the order differs markedly from the emergent order of the market economy (Sutter 2009). I examine how several distinctive features of the research order - including peer review and the pursuit of reputation and prestige - combine to create two problems or potential inefficiencies. The first problem is weak feedback from the larger society concerning the value of research, which is most serious in disciplines where university teaching positions comprise the primary support for research. Faculty research contributes to the reputation of a college or university, but the exact content of this research matters little for an institution's reputation, and peer review by discipline-based departments within the university insulates practitioners from feedback from actors and organizations in the greater society. In the aggregate, research in history, the humanities, and social sciences determines the stock of ideas available to society in cultural, economic, political and policy debates, but society has little way to direct this research.

The second problem arises when practitioners are located primarily in the university. Departmental decision making exhibits a pronounced majoritarian bias (Klein 2005; Klein and Stern 2009), which marginalizes heterodox scholars and schools of thought and can result in minimal differentiation of the research product. Dissident scholars will have difficulty attaining a majority or critical mass within a department, and mainstream ranking will be systematically biased against heterodox scholars and departments. A heterodox department will appear to be poorly performing according to conventional metrics, and thus university administrators motivated solely by necessarily mainstream rankings will judge the department as poorly performing and in need of overhaul. Heterodox schools of thought, however, can prove of substantial value of to a discipline and greater society when a discipline's dominant paradigm proves inadequate.

The remainder of this paper is organized as follows. Section 2 discusses the characteristics of the research order which produce the weak feedback and minimal differentiation problems, while Section 3 examines these problems in greater detail. Section 4 turns to the potential remediation of these inefficiencies. More diligent oversight by university trustees or legislators for state universities is unlikely to provide more effective feedback. Government can best strengthen feedback to academic research through its various roles as a user of research products as opposed to explicit support for research. Section 5 discusses the potential for private foundations and donors to support

dissident schools of thought and the application of mechanisms for voluntary provision of public goods to the support of scientific and academic research. Section 6 concludes.

## 2. Some Distinguishing Characteristics of the Research Order

Science is the area of research which has been most extensively analyzed as a spontaneous order (Polanyi 1962; Walstad 2002; McQuade and Butos 2003; Butos and McQuade 2006; McQuade and Butos 2009), but many different areas of scholarly research fit the description. I will use the term research order to emphasize that my analysis applies to fields beyond the traditional natural sciences. The weak feedback and minimal differentiation results apply more forcefully in the social sciences and humanities than science fields. The majority of my examples will be drawn from my academic field of economics, although I believe that most of my general points apply across at least the social sciences.<sup>1</sup>

The first distinctive characteristic of a research order relevant to my diagnosis is the role and perhaps necessity of a paradigm to delineate and shape research (Kuhn 1996). A paradigm converts fact-gathering into organized inquiry, because without a paradigm all facts seem equally relevant. The paradigm provides a set of first principles and concepts that subsequent practitioners can take for granted. But it also represents a shared cognitive framework into which scholars in a discipline must be trained and accept. “The study of paradigms ... is what mainly prepares the student for membership in the particular scientific community with which he will later practice. Because he there joins men who learned the bases of their field from the same concrete models, his subsequent practice will seldom evoke overt disagreement over fundamentals” (Kuhn 1996: 10-11). Scholars unwilling to accept the dominant paradigm “must proceed in isolation or attach themselves to some other group” (19). Training and instruction in the paradigm creates a barrier to entry in to a field of inquiry. While units face this requirement is not particularly troubling, in practice this training requires acquisition of a Ph.D. in the discipline, creating a more substantial barrier. By contrast, in the market economy, any one is free to pursue entrepreneurial visions without prequalification by the establishment, and many successful business leaders emerge out of total obscurity. Indeed many radical innovations almost by definition must have their origins with people not too vested in the established way of doing things. Everything else equal, the paradigm of a discipline and the graduate training which immerses students into the discipline will reduce the cognitive diversity of practitioners. Cognitive diversity is one of the necessary conditions for information aggregation in crowds (Surowiecki 2004),

so the existence of a paradigm in a discipline increases the potential for correlated errors among scholars.

