

## Science and Religion in Online Argumentation about Socioscientific Issues: A Case Study from Indonesia

Anindito Aditomo

Faculty of Psychology, University of Surabaya  
Jl. Raya Kalirungkut, Surabaya, East Java, Indonesia 60293  
email: aditomo@staff.ubaya.ac.id

*Abstract:* Being able to participate in argumentation about socio-scientific issues is an important part of scientific literacy. In some societies, the challenge of learning to argue is made more complicated by conflicts between science and religious doctrines. This study used discourse analysis to understand how the science-religion tension is manifested in online argumentation. A blog post (and its comment section) on the topic of homosexuality diagnosis in Indonesia was used as a case study. Informed by a ‘design perspective’ of discourse (Goodwin, 2001), the analysis focused on argumentation strategies arguers employed and the roles of science and religion in the enactment of those strategies. Findings show that science and religion were invoked differently depending on the position of the arguer with regards to the issue. Those who were favorable of the blog author’s position invoked scientific consensus and findings from empirical studies to make value judgments appear as having an objective basis. In contrast, those holding the opposite position used a number of strategies to undermine the epistemic authority of science. One strategy involved associating science with Western values which is portrayed as incompatible with Indonesian values. Another strategy was to contrast scientific claims with a conception of the natural order. Yet another strategy was to associate scientific claims with socially and morally undesirable consequences. These findings underscore the difficulty and the importance of helping science teachers and students to reconcile conflicting views related to science and religion.

*Keywords:* argumentation, discourse analysis, science, religion, Indonesia

### **Introduction**

One of the key objectives of science education is to enable students to use science in their daily life (National Research Council, 2012; Osborne, 2007; Roberts, 2007). For the majority of students who are not on the trajectory of becoming scientists or engineers, this means being able to understand certain scientific information well enough to make informed decisions (Aikenhead, Orpwood, & Fensham, 2011). Some of these decisions are about private matters, such as deciding on which supplementary food or exercise regime would be more beneficial for one’s health, or whether a safety feature offered by a new car model is worth its price. Other decisions are associated with students’ future role as citizens of modern, democratic societies. The most obvious example is the decision about whom to trust when candidates of public offices propose competing agendas that are based on, or at least touches upon, scientific claims and evidence.

Citizens of democratic societies do not only make decisions on whom to vote for in elections. Increasingly, they are also presented with the opportunity and obligation to participate in public argumentation about various societal issues, including those that are based on or heavily involve science (Derry & Zalles, 2011; Eilks, Nielsen, & Hofstein, 2014). In many countries, much of this public argumentation occur in online spaces such as social media (Twitter, Facebook), comment sections of the news, or personal blogs. These relatively new forms of information and communication technologies have made it easier for individual citizens to make their voices heard by their political representatives. Ordinary citizens can also start petitions and organize campaigns to support or oppose specific policies regarding complex problems or issues. As a result, the quality of public policy is, to some extent, influenced by the quality of public argumentation regarding issues relevant to the policy.

Societal issues that have significant scientific components are often called socioscientific issues (Sadler, 2011). Examples include climate change, genetically modified food, genetic therapy, the regulation of complementary medicine, and many others. Such issues are typically controversial because they impact groups in society with different, and at times incompatible, interests and values (Sadler, 2004). Furthermore, as Kock has argued, argumentation on societal issues are primarily about what actions need to be done in concrete situations, as opposed to be about what is true (Kock, 2009). That is, socioscientific argumentation are more practical than epistemic. Thus, this kind of argumentation necessarily requires participants to make value judgments and think about moral-ethical considerations about the consequences of certain actions about specific issues, in addition to scientific and technical considerations relevant to that issue.

Previous research has identified several factors which may hamper the quality of socioscientific argumentation. One is related to the participants' conceptual understanding of the relevant science content. Studies have shown that students often fail to incorporate the relevant scientific concepts and theories to support their arguments about socioscientific issues. For example, students tend to over-emphasize the importance of empirical evidence in justifying their views about the health impact of mobile phones (Albe, 2008). Some studies have also found that when students invoke science content in discussions about socioscientific issues, they do so mainly for argumentative purposes. That is, students "co-opt" science in their attempt to persuade interlocutors (Nielsen, 2012a, 2012b).

