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The question of rhetorical agency in scientific communication: a case study

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Abstract: Though rhetorical scholars have argued that scientific inquiry does not lack human agency, our knowledge of how agency is enacted in scientific texts is blurred. Using abstracts from the *American Journal of Bioethics*, this paper argues and demonstrates how our understanding of rhetorical agency can be enhanced through the neglected theory of tagmemics. Intended as a heuristic, the paper argues that contributors to the *American Journal of Bioethics* are capable of constructing individual responsible agency that is in tandem with rhetorical choices they make within their community of consensus.

Keywords: rhetoric, agency, scientific communication, bioethics, tagmemics

1. Introduction

In a recent issue of *College Composition and Communication*, Cooper (2011) readdressed the problem of human agency in the culture of science. She explained agency as the process that enables human actors, such as scientists, to create meanings through acting into the world and changing their structure in response to the perceived consequences of their actions[1]. She urged human subjects to be responsible in their choices despite the challenges confronting us in a modernist/postmodernist society. Scholars of rhetoric of science will agree with Cooper (2011) that scientific texts, for instance, express the agency of their writers despite their denial of it. However, there has been little investigation of this issue from an empirical standpoint (see Reyman 2013). Drawing on bioethics, this paper explores how rhetorical agency is enacted in research abstracts of the *American Journal of Bioethics*. The paper is inspired by an earlier study examining dominant rhetorical strategies in medical informed consent forms approved by the United States Food and Drug Administration (Coker 2013). Broadly construed, bioethics is the study of ethical dilemmas confronting medical practice and biomedical research (see Emanuel et al. 2008). Concerned with "physical and mental but not necessarily with social well-being" (Levine 2008: 213), biomedical research is premised on *informed consent*, the purpose of which is to ensure that research participants are properly informed of the risks involved in the study. A guarantee of minimal risk means that the biomedical research community seeks to erase personal biases and human agency in order to maintain the highest possible standards (see Emanuel et al. 2008). As I will demonstrate, this cultural practice of neutrality is, as has been argued, problematic because the abstracts I analyzed show a high proclivity to rhetorical agency.

There are six distinct parts to the remainder of this paper. In the first section, I start by situating the scholarship specifically within conversations about genre and rhetorical agency in the rhetoric of science. Next, I turn the spotlight on the theory of tagmemics, focusing on its potential significance to work in the rhetoric of science. The third section discusses the methodology employed in gathering data. In the fourth strand, I respond to Turnbull's (2004) call to "the rhetorical turn" by showing how tagmemics can offer a means to empirically study rhetorical agency in ways that can enhance the understanding of the relationship between genre and agency. The final part of the paper attempts to

[1] She argued that responsible rhetorical agency entails being open to and responsive to the meanings of concrete others, and thus seeing persuasion as an invitation to listeners as also always agents in persuasion. Drawing on neurophenomenology, she strongly insists that agency enables writers to recognize their rhetorical acts, whether conscious or non-conscious, as acts that make them who they are, that affect others, and that can contribute to the common good.

provide useful implications for future work and a heuristic in relation to the writing process.

2. Scientific genre and the notion of agency

Scientific genres foreground the relationship between disciplinary settings and individuals' rhetorical acts. Rhetorical acts shape what the scientific community believes to be true, and are constitutive of its authoritative knowledge. The effect is, nonetheless, dialectic as scientific knowledge equally shapes its rhetorical acts. Construed as such, genres perform a unique gatekeeping role in the sense that one cannot be a member of the community without an active display of the knowledge privileged in the field (for a more comprehensive discussion on scientific genre from a linguistic perspective, see Salager-Meyer 1994, 2000; Eggins 2004). Genres confer membership status on human agents (cf. Banks 2005), and they institutionalize and enable distribution of knowledge and power, often in ways that limit access to knowledge and power to a select group (Jack 2009). To put it crudely, scientific genres "help to reinforce and reproduce 'discourse regulations' which determine what *can* and *cannot* be discussed, as well as what *might* and *must* be discussed" (8 [emphasis mine]). For Jack (2009), genres, and for that matter the genres privileged in science, support institutional power and silence alternative perspectives. She draws attention to the ethnographic works of how women such as Tsuchiyama and Hankey were not considered "scientific" because their works lacked temporal distancing, indirect reporting, and a strict adherence to structure/chronology.

According to Jack (2009), these rhetorical choices effaced the agency of the women, and took away their identities. Their voices were not heard in the stories they themselves had created. In Jack's opinion, these women were virtually non-existent as they wrote away their own stories from the privileged positivist perspective of reality. Writing against a backdrop of the marginalization of women, Jack (2009) notes that even though there had been a shift in the role women played in the war, their position and participation in science, nonetheless, were relegated to the backstage. The language and culture of science in respect of the active engagement of female scientists was thus bellicose. But the real danger had to do with the fact that many female scientists had to adopt metistic strategies which, from where we stand, may not have appeared too self-gratifying because "those who succeeded during this period did so largely by internalizing dominant scientific values and discourses, not by challenging them" (Jack 2009: 3).

