

# **Bureaucratization in Academic Research Policy: Perspectives from Red Tape Theory**

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## **Abstract**

Senior academic researchers and research administrators whose careers have spanned decades have witnessed a monotonic trend in the growth of bureaucratic rules and structures pertaining to research policy. The increase in administrative requirements takes many forms, some directly related to research and others tangentially related. While the onslaught of rules has increased administrative burdens, not all of these requirements are red tape; many are useful and even vital. But when taken together, the amount of administrative procedure and documentation associated with research conduct and administration becomes crushing.

Others have well documented the bureaucratization of university research policy and administration. My primary purpose is to explain *why* rules and regulations and the bureaucratic structures supporting them continue to grow, extracting an ever-greater toll on time and resources available for actual research. procedures, focusing especially on academic research. I apply a well-developed theory of organizational red tape specifically to the problem of research administration red tape. The theory suggests that the increase in research policy bureaucratization can be explained chiefly by three different factors: crisis response, pressures for bureaucratic over-control, and the use of research policy for side-payments, both social side-payments (to achieve social goals not directly related to research) and political side-payments (conferring favor with political supporters by proving rules or policy symbols favored by them).

# **Bureaucratization in Academic Research Policy: Perspectives from Red Tape Theory**

## **Introduction**

In the U.S. and throughout most of the world, university research becomes increasingly bureaucratized (e.g. Schneider, 2013; National Science Board, 2014). Along with increasing dependence on research funding and increased expectations for more and more research-funds-per-academic-researcher, the demands of political bureaucracy continue to grow, reducing the proportions of time devoted to science and increasing the amount of time demanded for administration, especially administrative assurances. The increasing bureaucratization and compliance burden is not simply a matter speculation. In the United States, several authoritative studies (e.g. ACE, 2014) have recently examined university administrative burden, including specifically burdens associated with research policy and administration (e.g. National Institutes of Health, 1999; Decker, et al., 2007; National Science Board, 2014).

Nor have these changes in administrative burden gone unnoticed by researcher administrators and grants recipients. Given their gradual accretion one might expect that research would be inured to such changes but such is not the case. Consider the comments (Exhibit One) below of one not-so-anonymous U.S. academic researcher, comments made in response to a colleague's email congratulating him on his most recent National Science Foundation award. After acknowledging the

colleague's congratulations, the researcher reflects on changes from the time he received his first National Science Foundation (NSF) award to the most recent award, in summer of 2015.

### **Exhibit One. Evolution of NSF Grant Proposal Requirements**

*[Gives colleagues name], I was reflecting on the changes in research administration since I received my first grant in 1984. I remember the proposal and the proposal process quite well. The proposal was for three years for about half a million dollars and it focused on [topic withheld for anonymity]. The proposal was about 15 pages long plus a budget. It was reviewed by three peer reviewers in a mailed peer review. It was funded. The proposal provided core funding for my lab, it led to several dissertations and about ten or major publications. I also remember my most recently funded NSF grant. Not difficult since it just came through a couple of weeks ago. This is a smaller award for the study of [topic withheld for anonymity]. This proposal also included about 15 pages for the explanation of the research, the data, the hypotheses and so forth. But the 15 pages in the first proposal represented 90% of the actual proposal. For the last one, maybe 25%. Today's proposal includes all the same stuff as before but now there are broader impact statements that are largely meaningless, budget justifications that are useless, IRB forms that may or may not be useless depending on the research, a plan for managing postdocs, and, best of all reams of assurances about all the people I will not persecute, the animals I will not treat badly, all the national security I will no violate, plus a bunch of stuff about the intellectual property that I am producing that will appear in scientific journals. No one reads most of this. No one cares about most of it. Most of it is completely irrelevant. I don't do work with animals, my work has no conceivable relation to national security. I rarely work with human subjects and, when I do, they are not prisoners, pregnant women, children or only rarely are the senior scientists and lab directors from whom I collect data actually mentally ill. I should probably retire. It won't be long until proposals are all bureaucratic BS and zero science. –Source: electronic mail received from [bbozeman@asu.edu](mailto:bbozeman@asu.edu) received by [derrick.anderson@asu.edu](mailto:derrick.anderson@asu.edu), August 8, 2015*

Regardless of grant recipients' and principal investigators' views about increasing bureaucratization of research administration there seems little doubt that rules, compliance requirements and administrative burden continue increasing. Since no one seems to be rushing to the defense of more and more rules, since no one is in the business of self-consciously creating red tape, since nearly everyone acknowledges that it is important to devote as many resources as possible to

research and innovation and to not siphon off funds unnecessarily from that enterprise we are left to contemplate this question:

*What explains the continual growth in rules and regulations surrounding publicly funded research?*

This question is the chief focus of the current paper and, remarkably, there is almost no scholarly attention devoted to answering this question. There have been many efforts to document the growth of rules and administrative burden in research policy, blue ribbon panels have been convened and made recommendations about reducing rules and their costs, but the causes of this onslaught have generated little speculation, much less systematic explanation. Perhaps it is because the pool of researchers most affected by the increasing bureaucratization of research policy includes so few organization theorists. As a research grant recipient I am very much interested in reforms, but as an organization theorists I am interested in something quite different: explaining the reasons of bureaucratization and developing ideas about how we can sort the quality and effectiveness of rules and regulations. In doing so, I rely on theory and research from a field I have worked in for decades- red tape and bureaucratic pathology.

The organization of the paper is as follows:

- In the next section I provide a brief, necessary preamble to organizational analysis- a review and conceptual demarcation of bureaucratization, red tape and formalization.
- After clarifying closely related concepts, I review some of the studies documenting the bureaucratization of research policy and

administration in the U.S. and the responses to the bureaucratization, both institutional responses and responses and attitudes of individual investigators.

- A next section introduces theory of rules and red tape, the theory-base I use as a lens to asking the study's key question concerning the growth of rules in research policy and administration.
- After providing a theory base, I turn to the core question of the paper: *What explains the continual growth in rules and regulations surrounding publicly funded research?*

### **Understanding Bureaucratization: The Conceptual Thicket**

The terms "bureaucracy," "bureaucratization," "formalization" and "red tape" are comingled to such a degree, at least in the popular mind, that they are often used interchangeably, each serving an epithet directed at those aspects of governance disliked by citizens (Goodsell, 2003). However, if we examine the origins of the terms and their meanings among researchers and theorists, as well as professionally educated public managers, we see sharp differences.

*Bureaucracy.* "Bureaucracy," far from being a scourge on governance, is the fundamental organizing scheme for the delivery of good and services in the modern state, especially significant in developing states (Campos and Nugent, 1999).

Bureaucracy is not only inevitable in the contemporary world, when it is effective and fully institutionalized it can serve as a leading force in progress, modernization and in simply getting things done that society and policy-makers think worth doing. Bureaucracy is not the enemy, nor the hero. There can be too much bureaucracy, or

too little, ineffective and incompetent bureaucracy or highly effective and professional bureaucracy. But we move quickly for bureaucratic theory since we are not concerned with the institution per se but in its particular manifestations in research policy.

*Bureaucratization.* Whereas bureaucracy is best thought of as a vital and, in today's world, inescapable social institution, "bureaucratization" is not.

Bureaucratization is a term used many different ways (Eisenstadt, 1959; Hall, 1963; Montagna, 1968), some pejorative and some not, and one only rarely defined.