The specialized nature of scholarly research necessitates expert evaluation of individual pieces of scholarship and a scholar's overall record. The definition of a peer or practitioner in a discipline thus takes on considerable importance. In principle any scholar should be free to participate in scholarly debates by attempting to publish research in an appropriate peer reviewed journal. In practice, the university is used to demarcate the participants in the research order. The extent of the overlap between university affiliated scholars and members of a scholarly community differs across fields. In general the overlap is greater in social science and humanities fields. The ability of scholars outside of the academy (or privileged centers generally) to inject research findings is also probably greater in the natural and life sciences given the power of experiments to demonstrate findings.

Peer review combined with an academic based discipline and discipline based departments within the university create a structure very distinct from the market (Klein 2005). Discipline based departments largely make hiring, tenure and curriculum decisions. In markets consumer decisions determine the survival of firms and products, but suppliers largely make such decisions in the academy. The survival of restaurants depends on decisions by diners, with guidance from experts, say the Michelin or Zagat ratings. Peer review is analogous to forcing diners to choose from the restaurants which critics allow to operate. The academy has evolved over time to one where individual faculty members feel greater loyalty to their discipline than to their employer (Klein and Stern 2009). Tenure in the academy serves to reinforce and cement the effect of peer review and discipline based departments.

The research order is based on reputation, which has long been noted as a distinguishing feature of science (Polanyi 1962; McQuade and Butos 2003; Walstad 2002). To generate reputation, research must be produced for others, which injects a second hand or external motive works in the research orders. Reputation and prestige benefits scholars in two ways, directly in psychic benefits or utility from being esteemed by peers, and indirectly by allowing acquisition of systemic resources in the academy - job offers, promotion, raises, tenure, research grants and honors (di Zerega 1997). Both the direct and indirect value of reputation imply that research possesses synchronization value: research produces a reputation only if sufficiently in line with the work of others to be esteemed.<sup>2</sup> The need to generate a reputation augments the effect of training in a discipline's paradigm in diminishing research outside of the mainstream. Scholars can anticipate that their peers will greet research deviating from the paradigm with suspicion; everything thing else equal, research which follows the herd will generate more reputation benefits.

Reputation or prestige seeking creates flexibility in the selection of methods and subjects for research, as scholars may be willing to adjust the nature or topic of research to enhance its reputation earning potential. The synchronization effect has limits, because as Polanyi discusses, any original contribution which will earn recognition for a scientist must somehow challenge what is already known. And many (perhaps most) researchers are motivated by intrinsic curiosity, which I will return to presently. Nonetheless, research generates a reputation through synchronization with other scholars. Research outside of the mainstream and at variance with the dominant paradigm is less likely to generate a given amount of external value - mainstream members of the discipline will not appreciate the value of this research as referees, journal editors, and evaluators. Reputation creates an incentive to conform with the mainstream.

Many observers note critically that academics largely conduct research for each other, and that many scholarly articles and books are read only by a handful of other specialists. I interpret this as evidence not of the low value the academic research but that much of its value arises from a type of on the job consumption, which is an additional distinguishing characteristic of research spontaneous orders. Most future professors are highly intelligent, hardworking, and rank high in their college graduating classes. These individuals enjoy numerous lucrative career options compared to life as a college professor. Persons with the intelligence and work ethic to succeed as academic researchers are members of the cohort of top students who achieve great success in more highly paid fields like law, business, or medicine. If we assume young people choose careers based on expected utility over their careers and possessing sufficient information about salaries and working conditions, we can infer that the student who earns a Ph.D. in history or philosophy to teach at a liberal arts college expects lifetime utility comparable or greater than their lifetime utility they would experience as a corporate lawyer or doctor or senior manager.<sup>3</sup> Since the history professor's monetary income is only a fraction of the earnings of these other professions, persons choosing the Ivory Tower must place considerable value on the lifestyle, teaching, or research amenities offered by the academy. Naturally different components of the package will weigh more heavily for different people. The opportunity to do research of their choosing on interesting topics seems to be significant for many academics. These individuals trade off lower lifetime salaries (relative to law or business or medicine) for the opportunity to pursue research. The salary differential reveals the value future professors place on the opportunity to do their own research and the other amenities of the professorial life. A higher proportion of the value of research, especially in social science or humanities fields, arises from on the job consumption than in comparison with standard

products in the market. Thus the producers are also to a large extent the consumers.