Jack (2009) argues that scientific genres are mainly constructed around four main themes: objectivity, technical rationality, gender neutrality, and expertise. For Jack (2009), it does not suffice to clean up micro-linguistic breaches of scientific texts by doing away with grammar, terminology, sexist, and metaphorical language insensitive to women. She adds that the real stakes lie in the way scientific genres are rhetorically presented especially in research articles, and indisputably form part of what Latour and Woolgar (1979) term "the cycle of credit" (Jack 2009: 8). She places much emphasis on the genre of scientific texts because they are a site of ideological contestation and power struggle. As she notes, "The concept of genre is useful because it helps us to understand how typified rhetorical actions reproduce ideologies and power relations in scientific culture" (Jack 2009: 6).

Scientific discourse is also kairotic. Much of the field's progress, scholars have observed, is marked by the recognition and articulation of exigencies to solve human and material problems. For example, drawing on a number of real-life cases especially the 1981 Japanese Fifth Generation Computer System Project program, Miller (1984) makes a strong case for the role of kairos in science and technology. According to her, the panic that greeted the West over China's industrial revolution and progress needs to be situated within the context of a certain kairos. She means to say that the Japanese chanced upon the opportune moment in the discourse of computing and information technology to launch the fifth generation of computers they themselves could not manage to bring to fruition. An important lesson to be drawn from her discussion is that kairos is the enabling force for determining what she calls "technological forecasting". It appears, according to Miller (1984), that those who have foresight of the place of kairos in the rhetoric of science may not be taken by events,

as they could properly interpret the ebb and flow of events in that discourse. She also notes that it is knowledge of kairos that enables us to see quite clearly the difference between the rhetoric of science and the rhetoric of technology. For her the rhetoric of science is devoted to understanding the knowledge-making claims of science while rhetoric of technology explains how this knowledge is put into practice. Rhetoric of technology, she continues, should be seen as distinct from the former because it accounts for how "the direct use of the universal knowledge created by science to solve specific practical problems" (Miller 1984: 92). Thus, she argues that rhetoric of science 'constrains', whereas rhetoric of technology 'enables.'

This is exactly the point that Kolodziejski (2014) makes. In this study of harms of hedging in scientific discourse, she argues that the very practices of scientific publishing help to create a scientifically acceptable text but also leave discursive gaps. The gaps, according to her, allow for what she calls "alternate interpretations" as scientific texts pass from technical to public contexts (Kolodziejski 2014: 165). This translation of the genre, she claims, results in insufficiently supported claims of scientific knowledge among public consumers of science. Her account, however, runs counter to Fahnestock's (1999) work. Using articles from two publications of the American Association for the Advancement of Science, Fahnestock (1999) reveals the changes that inevitably occur in "information" as it passes from the scientific community to the public. She argues that accommodation of scientific texts also implies a recognition of change in audience and genre because "science accommodations are primarily epideictic", and that "celebrations of science, and shifts in wording between comparable statements in matched articles reveal changes made to conform to … popularized science" (Fahnestock 1999: 275). Unlike Kolodziesjki (2014), Fahenstock's (1999) view of accommodated scientific genres is positive because it emphasizes the uniqueness, rarity, originality of observations, and removes hedging, thus conferring a high ethos on the reported facts.

In all these discussions, one concern rhetoricians have expressed about science is that its genres place little emphasis on rhetorical agency. Although the notion of 'agency' is polysemous, and can refer to invention, strategies, authorship, institutional power, identity, subjectivity, practices, and subject positions, among others (e.g. Campbell 2005), it is often invoked to mean the capacity of individuals to assert their autonomy and make rational choices (Geisler 2004). In her 2004 report, Geisler (2014) called on fellow rhetoricians to move beyond discourses of who has access to agency in order to consider how agency is obtained. She argues that agency is a complex process by which a communicative act materializes out of a combination of individual will and social circumstances. Flynn et al. (2012) make a similar point, arguing that agency is capable of enacting resilience, in that "resilience resonates with concerns about feminist agency and rhetorical action in the face of material and social forces" (Flynn et al. 2012: 2). They conceive of resilience (and agency, for that matter) as action-oriented, and as a phenomenon that ought to be theorized as rhetorical, relational, and contextual. For one, agency is neither given nor static but is fluid and contingent on context.

Interestingly, two opposing traditions seem to have materialized on the subject. The first relates to the classical rhetorical approach which focuses on the rhetor's capacity to act, while the second takes a post-modernist perspective that claims that individual agency is socially constructed, illusory, and rhizomatic to the core. Work of the sort is a testament to the crisis of representation. But within the circumference of rhetoric, agency is often theorized as being constructed in texts and being able to result in action. According to Koerber (2006), we must account for rhetorical agency without reducing such agency either to the occupation of preexisting subject positions or to strategic, subject-centered language use that enables transcendence of such predefined positions. She explains:

Although we might feel compelled to choose between privileging individual agency or ideological force, my analysis reinforces the idea that the two are inextricably linked and adds to our understanding by taking a close look at the relationship between the rhetorical agency involved in acts of resistance and the ultimate outcomes of such acts (Koerber 2006: 88).