Among other meanings, bureaucratization is used to imply increased and more rigid control, more centralization or more hierarchy; in some cases it is used to signify a growing bureaucracy, especially a growing number of bureaucrats; in still other cases, especially in the sociological literature, bureaucratization is used as a contrast to professionalization. However, let us use the term in yet another way, one consistent with at least part of the literature in organization theory and public administration, and define bureaucratization as *"the deployment of the institution of bureaucracy and its attendant rules, regulations and procedures, as the means of social organization of work."*

By this notion, bureaucratization is neither inherently good nor bad; rather it is an approach to work and to addressing social problems. There are other basic ways to address social problems, ones not necessarily entailing bureaucracy as an instrument. Alternative approaches to achieving social objectives and to organizing work include markets and market incentives, informal structures and norms, trust and exploitation of social capital and coercion. While bureaucracy can, potentially,

play a role in any of these approaches it is not the dominant mode of organizing work.

Bureaucratization as the systematic deployment of bureaucratic institutions and structures implies the authoritative promulgation of rules and a social structure seeking to ensure that those formal rules are implemented effectively. The key questions about bureaucratization are these: (1) When is bureaucratization the appropriate choice for achieving socially sanctioned objectives? (2) When bureaucratization is either the dominant mode of social action, or at least in the mix, what level and intensity of rules, regulations and procedures should be required?

*Formalization and Red Tape.* While the chief focus of the paper is on bureaucratization, an integral part of bureaucratization is formal rules and an important aspect of any bureaucracy-driven change is the effectiveness of the rules, regulations and procedures seeking to promote or structure change. When we speak of “increasing bureaucratization” we imply a growth in both the rules governing behavior and the institutions and structures of bureaucracy charged with promulgating, implementing and monitoring the enforcement of rules.

In organization theory, the term *formalization* is a neutral term referring to the extent of an organization’s use of formal, written or recorded rules and regulations (Hall, et al., 1967; Bozeman and Scott, 1996). An organization or institution may exist with a great many rules or only a few, but knowing the extent of the rules tells us little about the organization’s effectiveness. The need for rules is contingent on a wide variety of factors (March, et al., 2000; Weimer, 2006) including the nature of tasks, the complexity of the organization, the degree to which tasks can



be routinized, to name just a few factors. Some organizations have few rules but too many; others have many rules but not enough.

Formalization is quite different from red tape. The most widely used definition of *red tape* is “rules, regulations and procedures that require compliance but do not meet the organization’s functional objective” (Bozeman, 2000 p. 21). Red tape is decidedly not a neutral term. It implies that plans have gone awry and that for some reason, and there are many possible reasons, rules are being implemented to no good effect. Red tape is best viewed as a bureaucratic pathology; by contrast, formalization is not inherently pathological (Ponomariov and Boardman, 2011).<sup>1</sup>

Before turning to the causes of the bureaucratization and the effectiveness of research administration rules and procedures, we have one last issue to consider: the accumulated evidence for an increase in bureaucratization. The next section examines the evidence, almost all of which is descriptive but also compelling.

## **Evidence of Bureaucratization and Administrative Burden in University Research**

Having a common meaning for the term bureaucratization and some context from organization theory, let us now consider some evidence about bureaucratization of university research policy and the compliance burden experienced by researchers.

### Federal Demonstration Partnership Study

About a decade ago, the Faculty Standing Committee of the Federal Demonstration Partnership (FDP) teamed with FDP member institutions to administer its Faculty Workload Survey. The resulting study (Decker, et al., 2007) of

more than 6,000 US researchers provided evidence that 42% of their time related to federal grants was devoted to pre- and post-award administrative activities, activities not directly related in any way to the actual research obligations entailed in the grant. To be sure, not all of these administrative activities are response to federal regulations. Some administrative work pertains to hiring, equipment purchases, and training personnel. But a significant amount of the administrative work was related to progress-report submissions, project-revenue management, IRB protocols and training, and, in proposal preparation, ensuring certifications and meeting administrative requirements of grants.

Vanderbilt University/Boston Consulting Group 2015 Study

The Vanderbilt study has received a good deal of attention for a reason not directly related to the content of the work- the use of the study in various reports, including a more general report of the American Council on Education (2015) focused on broad-based administrative costs of higher education, but without the study being made available to the public (see Blumenstyk, 2015). The study focused on just one university, Vanderbilt University, but in great detail, including but not limited to research administration costs. The analysis (Vanderbilt, 2015) reported that Vanderbilt in 2012-14 spent 11% of its budget complying with federal regulations and the largest amount was spent for regulations related to research. The report estimated the cost of Vanderbilt's compliance with federal regulations to be \$117 million annually, of which 80% was related to research administration. In the research administration category, most costs were decentralized, with half of that figure being estimated as the cost of faculty time required for compliance. One

figure that received a good deal of attention: it was reported that \$11,000 of each Vanderbilt student's \$43,000 tuition was needed to pay for regulatory compliance.

#### National Science Board 2014 Study

The most recent and perhaps the most relevant recent study of university research bureaucratization is the National Science Board's (2014) study *Reducing Investigators' Administrative Workload for Federally Funded Research*. The National Science Board (NSB) in December 2012 issued a formal request for information (RFI) seeking to determine which federal agency requirements contribute most to the administrative workload of principal investigators (PIs) on federal grants. Among the respondent group, almost all the 3,100 were university research faculty; 44% received funding from the National Science Foundation and 30% received funding from the National Institutes of Health. After gathering this information the Board members and staff conducted roundtable discussions with more than 200 faculty and administrators. According to the NSB report, a number of required activities were reported to have high administrative workload burdens for universities and university researchers. Exhibit 2 below lists these in two groups (as distinguished in the NSB report), those activities that are most time-and-effort-consuming and a set of other activities that require attention but less burden.

<b>Exhibit Two. NSB (2014) Results for Research Administration Compliance Burden</b>	
<b>Highest Level of Compliance Burden</b>	<b>Moderate Levels of Compliance Burden</b>
<ul style="list-style-type: none"> <li>• Research-Related Financial Management</li> <li>• Grant Proposal Process</li> <li>• Progress and Outcome Reporting</li> <li>• Human Subjects Review (IRB)</li> <li>• Time and Effort Reporting</li> <li>• Animal Care and Use Review and Reporting</li> <li>• Personnel Management</li> </ul>	<ul style="list-style-type: none"> <li>• Subcontracting</li> <li>• Financial conflict-of-interest (COI)</li> <li>• Training</li> <li>• Laboratory Safety and Security.</li> </ul>

The results of the study showed that respondents felt there was considerable variance in the administrative burden required by federal agencies in connection with research grants, with the NSF requirements being judged most favorable in terms of amount of time taken and the reasonableness of the requests.

The NSB report provides data on each of the research administration categories identified in Exhibit Two, but to get a flavor for the results but, at the same time, do so efficiently, let us focus on just one- administration of grants. More than 80% of respondents mentioned significant administrative burden in connection with grant proposal processes, including preparation rules, budget preparation, and submission rules. Respondents indicated excessive time spent on detailed budget requirements, agency-specific formatting requirements and technical problems with agencies' submission systems. Respondents recommended standardizing the proposal and submission process and developing a standard,

centralized database for bio-sketches, curriculum vitae, licenses, and other documents.