### 3. The Resulting Maladies

Training in a common paradigm, the importance of reputation and prestige, and the consumption value of research contribute to two problems in research spontaneous orders. First, dissident or heterodox schools of thought will have difficulty preserving themselves over time, which results in a minimal differentiation of product quality in equilibrium. Second, feedback from the greater society to practitioners regarding the venture of their research will be weak.

I consider first the problem of heterodox schools of thought. Dissident scholarship will be disadvantaged in peer review, the generation of reputation, and academic politics. Dissident scholarship will be disadvantaged in these processes, even in the absence of any explicit discrimination, and the disadvantage is often increased due to discrimination or hostility. Consider the peer review process. A mainstream scholar will be less likely to perceive a contribution in dissident scholarship, simply due to the different styles of research, and the likelihood that the contribution of dissident scholarship fails to be recognized as the “distance” between the school and the mainstream increases. Suppose that journal editors select reviewers randomly, but the composition of a discipline implies that more potential reviewers are mainstream scholars. Heterodox articles are less likely to be favorably reviewed at journals as a result; the same disadvantage will carry over to other applications of peer review, such as for grant proposals or tenure dossiers.<sup>4</sup> The process will be self-reinforcing as all practitioners of a discipline will not be equally likely to be selected as reviewers; rather mainstream scholars will be better known and be more likely to be chosen to review. And the potential exists for more explicit discrimination against research, as journal editors might choose not to review heterodox scholarship, select reviewers known to be hostile, or hold these papers to a higher average review level for publication. Heterodox scholars may also discriminate against mainstream research, but heterodox scholarship will be more adversely affected by discrimination.<sup>5</sup>

A mainstream scholarly contribution will generate more prestige and reputation than a heterodox contribution of similar quality. Mainstream research will place in journals with greater prestige, receive more prestigious grants, and impress more members of the discipline. The lure of prestige will also pull scholars toward the mainstream, just as poor treatment marginalizes dissidents. Some limits on prestige pull exist, because some people enter a discipline with preferences about the type of scholarship they wish to

undertake. Also prestige hierarchies exist within groups of heterodox scholars, leading to the establishment of reputations among the dissident community. A scholar might be able to earn more prestige as a leading dissident scholar than as a marginal contributor to the mainstream.<sup>6</sup> And being a leading scholar among a dissident group can lead to a type of recognition across a discipline. Nonetheless, scholarship within a discipline's paradigm can be expected to generate more recognition and reputation, *ceteris paribus*.<sup>7</sup>

Academic decision making processes combine with the above factors to threaten the survival of heterodox schools of thought within universities. Usually by definition the median faculty member in a discipline will be a member of the mainstream and disposed against heterodox scholarship. Such an individual will be less likely, everything else equal, to find merit in hiring or tenuring a dissident scholar, or including heterodox courses in the graduate curriculum. Given majoritarian decision making within departments, heterodox scholars will have difficulty securing faculty positions, especially at research universities. The metrics used to measure scholarly productivity also work against dissident scholars. Mainstream research in mainstream journals will be more read and cited more often than heterodox scholarship, and thus journals specializing in heterodox scholarship will attract fewer citations. Fewer citations translate into lower rankings for heterodox journals with equal standards of scholarship, and heterodox scholars will also generate smaller citation totals (Lee 2008).<sup>8</sup> Citation counts and journal rankings commonly employed in rankings (e.g., by the National Research Council) typically include only journals in the Institute for Scientific Information's Web of Science database. At least in economics, the journals tracked by the ISI appear to represent a nonrandom subset of refereed journals (Klein with Chiang 2004). If heterodox journals are less likely to be tracked for rankings, this represents an additional disadvantage for dissidents. Journal and department rankings, including the NRC's main ranking of research universities, are based on evaluation by leading scholars and thus are solely based directly on reputation. Subjective evaluation by (in all likelihood mainstream) prominent academics provides yet another disadvantage for minority schools of thought.

