

Paralogical Hyperbole: A “Missing Link” Between Technical and Public Spheres

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Recommended Citation

Coleman, Miles C. "Paralogical Hyperbole: A “Missing Link” Between Technical and Public Spheres." *Poroi* 12, Iss. 1 (2016): Article 5.
<https://doi.org/10.13008/2151-2957.1243>

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Paralogical Hyperbole

A “Missing Link” Between Technical and Public Spheres

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Poroi 12,1 (May 2016)

Keywords: hyperbole, *anticategoria*, *dissoi logoi*, *prolepsis*, paralogical hyperbole, rhetoric of science

It is sufficient to remark that the hyperbole lies, but not so as to intend to deceive by lying, and we therefore ought to consider more carefully how far it becomes us to exaggerate that which is not believed.

— Quintillian, *Institutio Oratoria*

Hyperbole is used to garner public interest and support for science. This phenomenon has been investigated, showing that hedges and qualifiers can be dropped to emphasize certainty, shifting technical science from a forensic genre to an epideictic one as it moves from proving science in the technical sphere to celebrating it in the broader public (Fahnestock, 1986). Some scholars raise concerns that such exaggeration through simplification “may hinder the responsible and effective use of scientific evidence in decision making” or “risk losing public trust” in science by perpetuating the false image of science as “infallible monolith” and raising the ire of anti-science publics (Kueffer and Larson, 2014, 3; Nisbet, 2009, 53; Locke, 1999, 77).

While science, in either its technical or public manifestation, is inescapably rhetorical, there remains a worry that some hyperbolic claims of science can unnecessarily alienate key audiences by perpetuating partisan visions of science. The “conflict frame,” for instance, encourages polarization between science and religion as propagated by supporters of evolutionary theory, such as Richard Dawkins, who draw on technical scientific conclusions not just to argue publicly that evolution explains origins, but to claim that it negates religious explanations too (Nisbet and Scheufele, 2009; Dawkins, 2009). This kind of claim, I argue, is not merely hyperbolic, as it does not simply add certainty to a technical claim by removing qualifiers and hedges. It is also *paralogical* in that it



illogically jumps from one line of reasoning to another. As we will learn from the case study of this article, citing technical science that makes an empirical case about a single fossil and then publicizing it as definitive evidence of *the* “missing link” is exaggerative and illogical. The technical sphere the claim is purported to have been drawn from does not recognize “missing links” as defensible claims about evolution.

I will describe an array of discursive moves related to paralogic hyperbole that are commonly used by agents to rhetorically shape scientific claims that are not defensible within the technical sphere (“missing links,” for example) into claims that at least superficially might seem technically defensible to broader publics. My objects of analysis are a book, a website, and a television documentary all sharing the same title: *The Link*. The texts of *The Link* are popularization efforts based on a controversial scientific report published in the all-online peer-reviewed journal of the Public Library of Science, *PLOS ONE*.

Written by a team of accomplished paleontologists and geologists from Germany, Sweden, Norway, and the United States, the *PLOS ONE* article describes the fossilized skeleton of a forty-seven million year old creature, *Darwinius Marsillae*. The article makes claims about *Darwinius Marsillae* as being a lemur fossil that could possibly have broader implications for understanding primate lineage. The popularization texts of *The Link* exaggerate the conclusions of the original *PLOS ONE* article in ways that hardly resemble claims actually defensible in the technical sphere by arguing that the skeleton is a “missing link,” as opposed to a “transitional fossil.” From the analysis of the case of *Darwinius Marsillae*, we learn that the paralogical hyperbole in the texts of *The Link* actually gave members of scientifically oppositional publics inventional resources for building an *anticategoria*, a retort that turns an interlocutor’s claim back on him or her, pointing to evolutionary science (in both technical and public forums) as “confused.” How, we may ask, should critics respond to paralogical hyperbole? *Dissoi logoi*, the ancient practice of visiting the “other words” on an issue, and *prolepsis*, answering the qualms of oppositional audiences in our arguments, present useful tools for practicing critical reception and response to paralogical hyperbole, both on the part of members of the technical sphere and the broader public. Some background information will be given on the case of *Darwinius Marsillae* and defensible claims regarding representations of transitional species in the technical spheres of paleobiology.

DARWINIUS’ STORY: FROM QUARRY TO QUARREL, FROM THE PAGES OF PLOS ONE TO THE LINK

Darwinius in the Pages of PLOS ONE

Darwinius Marsillae, a small lemur-like skeleton, was found in 1983 at Messel Pit, an abandoned quarry in Germany known for its rich fossil deposits, and spent over 20 years in storage before being sold to the Natural History Museum of Oslo in 2007. Norwegian vertebrate paleontologist Jørn Hurum facilitated sale of the fossil after being contacted by an anonymous source wishing to sell the skeleton; the identity of its original discoverer is still unknown (Schons, 2011). After the skeleton was secured by the museum, it was examined from 2007–2009 by six scientists, including Hurum, who all specialized roughly in the area of paleobiology (“University of Oslo,” 2012). The results of this examination were published in the online journal *PLOS ONE*.¹

