Inside Research Misconduct

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Author's Note

The author acknowledges the excellent work of the inquiry and investigation committees that were involved in the research misconduct case that is reviewed in this paper. They approached their task seriously and professionally, which has provided a rich record of the proceeding from which I have drawn. The conclusions drawn from the interview excerpts, however, are mine. The committees confined their deliberations to the concrete questions of what was done and how, without becoming bogged down in the question of why.

Abstract

During 2006 and 2007 a research misconduct investigation was carried out at a research institution in the western U.S. This paper focuses on the question of how the dynamics within the affected research group may have enabled the respondent to justify his ultimate rejection of normative values. Of specific interest is the possibility that loyalty, a core value for individuals who make ethical decisions at the local level (such as an academic lab), may encourage research misbehavior. Information for the paper is drawn from investigative interviews that illustrate the existence of a lab microculture, leading to a serious breach in research integrity. One possible surrogate value system that may play a role in the observed increase of misbehavior among some groups that have received training in the responsible conduct of research (RCR) is explored. The paper's purpose is to inform the dialogue concerning the surprising, unintended consequences of training efforts designed to improve the nation's research integrity. As the National Science Foundation initiates its universal requirement for the responsible conduct of research (RCR) instruction for all students and post-doctoral fellows funded under its programs, it is important that universities consider how to achieve a higher level of compliance and integrity.

Background

A starting point and common foundation for ethics-related discussion of contemporary society is the Kohlberg model of moral thinking. In this model, based on Piaget's work on moral judgment, an individual tends to progress through several levels and stages of moral development. The first level, Preconventional Morality, includes Stage 1, Obedience and Punishment Orientation, and Stage 2, Individualism and Exchange. The second level, Conventional Morality, is comprised of Stages 3 and 4, or Good Interpersonal Relationships and Maintaining Social Order, respectively. What makes these stages conventional is their reflection of societal expectations – or the "convention" on which our laws are based. Finally, in the

Postconventional Morality level, there are two additional stages -- Social Contract and Individual Rights (stage 5) and Universal Principles (stage 6) (Crain, 1985).

This model is linear, in that each stage is conceptualized as a progression from its immediate predecessor. It provides a convenient framework within which recognized philosophies of moral reasoning can be understood. For example, a strong intuitive correlation can be drawn between the conventional morality stages and the concept of beneficence, developed and articulated as Utilitarianism, or Consequentialism, by John Stuart Mill and Jeremy Bentham. In its most basic form, Utilitarianism holds that decisions should be made to provide the greatest good for the greatest number. An implicit connection exists between the moral reasoning of the individual under the Kohlberg model and the moral foundation of society as conceived by Mill. (Penslar,1995) Stage 6, Universal Principles, on the other hand, is easily identifiable with Immanuel Kant's Deontology. Deontology (from the Greek root *deon*, meaning duty) generally is embodied in the categorical imperative: "act only according to that maxim whereby you can at the same time will that it should become the universal law." (Kant, 1785)

Deontology tends to be expressed in terms of prohibitions, indicating what may not be done justly. A classic illustration of the difference between these two foundational Western theories of ethics is telling a lie. Under a utilitarian system, if telling a lie allows the greatest good to inure to the greatest number of people, then it is morally justified. Under a deontological system, telling a lie would never be morally justified, because – placing it in the Kantian construct – we could not will that lying should become the universal law. It should be noted that not all ethicists accept Kohlberg's model, and much has been said about its failures and weaknesses. For example, critics point out that Kohlberg's scoring system failed to identify a single individual who acted consistently in Stage 6. However, taken together with Defining Issues Test (DIT) research that builds on Kohlbergian concepts, the model can be accepted as a benchmark for analysis of moral judgment (Rest, Narvaez, Bebeau, & Thoma, 1999).

Organizational Ethics

The study of ethics applied in organizations broke from the Kohlbergian approach because organizations do not exhibit the same kind of progression over time in moral reasoning as individuals do. The Kohlberg continuum implies a time-bound progression. Children are expected to make decisions as predicted in Stage 1 or 2. Teens are expected to be transitioning from stage 2 to 3. Organizations, on the other hand, are responsive to other dynamics, and may shift from stage to stage in an unpredictable, rather than linear, order. To account for these characteristics, organizational behavior researchers began to build different models of group ethical climates. When looking at academic organizations, one method that was expected to be of interest by members of a committee commissioned by the National Academy of Sciences on Assessing Integrity in Research Environments was developed by John B. Cullen and Bart Victor. (Institute of Medicine, 2002). They focused their work on companies, and developed an ingenious, two-dimensional matrix of potential ethical climates. This matrix was built on two axes. On the vertical axis were three ethical criteria, beginning with egoism, then beneficence and finally principles. On the horizontal axis were three levels of analysis, including the individual, local, and cosmopolitan views. This three-by-three matrix allowed identification of nine distinct ethical climates (Cullen, Victor, & Stephens, 1989).