Dissident schools of thought consequently face difficulty surviving. In the long run, maintaining a school of thought within an academic discipline requires access to if not control of at least one Ph.D. program in the field. The Ph.D. is required for entry into the research club; the influence of graduate training has been documented in economics (Hansen 1991), and I see no reason to believe graduate training is less important in shaping scholars in other fields. Although a determined, aspiring Austrian economist might succeed in a mainstream program, most scholars will be unlikely to contribute to scholarship in an area without any exposure in their training. As a practical

matter the preservation of a school of thought requires the ability to produce future scholars, that is, to train Ph. D. students. Dissident scholars will have difficulty due to majoritarian academic decision making attaining the critical mass in a department required to control or influence the graduate curriculum.<sup>9</sup> Even when attaining critical mass, heterodox programs will be vulnerable to administrators seeking to improve a department's ranking based on metrics which favor mainstream scholarship. Administrators with no animus toward the dissident school of thought could be led to make decisions which systematically adversely affect heterodox schools of thought. As Lee (2008: 241) observes, "if a university decides to increase the ranking of its economics department ... policies that positively discriminate in terms of hiring, promotion, and research strategies towards mainstream economists and their research will be adopted."

The active or living schools of thought can be thought of like a range of products in a market place. The typical lay person probably only cares that the "best" approach be used in research in economics, sociology or other fields. The existence of dissident schools of thought nonetheless provides value to society. The orthodoxy in a discipline will periodically prove to be in error, setting the state for a scientific revolution (Kuhn 1996). Often a significant event from the real world triggers the collapse of a paradigm. Prior to the emergence of a new paradigm, the greater society is worse off if the paradigm of say economics is unable to make sense of The Great Depression. Active dissident schools of thought can provide much needed insights at these moments. The availability of a viable alternative to the current regime is an important factor in political revolution (Przeworski 1991), and there is no reason to imagine that science differs in this regard. The lack of an alternative paradigm for making sense of anomalous results will delay a scientific revolution (Levy and Peart 2006). A school of thought relegated to the periphery today might emerge as the new dominant paradigm in the future. If the school is alive and breathing, the paradigm shift might occur much more quickly than if the discipline has to rediscover or reinvent the wheel. Austrian economics was cast aside by the economics profession upon judgment that Mises' and Hayek's challenges to the viability of central planning had been answered during the Socialist Calculation Debate, yet the emergence of the Austrian school in the U. S. preserved their insights, which found a more receptive audience with the collapse of the Soviet Union. Even if a paradigm shift does not occur, the mainstream might be able to borrow from and synthesize some key insights from a thriving heterodox school of thought. Dissident schools of thought provide option demand in this manner, and the external benefits of heterodoxy suggests that the academy may support too few approaches to studying social problems.<sup>10</sup>

The second consequence will be weak feedback from outside the discipline in research orders. The strength of feedback will vary across disciplines and will likely be stronger in science and engineering fields. In the humanities and social sciences the primary form of support for research are university teaching positions. The discipline based department structure of the university and the reliance on peer review create a highly insulated structure within the university. An academic department's revenue stream is based on student enrollment, and the connection between research and the production of student credit hours is weak. A university is a straddling organization, meaning that it operates simultaneously in more than one spontaneous order (di Zerega 2009). A university obviously supplies higher education services in the mixed economy, and also hosts scholars who participate in the various research orders. Revenue from the supply of education covers the salaries of faculty. Academics participate in the research process largely without direct remuneration; journal editors and referees basically volunteer their services, and authors are not paid by the journals for papers. Instead these activities contribute to reputation for scholars, and universities make hiring and tenure decisions based on the derived scholarly reputation. Universities provide support for the academic research order through reduced teaching loads for faculty, library services, and as mentioned, committing to value research in hiring, tenure and salary decisions. Universities support faculty research because it enhances a university's reputation, which is an important driver in student applications, particularly from the most talented students (Thornton 2004; Winston 1999). A large number of applications also allows a university to admit a smaller percentage of applicants to fill a given number of slots, increasing the selectivity of the school. Faculty research helps make the university what we recognize as a university (as opposed to a high school or community college). Research provides a tangible indicator of the faculty's expertise, which the university markets to students, their parents, and donors. The content of the research matters very little to students or their parents or to the majority of a university's donors; the university derives value from the fact that faculty conduct research. The lack of concern over product details contrasts with most cases in the market. To consider what would be the parallel case in the market, imagine restaurant patrons without taste buds who care only to be fed nutritious and safely prepared food. The chef in such a restaurant would have great discretion to indulge his or her culinary preferences. A university can require research output from faculty with essentially no conditions on content. The freedom to engage in research of one's choosing is highly valued by faculty, who accept lower salaries than in alternate careers like law or management, and this contains the monetary cost of education. These arguments must be modified in disciplines like science,

engineering and medicine where research is capital intensive and where the products of faculty research have direct market value.<sup>11</sup>