In studying what she calls the disciplinary rhetorics of breastfeeding, Koerber cites the tension

between how rhetorical agency is traditionally defined, and "what, in value, it ought to be" (2006: 94). She describes a disciplinary rhetoric as the discourse of a particular normative culture, such as medical discourse, where agency is assumed to lie in the rhetorical acts of the speaker or writer. Koerber (2006) argues, however, that such an assumption limits our understanding of rhetorical agency. Or as Villadsen (2008) points out,

> When we speak of rhetorical agency as something that can be possessed, we are prone to get trapped in the very mode of thinking that the concept was first conceived as an antidote for—namely, a relationship between agent and agency resembling a more traditional modern or less instrumental use of rhetoric (28).

Perspicuity thus needs a place in considering rhetorical agency in order to bar the possibility of theorizing it as an either/or. Rather, agency ought to be seen as an ongoing work of interruptions, identity, negotiations, and contestations straddling the subject/structure axes (Geisler 2004; Modesti 2008; Turnbull 2004). A growing body of works has also appropriated the concept to research in rhetorical institutionalism first pioneered by Mats Alvesson in 1993 (Green & Li 2011).

It is clear that agency signals the success of human agents. The symbolic role of language in the creation of agency cannot be disputed. Often agency manifests itself in people's use of linguistic resources such as questioning (Turnbull 2004), negotiation (Koerber 2006), choice and evaluation (Campbell 2005), and has been examined from a number of theoretical perspectives such as textual analysis, genre analysis, and activity theory (Luzon 2005; Cross & Oppenheim 2006). Agency can also be signaled by such discursive moves as discourse markers, grammatical limiters, and question tags. A critical study of rhetorical agency, then, can be conducted within the framework of tagmemics. This is what I turn to in the next section.

3. Tagmemics and its relevance in the rhetoric of science

Tagmemics is a theory developed jointly by Richard Young, Alton Becker, and Kenneth Pike in their seminal work *Rhetoric: Discovery and Change* (1970). Basically, linguistic in nature, the theory is primarily based on a trimodal principle which consists of contrast, range of variation, and distribution. Tagmemists such as Becker, Young and Vitanza insist that for any linguistic analysis to be meaningful, and hopefully exhaustive, all the three levels of inquiry ought to be attended to. They write, "The principle of trimodalism gives the analyst both a procedure for approaching new problems and a safeguard against a limited view of the data (quoted in Winterowd 1975: 133).

A later version of the theory, however, accounts for how sentential elements (such as those of a research abstract) combine to form what Becker and Young term "the universe of discourse" or briefly a text. In an earlier work, Vitanza (1979) argued that much work in tagmemics has ignored the analysis of the patterns of the expository paragraph—and we reckon that an abstract is essentially a paragraph (see also Odell 1978; Winterowd 1975). For Vitanza (1979), tagmemics should also deal with the usefulness of the three structural patterns developed by Pike and his colleagues, namely (a) Topic, Restriction, and Illustration (TRI); (b) Problem and Solution (PS); and Question and Answer (QA), taking into account points of permutation. Nonetheless, he strongly decried the idea of conceiving of these patterns "as a rule-governed or mechanical procedure for organizing information" (Vitanza 1975: 274). Although he did not explicitly mention the subject of agency, this, presumably, is what he was getting at by insisting that the model is not an algorithm, but instead a model that is responsive to "countless number of forms, depending on the rhetorical strategy a writer might choose…" (274). And so, for Vitanza (1979), as for other tagmemists, the writing process is a heuristic, a discovery process. This is not to say that the theory is above criticism (see Odell 1978).

For one, tagmemics offers scholars in rhetoric of science another pair of sharp lenses for seeing through the dense layers of contemporary scientific texts. The theory is intended to add to the

analytical toolkit proposed by Selzer (1993). It is also a responsive framework for studying rhetoric from an interdisciplinary perspective (cf. Littlefield and Johnson 2012). A tagmemically informed rhetoric of science, as Winterowd (1975) attests, is capable of standing somewhere between the rigorous theories of science and the almost intuitive theories of the humanities. What is most startling about tagmemics is its linguistic agility. If we still hold that one of the chief modes of persuasion is language, then we cannot be wrong to call back to life a theory that pays particular attention to both rhetoric and language. Recognition of tagmemics in ongoing work in rhetoric of science is recognition of the difficulty of separating rhetoric and language as distinct fields. More to the point, what is most fascinating about tagmemic theory is that it pays tribute to the Aristotelian conception of rhetoric in a very special way. The theory valorizes the idea of invention as one of its cardinal principles, and holds that the act of writing any type of genre, in our case a scientific text, can hardly be productive without recourse to rhetorical invention. Doing rhetoric of science through tagmemics is to stay true to the tenets upheld in classical rhetoric. Becker and Young affirm:

> We believe that the procedures the linguist uses in analyzing and describing a language are in some important ways like the procedures a writer uses in planning and writing a composition, and hence that *tagmemic theory can provide the basis for a new approach to rhetoric.* Tagmemic discovery procedures can provide a heuristic comparable to the Aristotelian system of invention; the tagmemic descriptive model can give us a vehicle for describing rhetorical patterns (cited in Winterowd 1975 [emphasis mine]).