Basically, the Ethical Climate matrix expands to three the number of Kohlberg stages in each level, and stacks the levels one atop the other. A major conceptual difference in the Cullen

& Victor matrix, however, is that the ethical climate of a company represented on the third level is not inherently superior to one on the second level (See Figure 1). To be sure, there are ethical climates that indicate a need for special care to ensure that the company is compliant with regulations and aligned with societal expectations. This would be the case for a company that exhibited the ethical climate represented in the lower left-hand corner of the matrix, called Self Interest. But consider two organizations, one an accounting firm and the other a company importing and distributing goods from a developing Asian country. It would be common to find the accounting firm in the upper right hand cell of the matrix, which is labeled Laws and Professional Codes by Cullen and Victor. It would be unlikely, however, that the import and marketing firm that worked in that ethical climate would stay in business long. Such a firm is more likely to exhibit an ethical climate with a label like Company Profit or Friendship.

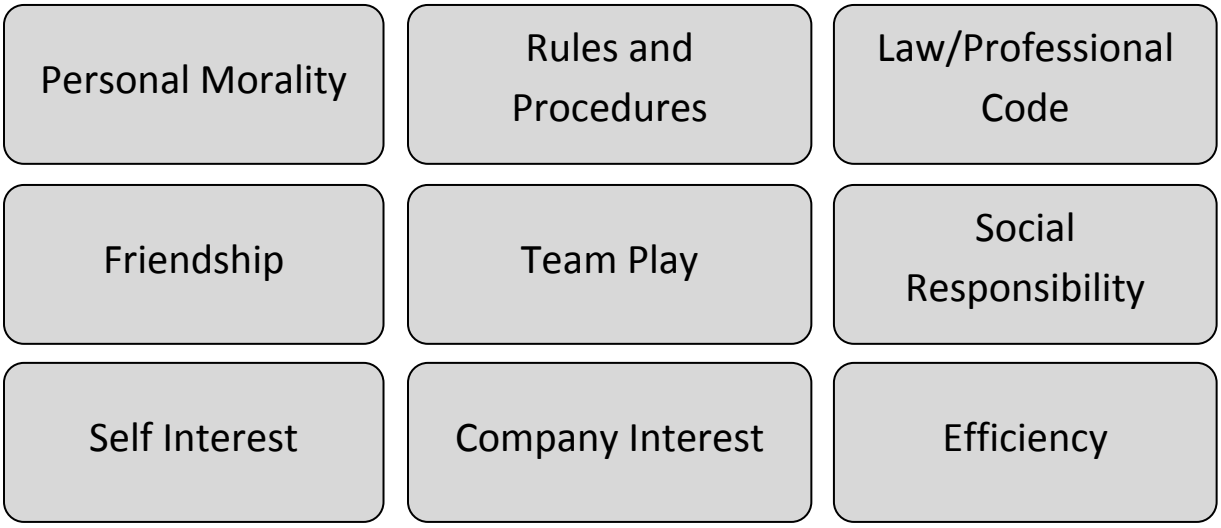

Figure 1. Ethical Climate Topology (Victor, Cullen, & Stephens, 1989).

The methodology used in this work was the administration of the Ethical Climate Questionnaire – a relatively simple instrument that contains 36 multiple choice questions. Four questions correspond to each of the ethical climates identified. The instrument has been validated, and responses by representative population samples within tested organizations have been shown to cluster within dominant matrix cells. (Victor & Cullen, 1987) Using the questionnaire, organizations have been identified that correspond to each of the 9 postulated ethical climates. When asked about their organization's ethics, employees tend to answer based on their observations and understanding of the organization, rather than on their perceptions of what might be acceptable. On the other hand, when individuals are asked about their own ethics, their answers are often colored by a desire to meet societal norms. This squares with the work of Scottish Enlightenment scholars Lord Kame and David Hume, who believed that norms were a construct of societies that protected individual property from the natural avarice of others. (Herman, 2001) When dealing with organizations, however, modern economies have relied on regulatory frameworks rather than societal norms. Thus, a company's employees may rely on

regulatory compliance to provides a safe haven that, in turn, allows them to provide a candid assessment of the ethical climate.

