SCIENTIFIC SELF-REGULATION: A BRIEF PRIMER FOR RESEARCH ADMINISTRATORS

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ABSTRACT

The National Academies of Science recently recommended a battery of guidelines for Academe to create an "environment" conducive to the responsible conduct of research. These guidelines affect the research administration field as a whole, as research administrators will be expected to assist in these changes. Research administrators, however, should consider their role in scientific self-regulation as they assist in environmental changes. Environmental changes take decidedly longer to achieve than a one-hour meeting or one-hour training session covering the definitions of scientific misconduct. It is time to move away from simple awareness training and discover new ways of collaborating with faculty to manage responsible conduct in research.

ROLE OF THE RESEARCH ADMINISTRATOR IN SCIENCE

The purpose of this article is to call attention to the literature concerning scientific self-regulation. Scientific self-regulation simply means scientists monitoring themselves to make sure the people in their profession are following rules and established norms. Research administrators are not expected to get involved with another profession's self-regulating activities, but most in the field believe they are involved by default because of federal regulations and auditing activities brought on by grants and institutional review board activities. This does not mean research administrators should act as peer reviewers for the soundness of science, it simply means the research administrator should probably be considered as a research variable in current research on scientific self-regulation. Research administrators seem to take pride in knowing they help with regulatory matters, but for an emerging profession like research administration, this needs some attention. With the National Academies recommendations, research administrators need to be

shown as a significant contributor affecting scientific self-regulation as well as the business-as-usual regulation.

Currently, the research administrator's role is viewed as a peripheral and largely clerical function. This involves making the campus aware of definitions of scientific misconduct, making sure the proper procedures are followed when an alleged incident occurs, and filing the paperwork. It is apparent that this peripheral role is all some of us want to perform, but if research administrators are to get involved in the actual prevention of scientific misconduct, and institutional climate changes, clearly a better understanding of the causes and effects of scientific misconduct is in order. The National Academy of Sciences recently recommended a battery of guidelines for Academe to create an "environment" conducive to responsible conduct of research. These guidelines affect the research administration field as a whole because research administrators will be expected to assist in these changes. Research administrators, however, should consider their role in scientific self-regulation as they assist in this environmental change.

RESEARCH ADMINISTRATOR: INSTITUTIONAL DEFINITIONS

Oliver Hensley (1986, p. 1) defined the research administrator or research support personnel (RSP) as those "who render assistance directly or indirectly to principal and co-investigators" and stated that "within the university research establishment, we can clearly identify four major types of persons with distinctive roles which are set by their purpose: (1) students, (2) researchers, (3) research support personnel (RSP), and (4) sponsors." Hensley offered thirteen functional classes of RSP, demonstrating that research administrators are an integral part of the university research culture and therefore should share the role of scientific self-regulation with the faculty whether this role is explicitly stated or not. Additionally, institutional environmental or climate changes can be brought about best by using the often neglected shared governance structure that exists within institutions of higher education.

The subject of scientific self-regulation is broad and growing and is primarily published in the area of Higher Education Administration and concerns faculty norms. An overview of the characteristics of scientific self-regulation is presented here to increase the research administrators' understanding of the professional self-regulation of science.

Research administrators typically view their role in science as a partnership between themselves and the faculty where the faculty members conduct research and the research administrators adhere to the regulatory requirements of the funding. When funding exists, it is difficult to separate the research administrator from the science because, by signature authority, the research administrator has a legal and ethical obligation to meet the goals of the project along with the faculty member. It is clear, therefore, that to affect institutional change, this role will have to be shared.

During the past decade, the self-regulation of science within this legal-scientific condition has primarily focused on the faculty. There has been an increase in the literature concerning self-regulation of science by promoting a culture, environment, or climate conducive to maintaining research integrity. Given that a culture conveys a body of norms or guidelines for behavior of that culture, it is necessary to understand the norms guiding the professoriate.