In the context of research abstracts, tagmemic theory can enable us to map out how rhetorical agency is created in the abstracts composed by contributors to scientific journals. Unlike in contemporary genre analysis with its emphasis on identifying the prototypical structures of abstracts and their unique macro- and micro-moves, a tagmemic analysis of genres, on the other hand, is useful for understanding how agency could be observed in the ways writers rhetorically vary and present their arguments based on the rhetorical choices they make.

4. Data and methods

As noted early on in the introduction of this paper, the abstracts selected for analysis in this study were collected from the *American Journal of Bioethics*, one of the leading journals in the field of medical ethics. Though I initially decided to randomly sample a small number of 50 abstracts from the "Most Widely Read" and "Most Widely Cited" sections of the journal, I proceeded on the basis of saturation instead of representativeness. Useful in exploratory studies such as the present research, saturation enables a meticulous researcher to understand the point at which collecting new data becomes redundant (Bryant & Charmaz 2007). Its challenge, however, is that it can be arbitrarily determined. To overcome this methodological bias, I engaged two colleagues to critically examine my coding schemes and data in order to achieve a fair level of inter-coder reliability.

Abstracts in the field of bioethics were selected because of my formative interest in medical communication. As pointed out earlier in the background to this study, I have previously examined the persuasiveness of informed consent forms approved by the American Food and Drug Association. Here, I was interested in understanding how the rhetoric of the consent forms highlights such ethical concerns as participant autonomy, voluntariness, and minimal risks vis-à-vis subjects' decisions to participate in the trials (Coker 2013). To this end I sought to discover the kinds of rhetorical strategies that are employed in the consent forms and the strategies employed to enhance the ethical considerations in the forms. It was, thus, in the process of analyzing these concerns that I began to observe the role agency plays in the scientific communication of contributors to the *American Journal of Bioethics*.

5. Doing a tagmemic analysis: findings and discussion

It may be worth re-emphasizing that the present study is a mini data analysis. Its basic goal is to demonstrate the usefulness of tagmemic theory in the analysis of scientific texts. The discussion is by no means comprehensive but exploratory, rather, being essentially a heuristic for further research. Available evidence from the data points to an emerging generic structure displayed by the abstracts. The analysis shows that the majority of the abstracts had a Topicality-Restriction-Instantiation (TRI) structure. Most of them were written by the contributors, using Topicality-Restriction-Instantiation tagmemes. Vitanza (1979), however, cautions that the purpose of the theory is not to provide a grammar of how things ought to be, and that "there is no reason to limit the patterns to TRI/PS; there are other patterns in other forms of discourse as well as in exposition, which await their identification and our use" (274). Before showing how some contributors slightly deviated from the generic TRI structure, let us discuss how the structure was realized in selected abstracts of the *American Journal of Bioethics* (henceforth *AJOB*).

Analysis of the data set shows that the topicality of most *AJOB* abstracts is usually made up of single (and in some cases) sentences with a simple syntax. In this tagmeme, writers aim at providing a kind of context and background information to their research. Given that contributions to the *AJOB* fall under two major categories—theoretical/conceptual and empirical—the abstracts were also written in much the same way. In this case, topical (or topic) sentences were written to cover any one of them. But it appears that topical sentences for empirical studies were fairly simple and straight-forward compared to conceptual topical sentences. This may be due to the ample space devoted to a description of the methods involved in conducting the studies by individual contributors. In comparison, conceptual topical sentences were interestingly complex in their syntactic structures, and sometimes made up of more than one sentence. We may say that it is partly due to the difficulty of conveying the theoretical astuteness required by an author in expressing themselves on a thorny bioethical concern. The latter set, however, dominates in the journal. Below are examples of topical sentences spanning the conceptual/empirical divide:

Text 1

> The term body integrity identity disorder (BIID) describes the extremely rare phenomenon of persons who desire the amputation of one or more healthy limbs or who desire a paralysis (Müller 2009)[2].

This is an example of a conceptual topical sentence excerpted from Katz et al. (2003):

> Much attention has been focused in recent years on the ethical acceptability of physicians accepting gifts from drug companies. Professional guidelines recognize industry gifts as a conflict of interest and establish thresholds prohibiting the exchange of large gifts while expressing allowing for the exchange of small gifts such as pens, note pads, and coffee.

In respect of TRI structure, some abstracts will be reproduced verbatim below in order to provide evidence of the way the structure is realized. This means that their internal structures usually contained topicality, restriction, and instantiation. Below is the abstract of Franklin G. Miller & Luana Colloca (2009).

[2] Bibliographical details are available in "List of sample texts".

> Motivations for placebo treatments include complying with patient expectations and promoting a placebo effect. In this article, we focus on two key empirical questions that must be addressed in order to assess the ethical legitimacy of placebo treatments in clinical practice: 1) do placebo treatments have the potential to produce clinically significant benefit? and 2) can placebo treatments be effective in promoting a therapeutic placebo response without the use of deception? We examine evidence from clinical trials and laboratory experiments bearing on these two questions. The conclusion is reached that based on currently available evidence, it is premature to judge whether placebo treatments are ethically justifiable, with the possible exception of acupuncture for pain relief.

A careful analysis of the above abstract, using the TRI framework, reveals the following breakdown:

Text 2

Topicality: Motivations for placebo treatments include complying with patient expectations and promoting a placebo effect.