The article is entitled *Complete Primate Skeleton from the Middle Eocene of Messel in Germany: Morphology and*

¹The scientific journal in which *Darwinius* is first described, PLOS ONE, is a dedicated “online” publication that possesses some traits that distinguish it from more traditional “print” journal articles. For instance, attached to the article is an icon that leads to readers’ “Comments.” The majority of the comments consist of technical questions (and answers) about the specific methods (Keesey, 2009; Coblo, 2009; Bsn8, 2009) and materials (Rpmias, 2009) employed in the authors’ examination of *Darwinius*. What is interesting about these comments is that they are from individuals who seem to have some technical knowledge, using words like, “plesiomorphies” (Keesey, 2009) or “Keratin mass spectrometry” (BramSnijders, 2009). In addition to these types of technical procedural comments, there are a few concerned with the “up selling” of the skeleton in the other venues (i.e., their book, website, and film). The construction of new media space that facilitates this kind of dialogue between the agents within a technical sphere and “outsiders” from the general public presents what has been said to represent the “courage to sit” in public discussions of science, as it does not “rashly” allow non-experts to engage in technical deliberations, but also avoids the cowardice of shutting out those who might question the motives of doing the science in the first place (Coleman, 2015a). While PLOS ONE does present an interesting site of publication, the current study is less concerned with the spaces created by publications, or the publication procedures of those spaces, and much more concerned with how individuals can more responsibly represent their projects in the public forum broadly, as they source, interpret, and employ findings from the technical sphere.

Paleobiology (Franzen *et al.*, 2009). In it, *Darwinius Marsillae* is described as “the most complete primate known in the fossil record” and as evidence of a new species (*Darwinius Marsillae*) that “call[s] into question accepted wisdom about the origin of higher primates” (Franzen *et al.*, 2009, 1–2). Pointing to specific phylogenetic qualities, the authors posit that *Darwinius* possesses characteristics of both lemurs and apes (Franzen *et al.*, 2009, 19). Some of the specific characteristics that are pointed out are that *Darwinius*’ skeleton is shaped like a member of the *strepsirrhine* or “lemur” line but lacks the “tooth comb” and “grooming claw” commonly associated with the line; it possesses opposable thumbs, fingertips with nails, and an anklebone similar to primates that should be categorized in the *haplorrhine* or “ape” line. Thus, based on the idiosyncrasies of the skeleton’s phenotype, the authors argue that *Darwinius* “could represent a stem group from which later anthropoid [human-like] primates evolved, but we are *not advocating this here*” (Franzen *et al.*, 2009, 24, italics added).

Paralogical Hyperbole in The Link

While the claims in the technical *PLOS ONE* article are relatively restrained, the subsequent book, website, and History Channel program—all entitled *The Link*—whose authors would later cite *Darwinius*, exaggerate not just the significance of the skeleton, but also its implications regarding explanations of origins. Specifically, in all permutations of *The Link*, the original *PLOS ONE* study is cited as describing “the missing link” of humanity’s primate lineage—“the” final piece of evidence needed for evolutionists to link human existence to the animals (see “The Link,” 2009a; 2009b).² What is significant about the exaggeration of *The Link* is

² This work will perform a rhetorical analysis of paralogical hyperbole, as it occurs between the technical and public spheres in discussions of the *Darwinius Marsillae* discovery. In examining both a scientific article and its transformation for public audiences, this work follows the path of Jeanne Fahnestock, who studies how scientific knowledge moves from technical publics into more popular ones (Fahnestock, 1986). But where Fahnestock started with original scientific facts and traced the shifts in genre (i.e., forensic to epideictic) and qualifiers (i.e., caveats were removed to create more absolute language) as they moved from technical spheres to popular spheres, this study will instead begin with the “popularized” versions of the *Darwinius* manuscript and the audiences for whom the versions were crafted to appeal. Furthermore, this study is less concerned with *how* scientific facts rhetorically shift as they move from the technical sphere to the popular and even more with *why* those shifts are important to specific audiences. Zeroing in on the elements of a primary text that earned paralogical exaggeration can help to isolate what

not that it is an overstatement of the conclusions made in the original article—many scientific articles are exaggerated when publicized by way of reducing qualifiers and playing up significance.³ The distinctive thing about the exaggeration of *The Link* is that it does not just play up significance or drop a qualifier—making dry science exciting by exaggerating a claim in line with the trajectory of the original claims of the article. Rather, it attempts to make a claim that is itself cripplingly indefensible with regard to scientific consensus.