Another kind of challenge is related to the controversial nature of socioscientific argumentation. As mentioned above, socioscientific argumentation involves judgments which are based on personal and cultural values (Kock, 2007c). Thus, to a certain extent socioscientific argumentation is necessarily subjective (Kock, 2007b). Because individuals typically subscribe to different and opposing (even irreconcilable) values, socioscientific argumentation can become "heated" or emotional. Participants of such argumentation are prone to a well known cognitive

bias called my-side bias, where an individual process information in ways which strengthen prior beliefs and opinions. This bias operates automatically and is largely independent of cognitive capacity (fluid intelligence) (Stanovich & West, 2007, 2008). This kind of bias makes it difficult for arguers to fulfill a key dialectical obligation in argumentation, which is to acknowledge and take into account the strength of the opposing side (Kock, 2007a).

For many individuals, especially those coming from religious backgrounds, value judgments concerning some socioscientific issues would be based on religious beliefs (Roth, 2010; Staver, 2010). For instance, interviews with preservice biology teachers in Brazil revealed the complexity of the relations between science and religion (El-Hani & Sepulveda, 2010). For some of these preservice teachers, religious worldviews obstructed the development of meaningful understanding of scientific ideas related to evolution. Beyond the classroom walls, religious beliefs also influence individuals' attitudes towards science-related policy. This is indicated by a survey in the US, which found that religiosity strongly predicts skepticism towards the science underlying issues such as climate change, stem cell research, and human evolution (Jelen & Lockett, 2014). These findings support McRae's (2010) argument that to be able to productively contribute to public discourse on socioscientific issues, students would benefit from experiences which help them manage emotions and develop "interpretive repertoires" which enable them to reconcile scientific and religious perspectives in principled ways.

The current study examines socioscientific argumentation in the context of an Islamic society. Some parts of the Islamic doctrine are at odds, or at least are often interpreted as being at odds, with modern science. Edis (2009) wrote about the intellectual and institutional tensions between evolutionary theory and Islamic doctrines in Turkey, where proposals to 'Islamize science' and incorporate creationist ideas in the science curriculum have gained strong support. A study conducted in Egypt also found that many Muslim science teachers held the view when there is a perceived conflict between religion and science, it is religion which must come first (Mansour, 2010). These tensions represent significant hurdles for achieving the goals of science education for large segments of the Muslim population. However, relatively little research has sought to understand how these tensions play out in science teaching and learning, both in and out of the classroom.

To gain a deeper understanding about how the relationship between science and religion in the Islamic context, the current study presents a discourse analysis of argumentation about the diagnosis of homosexuality. As a case study, the study focuses on segments of online argumentation which occurred in a popular blog. To characterize the nature of the argumentation, this study took a 'design' perspective of discourse as outlined by Goodwin (2001), who placed design theory as a strand of the pragma-dialectical approach to arguments which seeks to understand how people argue in practice.

Design theory differs from another pragma-dialectical strand called ‘dialogue theory’ proposed by scholars such as van Eemeren, Grootendorst, and Henkemans (2002) and Walton (2006, 2008). Dialogue theories take the ‘dialogue’ as the paradigm activity in which people argue. People conduct dialogues to achieve shared or social purposes. From this perspective, participants of a dialogue are assumed to be collaborating to achieve the certain shared purposes. Hence, dialogue theorists such as Walton have proposed a taxonomy of dialogue types, of which rational argumentation is one (called ‘critical discussion’). Other types of dialogues include erristic (quarrels), negotiations, and information-seeking dialogues. For each dialogue type, there are rules or norms which participants need to follow, if they are to achieve their shared goals. Dialogue theorists attempt to articulate these norms. Norms (or normative model) for rational argumentations (or critical discussions), for example, have been elaborated by van Eemeren, Garssen, and Meuffels (2009).

Design theory, on the other hand, suggests the *transaction* as the paradigmatic activity for arguing (Goodwin, 2001). A transaction seems to be more generic than dialogue. A transaction is simply any activity that involves two parties trying to influence each other. Design theory does not stipulate any taxonomy of transactions or their social functions. As a consequence, design theory does not attempt to stipulate a set of general norms or rules about the ideal argument. Participants in an argumentative transaction do not adhere to a any predefined rules, to achieve some predefined social function. Indeed, according to design theory, arguers do not necessarily behave cooperatively. Argumentation, in practice, is not assumed to be functional. Any norms which come to regulate an act of argumentation emerges from the interaction. From a design theory perspective, argumentation is said to self-regulated; any norms arguers adhere to are self-imposed. Such norms are consequently fluid and open to contention. The goal, then, of these two theories also differ. Whereas dialogue theory attempts to explicate the normative model or rules of a dialogue, design theory seeks to analyze the strategies people use in argumentation (and explain how those strategies work to achieve their purposes).