Interestingly (and relevant to subsequent analysis), many respondents' comments suggested that it is not only the amount of time required but that much of the time is "wasted" inasmuch as a minority of proposals are funded. At the NIH, only about 10% of proposals are funded, suggesting that 90% of the proposal effort has limited pay-off.<sup>2</sup>

The NSB report is quite useful in documenting the growth of administrative requirements and activities but, like most previous studies, it begs an important question: is the level of bureaucratization, growing or not, appropriate? For example, the study notes that there has been a great increase in proposal submission. At the NSF, there has been a 50% increase in proposal submission just during the last decade (NSB, 2014, p. 9). If bureaucratic structures and rules have grown by 50% or less, what does one make of the problem of administrative burden? On the other hand, the number of awards has remained fairly stable while as the submissions increase, indicating a lower "hit rate" and a growth in the futility associated with many of the administrative requirements. What does one make of this phenomenon? Most important, there is little focus on the efficacy and the social value of the various rules and regulations, though there are several anecdotes suggesting red tape, such as multiple bio-sketch and formatting requirements and budget revisions for proposals never funded.

Survey of Academic Scientists Data

In light of the data and findings from the NSB (2014) report, we can consider data about administrative issues of grants and contracts collected by my colleagues and myself as part of the Survey of Academic Scientists (SAS), a study sponsored by both the NSF and the NIH (for grant details and data specifications see Bozeman and Gaughan , 2007; 2011) of more than 2,084 sciences and engineering professors in research-intensive US universities. In the SAS questionnaire, my colleagues and I closed our questionnaire with one open-ended question:

“If you could change just one thing about your job that would make it much more satisfying, what would that one thing be?”

Despite the fact that they questionnaire had asked them a wide range of job-related questions, including questions about teaching, advising, research collaboration, time spent at work versus home, university policies: 73% of responses related to grant proposals usually either “less pressure to prepare grant proposals” or “ more administrative support when preparing grant proposals.”

Consider the questionnaire results in Table 1 and 2 below, each item pertaining to researchers responses to questions about grant proposals and procedures. We can see from Table 1 that while a little more than half of respondents enjoy preparing research proposals, a substantial percentage do not. The lack of enthusiasm of the 40% would be less problematic except for the fact that many (73.3%) view grant proposal writing as part of their job and fully 86.3% view their success in grants and contracts competition as integral to their careers and their ability to maintain their employment.

<b>Table 1. Findings about Research Grants and Processes</b> (Survey of Academic Scientists, see Bozeman and Gaughan, 2010 for elaboration)	
<b>Questionnaire item:</b> <i>If you spend any time writing or participating in the preparation of proposals for contracts or grants, please indicate your agreement or disagreement with the statements below:</i>	<b>% Agree or Strongly Agree</b>
<b>N=2081</b>	
<b>Generally, I enjoy preparing research proposals.</b>	<b>56.8%</b>
<b>Writing grant proposals is a formal requirement of my job.</b>	<b>73.3%</b>
<b>The ability to succeed in grants and contracts is (or was) important to my tenure and promotion.</b>	<b>86.3%</b>

<b>Table 2. Findings about Work Hours, Including Grants Related</b> (Survey of Academic Scientists, see Bozeman and Gaughan, 2010 for elaboration)	
<b>Work Activity Questionnaire Item:</b> <i>For the most recent full academic term, please indicate the average number of hours per week devoted to each of the activities below [Your best estimate will do].</i>	<b>Average Hours Per Week</b>
<b>Writing or developing proposals for grants and contracts</b>	<b>4.63</b>
<b>Conducting research related to grants and contracts</b>	<b>11.76</b>
Conducting research <u>not</u> related to grants and contracts	5.40
<b>Administering grants and contracts</b>	<b>2.44</b>
Teaching undergraduate students (including preparation time and meeting outside class)	10.68
Teaching graduate students (including preparation time and meeting outside class)	6.18
Advising graduate and undergraduate student advising for curriculum and job placement	2.60
Professional and community service work (not part of university service)	2.53
University, departmental or research center service and committee work	5.19
<b>Paid consulting</b>	<b>0.52</b>

Table 2 indicates that the development of grants, conducting research related to grants and contracts and administering grants takes up a substantial proportion, about 20% on average, or about twice as much as teaching undergraduates. This is actually a modest estimate since the means includes zeros for the 436 (27.2%) who do not have active grants or contracts. If we examine only those who are principal investigators or co-principal investigators, the average percentage of their time spent on grants-related activities rises to nearly 40% of their work time. Most important for present purposes, for those who have active grants 14.3% of their work time is taken up with either the development or administration of grants (i.e. *not* including research on grants), for many of them more time than is devoted to teaching and advising.

From this straightforward review of descriptive data I conclude the following. First, almost all sciences and engineering faculty are engaged in writing proposals for research grants and contracts and, for those who succeed in obtaining them, much of their work is developed to activities and processes related to grants. Second, they spend all this time working on grants because they want to conduct the research the grants enable but also because they keenly feel pressures to succeed in grants competitions. Third, a great many are dissatisfied with this process. To be sure, part of the dissatisfaction is with the pressures, but part of the dissatisfaction is related to inefficiency of administrative systems and the time taken that administrative requirements take away from time to actually conduct the research.

To summarize, there seems ample evidence of increased bureaucratization and administrative burden in research policy and administration. Now we return



to the central question of this paper: Why? In answering this question I rely on theories developed pertaining to rules and red tape.

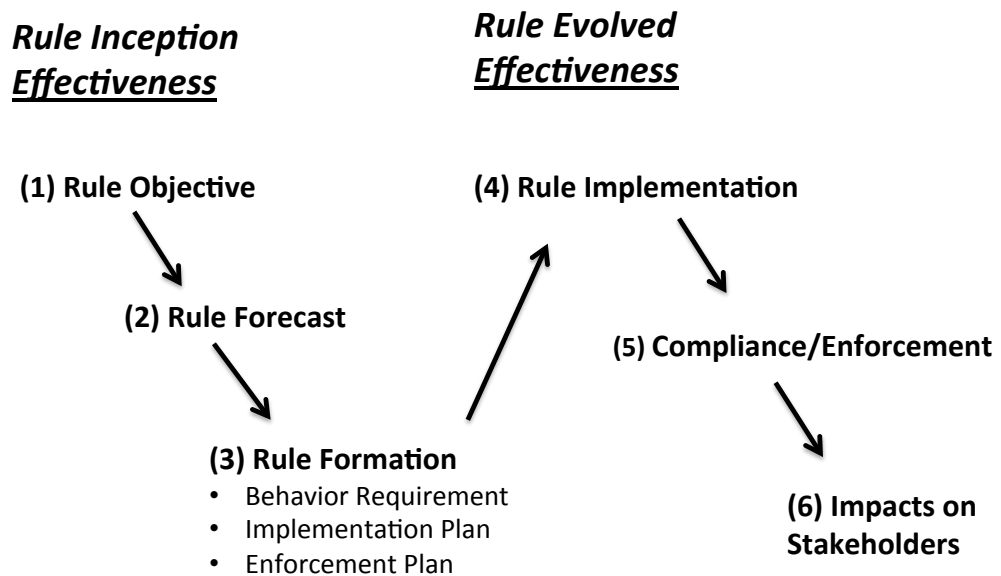
## **Rules and Red Tape Theory: A Lens for Understanding the Bureaucratization of Research Policy and Administration**<sup>3</sup>

In this section we focus on the general outline of red tape theory, but in the following section we take premises of red tape theory- specifically propositions about causes of red tape- and apply it to case of bureaucratization of research grants administration.

When we ask the question “why more and more rules and increasing compliance burden?” with respect to research policy and administration, my approach is to begin with general propositions about rules red tape and then consider the extent to which these general propositions predict the growth of research-related rules and research-related red tape. My analysis proceeds from rules and red tape theory that colleagues and I have developed (Bozeman, 1993; Rainey, Pandey and Bozeman, 1995; Bozeman, 2000; Bozeman and Feeney, 2011) but it is informed by others’ theory and research contributions as well (especially March, et al., 2000).