Michael Shermer, a popular science writer for *Scientific American*, explains the problem with our current exaggeration quite clearly in what he describes as the “fossil fallacy”: “the belief that a ‘single fossil’—one bit of data—constitutes proof of a multifarious process or historical sequence” (Shermer, 2005, 1). With respect to the skeleton of *Darwinius*, it would be erroneous reasoning to point to a singular piece of evidence (i.e., a “missing link”) to explain something as multivariate and complex as hominid evolution. To do so would be to make claims about human origins with only a single empirical data point. Thus, the claim is paralogical (“illogical”) in that it embellishes the claim, which is what hyperbole is supposed to do, but does so by diverging drastically with the original technical line of reasoning it purports to be embellishing. In paralogical hyperbole, an argument does not just get ahead of itself; it jumps to making conclusions for a completely different claim. Douglas Walton clarifies:

aspects of the original text have proven to be most problematic or facile for various audiences attempting to “make sense” of that text’s conclusions, given their respective belief-structures. Recognizing those key elements will show us glimpses of the values that constitute, drive, and steer evaluations of scientific validity or significance made by various publics that interact with the text. Paralogical hyperbole can be viewed not only as a slippage of qualifier on the part of a rhetor, but also as a tool for rhetoricians interested in understanding the values behind those slippages.

³ Fahnestock describes many examples of publicizers of science “add[ing] to the significance of the subject by claiming its uniqueness, its one-of-a-kind status”—hyperbole, absolutely, but hyperbole that exaggerates in directions that logically move from the original claims made in the technical journal articles they are based on. Even in her example of a *Science* piece describing “vulture bees,” wherein the specific diet of the bees is described, but later popularized as “bees ‘that can eat any animal’” to “glamorize the danger of bees,” it is an example of a potentially problematic simplification, but one that does not necessarily jump to a new line of argument as it is still describing the bee’s diet, only in a more dramatic way (Fahnestock, 1986, 281).

Paralogisms are errors of reasoning that relate to logical forms of inference. These forms can be deductive or inductive forms of argument like *modus ponens* or arguing from a sample to a larger population. Or they can be argumentation schemes for presumptive reasoning. Paralogisms are fallacies that arise chiefly through failure of an argument to meet a set burden of proof (Walton, 1995, 257, emphasis his).

Moreover, paralogisms involve inferences that do not follow from the premises of an argument but nonetheless seem appropriate to some audiences. Important to note, paralogisms are a type of fallacy offset from sophisms, in that paralogisms usually denote fallacies of which the arguer is unaware, whereas sophisms denote more consciously fallacious deceptions. So a paralogic hyperbole is a claim that fallaciously “jumps” arguments in ways that seem unknown to the arguer him or herself as claims move from the technical sphere to the public and the slippages of technical defensibility blur into one another, making them less visible to a rhetor or to his or her audience(s).

Paralogical hyperbole is inevitable, exciting, appeasing, and satiating. Given that much public communication of science, especially via media like that of the History Channel, is economically driven, it would be naïve to expect that such actors would be bothered to “clean up” their communication at the expense of “giving the people what they want.” So, paralogical hyperbole is presented here chiefly as a trope to be aware of as we receive public communications of science more than as informing the production of science communication *per se*. Moreover, paralogical hyperbole simply *works* for some audiences; it is important not to overlook this reality *en route* to explaining some of the problems with the trope.

The Problem of Paralogical Hyperbole in The Link

In the case of the popularizations of the *PLOS ONE* article, the authors of *The Link* tried to take the discourse of the original article and forward it as *the* “missing link.” The idea of a “missing link” actually plays into the classical idea (later folded in with Christianity) that envisions a Great Chain of Being from the lower animals to the highest. To find the “missing link” is to demonstrate humanity’s relationship with the rest of nature by filling in and completing the chain. Pointing to a fossil as a “missing link” would be a gaffe, at least with regard to technically defensible versions of evolution, where species are the products of chance and natural

selection instead of design, representing more of a “flattened” web between species than a hierarchical top-down chain. Thus to make reference to the “missing link” is to move forward from a vision of evolution that sneaks into it a set of cosmological implications that so happen to be expressly relevant to creationist explanations of origins. That is, if the “missing link” is found the “gaps” between chain links are made “complete,” demonstrating humanity’s relation to the rest of nature. If the “missing link” is found, humans can no longer enjoy their distinct place at the top of the Chain of Being, touching fingertips with the angels, for if all species, including humans, are related, humanity is not special. In paleobiology, the preferred term is “transitional fossil” instead of missing link to avoid just this implication. The term is consciously used in technical spheres of paleobiology instead of “missing link” in order to represent fossils that might have characteristics of an ancestral line and a more recent line of species, but one that is most emphatically non-hierarchical, reducing its relevance to any testimony biology might give about theistic conceptions of origins (Prothero, 2008). An argument field with proclivity for the term “transitional fossil” is one in which “initiated” interlocutors do not speak of single fossils as representative of evidence for cosmological claims. In all of *The Link*’s popularization efforts of the PLOS ONE article, by contrast, *Darwinius Marsillae* acquires a new name—“Ida,” and she is exaggerated into the public sphere as the “missing link.” Borrowing from the *ethos* of technical paleobiology *The Link* forwards a claim that disregards a major assumption that composes the foundation of that *ethos* in the first place (Handwerk, 2009).