It is interesting to think about what an ethical climate in a company might mean, and how it is created. There appear to be common ways that people in the same organization learn to deal with questions of moral reasoning. This may be especially true of organizations that are insular. An example might be the federal labs that were asked at the end of the Cold War to change their focus from secret and classified projects to collaborative research that would result in patents and commercialization. The labs developed mission and vision statements, and operational standards that would support the new paradigm, but the people expected to implement them were the same people who had learned over three decades or more to keep information to themselves. The culture of such organizations is not easily changed.

Ethical Matrix for the Academy

This question of organizational inertia applies perhaps to no community of organizations more aptly than to institutions of higher education (IHEs). Yet universities, colleges and academic medical centers perform a function within society that sets them apart from commercial organizations. Companies almost always exist to make a profit. They are motivated by a straightforward exchange of goods or services for money. IHEs also require money to fulfill their missions, but the transactions are not as straightforward. Money is garnered from many sources for which services – primarily teaching, research and outreach – are rendered. The academy may talk constantly about output and yields and investment, but these are understood metaphorically. The returns generated by IHEs often inure to society, rather than directly to the benefactors. The roles IHEs play in society are in the important but relatively intangible development of human capital and in technological advancement. Societal expectations of universities do not include any measure of the *natural avarice* commonly expected from commercial counterparts. In this regard the position of the ethical climate of a university within the Ethical Climate matrix is not perceived, as it is for a company, as value-neutral. The organizational dynamics that lead to whatever ethical climate exists, however, may be indistinguishable from those that take place among commercial firms.

Recent federally funded research on research integrity focuses some attention on this issue. As the regulatory environment for IHEs becomes more rigid, the effects of the programs being established in topical areas in the Responsible Conduct of Research (RCR) are being evaluated. So far, the picture has not been comforting. In some circumstances, for example, an increase in ethics mentoring and training, especially related to career survival topics, correlates to a measurable increase in subscription to what the authors call counternorms among those who have received the training. (Anderson, Martinson, & De Vries, 2007). The significance of this finding in terms of IHEs being able to preserve the public trust cannot be overstated. While one potential outcome, an increase of regulatory control, is unsavory, the impact of another – government and industry finding alternative providers of knowledge and technological development – would be catastrophic.

What it is about IHEs that allows, or even drives, individuals in universities to misbehave is as yet an open question. One aspect of organizational dynamics of current interest to researchers and compliance practitioners is the *locus of influence* involved in the formation of normative values. The locus of influence is the level at which an individual forms an understanding of what is accepted and allowable within the organization. It is thought that on

many ethical matters, this locus may be the academic department, but it is still not known what role the individual lab may play, or what types of decisions might be influenced at the numerous levels of institutional hierarchy. Indeed, it is possible that some loci of influence exist completely outside of the recognized organizational hierarchy of the institution.

In this context, the experience of IHEs should be explored for clues into the processes that are at play in the development of normative values. As with the human body, testing while a system is under stress can provide useful insight into its weaknesses. Institutional systems are certainly under stress when misconduct has been alleged and investigated. In 2006, such an incident took place at a research university in the western U.S. A graduate student's work was alleged to have been misappropriated by the student's faculty mentor. The allegation was assessed, an inquiry was conducted, and finally an investigation ensued. As this incident has been evaluated over the two years since the institution's findings became final, an interesting phenomenon has been noted. Interviews of the respondent (who was charged with the misconduct), the student, and others in the lab show a pattern of behaviors and attitudes that indicate loyalty was a primary value held by individuals in the mentor's lab, which may have displaced other core values, such as integrity, disinterestedness or fairness.

Misconduct Investigation & Findings

The investigation found that the faculty member had plagiarized the words of the graduate student. In fact, the proposal submitted by the faculty mentor to a federal agency was a near-verbatim copy of one developed for a separate agency by the student with assistance and editing from several faculty and colleagues within the institution and elsewhere. The question might arise: could the professor and student not be co-authors? In this case, the student was writing a proposal for an initial post-doctoral position at another institution. It was the finding of the investigation that, while the intellectual provenance of the student's proposal could not absolutely be said to be only the student's, the words were primarily the student's, and the student should at least have been shown as a co-author of the mentor's proposal.