Figure One is a model of rule effectiveness and is the core of red tape theory (red tape being extreme cases of rule ineffectiveness). In the ensuing section we explore some of the reasons rules are ineffective at their very outset (rule inception ineffectiveness) as well as the reasons previously effective rules evolve into red tape (rule-evolved ineffectiveness).<sup>4</sup>

**Figure 1. Model of Rule Development and Effectiveness**



Note from Figure One that rules can be thought of in terms of a required, staged set of activities, beginning with the setting of the objective for the rule, then developing a sort of “behavioral prediction” about the rule, formulating the rule itself, including behavior requirements, an implementation plan and an enforcement plan, then moving to the actual implementation of the rule. Once implemented, those subject to the rule comply (or do not), enforcement sanctions may be used for non-compliance and, ultimately, the rule has an impact on the stakeholders, including the entity responsible for the rule, the group responsible for its implementation, those required to comply and third parties to the rule. The model distinguishes to sources of effectiveness determinants, those present at the outset

(rule-inception effectiveness) and those present as the rule evolves during its implementation (rule-evolved effectiveness).

It is important to bear in mind in the model of rule development and effectiveness is that rules can fail at each point in the process. Many of the failure points are verified in empirical literature (for overviews see Pandey and Scott, 2002; Bozeman and Feeney, 2011; DeHart-Davis, 2014).

We turn now to the first step of the model, the rule objective, because of one of the most important issues of concern here

#### The Rule Objective Stage

As suggested in Figure One above, any rule, regulation or procedure (hereafter: rule) can be viewed as having not only a behavioral requirements, implementation mechanisms and enforcement provisions. However, the model assumes the rule. In fact, any rule can be said to have a *functional object*, defined as “the officially sanctioned objective of the rule” (Bozeman, 2000). The functional object of the rule may be quite simple, such as the objective of preventing smoking in an office environment, or it may be inordinately complex, such as objectives related to nuclear safety rules. But a prior question is the origin of the rule and its functional object.

Most studies of rule effectiveness assume the validity of the rule objective and seek to understand how those objectives are thwarted. True, rules objectives can be the core of the problem with the effectiveness of rules, especially when the rules are unrealistic, impractical or, most frequently, ambiguous. Indeed, there is a rather considerable organizational literature just on the topic of goal ambiguity (e.g.

Frank, 1958; Rizzo, et al., 1970; March, 1978). Most of the more recent goal ambiguity research is in the field of public administration (e.g. Rainey, 1993; Chun and Rainey, 2005; Pandey and Wright, 2006; Pandey and Rainey, 2006; Jung, 2014) chiefly owing to the fact that goal ambiguity is so often hypothesized as a cause of alleged lesser degrees of organization effectiveness in public sector organizations (for a discussion and critique see Rainey and Jung, 2015).

Instances of rules based on ambiguous objectives are easy enough to find. Indeed, some political scientists note that legislation is sometimes intentionally general and even ambitious because legislators believe that greater technical expertise in bureaucracy is required to provide more specificity to rules (Weingast, 1983; Bryner, 1987; Gailmard, 2002). In other cases, the lack of specificity is not a salute to the expertise of bureaucrats but rather a means of covering political tracks so that elected officials will not be censured by voters for developing policy that the officials believe is need but which would either inflame or be misunderstood by their constituent base (Rourke, 1993; Keiser, 1999).

#### Rule-Inception Red Tape and its Causes

According to red tape theory, red tape emerges in two ways. In “rule-inception red tape,” the red tape is, usually intentionally, built into the rule. The rule is red tape right at the beginning due to, for example, flaws in the causal logic of the rule makers. In “rule-evolved red tape,” discussed below, rules may be initially effective but then change and become ineffective (in red tape theory meaning “requiring compliance, entailing a compliance burden, but not contributing to the functional object of the rule). Red tape

theory present a number of hypotheses, some tested empirically, others not, as to just how this occurs. Let us consider some of the explanations in terms of rules pertaining to research policy and administration.

As we see in Table 3 below red tape theory provides a number of hypotheses as to why rules originate as red tape, that is, requiring compliance but failing to achieve the functional object of the rule. Let us review some of those hypotheses, focusing on ones that seems especially relevant to research policy and administration:<sup>5</sup>

**Table 3. Rule-Inception Red Tape Threats in Research Policies**

<b>Red Tape Threat Concept</b>	<b>Definition</b>	<b>Estimated Threat Level for Research Administration</b>	<b>Examples from Research Policies</b>
<i>Incorrect rule forecasts</i>	Rule-makers' assumptions about the relation of means to ends is invalid	High	Causal chain of rule disrupted, e.g. new indirect cost audit rules lead to overcompliance
<i>Over-Control</i>	Rules established for managerial control and accountability impose so much control or such a compliance burden that work is impeded.	Extremely High	Human subjects review (IRB) required even when there are essentially no human subjects involved in the study
<i>Rule Redundancy</i>	Multiple rule-makers create different rules and requirements for quite similar administrative duties	High	Agencies such as NIH, NSF, DoE have different budget and grant submission requirements.

## **Origins of Bureaucratization: Implications from Theory of Rules and Red Tape**

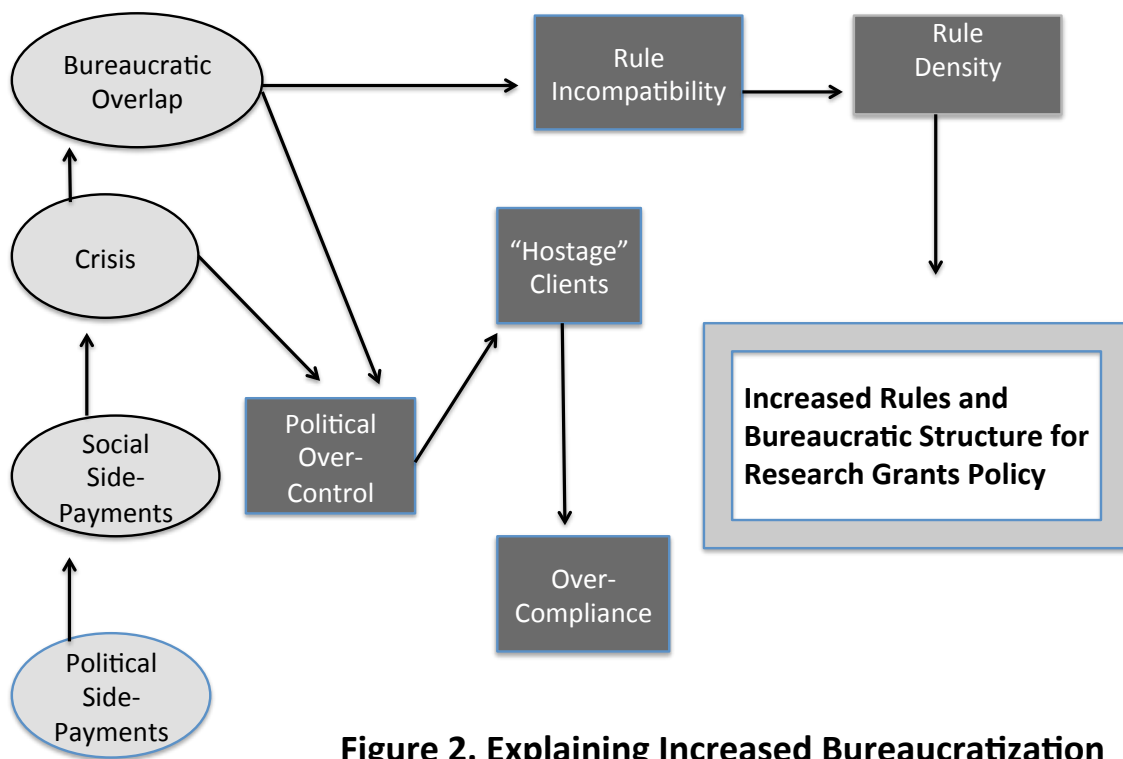
There is a prominent literature on the growth of bureaucratic structures and bureaucratization and it seems not so relevant here. Rational economic theories of bureaucracy tell us that we should expect bureaucratic proliferation because it is a means of bureaucratic officials expanding their power and concomitant career rewards (e.g. Downs, 1965; Niskanen, 1968, 1974; Amacher, et al., 1975). There is sound reasoning here, at least from one perspective. Federal pay grades and many state government personnel systems are closely related to the number of persons a manager supervises.