Restriction: In this article, we focus on two key empirical questions that must be addressed in order to assess the ethical legitimacy of placebo treatments in clinical practice: 1) do placebo treatments have the potential to produce clinically significant benefit? and 2) can placebo treatments be effective in promoting a therapeutic placebo response without the use of deception?

Instantiation: We examine evidence from clinical trials and laboratory experiments bearing on these two questions. The conclusion is reached that based on currently available evidence, it is premature to judge whether placebo treatments are ethically justifiable, with the possible exception of acupuncture for pain relief.

From the breakdown, we reckon that the topicality of a research abstract performs at least two main rhetorical functions. It provides a situational context within which the current article should be read and understood, and it announces the subject of the article. Restriction, on the other hand, delimits the scope subject, and also clearly states the objectives of the article. This is introduced by the phrase "In this article, we focus…" (Miller & Colloca 2009). When authors provide an instantiation of their major concerns, this amounts to providing evidence of the subject matter in much more detail, as in Miller and Colloca's (2009) abstract. It should be noted that the instantiation section, or what Swales (1990) calls the move, often specifies the article's results/findings, thoughts, or claims in a much more elaborate way. Further, when authors instantiate their concerns, they sometimes go a step further to show the implications of their findings or claims, or make suggestions to be followed by the researchers in their community of consensus. In Wolpe et al. (2005), this idea is made clearer:

Text 3

Topicality: Detection of deception and confirmation of truth telling with conventional polygraphy raised a host of ethical and ethical issues.

Restriction: Recently, newer methods of electromagnetic signals from the brain show promise in permitting the detection of deception or truth telling. Some are even being promoted as more accurate than conventional polygraphy. While the new technologies raise issues of personal privacy, acceptable forensic application, and other social issues, the

focus of this paper is the technical limitation of the developing technology.

Instantiation: Those limitations include the measurement validity of the new technologies, which remains largely unknown. Another set of questions pertains to the psychological paradigms used to model or constrain the target behavior. Finally, there is little standardization in the field, and the vulnerability of the techniques to countermeasures is unknown. *Premature application of these technologies outside of research settings should be resisted, and the social conversation about the appropriate parameters of its civil, forensic, and security use should begin* [emphasis mine].

In Text 3, the simple sentence "Detection of deception and confirmation of truth telling with conventional polygraphy raised a host of ethical and ethical issues" announces the authors' concern. We know from this topicality that the abstract deals with ethical issues about detection of truth telling. This subject is narrowed down by its restrictive sentences as shown above, as Wolpe et al. (2005) focus on recent electromagnetic methods associated with the brain in detecting lies. It is also restrictive in the sense that it adds color to its argument on the ethics of lie detection. The arguments are then clarified in the instantiation section, and also presented with the authors' final claim on the polemic. The sentences in italics are my own attempt to show the rhetoric involved in instantiating.

The analysis thus far points to rhetorical choices some authors take in presenting their arguments to the communities they belong. It illustrates that contributors to the *AJOB* do not always stick to the TRI structure as though it were a matter of convention. Rather there were instances in the abstracts that substantially violate, but nonetheless do not deviate from, the core of the structure. Some abstracts were interesting in some ways. There were times when the structure of the abstracts exhibited a problem-solution (PS) structure rather than the usual TRI-structure, or exhibited a structure with the I-move containing a solution component (to be explained below). What these analytical results reflect is that writers make rhetorical choices contingent upon the rhetorical exigencies of their arguments. What is more, some abstracts did not contain one or more of the TRI elements. In some instances, some had a TR, RI, or TI structure. Meanwhile, three basic kinds of topicality in *AJOB* abstracts can be inferred from the data, viz. (a) problem-driven topicality; (b) solution-driven topicality; and (c) goal-driven topicality.

4.1 Problem-driven topicality

Research abstracts with problem-driven topicality, as the name suggests, are abstracts written to identify a research gap in the field (of bioethics). In most cases, the problems are clearly stated in one or two sentences from the very beginning of the abstract. The problem-driven topicality is qualitatively either empirical or conceptual in nature, although the latter proved dominant. Below is an example from Autumn Fiester (2012):

Text 4

Topicality: Between 15% and 60% of patients are considered "difficult" by treating physicians. Patient psychiatry pathology is the conventional explanation for why patients are deemed "difficult". But the prevalence of the problem suggests the possibility of a less pathological cause.

Restriction: I argue that the phenomenon can be better explained as a response to problematic interactions related to health care delivery. If there are grounds to reconceive the "difficult" patient as reacting to the perception of ill treatment, then there is an ethical obligation to address this perception of harm. Resolution of such

conflicts currently lies with the provider and patient.

Instantiation: But the ethical stakes place these conflicts into the province of the ethics consult service. As the resource for addressing ethical dilemmas, there is a moral mandate to offer assistance in the resolution of these ethically charged conflicts that is no less pressing than more familiar terrain of clinical ethics consultation.