Informed by this perspective, the current study sought the address the following question: (1) What strategies do arguers use to when presenting their positions in an online discussion about a socioscientific issue? (2) What roles do science and cultural values, including religion, play in those strategies?

## **Method**

### *Design*

This study adopted a case study approach in which discourse analysis was applied to selected corpus of argumentative discourse. Selection of the discourse corpus was guided by the purpose of the study, which was to elucidate the ways in which science and cultural values, including religion, were invoked in public discourse about controversial socioscientific issues. Hence, the case should involve issues which present tensions between science and cultural/religious values, and should be rich

enough to represent various positions and argumentative strategies. The case should also come from public domain. The chosen case was a post from a popular personal blog (hermansaksono.com), along with its commentary section. The particular post concerned the diagnosis of homosexuality, a topic which recently received national attention in Indonesia.

#### *Data and participants/contributors*

Forty two participants (i.e. users with different account names) contributed to the discussion, most of whom (34 participants) contributed only a single comments, while 8 contributed between 2 to 4 comments. The blog author contributed 15 comments, to make up a total of 67 comments, which were clustered into 33 threads. Of the 67 comments, 40 expressed positive sentiments towards the position presented by the blog author, 21 expressed negative sentiment, while the remaining 6 were neutral.

#### *Analytic approach.*

Following Nielsen's (2012b) approach, the first step in the analysis was to identify posts which invoked science and/or cultural values (including religion). In the second step, inductive analysis was performed iteratively to identify themes related to each category (science and cultural values). The themes were subsequently categorized into broader issues, i.e. objects of contentions. Third, normative pragmatic analysis was performed on selected threads. This included attending to: the types of speech acts employed, argument indicators used, and other linguistic features used to design the utterances (including pronouns, adjectives, stance verbs, and interjections). Last, the local roles of science and cultural values were interpreted in terms of the overall theme and dialectic of the discussion.

## **Findings and Discussion**

### *Argumentation strategies employed in the blog post*

Herman's blog post was entitled "dr. Fidiansyah on LGBT: Right or Wrong?" (in Indonesian, *dr. Fidiansyah Tentang LGBT: Benar atau Salah?*). Below the title was a screenshot of the psychiatrist when he appeared in the popular TV talk show called Indonesian Lawyers Club. The blog post title and illustrating picture served as an introduction to what is the main issue, i.e. the veracity of dr. Fidiansyah's claim that "homosexuality is a mental disorder" (cited by Herman in Lines 1 and 2).

The blog post title and opening paragraph, however, not only introduced the issue, but also framed it in a certain way. In particular, the phrase "right or wrong" suggested that the issue should be seen as a factual matter, one which can be judged in terms of a simple true/false dichotomy. In this framing, dr. Fidiansyah's statement can only be either factually correct or incorrect. It cannot be judged as having certain weaknesses and strengths in a more nuanced manner. This framing is reinforced in

Line 3 of the opening paragraph, which declared the purpose of the blog post as to “proof whether what dr. Fidiansyah said was true or false.”

Furthermore, the word “proof” in Line 3 signals that there is an objective way to verify or falsify dr. Fidiansyah’s claim that homosexuality is a mental disorder. As revealed in subsequent paragraphs, this proof revolved around the content of the third edition of the Indonesian manual for the classification and diagnosis of mental disorders (in Indonesian, “*Pedoman Penggolongan dan Diagnosis Gangguan Jiwa di Indonesia*”, hereafter PPDGJ). More specifically, the blog post focused on whether the PPDGJ listed homosexuality as a disorder. This is made explicit in Line 10, which stated that “to proof whether dr. Fidiansyah is right or wrong, his statement will be compared to the content of the PPDGJ.” Photographs of the cover and relevant pages of a copy of the PPDGJ further underscored the centrality of the issue of what the manual said about homosexuality.

Health - February 19th, 2016

**dr. Fidiansyah Tentang LGBT: Salah atau Benar?**



Dalam episode Indonesian Lawyers Club (ILC) berjudul “LGBT Marak, Apa Sikap Kita?”, dr. Fidiansyah mengatakan bahwa homoseksualitas adalah gangguan jiwa. Tulisan ini akan membuktikan benar salahnya ucapan dr.Fidiansyah.

(Update: pada 23 Maret 2016, dr Fidiansyah telah *minta maaf* atas pernyataannya di ILC).