Despite the widespread applicability the well known economic theories of bureaucratic expansion, these do not serve us well here. The bureaucratization of universities to a large extent has external causes, chiefly compliance with federal research policy requirements. Let us consider just a few recent changes in administrative requirements. In 2004 the Higher Education Act required researchers to report foreign gifts and contracts; as part of the America Competes Act of 2006 (implemented in 2010) the NSF now requires “public outcomes reporting” from research grants; In 2011, the Department of Homeland Security’s Citizenship and Immigration Service required new export certifications for H1B visa visitors (which includes many foreign researchers); in 2013, the National Institutes of Health required new procedures for cost accounting of core research facilities. This is just a small fraction of the federal rules and regulations passed since 1991.

(A more complete list is provided in the Appendix to this paper). What these four regulations, and almost all those passed recently, have in common is that they are mandates passed down by the federal government to be implemented in universities (and other research organizations). They do not expand the number of people supervised by federal bureaucrats (or, if they do at all, not by much) and they typically do not arrive as part of an incentive by university bureaucrats to expand their personnel supervisory domains. In short, the basic economic theory of bureaucracy does not work so well in accounting for the expansion of administrative requirements for federally sponsored research. What does? Let us consider some explanations from theory of rules and red tape.

### **Explaining Bureaucratization in Research Grants Policy and Administration**

The above introduction to theory and concepts of rules and red tape is perhaps sufficient for application to the issue of bureaucratization of research grants policy and administration. Figure Two provides the basic model employed here, one to a large extent derived from rules and red tape theory but informed by institutional knowledge of research administration.



**Figure 2. Explaining Increased Bureaucratization in Research Grants Policy**

The figure shows that there are four inter-related drivers of increased bureaucratization in US research policy and administration (the focus here is specifically on policy for grants and research funding but the model seems to apply more generally).

Crisis and University Research Bureaucratization

The relation between crisis and the growth of bureaucratization is well known. In such different domains as national security (Cohen, et al., 2006), public schools (Berliner and Biddle, 1995), and finance (Khademian, 2009), nothing feeds bureaucracy like a crisis. If we examine the proliferation of rules and regulations for grants policy administration we see that many have origins in crises or scandals. A colleague and I (Bozeman and Anderson, in press) have extensively documented the



role of a single, highly visible scandal, the so-called Stanford Yacht scandal, in contributing greatly to rules and regulations pertaining to accounting and financial management for grants. One mid-level accountant at Stanford University incorrectly allocated costs from the Stanford Yacht to the university's indirect cost recovery from federally sponsored research. After the actions of a zealous federal auditor, much negative news coverage, a network television expose, and the resignation of the Stanford University president, the aftermath included a tremendous growth in rules and regulations regarding the treatment of financial accounting for federal research grants.

The causal chain of crisis to hurried policy changes to increased rules and regulations is to be found in virtually any policy domain. However, there is a distinctive element to the case of research grants policy and administration, what I refer to as the "hostage client" (see Figure Two). From a research standpoint, most of the leading universities in the US, whether private, nonprofit universities or state government chartered universities, are wards of the federal government. Among the top 300 research universities, more than 80% of research funding on average comes from the federal government, especially the National Science Foundation (which allocates more than 90% of its funds to universities), the National Institutes of Health (the single largest source of research funding), and the Department of Defense. While some universities attract significant funding from the private sector, these universities are very much the exception and even among this group, private sector funding generally accounts for no more than 10% of funds. What this implies is that there is no adequate substitute for federal research funds. A university that

loses its federal funding is no longer a research university. Thus, every major university has high-level compliance officers charged with ensuring that federal research regulations are followed. In many instances, the err on the safe side, universities “over-comply” with regulations, particular choosing conservative approach to indirect cost claims and research accounting (Brown, 1981; Kutina, et al., 1985; Goldman and Williams, 2000; Bozeman and Anderson, in press).

It is important to note that federal penalties for violation of research rules are not typically severe but, at the same time, the risk of severe penalties constantly weighs on university administrative leaders. Moreover, there are a great many research-related activities which could possibly lead to punitive action, not just accounting rules but also rules regarding researchers’ conflict of interest, fraud, laboratory safety and human resources, among others. The incentives for meticulous attention and even for over-compliance are strong ones.

#### Political and Social Side-Payments and University Research Bureaucratization

A remarkable number and percentage of the bureaucratic rules to which university research administrators must attend have little if anything to do directly with the quality or quantity of scientific research. I use the term “side-payment rules” as a broad category for the rules that must be attended to by university researchers and administrators but that do not affect the quality or quantity of scientific work. One category is “social side-payments.” For several years the U.S. Congress overseers of federal funding for university research have sought to achieve social objectives in rules ancillary to university research. We can divide “social side-payments” into two sub-categories “research relevant” and “research irrelevant.”

In some cases, officials in science bureaucracies are strong promoters of “research relevant” rules. A good example of a “research relevant social side-payment” is the recent NSF rules requiring mentoring plans for post-doctoral fellows (Scaffidi and Berman, 2011). The problem addressed is perhaps related to the long-run health and well being of the research work force but is not directly related to the research products being produced by PIs. Requirements or incentives to partner with minority-serving universities is another example of a “research relevant social side-payment,” rules that do not specifically advance research but may have long-term benefits to research.

Many other rules are “research irrelevant” but are nonetheless socially-motivated mandates to which research administrators must attend. For example, many of the rules and regulations regarding prohibiting support of human trafficking, however relevant they may be, seem to have little bearing on the conduct of scientific research but, at the same time, are part of the paperwork and compliance requirements of grants administration. Other such regulations, some likely very beneficial, include those dealing with handling of toxins (Smith, et al., 2011) and handicap access (Hansen and Moreland, 2004). The categorization of these as side-payments does not imply they are without value and, indeed, many of the rules attached to research administration may well achieve very important social goals.

The category of “political side-payment” rules is in a sense not much different from “research irrelevant social side-payments,” except that the political side-payments may be interpreted as focusing more on political posturing and electoral

political agendas than on and social benefit. Excellent examples, listed in the appendix, are requirements that federally funded research do not, at least not as part of their research, advocate for gun control. This is more a minor nuisance than anything else, since there is no evidence of any previous widespread use federal funding for scientific research being used for gun control advocacy. Other “political side-payment” rules are much more than a simply annoyance, the most conspicuous case being the extensive rules surrounding the acquisition and use of stem cells for research. While in many nations any of a variety of approaches have been used for acquiring stem cells (Gottweis, 2002; Fink, 2007), in the US the use of stem cells by researchers has landed them in the middle of one of the most contentious political issues in the US- the continually raging conflict between those affirming abortion rights and those who wish to abridge or vitiate abortion rights (Karch, 2012). The result is an extensive set of regulations in research administration, ones that *are* related to research but not aimed at improving the quality or quantity of research.