Joint production of research and teaching by faculty in the straddling organization of the university provides indirect support for research in social sciences and humanities. The self-selection of faculty further insulates this structure from external feedback. An interest in research draws many students to academe; persons willing to do research for others for money are more likely, everything else equal, to work in industry or consulting. Those who choose the university would demand the highest extra compensation to forego the opportunity to pursue research of their own choosing. The result is a professorate relatively unlikely to respond to external incentives. In addition, training in the discipline or paradigm can further refine this predisposition. The structure of the paradigm can impair external feedback: "A paradigm can, for that matter, even insulate the community from those socially important problems that are not reducible to the puzzle form, because they cannot be state in terms of the conceptual and instrumental tools the paradigm supplies" (Kuhn 1996: 37).

The straddling organization of the university creates a relatively insulated spontaneous order. Faculty earn their keep from the university by teaching classes. The university supports faculty research because this research is an easily observable manifestation of expertise, and assists the university in the quality assurance of its degrees. A consequence of this, however, is that research in a field may be of little social value. Practitioners in many research fields write primarily for their colleagues, which is tolerated by universities because it verifies faculty expertise. If other types of research could produce greater value to society, or if a discipline is stuck in a dysfunctional paradigm, the structure of the university does not easily allow feedback to redirect a discipline. Conceivably a discipline could even engage in negative social value research by polluting the stock of ideas and policy options.<sup>12</sup>

#### **4. Government Responses**

The comparative analysis of the research order has identified two potential problems, weak feedback and insufficient diversity of intellectual approaches. I now turn to potential responses to these problems, beginning in this section with government actions. The political oversight process could potentially be used to encourage scholarship or preserve heterodox schools of thought. Oversight could emanate from either state legislators for state universities, or boards of regents, taking a more active managerial role. Reduced faculty teaching loads and the provision of library and other support as an important public subsidy for research in the humanities and social

science. Taxpayers should expect this support be used to produce research of value, just as National Science Foundation (NSF) research is expected to yield returns to society. Legislators or trustees could intervene directly to influence research and support heterodox schools of thought, legislators or regents could intervene.

Use of oversight mechanisms to strengthen feedback and support heterodox schools of thought seems limited. Marginalized schools of thought lack the ability to secure resources through the normal university governance process; should we really expect that scholars unable to lobby successfully within the university will be better able to lobby state legislators and regents? Legislators and regents lack expertise about specific disciplines, and thus seem unlikely to choose high value heterodox schools of thought for support. Further, as Klein and Stern (2009) discuss, academics' primary loyalty tends to be to their discipline and not their university. Upper administrators or legislators would need to seriously compromise academic freedom to redirect the content of scholarly research using negative incentives. Even if in some specific instances a low value scholarship could be usefully redirected, the restructuring required to allow legislators or administrators to direct research content would in essence introduce central planning into the spontaneous research order. Politically unpopular research would be particularly endangered. It seems hard to imagine that centralized direction of research and the abandonment of academic freedom to be beneficial on whole.

Government agencies can and should continue directing research in their roles as consumers of research. Many government agencies use scholarly research to fulfill their missions, including the Departments of Defense, Energy, Education, Health and Human Services, and Homeland Security, the Environmental Protection Agency, National Oceanic and Atmospheric Administration, and NASA. In a pure market order many of these functions would be undertaken by the private sector, but in our mixed economy government will continue to undertake these tasks. Government agency research demands create the opportunity for disciplines to respond to requests for proposals (or not). The EPA has funded research on the valuation of environmental protection over the decades, specifically spurring the development of contingent valuation (or stated preference) methods by environmental economists. The Federal Bureau of Investigation, the Department of Justice, and other law enforcement agencies have been important demanders of forensic science research. This research demand was not accommodated by sociology, leading in part to the development of programs and departments of criminology or criminal science at many universities (Kimball 2008). The research demands of the Department of Homeland Security haven produced supply side responses from the academy,

like creation of centers drawing faculty from a variety of disciplines. Government agencies as demanders of research do not compromise the decentralized character of the academic order, as individual faculty, departments and disciplines are free to respond to the demand or not. Government research creates profit opportunities for academic entrepreneurs willing to supply the research. The ultimate value to society of the research government agencies fund depends on the efficiency of the political process; provided that politics is not extraordinarily inefficient, the research demands of these agencies represent some value to society.<sup>13</sup>