Kronologisnya, pada ILC episode 16/2/2016, dr.Fidiansyah mengatakan bahwa homoseksualitas merupakan gangguan. Ketika ditanya Karni Ilyas gangguan apa yang dimaksud, dr.Fidiansyah menjelaskan bahwa homoseksualitas adalah gangguan jiwa. Kesimpulan ini dia ambil setelah membacakan buku diagnosis PPDJG III versi “textbook” yang ilmiah. Menurut dr. Fidiansyah, buku versi textbook lebih lengkap daripada buku saku yang dipakai masyarakat.

Untuk menguji benar salahnya dr.Fidiansyah, saya akan membandingkan ucapan beliau dengan buku PPDGJ III versi “textbook”. Pada tanggal 18 Februari 2016, saya mendapatkan PPDGJ III dari perpustakaan Fakultas Psikologi UGM. Buku ini bernomor 616.89 Ind p-c4. Jika pernyataan dr. Fidiansyah sesuai dengan isi buku textbook, maka kita bisa menyimpulkan bahwa dr. Fidiansyah mengatakan kebenaran.

By focusing his blog post the content of the PPDGJ, Herman implicitly shifted the issue from *whether homosexuality is a mental disorder* to the issue of *whether the PPDGJ listed homosexuality as a diagnostic category*. This shift can be understood as a deliberate strategy which draws from the fact that dr. Fidiansyah’s claim was also based on a reading of the PPDGJ. As narrated in Herman’s post (second paragraph, Lines 5 to 9), the psychiatrist stated that on this matter, one should refer to the more complete “textbook” version of the PPDGJ, and not to “the pocketbook [version] used by people.” The psychiatrist then read aloud the following sentences from page 288 of the PPDGJ (narrated in Lines 16 to 21):

“Psychological and behavioral disorders which are related to sexual development and behavior ... are ...

F66.x01 Homosexuality

F66.x02 Bisexuality.

Clearly written!”

Following this recounting, Herman directly attempted to undermine the grounds of dr. Fidiansyah’s argument by visually presenting page 288 of the PPDGJ. Comparing the content of that page with dr. Fidiansyah’s statement, Herman wrote (Lines 25-28):

“We can see that, for whatever reason, dr. Fidiansyah did not mention two important lines from the PPDGJ III:

1. ‘Sexual orientation should not be regarded as a disorder’
2. ‘F66.x00 Heterosexuality.’”

Herman thus concluded, in bold letters, “dr. Fidiansyah was not telling the truth” (Lines 36-37). Notice that Line 25 contained the clause “for whatever reason” (in Indonesian, “*entah karena apa*”). This clause was not informationally relevant to Herman’s assessment about the veracity of dr. Fidiansyah’s statement. However, the clause could potentially have pragmatic relevance by signaling that dr. Fidiansyah had a concealed and possibly sinister motive in stating that homosexuality is a mental disorder. This interpretation becomes more probable when considering Herman’s argumentative move in the next paragraph (Lines 38-40):

“This mistake is unacceptable. dr. Fidiansyah must publicly correct what he said and apologize because his action has the potential to perpetuate discrimination and violence against the marginal groups of homosexuals, bisexuals, and LGBT in general.”

Here, Herman shifted the issue from being about the factual/scientific merit of dr. Fidiansyah’s argument about homosexuality as a disorder, to become about making value-laden practical decisions. Reinforcing this shift are words signaling unequivocal stances such as “unacceptable” and “must”. Notice also that in Line 39 Herman no longer used the term “statement” to refer to dr. Fidiansyah, but used the stronger term “action.” Overall, that paragraph was designed to convey that dr. Fidiansyah was not merely making statements. More than that, the psychiatrist was committing acts which could perpetuate discrimination and violence against marginalized groups. Thus, being wrong regarding the diagnosis of homosexuality was portrayed as perpetuating morally objectionable social consequences.

To summarize, the science invoked in Herman’s blog post was the scientific consensus on the diagnosis of homosexuality as a mental disorder, as codified in the Indonesian mental disorder diagnostic manual (PPDGJ III). This science content was used in a relatively straightforward manner to introduce a topic as a relevant issue for discussion. In addition, the science content also used to frame the issue in a particular way, i.e. the diagnosis of mental disorder as a factual matter of looking it up in a diagnostic manual. In this case, both sides in of the debate rested their arguments on the authority of the PPDGJ. The information contained in the diagnostic manual was presented as corresponding to factual truth. Crucially, this framing contributed to the attempt to make value-laden positions appear to have objective, value-free scientific foundations.