THE FUNCTIONAL CULTURE OF SCIENTIFIC PRACTICE

It will be helpful to research administrators to note that science as a profession was defined by Robert K. Merton's seminal work (1942) concerning the "norms of science" that guide the professional behavior of scientists. He identified four distinct "norms" of science: (1) universalism, which prescribes peer review and scientific merit as the guiding principle and denounces factors such as race, nationality, class, or personal qualities when it comes to deciding on merit; (2) communality, which prescribes that research findings must be published and the findings distributed for all the scientific community to scrutinize and, if found worthy, the originating scientist should receive the appropriate credit for that work; (3) disinterestedness, which prohibits a scientist from doing research to seek fame alone––science should be performed for the sake of disseminating new knowledge, and (4) organized skepticism, which prescribes that results of experiments should never be accepted without empirically and logically based methods. Scientists perhaps are able to self-regulate themselves and any deviations from these rules and guidelines are indeed self-correcting through the peer review of publications and a research design that promotes the reproducibility of results. Merton's analysis is functional when placed within its historical context because the grant system was just beginning to affect the university culture. The institutional and funding factors of science make it difficult for scientists to avoid intrusion into their work by administrators. Maybe a fifth norm for today's day and age, although not as elegant as Merton's vernacular, could be: (5) shared organizational leadership.

POTENTIAL CAUSES OF SCIENTIFIC MISCONDUCT

Edward J. Hackett (1994, p. 245) in a later work suggested three schools of thought concerning deviation from norms of science: (1) Individual psychopathology; (2) Anomie; and (3) Alienation. Hackett (*Ibid*., p. 246) maintains that individual psychopathology is the "least satisfying explanation of scientific misconduct," for two reasons: (1) because "the attribution of personality disorder…is vague and unmeasured, [and] (2) many of the characteristics that seem to underlie putatively defective scientific personalities also seem to characterize effective even eminent scientists." Anomie and Alienation are more satisfying because they exist within the cultural context of the norms of science as prescribed by Merton (1942). Anomie, according to Hackett (*Ibid*., p. 247), is a condition where "deviance may arise when great cultural value is placed on achieving an end, but the means for its achievement are unavailable to persons in certain positions." Wodarski's (1991) administrative and monetary changes mentioned previously are excellent suggestions for warding off a state of anomie.

Alienation, on the other hand, is "a separation of a worker from the work, the self, or other workers" (Hackett, 1994, p. 248). Fragmentation among faculty due to extreme specialization causes this condition. As a faculty member becomes highly specialized, a condition emerges that creates a dominant sense of alienation from the world and the institution. Again, Wodarski's research administrative interventions appear to be excellent preventive measures to a condition of alienation as well because of the high level of peer review and grant writing support.

In another study, John Braxton and Alan Bayer (1994) presented four general hypotheses: (1) "The higher the interprofessional status, the more favorable are that individual's attitudes toward taking action for scientific misconduct, (2) the greater the level of social cohesion in an academic department, the less favorable are the attitudes toward taking action for scientific misconduct, (3) the greater the institutional pressure for academic scientists to receive external grant support, the less favorable are individual academics' attitudes toward taking action for

scientific misconduct, and (4) professional solidarity constrains taking action against scientific impropriety." Braxton and Bayer (1994, pp. 351ff) found: (1) "Both departmental cohesion and professional solidarity exert the predicted influences on reputational harm"; (2) "As professional age increases, an individual's concern over harm to the university's and colleagues' reputations created for taking action for scientific wrongdoing decreases"; (3) "as professional solidarity increases, the tendency of an individual to endorse the use of informal and lenient sanctions for scientific improprieties also increases"; (4) "department chairpersons are less likely to endorse informal and lenient sanctions than are academics who are not department chairpersons"; (5) "cohesive departments buffer individuals from fear of being labeled a whistleblower"; (6) "professional age shields an individual from fear of being stigmatized as a whistleblower"; and (7) "as professional solidarity increases, the tendency of individuals to distance themselves from colleague misconduct increases." This article indicates exceptional opportunities for the research administrator to foster institutional relationships with scientists in order to uncover and report incidences of scientific misconduct and, better yet, prevent them from happening, particularly by partnering with deans and chairs.

SCIENTIFIC SELF-REGULATION IN THE LITERATURE

In recent years, John Braxton (1989, p. 423) hypothesized that "the greater the institutional administrative emphasis on research and scholarship, the greater the conformity to the norms of science." An "institutional" emphasis is a broad category and would perhaps involve factors such as resources, time, effort, and administrators. Braxton found that the institutional emphasis on research exhibited little or no influence on faculty conformity to the norms of science. According to Braxton, a combination of peer review and emphasis on publication is associated with a slight increase in faculty treating each other as peers. On the other hand, he found that combining rigorous scientific methodology with prohibiting science for fame causes faculty to fragment to some extent. This could be because the level of rigor on methodology is sometimes difficult to agree upon.