To make matters worse, amidst the clamor of *Darwinius* as “a missing link” members of the technical sphere began calling into question the claims of the original *PLOS ONE* technical journal article. Pointing to a poor analysis of phylogeny on the part of the scientists (regarding inferences to and implications of anthropoid—“higher primate”— characteristics, specifically), critics, mostly fellow scientists, argued that it is unlikely that *Darwinius* is representative of a transitional species with any implications for anthropoid lines at all (e.g., Beard, 2009). We will see that these public critiques of *The Link*’s paralogical exaggeration were exploited by some oppositional publics to build an *anticategoria* against evolutionary science.

As shown by Leah Ceccarelli, the ways in which scientists stand for the projects they favor in the public sphere requires rhetorical prowess in order to avoid the pitfalls of our 21st century public sphere (Ceccarelli, 2011). As she demonstrates in her telling work on “manufactured controversies” in public science, scientists who

“write off” scientifically oppositional viewpoints because these viewpoints do not actually exist in the technical consensus of science can hurt public sympathies with science; such a move goes against appeals to balance and inclusion endemic in a broader democratic public sphere. This paper carries out a similar critique, as it will focus on the ways in which scientists step out from the technical sphere to stand for the projects they favor in the public sphere. Instead of focusing on how advocates can defend science from scientifically-opposed publics, this paper will focus on how we can defend science from those who think they are doing good by science, but are instead propagating paralogic hyperbole.

HYPERBOLE: FROM SCIENTIFIC FACT TO PARALOGICAL ACT

Hyperbole, as defined in *Rhetorica ad Herennium*, “is the manner of speech exaggerating the truth, whether for the sake of magnifying or minifying something”, which can occur through exaggerative metaphor and simile, the *enumeratio*-esque piling of extravagantly evocative diction, and the comparison of particular objects (Caplan, 1964, 4.33.44; Aristotle, 2007, 225–226; Fahnestock, 2011, 118; Quintillian, 2006, 339).

Traditionally, hyperbole is discussed most rigorously with regard to rhetorics that have aesthetic or political ends (see Claridge, 216–219; Jasinski, 2001, 549–550; Patnoe, 1996, 334–335). But hyperbole, considered as a rhetorical figure, can also be used for epistemic ends by amplifying the characteristics of a given phenomenon. That is, hyperbole can be used to “play-up” the *scientific-ness* of a something so as to “demarcate” it from things merely *pseudoscientific* (Taylor, 1996). In the current case, *paralogical hyperbole* is the result of attempts by agents to borrow the *ethos* of the technical sphere to add gravity to their claims. But those claims, it turns out, are not defensible within the sphere from which they are borrowing their *ethos*. That is, paralogical hyperbole can borrow from the “foundations” of technical arguments, which are based in a “person’s identification with his [or her] work in a special occupation”—such as that of a scientist—but makes claims that do not represent those foundations at all (Goodnight, 1999, 253). As will be demonstrated later, the result is something that that looks pseudoscientific, is not persuasive to oppositional publics, and even threatens to leech back to the original technical sphere from which one is appropriating scientific “facts,” thereby muddying what technically defensible science actually looks like.

Further, paralogical hyperbole can be perceived by uncritical publics and rhetors not as exaggeration, but as “fact.” Jeanne Fahnestock describes such uses of hyperbole not as “knowingly ironic,” or as “an attempt to amplify,” but rather as “exaggerated language [that] is meant ‘as is,’ to hit an appropriate level of characterization” (Fahnestock, 2011, 117).⁴ As it is being described in the current study, paralogical hyperbole exists in claims that fail to demonstrate a conscious differentiation between exaggerations of *findings of the technical sphere*, like those that avoid fossil fallacy arguments, and *illogical exaggerations of those findings*, such as those that point to a single skeleton as a “missing link.” They are conflated to be one in the same. Accordingly, paralogic hyperbole seems to be problematic for two reasons: (1) It can be

⁴ Scientific validity, or the perceived accuracy of the methods used to derive knowledge about a given phenomenon, is assessed within ideologically and epistemologically situated frameworks. For instance, some believe that human psychology is nothing more than the electrochemical composition of the brain and body. Within this worldview, it would be valid to engage research that attempts to understand human psychology by identifying, measuring, and testing the chemicals and electric currents in human bodies (Thomas, 1999). People who believe this way are often categorized as “materialist-reductionists.” On the other side of the metaphysical coin, there is another group of people, the “emergentists,” who believe that no matter how much one learns about the electrochemical composition of the human body, there will always be something that exists just out of reach of the instruments one uses to measure the material world. Within the scope of this worldview, it would not be valid to refer solely to the chemical and electrical compositions of the human body to understand human psychology, simply because to this group, there is more to the equation than chemicals and electricity. These differences in what counts as scientifically valid will influence what emergentists and material-reductionists will choose to “play-up” about a given psychological finding, so as to deflect and avoid discordant views of scientific truth. It is somewhat of an axiom within persuasion research that people prefer “cognitive consistency” to “inconsistency” (Littlejohn and Foss, 2008, 78). So, it would not be much of a stretch to argue that when psychological findings are interpreted and repeated by emergentists and material-reductionists, they tend to be exaggerated in directions that correspond with their extant worldviews in order to avoid the inherent dissonance involved with the “self-discrepancies” produced by clashing beliefs (Festinger, 1957; Higgins, 1987). Similarly the “significance,” or the weightiness of findings, would be expected to pass through a similar process of belief-relevant interpretation and exaggeration; thus, paralogical jumps, to some, can represent “as is” hyperbole, allowing room for interlocutors to “overshoot the range of cases their theories cover” based on the “values dear to them” (Depew, 2013, 381).