As the inquiry and investigation teams did their work, the fact set developed as follows: The student had worked with the mentor and several other faculty members on two papers that were published in high profile journals. The student was the first author on both of these publications, which were later included as two chapters of her dissertation. The student was pursuing a prestigious postdoctoral fellowship, and wrote the new proposal under the mentorship of a well-known scientist at a different institution. The proposal, however, was not funded, and the student left the institution for an unrelated postdoctoral position. Several months later the student received an email from her former mentor, telling her that "after some re-writing, I submitted to [a federal agency] the [postdoctoral] proposal that you wrote to work in Dr. [redacted] lab." This email set off a chain of events that culminated in an allegation of misconduct, not by the former student but by a former department head who had acted as a second (and more attentive) mentor to the student.

The faculty mentor (who became the respondent in the misconduct case) was scheduled at that time to take a sabbatical leave. Eventually, the respondent resigned from the institution and took a position at the sabbatical institution. However, he was available for interviews, as were his subordinates in the lab. As interviews progressed, an unexpected picture unfolded that indicated that normative values as generally presented in RCR instructional materials and as expressed in the literature (Macrina, 2007) were not well understood or accepted within the

group. As an example, one of the lab workers familiar with the writing of the first publication had this to say about the question of authorship:

> A day or two before she sent it off to [the respondent] when it was getting close to the submission time, then this whole thing came out about the authorship. You know she told us that [the respondent] wasn't going to be the last author. And I was really surprised. But you know, I assumed, you know, I was like, "Oh, well [the department head] is going to be the last author." And then she told me, "No. His son is the last author." And I said, "Did he even contribute anything?" Umm, and she's like, "Oh yeah. You know, this data here." And I said, "Oh, that's not from [the department head's] lab?" And so it was just a whole fiasco. I knew this was bad. (Inquiry Transcript, 12 JUL 2006 (protected). pp 28-29)

Two important misconceptions are disclosed in this response. First, it is clear that authorship order had not been discussed early in the process, and that it was not unusual that those decisions would be left to the end of the writing process. In contrast, the consensus among both RCR authors and practitioners is that authorship should be established at the beginning, rather than at the end, of the collaborative work. Second, there seemed to be an expectation that the last author (who in that discipline was normally the senior scientist responsible for the work) would be the lab director. The interviewee is asking an important question – did the named last author contribute anything? But the thought process she exhibits presupposes that the head of one of the labs is going to be the last author. While most publication guides do not contain a fixed rule for who will be the last (or responsible, or corresponding) author, there is strong consensus that roles should be dependent first on meeting all of the established authorship criteria, and then on specific contribution to the work. Organizational position should not play a role.

The understanding within the lab in terms of the connection between lab organization and authorship is further illuminated in this exchange with a different employee. Speaking about the participation of the department head and his son, this employee recalled:

> Postdoc: They did a tremendous amount more to this one paper that I am aware of. To the point where one of them thought it was only fair for him to be first author. And he, accordingly to [the student], he essentially wrote the NSF paper.
>
> CM (Comm. member): Okay, this is the [first published] paper?
>
> Postdoc: This is the [first published] paper, in which [the respondent] was asked not to be last author. … To have [him] not last author when he was the one whose lab space she was using, and whose ideas she was using, and whose grant she was being paid by seemed wrong to me, and I told her at the time. And she still put [the department head's son] as last author.
>
> CM: It was her decision to make?

Postdoc: Oh yes. Yes. She told me that she had talked to [the department head] and [he] had said, "Yeah, it's your decision. You are first author on the paper, you decide." But I thought it was highly irregular for [the student] to ask for that because in our field… if you go to … any of the citation indexes, they index the paper by the first author and the last author. The first author is the one who wrote the paper, and the last author is the one whose lab it was where the experiment was conducted. (Inquiry Transcript, 14 DEC 06 (protected). p5.)

This response reinforces not only the concept that directing the lab was viewed as an entitlement for authorship, but also that it was common in the department, as well as the lab, for authorship to be settled without consultation among the authors, and at the end of the writing process.

That potentially inappropriate attribution was an established pattern within the group is best illustrated elsewhere in this interview:

CM: I need to know what you do there…just to get a feel for why you might even be relevant in this.