Support for the institutional role in science is also seen in the work of Edward J. Hackett (1990, p. 245), who contended that market and institutional forces are at play: "the culture of academic science is a blend of the cultures of science and academe, and the resulting cultural mix is further shaped through interaction with and accommodation to its clients, competitors and patrons." Hackett (*Ibid.*) further contends that the role of formal organization in science is governed by two perspectives: (1) resource dependence, and (2) new institutionalism or institutional theory. Resource dependence involves the exchange of goods and services such as grant mechanisms and contracts. Institutional theory emphasizes organizational behavior in response to a bombardment of transforming forces in society such as government, agencies, and elites. Cultural change occurs within these two contexts in both the public and private sectors. Because science depends on external funding for its survival, institutions and science exhibit some level of becoming more like the federal and state administrative structure. Research administration as a field evolved and changed along with "science" and with the influx of funding for science (Atkinson, 2002), so an unavoidable bond exists between the two fields. Self-regulation of science, therefore, involves a necessary partnership between the field of research administration and the scientists before realizing cultural and environmental modification.

CURRENT PRAGMATIC SOLUTIONS

John Wodarski (1991), a professional research administrator, focused his work on generating a "positive" research culture driven by strong institutional support. Wodarski implemented the following support mechanisms on his campus: (1) a catalogue of resources for identifying funding sources, (2) proposal critiques, (3) grant writing seminars, (4) small grants program, (5) redirecting indirect costs back to the investigator, (6) redirecting indirect costs into travel, and (7) set-aside funds for costs of publication and computer time. The strength of Wodarski's methods of directing funds into grant writing and proposal critiques and supporting research infrastructure assist faculty compliance with Merton's four norms of science. During the study period, Wodarski's campus experienced: (1) a 55% increase in external funds, (2) a 79% increase in funded programs, (3) an 82% increase in proposal dollar value, and (4) an overall 68% increase in proposal submissions. This is exemplary of research administration supporting and binding the science-administration partnership. Empirical data, however, are scarce concerning the effects of an increase in institutional support on faculty adherence to norms of science and the expected decrease in scientific misconduct. This article presents an excellent platform from which the research administrator can operate in helping to monitor the normative controls of science. Understanding how institutional support of this nature affects faculty self-regulation of science first involves an understanding of the underlying environmental factors involved in deviation from the prescribed norms.

THE MENTOR-TRAINEE FACTOR

Reybold (2001, p. 41), in studying graduate/mentor student culture, discussed "the role of academic culture [as a whole] in determining a personal model of ethical research in the practice of the professoriate." Some of Reybold's conclusions were: (1) There is a slim body of coursework in research ethics along with an expectation that students would glean ethical research practice from the professors; (2) disregard for compliance with institutional review board standards; (3) lack of a definition of ethical research; (4) concern about power issues in ethical decision making, where students witness "unethical" behavior but are in a poor position to do anything about it; and (5) that since institutions intensify their focus on rewarding research productivity, researchers become ambivalent toward ethical conduct. Reybold's article does not note the role of the research administrator in offering guidance, support, and training to graduate students in the regulations. That was not the purpose of the article. Again, this could be because the perception among many faculty is that the administration haphazardly hinders research rather than promotes it. Also, Reybold's article does not discuss many specific steps the professoriate should take to involve the administration.

CONCLUSION

It might seem obvious to note at this point that many opportunities exist to explore the role of the research administrator in scientific self-regulation. First, it is suggested that the normative structure of research administration in the scientific context should be better defined. Second, the role of the research administrator in science should be explored more empirically. Third, research administrators' attitudes and beliefs about scientific misconduct should be thoroughly assessed not only within the larger research university context but within some of the governmental structures as well. Fourth, attitudes and beliefs of executive administration toward research should be assessed in order to determine barriers to funding institutional infrastructure in order to initiate environmental changes. Fifth, but not finally, the normative structure of technology

transfer should be assessed to determine how this enterprise resists or facilitates adherence to Merton's norm of disinterestedness, which prohibits scientists from doing research to seek fame and fortune alone. Diagnosis and management of the scientific misconduct event is one thing, but prevention and culture building requires an altogether different set of skills. Hopefully, this small primer is a helpful step in the right direction toward meeting the goals of the latter.

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