unnecessarily and uselessly polarizing; and (2) knowledge making generally might suffer from the imprecise and uncritical use of scientific findings associated with paralogical exaggeration. In the following section will be an analysis of the paralogical exaggeration of *Darwinius Marsillae* in the book, the website, and the television program *The Link*, wherein the transitional species, *Darwinius Marsillae*, is rhetorically shaped into “Ida,” the “missing link.” Later, *dissoi logoi* and *prolepsis* will be discussed as instrumentally useful and ethical means for critically engaging paralogical hypberbole.

DARWINIUS HYPERBOLICUS: RENDERING A COMPLETE PRIMATE SKELETON TO THE LINK

The Link, as it appears in transmediated form, spanning a book, a film, and a website, cites the original *PLOS ONE* article to tell the tale of *Darwinius Marsillae*. On *The Link*'s webpage, *Darwinius* is described as having “some early anthropoid traits. These foreshadow physical features which later appear in monkeys, apes, and *of course*, humans” (“The Link,” 2009b, italics added). With its fairly obvious usage of a synonym for “naturally,” or “matter of fact,” this claim is stating that *of course* the Ida skeleton *foreshadows* the features that show up later in *humans*. This shows a commitment to a progressivist evolutionary narrative, but not necessarily one connected to scientific consensus. For instance, using *incrementum* evolution is depicted in a step-by-step increase in complexity that culminates with modern humans, starting with *Darwinius*. It is a portrayal that resonates with a “missing link” narrative, but not necessarily one of a transitional species.⁵ The claim is that progressive evolution is valid. The evidence is the *Darwinius* skeleton. The warrant necessary for this claim to yield acceptance is one built on prior commitments to demonstrating humanity's linkage to nature. In the technical sphere of paleobiology, such a warrant exists, but only in a highly qualified form. Just as foreshadowing a plot helps orient the reader to understand later narrative points, *Darwinius* is placed as the necessary antecedent to understanding later developments of monkeys, apes, and humans. The story is made complete. In this

⁵ An incredibly similar use of *incrementum* is described by Lessl in his analysis of a display of humanoid skulls at the Musée de l'Homme, which resounding the conclusions of Fahnestock's writing on the device, culminates with the sense of climax that makes *incrementum* a distinct device of series reasoning by displaying a recent *homo sapien* skull last—the epitome of humanity's evolutionary track culminated (Lessl, 2012; Fahnestock, 1996; see also, Fahnestock, 2014).

logical frame, the nebulous, complex, ever-expanding process of evolutionary speciation that created modern humans is broken down into four simple plot points. It is a claim about paleobiology, exaggerated toward cosmological claims, and in a way paralogical, given the sphere from whence it was germinated, in which these warrants do not exist.

In fact, the warrant unlocking such a paralogical jump between technical and public spheres is wrapped up with what Lessl would describe as a larger kind of spiritual commitment: “evolutionism” (Lessl, 2012). To Lessl, evolutionism is a mythologized “narrative about an ‘evolving’ human ‘destiny’—the species’ destined reunion with the cosmos that is being accomplished through science” (Lessl, 2012, 12). In this sense, the above narrative of *The Link* could be legitimated into a reasonable story by the values of evolutionism, values that place scientific practices aimed at showing humanity’s link with nature as more respectable than those that do not.

Such paralogical hyperboles are sometimes covered by authority. Sir David Attenborough, a famous broadcaster and “naturalist,” illustrates another example of paralogical exaggeration regarding the significance of *Darwinius* in a video quote posted to *The Link* website under the heading, “The Implications:”

It’s a discovery of great significance. We desperately want to know where we came from...*it’s not a question of deduction, not a question of imagination, not a question of suggestions, it’s fact....*The link, they [creationists] would have said, until now is missing. Well, it is no longer missing (“The Implications,” 2009, 0:02–0:59, italics added).