The same arguments apply with less force to government research agencies like the National Science Foundation (NSF) or National Institutes of Health (NIH).<sup>14</sup> These agencies are more likely to assume the commanding heights of a discipline than to merely serve as an additional demander. Given the traditional emphasis on peer review in U. S. science funding (Greenburg 1999), these funding agencies rely heavily on program officers and review panels drawn from the academy. When the NSF funds research on a new topic, the academic background of program officers creates a high likelihood of funding merely minor variations on existing research. NSF and NIH funding also likely contributes to a mainstream bias of a discipline. Suppose the NSF decided to substantially increase funding for a poorly funded field, to encourage more valuable research in the discipline. Program managers and review panels will necessarily tilt toward the orthodoxy, with little support for the heterodoxy. NSF funding could worsen the position of heterodox scholarship; NSF funding is tracked by the NRC, and thus can be an important metric for administrators in evaluating departments. As Holcombe (2004) discusses, some university administrators use NRC criteria to evaluate the performance of departments and individual faculty members. Heterodox schools of thought are unlikely to secure substantial funding given the majoritarian decision making processes used by the NSF. If the NSF and NIH provide little funding for a discipline, department rankings are unlikely to depend substantially on grants received since most departments will have the same performance (no grants received), and department rankings must be differentiated on other margins. At some threshold, grants will become important in rankings, worsening the relative performance of heterodox departments. Traditional government research agencies seem to be a poor means to strengthen the feedback mechanism for scholarship in an academic discipline.

## 5. Private Donors

In contrast with government oversight or research, private donors and

foundations have significant potential to assist heterodox schools of thought. Dissident schools will have difficulty competing for resources in the normal academic governance process, and particularly building and sustaining the clusters of scholars needed in Ph.D. granting departments for long run viability. Yet heterodox schools of thought generate value to society as insurance against the inadequacies of the dominant paradigm. Unfortunately there are many schools of thought, including dissidents within dissidents who might claim status. Universities require some mechanism to identify schools worth spending resources to preserve. The willingness of donors and foundations to invest to support and sustain this scholarship can provide a signal of value. The process will not be perfect, as the ability of dissident scholars to attract external funding will depend on factors such as personalities and luck (connecting with a willing donor) as opposed to only objective measures of the quality of scholarship. Nonetheless, the inability of a school of thought to generate any external support could indicate that its contribution may simply be of academic and not societal interest.

Donors and foundations have long funded academic research. In the early 20<sup>th</sup> Century, foundations were the primary funding source of research support in sociology, as opposed to university faculty lines (Burriss 2004). The Laura Spelman Rockefeller Memorial provided indispensable financial support for the field research which shaped the Chicago school of sociology (Bulmer 1984: 216-218). Foundations have also played an important role in research in economics. The Carnegie Corporation provided funding for the establishment of the National Bureau of Economic Research (NBER) in 1920 under the direction of Wesley Mitchell. The NBER quickly became influential in developing economic statistics to help guide government policy (Holcombe 2000: 57-59). In addition the Carnegie Corporation funded economist Gunnar Myrdal's study of race relations, *The American Dilemma: The Negro Problem and Modern Democracy*. The Corporation selected Myrdal to undertake the study after beginning with a list of 25 candidates (Holcombe 2000: 62-63). And foundations have funded many think tanks that serve as intermediaries between academic research and the public.

Thus the question here is whether external donors should be able to affect academic curriculum, say by funding faculty lines for a group of heterodox scholars or graduate students in a Ph.D. program. The external support would reduce (and potentially eliminate) the cost to the university of maintaining the heterodox graduate program. And the willingness to donate signals to administrators that somebody in the greater society perceives value in this dissident scholarship. Administrators who recognize the value to society or a discipline of preserving heterodox schools of thought would still face the problem of selecting schools worthy of support. The ability to attract external

resources provides an independent signal of value to administrators, justifying the use of university resources and capital in the effort.

Would any eccentric rich person or foundation be able to “buy” a Ph.D. program? I would not think so. External support would most likely serve to preserve a distinctive program, establish a new Ph.D. program, or allow a cluster of scholars to move to a department with a Ph.D. program. In these cases, the scholars would already have the proper credentials, namely a Ph.D. in the appropriate discipline and academic publications. The external support signals to administrators the perceived value of scholarship, and perhaps compensate for the decline a department might experience based on majoritarian ranking metrics.