Postdoc: Oh well. I do research. I write papers. I write grants for [the respondent's] name … Under [his] name to be P.I. … (Ibid. p1)

In fact, the idea that she would write proposals without receiving credit seemed so routine to her that she commented again later:

Postdoc: I've written at least three grants that were my own work. I got some help from [the respondent], but really, not much help. In fact, I got more help from [my husband (a professor in another department)]. And they went under his name as if he had written them. I feel since [the respondent] didn't ask me, "do I want a piece of this?" that I might have a claim for plagiarism too if I decided I wanted to do that. But it's such an accepted practice…

CM: Were you funded?

Postdoc: That's true, I was on these grants. You're right. (Ibid. p8)

This last exchange reveals a kind of quid-pro-quo attitude that seems to reinforce the idea that the individuals involved in the lab were used to working on a group level of analysis. This employee, who described herself as "an eternal postdoc," had a particular understanding of her role within the group, and was acclimated to filling that role as long as she was being compensated as she expected. Her recognition that once someone had left the group there might need to be some new relationship appears novel to her. When looking at this through a more principle-driven lens, it seems relatively clear that this employee would indeed be able to claim she had been plagiarized.

What causes ethical climates like the one exhibited in this case to form and to resist change? One might expect that behaviors and attitudes exhibited in this lab would reflect behaviors and attitudes throughout the university, or at least the department. However,

interviews with other faculty members in the department, including the current department head, indicated that this lab was an outlier. The implication for any university administrator hoping to socialize correct normative values is chilling. Apparently, higher education systems allow for small pockets of individuals to build microsystems that are autonomous and insular where surrogate value systems are able to be sustained. In the case at hand, the lab group established and sustained an ethical climate that was reflective of neither the university nor the college and department with which it was associated. One helpful way to express this anomaly is that the group was substituting surrogate values for normative values. For example, loyalty may have been a core value accepted within the group, organized around the lab director whose choice of subordinates may have reinforced the system dynamics. Loyalty is clearly not a bad attribute, but it may not be the ideal attribute in a system whose social capital is based on its disinterested truth-seeking and freedom of inquiry.

Loyalty – in Business, and in the Academy

Loyalty is a value that many business owners prize among their employees. Huntsman (2005) describes his expectations of employees as leader of Huntsman Chemical. In this passage, Huntsman's company was in trouble in 2001, along with the whole petrochemical industry:

> We were on the financial precipice. Internally I was discouraged, but tried not to show it.
>
> Few colleagues believed I could slay the economic dragons besieging us. One senior officer came to me and said that if I did not seek bankruptcy protection, he would have to leave the company. His expression in favor of bankruptcy didn't bother me. He was there, after all, to offer advice, which he did. He took it a step further when he said he would have to leave Huntsman if I did not follow the route he recommended. He no longer shared my values. When that occurs with an advisor or officer, we part ways – as we did in this case….
>
> If a member of your team no longer believes you can attain success, that person – or you – should leave. (pp 98-99)

Huntsman's approach is measured. His expectation of employees is that they will share opinions openly, but in the end will line up in file behind the leader. The aspect of Huntsman's language that is of perhaps most interest is the use of the first-person. There is no question in his mind of who is going to slay the dragons. That job falls to him. And because of this, Huntsman also expects to be able to set the value system. They were not the company's values that the advisor was rejecting, they were Huntsman's personal values. It is a system that works well for businesses when the owner is right, but not as well when he is wrong. Nevertheless, when a business has an owner, it would be hard to argue that he or she does not have the inherent right to set the course. In institutions of higher education, can the same be said of lab directors? Lab directors see themselves largely in the same role as business owners. They have ultimate responsibility for identifying and capturing revenue, and for ensuring adequate performance in

the lab's research to compete. Yet they operate within a system that supports a different mission and set of objectives than do commercial firms.

The truth is the two systems are more similar than they are different, and they can both support a range of ethical climates. Companies in different commercial sectors tend to foster ethical climates that match their disciplines. Hospitals tend more toward climates of Efficiency or Social Responsibility, as they are comfortable in an environment where services to society with limited resources are paramount. Seasoned entrepreneurs are more likely to run companies whose ethical climates could be characterized as Team Interest or Company Profit. The problem in academic settings is that virtually all disciplines are represented, and socialization of employees, as discussed previously, comes from so many levels. It is therefore relatively easy for a rogue lab director to operate in dangerous waters relatively undetected. This is illustrated in the investigation committee's interview with the former department head (who brought the allegation). At the beginning of the interview, when asked about his relationship with the respondent he says: "I collaborated closely with him. We did research together, successfully (very successfully) I would say, over a number of years. I've eaten dinner at his house; he's eaten dinner at my house. I like the hell out of him." Yet as close as that relationship appears to be, both as a colleague and as a department head, he was still surprised completely by the respondent's behavior in this situation:

> CM: The question is, if you had read the proposal at the time [and recognized it was a verbatim copy of the student's proposal], what would have been the reaction?
>
> Department Head: If I had known he was turning around the proposal that [the student] had submitted? …actually if he had shown me that, I would have said, "[Redacted] you can't do this." (Inquiry Transcript, 06 JUN 06 (protected). p13.)