Attenborough exaggerates the implications of *Darwinius* from a paleobiological fossil that has characteristics which, according to the original *PLOS ONE* article, “*could* represent a stem group from which later anthropoid [human-like] primates evolved” (italics added, 24). The explanatory power of the skeleton is exaggerated in Attenborough’s depiction. The amplification of this explanatory power is bolstered by Attenborough’s *enumeratio*, which lists off descriptors of the discovery, recounting the skeleton as an object that does not present questions of “deduction” or “imagination” or “suggestion”—epistemic states that are commonly considered subject to human error. Instead, it is a “fact.” *Enumeratio* legitimates the paralogical exaggeration of the *PLOS ONE* article by reducing space for the infiltration of human inaccuracy. After all, facts are not open to interpretation. And if they are not open to interpretation they cannot be exaggerated. Thus the “missing link”

is a *fact*, and because of the narrative that it completes it is a fact that negates creationism. Science—specifically objective science—actualizes humanity’s destiny to reunite with nature.

Attenborough’s exaggerated view reverberates in the epilogue of the book *The Link*. It paints a picture of “many a philosopher and cleric” as wrongheaded for having “condemned biologists for *daring to emphasize* our affinity with other creatures,” but then goes on to say,

but many a philosopher and cleric, and of course many a biologist, have not been ashamed to be associated with the other beasts. St. Francis of Assisi, felt by many to be the most Christlike of the Christian saints declared that the animals and plants were his brothers and sisters....If everything is God’s Creation, why would we want to be aloof from it? Who are we to be so superior? (Tudge, 2009, 245, italics added).

Collin Tudge, the author of the book version of *The Link*, seems to exhibit less paralogical exaggeration than Attenborough in the video version, as his claims can operate without necessarily relying on a “missing link” warrant. His is an exaggeration of the significance of the *Darwinius* skeleton in which the non-hierarchical structures of speciation exists. The warrant for a “transitional fossil” argument exists independently of the spiritual commitments to nature that characterize the evolutionist narrative in Lessl’s sense. Additionally, instead of stressing the fact that humans are not “superior” to the “other beasts” as a claim that denies creationism, Tudge seems he would rather pose the idea as a *synchoreisis*—or “conceding one point for the sake of another”—wherein perhaps both religion and science can coexist within an evolutionary narrative (Burton, 2007a). Nonetheless, the inclusion of such appeals to spirituality give the argument a wildly different character from that of technically defensible arguments about evolution as they take on implications that go beyond the empirical.

The Harms of Paralogical Hyperbole to Public Understandings and Dialogue of Science

Reception evidence of *The Link* reveals the invisibility of its exaggerations to audiences already committed to an evolutionist narrative. Take for instance, the following comment countering the Creationist project on a YouTube page created to discuss Attenborough’s views on the *Ida* skeleton:

Wow Creationists are so foolish. It's them that keep asking after every gap in the human evolution fossil record and every time we find exactly what evolution predict they ask for another. Want to know why we keep finding missing links? It's because that's what creationists want. Unfortunately for them this is the last Gap we had to fill. Though it has been over-hyped [*sic*] (Since we already have irrefutable evidence and this doesn't actually add much) by the media (OlympicRudi, 2009).

Despite the fact that this audience member acknowledges that *Darwinius* may have been “over-hyped,” the evolutionist narrative of *The Link* remains intact. *Darwinius* still remains to be the “last Gap we had to fill” in order to complete the story of evolutionism. So, while there may be some aspect of the skeleton that has been “over-hyped,” this audience member does not see an exaggeration of claims of *Darwinius* (a single fossil) completing and affirming the narrative of evolutionism, as something that has been exaggerated—it is a fact. This is an exquisite example of the potential harms of paralogical exaggeration. Because this audience member’s valuative schema is already so resonant with the claims being made in *The Link* the over extrapolation of the skeleton’s significance is treated as largely invisible, even alongside an attempt to point to the campaign itself as hyperbolic. The fossil fallacy is perpetuated unchecked, distorting what is actually scientifically defensible within the technical sphere. In addition to this, and as noted in the introduction, one of the main worries about such an outcome is that it might perpetuate partisanship among publics of science.

Some creationists found the words of *The Link* to be claims not of fact, but exaggerated treatments of fact: “It may seem incredible that anyone would hail this find as a ‘missing link.’....Unbelievably, Attenborough claims his interpretation is ‘not a question of imagination’ (“Got Questions Ministries,” 2012). Here the incompatibility of the competing narrative logics of creationism and evolutionism can be found as they intersect at the *Darwinius* skeleton. As discussed above, in the logic of *The Link*, *Darwinius* is *the* missing link, the final preface needed to understand the lineage of speciation—the plot, which started with *Darwinius*, moving through monkeys and on to apes and humans. The moral of the evolutionist narrative, forwarded by the causal relations between these characters, is that humanity is not above, or distinct from nature, but rather *is* nature, born of a very long, interconnected lineage of ancestors. This interconnectivity is oppositional to the

creationist narrative, which posits that species were created specially and distinctly by a Creator: “The fossil [*Darwinius*] does not resemble a human skeleton....it was a small, tailed, probably tree-climbing, and now extinct primate—from a kind created on Day 6 of Creation week” (“Answersingenesis,” 2009). While Creationists give the impression that the fossil does exist as evidence for something, that thing is not human evolution because in the Creationist narrative logic, species exist not as interconnected ancestors, but as disconnected creations.