I have not offered a specific plan of action, only a rationale for efforts which may sometimes already occur. External funding for dissident scholarship does not require radical reform of the research order. University administrators need only facilitate such arrangements. Administrators could take steps to regularize such external support, and the creation of such frameworks would encourage more extensive gifts - if a template exists and administrators signal in advance their receptivity to such arrangements, the number of externally supported Ph.D. components will likely increase.

Foundations and private organizations could also support more fundamental research and thus strengthen the feedback loop for academic scholarship. The public good character of research provides the rationale for government and university support. The argument for government support of science generally ends at this point, on the presumption that voluntary support for this public good will not be insufficient. Yet this ignores findings on the voluntary provision of public goods. Voluntary arrangements have proven effective in supplying a variety of public goods. Mechanisms exist to augment private support for research; patents, for example, can be thought of as a long standing means to facilitate the private support of research. Industry has long financed research, both in the private sector and through partnerships with universities. Industry partnerships with universities certainly raise legitimate concerns regarding the capture of intellectual property and potential chilling of scholarly discourse (Washburn 2005). And proprietary control of research results, with only favorable studies being released and unfavorable studies squelched, as alleged in pharmaceutical research, is also troubling. Nonetheless, industry support demonstrates by existence the feasibility of alternative means of funding research.

Evidence from experiments and the field clearly demonstrates peoples’ willingness to contribute to public goods. And a variety of mechanisms have been observed which can regulate and support voluntary contributions (Olson 1965; Schmidtz 1991; Cowen 1988; Tabarrok 1998). Billions of dollars have

been raised voluntarily to fight various diseases. Private citizens are as capable of recognizing the benefits of research as government officials, so the question becomes how readily the examples of private provision of public goods could be applied to fund research. A mechanism which offers particular promise for research are the turnpike companies of early 19<sup>th</sup> Century America. As Klein (1990) explains, turnpikes were organized as for-profit companies which sold stock and built roads, but virtually all of the companies were financial failures (791). In addition, hundreds of turnpikes were built after it was clear to “all save the most foolhardy” investors that turnpikes were not going to be profitable (794). Klein argues that turnpike companies were more like quasi-charitable enterprises which voluntarily provided public infrastructure. Most relied on locals, who were likely to benefit from the road, to purchase stock, and moral suasion and social pressure (selective incentives) were employed to induce contributions. Also organization as a stock company provided a means to detect and control free riding, as stock subscriptions indicated whether leading citizens of the community. Stock purchases covered the capital cost of building the turnpike, and then the modest tolls collected often covered maintenance. Benson (1994: 262-269) discusses how voluntary provision also supplied roads in England. Some of the institutional details differ, but during the parish system community roads were provided by similar community efforts.

Similar mechanisms could also be applied to research. Participation through stock purchase could also tie recognition for a good deed to contribution to the research effort. Many businesses are active in community charities to produce good will, and so recognize the value of goodwill. Charitable support of medical research already uses roughly similar mechanisms. The purchase of tickets or tables at a charity dinner or sponsorships for a charity golf tournament are parallel to the stock purchases of turnpike companies. The exact nature of the moral suasion would need to be tailored to the type of research being supported. A research company on the model of the turnpike companies would provide a broader basis for sharing the products of scientific research.

## 6. Conclusion

Several distinguishing features of research spontaneous orders combine to create two problems, minimal differentiation in product type and weak feedback from the greater society. Minimal differentiation implies that the academic market process will have difficulty sustaining heterodox schools of thought in different disciplines. Although the orthodox might represent our best guess as to how to pursue research at a given point in time, heterodoxy

can have significant value to society when a discipline's dominant paradigm breaks down. I do not claim that these types of problems are unknown in markets, the Hotelling differentiation results occurs often in models of spatial competition. I have also considered the redress of these difficulties. Government agencies using academic research in their activities provide a means to strengthen feedback to disciplines than research entities like the NSF, because EPA, DOD or DHS funding is more similar to profit opportunities in the market which scholars can pursue or not. Private sector donors and foundations can also help preserve heterodox schools of thought and strengthen feedback. Disciplines like sociology have been dependent upon foundation support at times in the past (Burris 2004), so such private sector influence on scholarship is not without precedents. Neither government demands for research or greater use of private funding would compromise the decentralized structure of the academic research order.