Insularity of work environments, even among colleagues who work closely together, may be a natural outgrowth of academic freedom. There is a centuries-long tradition of faculty being allowed to pursue their own ideas in their own ways. This is part of what is at work in this misconduct case, but there are other factors at play as well.

Surrogate values

Universities are founded on principles of freedom of inquiry and scholarly integrity, or "disinterestedness." Any value that is substituted for either of these has the potential to allow ethical gaps. In addition to these overarching values, there are additional values that through normative consensus or regulation also come to be expected. For example, core values in the protection of human subjects are respect for persons, beneficence and justice. The institutional example explored here illustrates that it is not always a value (such as loyalty) in isolation that creates the ethical lapse. It may be the value in conjunction with inconsistency in ethical climates within the broader organization. While we do not have data available to prove this point, it may be that the respondent was acting at an individual level of analysis, and through a kind of organizational co-dependence creating an ethical climate in the lab that would support his egoistic objectives. In the interview with the postdoctoral employee the tension between the

personal preferences and the group-driven climate was clear. A committee member asked her if she could corroborate the respondent's story. She responded:

> Postdoc: The only thing that I can offer you folks at this point, if you're interested, is as a sort of a character witness. I know both of them. I've known both of them for the same length of time and I have an opinion as to if there were direct conflicting accounts, whom I would believe.
>
> CM: What is that?
>
> Postdoc: I would believe [the respondent]. And I am no friend of [the respondent]. [He] and I have had plenty clashes on the way he manages me…. You know, we have been basically at each other's throats. But I just, I believe him. I don't think he's the kind of person that would lie. Especially this big of a lie. And I just can't step aside and let it happen. Even though there's a part of me that said, "Well, he can be a real son of a bitch and I am glad somebody finally got him." … But the truth is the truth. I don't believe he did this (pause) intentionally. (Inquiry Transcript, 14 DEC 06 (protected). p9)

Another misalignment in ethical climates also came into focus with the former department head, who referred to rules and consequences when talking about his motivation to bring an allegation of plagiarism at the institutional level, rather than try to work things out through back-channels:

> I thought it was my obligation to report this. I was afraid by going to [the respondent] I could jeopardize the whole federal grant position of the university (pause), because I would view that as a cover up.… I think at the stage it was, I didn't have a choice. I immediately went to my Department Head and we contacted the Research Office, and the advice there was we were doing the appropriate thing. (Inquiry Transcript, 06 JUN 06 (protected). p14)

The department head was working on a level of analysis somewhat broader than the respondent, but more importantly applying a very different set of ethical criteria, making it difficult for each of them to understand and accept the other's moral reasoning base. These mismatches in both the level of analysis and the ethical criteria may be very important in understanding why incomplete training in research ethics may lead to increases in the incidence of research misbehaviors.

Conclusions and Future Directions

This paper has aimed to provide some potentially fruitful paths in two related areas. First, an evaluation of the ethical climates in research settings and consideration of the effects of potential mismatches of ethical criteria and/or levels of analysis should become a focus in research on Research Integrity. Loyalty has been explored here as a surrogate value that, taken in conjunction with these mismatches, may play a role in allowing ethical lapses in research

environments. What other surrogates may exist, and what other interactions might predictably lead to research misbehavior? This is a question for further qualitative exploration.

Second, the use of transcripts from investigative interviews provides unvarnished oral data that reveal important insights into both individual motivations and group dynamics. By evaluating these transcripts, perhaps using coding systems for the use of words that indicate the presence of surrogate values or ethical climate mismatches, organizational behaviorists and sociologists could develop a more complete picture of the conditions that lead to research misbehaviors.

In addition, the work suggested in *Integrity in Scientific Research* by the Institute of Medicine – applying the ethical climates model to the academy and developing tools to identify the ethical climates at play in institutions of higher education – should be completed and disseminated among IHEs.

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