It is worth noting that the notion of political side-payments is very much constructed by the observer. It is difficult to say whether the advocate of any particular set of rules and regulations is actually seeking beneficial social change or merely seeking policies that favor the policy-maker’s chances of re-election or political advancement or, related, currying favor with past and future political campaign contributors.

#### Bureaucratic Overlap and University Research Bureaucratization

Red tape theory is particularly useful in helping understand the role of “bureaucratic overlap” in increasing university research bureaucratization.

According to red tape theory (Bozeman, 2000, p. 203):

*Rule strain* occurs as the sheer number of rules increases, with a corresponding increase in compliance burden, until the marginal benefit from rules becomes less and less and, then, negative.

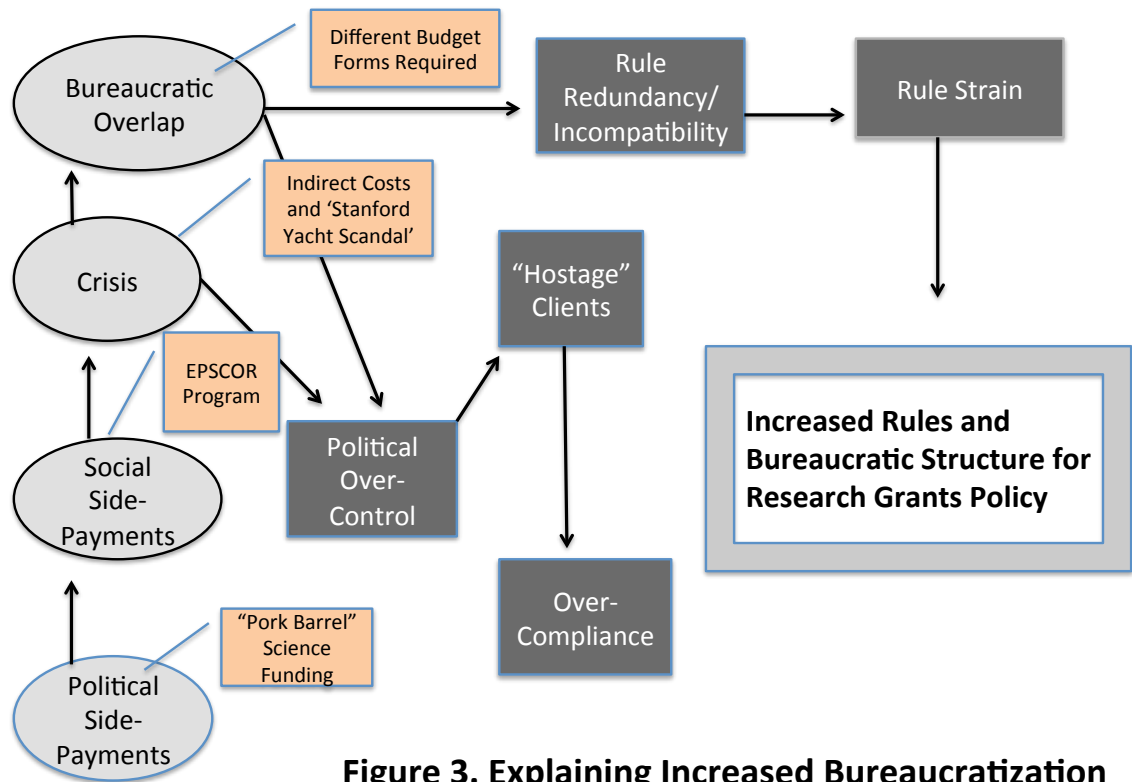
Rule strain, then, is a direct product of bureaucratization. When we ask “why does bureaucratization occur?” we are at the same time asking “why do rules and regulations increase?” Thus, this paper is, essentially, seeking to explain rule strain *and* the accompanying component of bureaucratization- the growth of bureaucratic structures. These are accompanying characteristics but do not grow proportionately by formula because some new rules and policies require a much greater supportive bureaucratic structure than do others (e.g. transfer payments versus environmental regulations).

Two of the primary factors driving rule strain are both features of *bureaucratic overlap*. A chief culprit is *rule redundancy*, by which multiple bureaucratic agencies each develop rules requiring essentially the same behavior but with different specifications or, in terms of rules theory, different behavioral requirements, implementation plans and enforcement mechanisms. Another factor increasing rule strain is *rule compatibility* in which “new rules are promulgated that may be effective but, at the same time, undermine the effectiveness of old ones” (Bozeman, 2000, p. 203).

Recipients of research funds from US federal government agencies are well aware of the incidence and impacts of both rule redundancy and rule

incompatibility. It is easy enough to understand why, say, the Department of Defense and the National Institute of Standards and Technology would have different rules even for similar behavioral constraints and requirements. The two funding agencies diverge on mission, size, geographic dispersion, needs for secrecy and security and political power, among many other factors. But why should there be significant rule redundancy with two agencies chiefly charged with funding basic and applied research in universities and medical schools, the NSF and the NIH? Nevertheless they have different budget requirements, different grant specifications, and even different requirements for biographical sketches of researchers. While there is some effort underway to make rules and processes more consistent, especially the deployment of a common online information system Grants.gov, the redundancy continues despite calls (e.g. NSB, 2014) for rules reforms and efficiencies.

Figure Three is a reworking of the model provided in Figure Two, showing in this case illustrations of research policy-specific examples of rule proliferation and bureaucratization.



**Figure 3. Explaining Increased Bureaucratization in Research Grants Policy (with examples)**

## Conclusions

When we say that there is “increasing bureaucratization of university research policy and administration” that means that there is a growth in rules, regulations and procedures requiring compliance from university administrators and from seekers and recipients of research grants *and* that there is at least some growth in the bureaucratic structures (both in government and in universities) charged with implementing or monitoring the behaviors required by the new rules.

Several recent studies (e.g., NSB, 2014; ACE, 2015) document the bureaucratization of university research policy and administration but do not even attempt an explanation. Red tape theory has been applied here as a possible basis of

explanation. Red tape theory suggests that three major factors explain the bureaucratization of research policy and administration- bureaucratic overlap, crisis response, and side-payments, categorized as social side-payments (by which policymakers seek to achieve legitimate social goals not directly related to research quality or outcomes) and political side-payments (by which policymakers, especially elected officials). It seems valid to conclude that many of the factors driving bureaucratization of research policy and administration are well known in among scholars of bureaucracy, rules and red tape, but others have a distinctiveness stemming from the particular context of science and technology policy. Thus, for example, the tendency to try to specify behavior to a degree that it results in bureaucratic over-control is a tendency found in a most institutions and not just government (Bozeman, et al., 1992; Rainey, et al., 1995; Pandey and Kingsley, 2000). But while most organizations producing rules and regulations have a tendency to “control the uncontrollable” or to exert more control than is practical or effective, science policy offers such distinctive contexts for bureaucratization as human subjects research reviews and Institutional Review Boards and such uncommon (though not unprecedented) forces for side-payments as the inclusion of political economic criteria for selection of science and technology facilities. Similarly, while pork barrel policy (political side payments) is common in many policy fields, it takes on a distinctive character in policy for university research. In short, it seems that an understanding of bureaucratization of research policy and administration requires some knowledge of both the working of



bureaucracies and of the particular policies and institutions at play in university research.