In the creationist sense-making narrative, species were made independently and perfectly by God on days five and six of “Creation week.”⁶ Every species, then, is disconnected from, and unrelated to, every other species, including *Homo sapiens*. The moral of the creationist story, advanced by removing causal relations between species, is that humanity has not been born of nature, but rather by the hands of a Creator. Therefore, in this logic, *Darwinius* can certainly be evidence of a now extinct instance of God’s creation. It cannot, however, describe any sort of interconnected relationship to monkeys, or apes, or humans because there is no warrant—as in evolutionist narrative—that allows such relationships. The above responses imply a perception of *The Link*’s claims about *Darwinius* not as fact, or even as legitimate science, but as hyperbolic poppycock, the product of uncritical evolutionist dogma. This response reveals the apparent futility of arguing against creationists with claims that rely on either “missing link” or “transitional fossil” type warrants. However, it seems that “transitional fossil” type arguments avoid direct refutations of religion. So although both “transitional fossil” and “missing link” type arguments both rely on the notion that humanity is linked to the animals—a fundamental difference from the creationist argument field—transitional fossil arguments seem to sidestep needlessly placing claims within the realm of religion; they restrict themselves to empirical claims about a single fossil. As we will see in the next section, despite the differences in defensibility of claim, *The Link*, and its public refuters, who mostly represent paleobiology, which consciously attempts to stay away from cosmological/spiritual claims, they were treated as one in the same by creationist publics. Consequently, a straw man argument was created by those attempting to critique *The Link* by charging

⁶ It is important to note that there is a wide spectrum of beliefs that are amenable to blending elements of the evolutionist and creationist narratives, in what one might call “intelligent design.” For the sake of argument and clarity the current study will focus on radical creationists who believe in a literal reading of *Genesis*.

them with sharing the same foundational argument field that spawned the arguments they were refuting in the first place.

PARALOGICAL HYPERBOLE AS ANTICATEGORIA

Anticategoria is defined by Burton as “a retort in which one turns the very accusation made by one’s adversary back against him” (Burton, 2007b, 1). In *The Link*, the accusation being made is that the creationist narrative is false because humanity is in fact interconnected with nature, for “the link” in the evolutionist story “is no longer missing” (“The Implications,” 2009, 0:45–0:59). To invert this accusation, creationists pointed to individuals from the technical sphere, such as Chris Beard, the curator of vertebrate paleontology at the Carnegie Museum of Natural History, who commented on the original *PLOS ONE* article, calling the description of *Darwinius* faulty science (Thomas and Sherwin, 2009; Beard, 2009). In Beard’s view, while *Darwinius* might have primate characteristics that help us to think about evolutionary processes “this does not necessarily make Ida [*Darwinius*] a close relative of anthropoids” (Beard, 2009, 1). To argue this would require *Darwinius* “to have anthropoid-like features that evolved after anthropoids split away from lemurs and other early primates. Here, alas, Ida fails miserably” (Beard, 2009, 1). In light of the revelation of the flaws in the original *PLOS ONE* article some creationists exploited this opportunity to show that the public popularization of *Darwinius* was wildly different from defensible claims about transitional species in the technical sphere (Batten, 2009). To do so, they pointed explicitly to Beard’s public commentary as well as to the fact that his views also resounded in the halls of the biological academy at large (see Dalton, 2009 for an example of the *Darwinius* controversy within the academy). By referencing the inconsistency between the scientific consensus concerning claims that could be made about *Darwinius* in the technical sphere and the claims made in the book, website, and television program of *The Link* in the grander public sphere, creationists were able to point to the bickering betwixt a rogue group of paleobiologists committing paralogic hyperbole by arguing for a “missing link” and a group of concerned evolutionary scientists who attempted to hold them accountable to the technical argument field from which they were purportedly borrowing. From these public discourses, and the discrepancies between them, some creationists were able to build an *anticategoria* that described the entire project of evolution (both in the public *and* in the technical spheres) as inconsistent, confused, and false:

Ida's accolades as the long-sought-after "missing link" are thoroughly undeserved. Both creation and evolutionary scientists recognize the reality that Ida does not reflect the claims of the publicity campaign. The extravagant marketing of the latest fossil purporting to be "proof of evolution" seems to have been timed for the effective sale of the evolutionary theory itself...One reason that published opinions on the subject are consistently inconsistent could be that all the evolutionary researchers involved are laboring under a false paradigm (Thomas and Sherwin, 2009, 1).

These claims fail to distinguish the paralogical hyperbole of *The Link* from technically defensible evolutionary theory. Moreover, evolutionary theory is conflated with the spiritual commitments of a progressivist evolutionary narrative and worldview. Thus the *anticategoria* is waged against all of evolutionary theory, not just those representing the evolutionist narrative. The scientists critiquing *The Link* had a claim turned back on them that they never actually made. The result was an *anticategoria* that did not distinguish between popular science or technical science, but rather just referred to "science." With the recognition of paralogical hyperbole, the straw man involved in such a charge is rendered visible.