A second look at this abstract reveals that the problem identified in the topicality element is in fact the *topos* of the author's argument. It is not then surprising that in the instantiation column we are offered what could be perceived as the author's view of overcoming the challenge in the field—that is, how to deal with what he terms "difficult" psychiatric patients. He writes, "As the resource for addressing ethical dilemmas, there is a moral mandate to offer assistance in the resolution of these ethically charged conflicts that is no less pressing than more familiar terrain of clinical ethics consultation" (Fiester 2012: 2). Below is another example of a problem-driven topicality taken from Howard Brody (2011).

Text 5

Topicality As the debate over how to manage or discourage physicians' financialconflicts of interest with the drug and medical device industries has become heated, critics have questioned or dismissed the concept of "conflict of interest" itself.

Restriction: A satisfactory definition relates conflict of interest about maintaining social trust and distinguishes between breaches of ethical duty and temptations to breach duty. Numerous objections to such a definition have been offered, none of which prevails on further analysis.

Instantiation: Those concerned about conflicts of interest have contributed to misunderstandings, however, by failing to demonstrate when social arrangements leading to temptations to breach duties are in themselves morally blameworthy. Clarifying "conflict of interest" is important if we are eventually going to develop productive modes of engagement between medicine and for-profit industry that avoid the serious ethical pitfalls now in evidence.

4.2 Solution-driven topicality

Solution-driven topicality is one that straight away announces the intent of the writer to solve or resolve a thorny ethical quandary. Solution-driven topicality is unique in the sense that authors who employ this style in their abstracts usually maintain their position by offering a solution, to a large extent, throughout the remainder of the abstract. As in the case of problem-driven topicalities, solution-driven topicalities are also either empirical or conceptual in scope. Ravitsky and Wilfond (2006) is a good example:

Text 6

Topicality: Investigators and institutional review boards should integrate plans about the appropriate disclosure of individual genetic results when designing research studies. The ethical principles of beneficence, respect, reciprocity, and justice provide justification for routinely offering results to research participants.

Restriction: We propose a *result-evaluation approach* that assesses the expected information and

the context of the study in order to decide whether results should be offered. According to this approach, the analytic validity and the clinical utility of a specific result determine whether it should be offered routinely. Different results may therefore require decisions even within the same study. We argue that the threshold of clinical utility for disclosing a result in a research study should be lower than the threshold used for clinical use of the same result.

Instantiation: The personal meaning of a result provides additional criteria for evaluation. Finally, the context of the study allows for a more nuanced analysis by addressing the investigators' capabilities for appropriate disclosure, participants' alternative access to the result, and their relationship with the investigators. This analysis shows that the same result may require different decisions in different contexts.

In the two-sentence topicality of the abstract in Text 6, we see in clear terms how Ravitsky and Wilfond (2006) from the beginning of the abstract put forward what they call a result-evaluation approach. Their argument is conveyed by the deontic modal *should*, signaling a move to providing a solution to lack of disclosure of research results to volunteers and/or research participants at the end of a study. Observations reveal that this type of topicality was, however, very anecdotal in the data. It may be so because the topicality section of research abstracts largely opens up the argument; it rarely proposes ways of dealing with an argument right away. In the example below (Murphy 2012), the solution is provided just after the first sentence that announces the context of the study, although that sentence and what follows act in concert to function as the solution-driven topicality of the abstract:

Text 7

Topicality: Some commentators have criticized bioethics as failing to engage religion both as a matter of theory and practice. Bioethics should work toward understanding the influence of religion as it represents people's beliefs and practices, but bioethics should nevertheless observe limits in regard to religion as it does its normative work.

Restriction: Irreligious skepticism toward religious views about health, health care practices and institutions, and responses to biomedical innovations can yield important benefits to the field. Irreligious skepticism makes it possible to raise questions that otherwise go unasked and to protect against the overreach of religion.

Instantiation: In this sense, bioethics needs a vigorous irreligious outlook every bit as much as it needs descriptive understandings of religion.

4.3 Goal-driven topicality

The analysis also shows that the topicality of some abstracts is goal-driven. A goal-driven topical sentence clearly states the author's objective. It does little to provide a theoretical, historical, or situational context as a rationale for the relevance of the research or article. The rhetorical significance of this is that, given that knowledge is understood within discourse communities, authors who compose their abstracts using goal-driven topicality may be convinced that their readers would be able to make the necessary connections between given and new information. As belonging to a common community of consensus, such authors may not see the need to expend energy reiterating the obvious. Rather, they delve straight away into their works by announcing the rationale for writing their articles or studies. This is evidenced in Text 8:

Text 8

Topicality: This article examines arguments concerning enhancement of human persons recently presented by Michael Sandel (2004) 3. Sandel, M. 2004. The case against perfection. The Atlantic Monthly, 293 (3): 51-62.

Restriction: Sandel claims, the desire for mastery motivates enhancement and whether such a desire could be grounds for its impermissibility. Section three considers how Sandel draws the distinction between treatment and enhancement, and the relation to nature that he thinks each express. The fourth section examines Sandel's views about parent/child relations and also how enhancement would affect distributive justice and the duty to aid.

Instantiation: In conclusion, I briefly offer an alternative suggestion as to why enhancement may be troubling and consider what we could safely enhance.