### Reform: Abandon All Hope Ye Who Enter Here?

In the US, blue ribbon panels periodically suggest reforms for bureaucratic rules and regulations viewed as constraining the efficiency and effectiveness of scientific enterprise. In some cases, though not many, those suggestions for reform are acted upon and a (small) dent is made in the compliance burden surrounding the conduct of federally-sponsored research. While I have no objective evidence (other than that suggested by the rules proliferation described in the appendix to this paper), casual observation suggests that the rate of new rules promulgated greatly outstrips the removal or diminishment of the rules already in place. Thus, I invoke Dante. Or, to put it another way, there is very little reason to expect that the tide will turn in processes by which rules increase and expand and, thus, rules reform, while desirable, is not perhaps not the answer to greater research quality and quantity.

In another section of the paper I noted that policy-making, not only for science policy but in any domain, presents alternatives to policy by rule-making. While some policy domains seem to inherently require rules and regulations, other policy domains present alternative approaches. Even in such a traditionally rules-dominant policy domain as environmental policy it is possible to achieve much with any of a variety of market focused approaches such as, famously and controversially, cap-and-trade policies (Colby, 2000; Fischer, 2003; Fowlie and Perloff, 2013).

Some market-based policies are relevant to university research policy. True, the most prominent market-based policy for research, R&D tax credits, has only modest relevance to nonprofit and government universities (Berger, 1993), but universities have been greatly affected by changes in rules and regulations regarding the disposition of intellectual property and the ability of universities and federally funded university investigators to profit from sponsored research (for an overview see Mowery, et al., 2001).

In the case of policy for research grants, other than disposition of intellectual property flowing from grants, there seems to be much less potential for using market-focused policies. Market approaches are not likely to have much effect on such legitimate and important policies as human subjects review, laboratory safety or conflict of interest. But another set of institutional approaches has some promise- professionalization, third-party adjudication and trust. These approaches may be especially useful when taken in conjunction with bureaucratic reforms and rule reduction. A conspicuous example, not yet adopted, is the National Academy of Science recommendation (National Research Council, 2013) to drastically cut the human subjects reviews pertaining to noninvasive social sciences studies, thus not only alleviating the need for “expedited reviews,” thus requiring no reviews other than occasional audits for low threat research. If adopted fully, this recommendation will recognize the convergence of professionalism and trust as social action mechanisms but, at the same time, perhaps enhance effectiveness by providing more time and resources for reviews of potentially threatening research.

Learning from Red Tape Theory: Next Steps

Perhaps the primary lesson of red tape theory is that having a great many and having red tape are not the same. It is possible to have a great many rules, none of which are red tape because each is achieving its functional objective. It is possible to have only a few rules and, if they are ineffective but require compliance, they may nonetheless be red tape. The focus of the current study is on the growth of research policy rules, particularly trying to explain growth processes, and the many of the concepts and premises of red tape are useful for that objective. This point separates the current study from nearly all the well known studies of university research bureaucracy inasmuch as the present study considers causes of growth and most others focus chiefly on documenting the growth (and sometimes approaches to stemming the tide). What the current study has in common with previous ones is that it does not seek specifically to evaluate the rules and to sort out red tape from rules that, even if they have a high compliance burden, achieve important objectives. That is the next step: evaluating research policy rules, examining compliance burden but in connection with the social achievements of rules and policies.

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## Appendix: 1991 to 2013 Federal Regulatory Additions or Changes Pertaining to University Research Administration<sup>6</sup>

*The listed regulations directly affect the conduct and management of research under Federal grants and contracts. The list of current regulations is in chronological order. Significant changes in the implementation or interpretation of regulations or management processes are listed below in a separate section. The list concludes with significant proposed regulations.* (NSB, 2014, Appendix A, p. 1.

Federal Policy for the Protection of **Human Subjects (Common Rule, 1991)**  
Nonindigenous **Aquatic Nuisance Prevention & Control Act** of 1990 (Implemented, 1992)  
NIH Guidelines for Research Involving **Recombinant DNA Molecules** (1994)  
**Deemed Exports** (1994, EAR & ITAR)  
**DFARS Export Control Compliance Clauses** (2010)  
**Conflicts of Interest**  
Public Health Service/NIH Objectivity in Research (1995; Amendments August 2012)  
NSF Financial Disclosure Policy (1995)  
**Lobbying Disclosure Act** of 1995 (Amended 2007; 2013)  
Cost Accounting Standards (**CAS**) in OMB Circular A-21(1995)  
Health Insurance Portability & Accountability Act of 1996 (**HIPAA**) Privacy Rule (Amendments January 2013)  
OMB Elimination of **Utility Cost Studies (UCA)** (1998)  
Data Access /**Shelby Amendment** (FY 1999 Omnibus Appropriations Act); related amendments to OMB Circular A-110  
Policy on Sharing of **Biomedical Research Resources** (NIH, 1999)  
**Misconduct in Science** (Federalwide Policy, 2000)  
NEH, 2001  
NSF, 2002  
EPA, Directive, 2003  
Labor, 2004  
HHS/PHS, 2005  
NASA, 2005  
Energy, 2005  
Veterans Affairs, 2005  
Education, 2005  
Transportation, 2005  
USDA, 2010  
HHS Centers for Medicare and Medicaid Services (**CMS**) **National Coverage Determination for Routine Clinical Trials** (Clinical Trials Policy), 2000  
Health and Human Services/FDA **Clinical Trials Registry** (2000, Food and Drug Administration Amendments Act of 2007; Mandated Reporting, 2008)  
**Executive Order 13224**, Blocking Property and Prohibiting **Transactions With Persons** Who Commit, Threaten to Commit or **Support Terrorism** (September 2001, also EO 12947, 1995)  
COGR Regulations Since 1991, November 15, 2013 Page 123  
**Select Agents & Toxins** (under CDC and USDA/APHIS) Public Health Security & Bioterrorism Preparedness & Response Act of 2002; companion to the USA PATRIOT Act (2001); revised October 2012  
**FISMA** Federal Information Security Management Act (Title III, E Government Act of 2002) OMB Circular A-130, Management of Federal Information Resources, Appendix III, Security of automated systems.  
**CIPSEA** Confidential Information Protection and Statistical Efficiency Act (OMB Implementation Guidance 2007, Title V, E Government Act of 2002)  
**Data Sharing** Policy (NIH, 2003)



Homeland Security Presidential Directive (**HSPD**) – **12**, Common Identification Standards for Federal Employees and Contractors (2004)

Higher Education Act, Section 117 Reporting of Foreign Gifts, Contracts and Relationships (20 USC 1011f, 2004)

**Model Organism** Sharing Policy (NIH, 2004)

**Constitution & Citizenship Day** (2005, Consolidated Appropriations Act FY 2005)

**Genomic Inventions** Best Practices (2005)

Office of Management & Budget Guidance for Governmentwide Debarment and Suspension **[Nonprocurement]** (2CFR Part 180, 2006) Consolidation of agencies' Governmentwide Debarment & Suspension Common Rule (2003).