The diversity of experiments or activities supported provides a relevant means to evaluate funding for creative endeavors. As Cowen (2006) emphasizes, the marginal contribution of a new source of funding depends on the endeavors which otherwise would go unfunded, as opposed to more generous support for (or compensation for) experiments already funded. A robust system will institutionalize mechanism which fund very different approaches. Private donor and foundation support can be the third part of a triad of funding for research, complementing conventional academic governance mechanisms (support through universities and agencies like the NSF) and the political process (earmarked funds for specific purposes). Research subjects and approaches outside of the mainstream can be difficult to fund through the normal academic governance process, and thus can turn to either politics or private donors for support. The different decision making processes of each type of organization provide alternative ways scholars can seek support.

## Notes

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1. An interesting but ultimately side point for my topic is how broadly or narrowly academic research should be conceptualized as a spontaneous order. At a minimum natural sciences, social sciences, and the humanities can be seen as separate spontaneous orders. Conceivably individual disciplines could be considered at their own spontaneous order, although in the long run there is substantial potential for research to shift across disciplines, so economics might encroach upon research areas previously in the domain of political science, sociology, or history. Also human geography overlaps with many other social sciences fields.

2. Reputation is also critically important in economic markets, but reputation in markets arise through an individual's performance - does a firm produce a good of specified quality, do people live up to agreements - and is not inherently second hand as in research.

3. Note that many observers attribute the anti-business bias of many professors to jealousy based on the greater earnings of their not as bright undergraduate classmates. So the tradeoff I point to here seems widely accepted, even though my interpretation is slightly different.
4. With multiple reviews the prospects for favorable review diminish rapidly with even a modest reduction in likelihood. For example, if the probability a mainstream scholar favorable reviews a paper or proposal of given quality is 25% lower for research out of the mainstream, the probability of three favorable reviews is reduced by 58%.
5. The peer review process can also enforce the boundaries of a discipline, as journal editors decide who counts as a peer worthy of review. If editors are primarily from the academy, they can marginalize practitioners outside of the academy by not choosing them as reviewers and not reviewing their research.
6. The observations about dissidents relative to the mainstream of a discipline also apply to dissidents in a heterodox school of thought. Because the problem of dissident dissidents does not affect the survival of heterodox approaches, I do not pursue this here.
7. The effect of prestige among the dissidents depends on whether renown utility is based on relative praise or absolute praise, that is, whether the number of people who esteem a scholar is more important than being thought by a smaller number of peers to be say the best Austrian economist.
8. These statements depend on whether barriers to entry exist in journal publishing. Suppose dissidents comprise 20% of practitioners in a discipline, and so the pool of potential citations for mainstream research is four times greater than for heterodox research. If there are four times as many orthodox journals as heterodox journals, citations per journal (or article) would seemingly be equalized.
9. A thorough examination of whether academics must receive graduate training in a dissident viewpoint or can wander into say Austrian economics on their own is beyond the scope of this paper. One of the important elements of favorable graduate school exposure may be to legitimate dissident scholarship. In addition to mere access to a Ph.D. program, the ranking of the program will also affect the viability of the school of thought.
10. A paradigm's dominance in a discipline could normally be taken as an indication of its value, and in some sense superiority to, heterodox schools. This wisdom of crowds value of peer review in general suggests that the method that the largest number of participants choose to pursue presumably reflects society's best guess as to how to pursue research in a field. But the wisdom of crowds argument requires that each person's judgment or choice of method be independent, and in academic settings independence is a questionable assumption given the selection and training involved in graduate study (Sutter 2007).
11. Fields where faculty must pursue external funding to support research should have higher salaries, *ceteris paribus*, because faculty have less ability to indulge their own interests in research.
12. I do not mean to deny the general principle that society might benefit from providing some scholars with the resources and discretion to pursue research without feedback from others. My argument is merely that the level of feedback is less than optimal.
13. Again this demand might be crowded out from the private sector, and the politicization of the

demand may reduce the value of the exact composition of the demand. For example, a privatized criminal justice system might have funded a better mix of forensic science, say less biased toward helping secure conviction. I merely contend that the government agencies' major research efforts probably represent genuine societal demands.

14. See also Butos and McQuade (2006) on the problems of government science.

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