We appreciate from the above abstract that Kamm (2001) makes her intention clear right from the very beginning of the abstract thus: "This article examines…". Interestingly, however, she is careful to weave into the abstract the locus of her argument as she provides the needed context to understand her essay. Her work appears as a corrective to the article by Michael Sandel on enhancement of human persons. Speaking from the perspective of rhetorical agency, there was nothing to stop her from ignoring the traditional genre-based demands of providing a niche as it is often said in Swales' (1990) genre analysis.

6. Conclusion

This work is by no means conclusive. While I concede that the analysis offered here is exclusively focused on topicality, readers are encouraged to consider exploring the tagmemes of restriction and instantiation. This limitation notwithstanding, it should not be difficult to see the theoretical and practical resonance of the essay. The article shows that a number of contributors to the *American Journal of Bioethics* are mindful of how they structure their thoughts in order to communicate with their audiences quite meaningfully (Swales 1990). In particular, they make pragmatic choices that are contingent upon key rhetorical exigencies. For example, in building their arguments, science writers of the *American Journal of Bioethics* were shown to employ one of three basic rhetorical strategies for announcing their topics. These are problem-driven; solution-driven; or goal-driven topicality. For the most part, when authors selected any of them, they strove to remain consistent in the presentation of their arguments. The focus on topicality alone from the theoretical framework of tagmemics thus shows that the composition of research abstracts is a rhetorical construction based on the individual writer's agency. At the very least, the analysis serves as a heuristic for composing research abstracts; it values the rational choices the writer makes rather than imposes structures of writing on them.

The discussions are also useful to ongoing work in rhetoric. As I have argued, this study offers empirical evidence to the claim that scientific texts are highly rhetorical. In heeding the call to the rhetorical turn, I suggest that the present work beckons scholars to carry on vigorous studies into the nature of rhetorical agency in scientific genres. The reason is that genres have been studied and presented from an almost calcified perspective, most privileged in genre analysis. At the dawn of the crisis of representation, we cannot but insist that it is perhaps the way to go. I conclude by recalling Cooper's (2011) words that responsible human agents, such as scientists whose abstracts I have studied, are capable of making responsible choices in the way they present knowledge in spite of the structures afforded in their communities of consensus.

References

Banks, Adam J. (2005). *Race, Rhetoric, and Technology: Searching for Higher Ground*. New Jersey: Lawrence Erlbaum Associates.

Bryant, Antony & Kathy Charmaz (2007). *The Sage Handbook of Grounded Theory*. Los Angeles: Sage.

Campbell, Karlyn Kohrs (2005). 'Agency: Promiscuous and protean'. *Communication and Critical/Cultural Studies*, 2(1): 1-19.

Coker, Wincharles (2013). 'Overt communication or covert rhetoric: A study of American medical informed consent forms'. *Asian Journal of Humanities and Social Sciences*, 1(1): 1-11.

Cooper, Marylin (2011). 'Rhetorical agency as emergent and enacted'. *College Composition and Communication*, 62(3): 420-49.

Cross, Cate & Charles Oppenheim (2006). 'A genre analysis of scientific abstracts'. *Journal of Documentation*, 62(4): 428-446.

Eggins, Suzanne (2004). *An Introduction to Systemic Functional Linguistics*. London: Continuum.

Faden, Ruth R., Tom L. Beauchamp & Nancy MP King (1986). *A History and Theory of Informed Consent*. New York: Oxford University Press.

Fahnestock, Jeanne (1999). *Rhetorical Figures in Science*. New York: Oxford University Press.

Flynn, Elizabeth A., Patty Sotirin & Ann Brady (eds.) (2012). *Feminist Rhetorical Resilience*. Boulder: University Press of Colorado.

Geisler, Cheryl (2004). 'How ought we to understand the concept of rhetorical agency? Report from the ARS'. *Rhetoric Society Quarterly*, 9-17.

Graham, S. Scott (2009). 'Agency and the rhetoric of medicine: Biomedical brain scans and the ontology of fibromyalgia'. *Technical Communication Quarterly*, 18(4): 376-404.

Green Jr, Sandy Edward, and Yuan Li (2011). 'Rhetorical institutionalism: Language, agency, and structure in institutional theory since Alvesson 1993'. *Journal of Management Studies*, 48(7): 1662-1697.

Jack, Jordyn (2009). *Science on the Home Front: American Women Scientists in World War II*. Urbana and Chicago: University of Illinois Press.

Koeber, Amy (2006). 'Rhetorical agency, resistance, and the disciplinary rhetorics of breastfeeding'. *Technical Communication Quarterly*, 15(1): 87-101.

Kolodziejski, Lauren R. (2014). 'Harms of hedging in scientific discourse: Andrew Wakefield and the origins of the autism vaccine controversy'. *Technical Communication Quarterly*, 23(3): 165-183.

Kuhn, Thomas S. (1962). *The Structure of Scientific Revolutions*. (3rd ed). Chicago: University of Chicago Press.

Latour, Bruno and Steve Woolgar (1979). *Laboratory Life: The Social Construction of Scientific Facts*. Princeton: Sage.

Levine, Robert, J. (2008). 'The nature, Scope, and justification of clinical research'. In E. J. Emanuel, C. Grady, R. A Crouch, L. K. Reidar, F. G. Miller & D. Wendler (Eds.), *The Oxford Textbook of Clinical Research Ethics*. Oxford: Oxford University Press. 211-221.