Federal Acquisition Regulations [FAR] Flowdown of Debarment/Suspension to Lower **Tier Subcontractors** (December 2010; amendment to FAR Subpart 9.4)

Combating Trafficking in Persons (2008)

**Code of Business Ethics & Conduct** (FAR 2008)

Homeland Security **Chemical Facilities Anti-Terrorism Standards (CFATS) (2008)**

**E-Verify** (2009)

**Military Recruiting** and ROTC Program Access (2008, Solomon Amendment, National Defense Authorization Act for FY 2005)

Nuclear Regulatory Commission Order Imposing Fingerprinting and Criminal History Records **Check** Requirements for Unescorted Access to Certain Radioactive Materials (Feb 2008, Section 652, Energy Policy Act of 2005)

National Institutes of Health **Public Access Policy** (2008, Consolidated Appropriations Act of 2008, Division G, Title II Section 218)

**Certification of Filing and Payment of Federal Taxes** (Labor, HHS, Education and Related Agencies Appropriations Act of 2008, Division G, Title V, Section 523)

National Institutes of Health Policy for **Genome-Wide Association Studies (GWAS)** (2008)

Federal Funding Accountability and Transparency Act (FFATA) Executive Compensation and **Subrecipient Reporting** (2006) (FAR, July 2010; OMB Open Government Directive, April 2010)

USAID **Partners Vetting System** (re: EO 13224 et al re: terrorist financing 2009; Extension to Acquisitions, 2012)

National Institutes of Health **Guidelines for Human Stem Cell Research** (2009)

National Science Foundation **Post-Doctoral Fellows Mentoring** (America COMPETES Act 2006; implemented 2009)

Executive Order 13513, Federal Leadership on Reducing **Text Messaging** While Driving (October 2009)

National Science Foundation **Responsible Conduct of Research** Training (America COMPETES Act 2006; implemented 2010)

National Science Foundation **Public Outcomes Reporting** (America COMPETES Act 2006; implemented 2010).

**Select Agents & Toxins** (under CDC and USDA/APHIS) Public Health Security & Bioterrorism Preparedness & Response Act of 2002; companion to the USA PATRIOT Act (2001); revised October 2012

**FISMA** Federal Information Security Management Act (Title III, E Government Act of 2002) OMB Circular A-130, Management of Federal Information Resources, Appendix III, Security of **Federal Automated Information Systems**

**CIPSEA** Confidential Information Protection and Statistical Efficiency Act (OMB Implementation Guidance 2007, Title V, E Government Act of 2002)

**Data Sharing** Policy (NIH, 2003)

Homeland Security Presidential Directive (**HSPD**) – **12**, Common Identification Standards for Federal Employees and Contractors (2004)

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**Genomic Inventions** Best Practices (2005)

Office of Management & Budget Guidance for Governmentwide Debarment and Suspension

**[Nonprocurement]** (2CFR Part 180, 2006) Consolidation of agencies' Governmentwide Debarment & Suspension Common Rule (2003).  
Federal Acquisition Regulations [FAR] Flowdown of Debarment/Suspension to Lower **Tier Subcontractors** (December 2010; amendment to FAR Subpart 9.4)  
Combating Trafficking in Persons (2008)  
**Code of Business Ethics & Conduct** (FAR 2008)  
Homeland Security **Chemical Facilities Anti-Terrorism Standards (CFATS) (2008)**  
**E-Verify** (2009)  
**Military Recruiting** and ROTC Program Access (2008, Solomon Amendment, National Defense Authorization Act for FY 2005)  
Nuclear Regulatory Commission Order Imposing Fingerprinting and Criminal History Records **Check** Requirements for Unescorted Access to Certain Radioactive Materials (Feb 2008, Section 652, Energy Policy Act of 2005)  
National Institutes of Health **Public Access Policy** (2008, Consolidated Appropriations Act of 2008, Division G, Title II Section 218)  
**Certification of Filing and Payment of Federal Taxes** (Labor, HHS, Education and Related Agencies Appropriations Act of 2008, Division G, Title V, Section 523)  
National Institutes of Health Policy for **Genome-Wide Association Studies (GWAS, 2008)**  
Federal Funding Accountability and Transparency Act (FFATA) Executive Compensation and **Subrecipient Reporting** (2006) (FAR, July 2010; OMB Open Government Directive, April 2010)  
USAID **Partners Vetting System** (re: EO 13224 et al re: terrorist financing 2009; Extension to Acquisitions, 2012)  
National Institutes of Health **Guidelines for Human Stem Cell Research** (2009)  
National Science Foundation **Post-Doctoral Fellows Mentoring** (America COMPETES Act 2006; implemented 2009)  
Executive Order 13513, Federal Leadership on Reducing **Text Messaging** While Driving (October 2009)  
National Science Foundation **Responsible Conduct of Research** Training (America COMPETES Act 2006; implemented 2010)  
National Science Foundation **Public Outcomes Reporting** (America COMPETES Act 2006; implemented 2010)  
Federal Acquisition Regulations (FAR) and Office of Management & Budget Federal Awardee **Performance and Integrity Information System (FAPIS) and Guidance for Reporting and Use of Information Concerning Recipient Integrity and Performance** (2010,2012)  
(Compliance with § 872, National Defense Authorization Act of 2009, PL 110-417; as amended, 2010)  
National Institutes of Health, **Budgeting for Genomic Arrays** for NIH Grants, Cooperative Agreements and Contracts (2010)  
Homeland Security/Citizenship & Immigration Services **I129 Deemed Export Certification for H1B Visitors** (November 2010; implementation postponed to February 2011)  
Nuclear Regulatory Commission – Statement concerning the Security and Continued Use of **Cesium-137 Chloride Sources** (July 2011)  
America Invents Act 2011 **Patent Regulatory Changes** (2012): Implementation of First Inventor to File System; Inventor Oath or Declaration; 3rd Party Submission of Prior Art; Citation of Prior Art; Statues of Limitation for Disciplinary Actions; Supplemental Examination; Post-Grant Review  
NASA/OSTP **China Funding Restrictions** (2012, Under PL 112-10 § 1340(2) & PL 112-55 § 539)  
**US Government Policy for the Oversight of Life Sciences Dual Use Research of Concern** (March 2012)  
NIH, Mitigating Risks of Life Science Dual Use Research of Concern (2013)  
Food and Drug Administration Reporting Information on Falsification of Data (April 2012)  
National Science Foundation **Career-Life Balance** Initiatives (2012)  
**Gun Control**, Prohibition on Advocacy & Promotion (Consolidated Appropriations Act of 2012 – PL 112-74, Sec 218)

Office of Science and Technology Policy (OSTP), **Increasing Access to the Results of Federally Funded Scientific Research** (February 2013)

Federal Acquisition Regulations (FAR) and Office of Management & Budget Federal Awardee **Performance and Integrity Information System (FAPIS)** and **Guidance for Reporting and Use of Information Concerning Recipient Integrity and Performance** (2010,2012)  
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**Gun Control**, Prohibition on Advocacy & Promotion (Consolidated Appropriations Act of 2012 – PL 112-74, Sec 218)

Office of Science and Technology Policy (OSTP), **Increasing Access to the Results of Federally Funded Scientific Research** (February 2, 2013).



## Endnotes

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<sup>1</sup> While the above discussion fits closely to the most broadly accepted notion of red tape, a more nuanced approach, too complex for current purposes, views red tape as multidimensional and

<sup>2</sup> Surprisingly, the report does not explicitly mention the burdens associated with *reviewing* grants, significant since most of the reviewers are university faculty. Generally, proposals are reviewed by four or more “peers,” suggesting countless hours devoted to reviewing, including the 75-90% of proposals not funded.

<sup>3</sup> This section draws from Bozeman (1993); Bozeman (2000); Bozeman and Feeney (2011).

<sup>4</sup> While this section suffices as a succinct introduction, it is a limited introduction to what is by now a very well developed theory (for reviews of the red tape literature see Bozeman and Scott, 1996; Pandey and Scott, 2002; Bozeman and Feeney, 2011).

<sup>5</sup> While this table and its concepts are adapted from Bozeman (1993; 2000), one new causal construct is presented here, rule sovereignty.

<sup>6</sup> This list was adapted from one developed by the Council on Governmental Relations and is provided as an appendix in NSB (2014).