In light of the findings in science communication literature that support for science and technology can be mediated by strength of religious beliefs, perhaps we would be served well by looking out for paralogical hyperbole that conflates technical claims with spiritual commitments (Brossard, Scheufele, Kim, and Lewenstein, 2008). And given the means by which this particular *anticategoria* was created perhaps we should even tread carefully when attempting to "call out" other scientists for unnecessarily taking on religious beliefs while trying to borrow the *ethos* of the technical sphere. In the US, over 30% of the population believes in a creationist explanation of human origins and nearly that many (29%) believe that scientists do not agree with one another about evolution (Funk and Rainie, 2015). Under these circumstances, there seem to be good reasons to search for tools to combat and correct paralogical hyperbole in public arguments about evolutionary science without unnecessarily perpetuating partisanship between scientific and religious commitments.

CHECKING PARALOGICAL HYPERBOLE WITH *DISSOI LOGOI* AND *PROLEPSIS*

The act of identifying and treating the multiple perspectives that bear on an issue through *dissoi logoi*, the “other words,” is surely important to informing and strengthening one’s argument. Some might even argue, as I have elsewhere, that to do so is to perform an ethical duty to the fellow persons with whom one might disagree (Coleman, 2015b). Importantly, as the case we are dissecting reveals, it is important for individuals to be aware that multiple sense-making frameworks can exist for a single issue. As Nathan Crick puts it, “*dissoi logoi*” is not simply a statement that people disagree; rather, *dissoi logoi* emphasizes that productive action must be *preceded* by thoughtful debate that draws on the wealth of available knowledge to produce desirable results” (Crick, 2010, 36, his emphasis). Instrumentally speaking, visiting potentially oppositional audiences (including the technical spheres from which one is borrowing) provides audiences with the means by which to check for *ethos*. If we are amenable to and can entertain multiple argument fields as they bear on a single issue the paralogical jumps of reasoning that might exist between them are easier to see. In turn, one’s virtues of “decision making” and “*good thinking*” are enhanced when multiple perspectives are acknowledged, respectfully treated, and understood in one’s assessments.

On the part of those who wish to publicly rebuke science communicators, Michael Leff and Jean Goodwin provide a useful discussion and revival of the term *prolepsis*, or anticipatory finding, and answering in one’s messages the potential counterarguments that exist in the minds of one’s opposition (Leff and Goodwin, 2000). Where *dissoi logoi* is a tool for thinking about the invention of one’s arguments against paralogical hyperbole, *prolepsis* is a stylistic device for the presentation of those arguments. Leff and Goodwin argue that *prolepsis* helps to construct a “dialectical tier in an otherwise monologic discourse” (Leff and Goodwin, 2000, 68). This is to say that when one engages in *prolepsis* one is performing a dialogue with one’s oppositional audiences, be they technical or public. In doing so one distinguishes him or herself from other points of view, for example, those in whom one perceives paralogical exaggeration. Instead of just arguing, “science X is false!” one might argue instead, “science X has been presented in a way that is not defensible in the sphere from which it is purported to have been borrowed. And that original article is flawed anyhow.” This way the mousetrap presented by the inconsistency between evolutionary “scientists” can be headed off by showing that “science X” is not technical science, but instead the public version of that

science, not hard won through debate and consensus, but rather the interpretation of one or a few individuals attempting to stand for their own beliefs. They may be arguing for a version of evolution, but they are not arguing for or in the name of all of evolutionary science. Acknowledging that there is not merely *one* opposition, but potentially multiple oppositions is key to this *prolepsis*.

Hyperbole might present itself as a necessity to help popularizations of science cut through our “overloaded” information age. But successfully navigating toward versions of “information quality” that recognize the need for “optimization” (simplifying by dropping qualifiers and hedges) without completely negating “soundness” is ideal (Eppler, 2015, 224). While we cannot expect for-profit organizations to cut the sensationalism, controversy, and group identity associated with paralogical hyperbole, we can attempt to cultivate critical sensibilities of it. Seeking out multiple perspectives and practicing awareness of those multiple perspectives can help add clarity and consistency to a sometimes “confused” *ethos* for science. Scientists can stand for the implications of science they favor in the public forum, even if they are claims not defensible in the technical sphere. But when they do it is vital that they keep in mind that even if they possess the correct science the manner in which they express that correctness can backfire on them. Letting science “speak for itself,” in other words, is not enough. Paralogical hyperbole is a conceptual tool for allowing individuals to “learn a way of experiencing rhetoric more consciously and intentionally” (Brummett, 1984, p. 104). With other public issues of science, such as vaccine skepticism or climate change, in which scientists are directly invited to construct “bio-rhetorics,” rhetorics that use the “play of language” to move from what the science “is” to what one “ought” to believe about it, precision in dealing with how (and why) exaggeration exists between technical and public spheres in our arguments can only help us communicate responsibly (Lyne, 1990, 38).

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