Littlefield, Melissa M. & Jenell M. Johnson (2012). *The Neuroscientific Turn: Trandisciplinarity in the Age of the Brain*. Ann Abor: The University of Michigan.

Luzón, Maria, Jose (2005). 'Genre analysis in technical communication'. *IEEE Transactions on Professional Communication*, 48(3): 285-295.

Miller, Carolyn (1984). 'Genre as social action'. *Quarterly Journal of Speech*, 70: 151-167.

Modesti, Sonja (2008). 'Home sweet home: Tattoo parlors as postmodern spaces of agency' *Western Journal of Communication*, 72(3): 197-212.

Odell, Lee (1978). 'Another look at tagmemic theory: A response to James Kinney'. *College Composition and Communication*, 29(2): 146-152.
Orasan, Constantin (2011). 'Patterns in Scientific Abstracts'. In *Proceedings of Corpus Linguistics 2001 Conference*. Lancaster University: Lancaster.
Owens, Kim Hensley (2009). 'Confronting rhetorical disability: A critical analysis of women's birth plans'. *Written Communication*, 26(3): 247-272.
Reeves, Carol (2011). 'Scientific visuals, language, and the commercialization of a scientific idea: The strange case of the prion'. *Technical Communication Quarterly*, 20(3): 239-273.
Paul, Norbert W. (2009). 'Medicine studies: Exploring the interplays of medicine, science and societies beyond disciplinary boundaries'. *Medicine Studies*, 1(1): 3-10.
Reyman, Jessica (2013). 'User data on the social we: Authorship, agency, and appropriation'. *College English*, 75(5): 513-533.
Salager-Meyer, Francoise (1994). 'Hedges and textual communicative function in medical English written discourse'. *English for Specific Purposes*, 13(2): 149-170.
Salager-Meyer, Francoise (2000). 'Rhetorical evolution of oppositional discourse in French academic writing: Oppositional discourse in academic writing'. *Hermes, Journal of Linguistics*, 25: 23-48.
Selzer, Jack (1993). *Understanding Scientific Prose*. Madison, WI: The University of Wisconsin Press.
Scott, Blake, Judy Z. Segal & Lisa Keranen (2013). 'The rhetorics of health and medicine: Inventional possibilities for scholarship and engaged practice'. *Poroi: An International Journal of Rhetorical Analysis and Invention*, 9(1): 1-6.
Swales, John M. (1990). *Genre Analysis: English in Academic and Research Settings*. Cambridge: Cambridge University Press.
Turnbull, Nick (2004). 'Rhetorical agency as a property of questioning'. *Philosophy and Rhetoric*, 37(3): 207-222.
Villadsen, Lisa Storm (2008). 'Speaking on behalf of others: Rhetorical agency and epideictic functions in official apologies'. *Rhetoric Society Quarterly*, 38(1): 25-45.
Vitanza, Victor J. (1979). 'A tagmemic heuristic for the whole composition'. *College Composition and Communication*, 30(3): 270-274.
Wander, Philip C. & Dennis Jaehne (2000). 'Prospects for a rhetoric of cience?'. *Social Epistemology*, 14(2-3): 211-233.
Winterowd, W. Ross (1973). 'Topics and the levels in the composing process'. *College English*, 43(5): 701-709.
Winterowd, W. Ross (1975). *Contemporary Rhetoric: A Conceptual Background with Readings*. New York: Harcourt Brace Janovich.
Young, Richard E., Alton Becker & Kenneth Pike (1970). *Rhetoric: Discovery and Change*. New York: Harcourt, Brace and World.

List of Sample Texts

Brody, Howard (2011). 'Clarifying conflict of interest'. *American Journal of Bioethics*, 11(1): 23-28.
Fiester, Autumn (2012). 'The "difficult" patient reconceived: An expanded moral mandate for clinical ethics'. *The American Journal of Bioethics*, 12(5): 2-7.
Müller, Sabine (2009). 'Body integrity identity disorder —is the amputation of healthy limbs ethically justified?'. *American Journal of Bioethics*, 9(1): 36-43.
Kamm, Frances M. (2001). 'Health and equality of opportunity'. *American Journal of Bioethics*, 1(2): 17-19.
Katz, Dana, Arthur L. Caplan & Jon F. Merz (2003). 'All gifts large and small: Toward an understanding of the ethics of pharmaceutical industry gift-giving'. *American Journal of*

Bioethics, 3(3): 39-46.

Franklin, G. & Luana Colloca (2009). 'The legitimacy of placebo treatments in clinical practice: Evidence and ethics'. *American Journal of Bioethics*, 9(12): 39-47.

Murphy, Timothy F. (2012). 'In defense of irreligious bioethics'. *American Journal of Bioethics*, 12(12): 3-10.

Ravitsky, Vardit & Benjamin S. Wilfond (2006). 'Disclosing individual genetic results to research participants'. *American Journal of Bioethics*, 6(6): 8-17.

Wolpe, Paul Root, Kenneth R. Foster & Daniel D. Langleben (2005). 'Emerging neurotechnologies for lie-detection: Promises and perils'. *American Journal of Bioethics*, 5(2): 39-49.