#### *Argumentation strategies in the comment section*

The discussion in the comment section is interpreted in the context of the blog post. That is, the comments are seen as a response, directly or indirectly, to the argument presented in the blog post.

Perhaps unsurprisingly, science was invoked to support the position advocated by the blog post (i.e. that homosexuality is not a mental disorder). Science content in the form of expert or professional consensus (as represented in the Indonesian PPDGJ and the American DSM), as well as conclusions from empirical studies (on the formation of sexual orientation) were cited as grounds to support value judgments, e.g. that as homosexuals’ civil rights need to be supported and protected. In other words, contributors who were favorable of the blog author’s position invoked scientific consensus and findings from empirical studies to make value judgments appear as having an objective basis.

In contrast, contributors who opposed the blog author’s position also invoked science, but mainly to undermine the authority of scientific claims regarding homosexuality. This was performed through the following strategies:

1. By explicitly contrasting science to religion.

This simple argumentative strategy is illustrated in the following thread:

- |        |   |
|--------|---|
| C.3.1. | <b>Kahfi</b>  |
| C.3.2. | I have more believe in the Quran which states that lgbt is <i>haram</i> than in the book which could be wrong. Because [of that] surely |
| C.3.3. | everything including science must be based on religion.   |
| C.4.1. | <b>melody</b>   |
| C.4.2. | Agree ... Back to the holy book, as the guide for life. Clearly <i>haram</i> .  |



In Lines C.3.2 and C.3.3, Kahfi juxtaposed the Quran (Islam’s holy book) and “the book” (i.e. the PPDGJ/diagnostic manual) as sources of knowledge about the status of homosexuality. The construction “more ... than” signals that the two objects being compared have unequal status as sources of knowledge. In this case, the diagnostic manual is presented as fallible (signaled by the modal “could be” wrong), which further implies that the Quran is infallible. This infallibility of the Quran logically justifies Kahfi’s next claim that science (as everything else in life) must be based on religion. The adverb “surely” portrays the following claim as an obvious truth requiring little or no justification, while the adverb “must” denotes an absolute stance, which leaves no room for any alternative.

The crassness of this strategy may lead some readers to doubt its persuasiveness. To appreciate the strategy’s persuasive power, one would need to remember that many religious individuals believe that their holy book contains literal and eternal truths. By providing no further grounds to justify his claim (other than saying that the Quran contradicts the diagnostic manual), Kahfi was betting that at least some of his audience shared this worldview. This was confirmed by the next contributor (Dicky), who explicitly endorsed Kahfi’s argument.

From a normative viewpoint, this strategy is problematic because it conflates two ontologically separate realms: the empirical and the moral. Arguably, the statement “homosexuality is *haram*” is more appropriately seen as a moral claim. That is, it describes an ethical stance, as opposed to being a description of reality. This claim, even if true, this does not necessarily contradict (or confirm) scientific claims about whether homosexuality is a mental disorder. At least, it does not logically follow that if homosexuality is haram, then it must be seen as a mental disorder.

2. By implicitly contrasting science to conceptions of what is **natural**, often using emotive words (e.g. disgusting) and absolute stance adverbs (e.g. clearly).

This strategy is illustrated in the following thread:

February 20, 2016 at 2:01 pm. **INFO MILITER:**

Whatever that book [the PPDGJ] says LGBT are mentally ill, because their behavior has degraded to become lower than animals, they belong in the mental hospital, remember that NKRI [the Republic of Indonesia] is a theistic and moralistic country, all religion without exception clearly oppose the existence of immoral LGBT

February 20, 2016 at 2:20 pm. **Herman Saksono:**

Animals also engage in same sex relations too, you know.

February 22, 2016 at 1:23 am. **Nvil:**

do you have proof? have you done any research?

In comment #33, INFO MILITER (IM) began with a reference to the mental disorder diagnostics manual. The phrase “whatever the book says” indicated an absolute stance, a complete rejection of the diagnostic manual. The need to repudiate the authority of the diagnostic manual could be understood by seeing the comment as a response to Herman’s blog post. In his blog post, Herman took for granted the authority of the PPDGJ. That is, the blog post assumed that the manual possessed scientific authority, and that its authority served as a sufficient ground to support Herman’s claims. The opening phrase of IM’s comment allowed him to present an argument free from the epistemic constraints imposed by assumptions about the authority of the PPDGJ, and also preempts any interlocutor to draw upon that assumption.

IM subsequently argued that *because* homosexual behavior is “lower than animals”, then it must be the manifestation of a mental illness. Underlying this argument seems to be an assumed natural, hierarchical order in which humans assume a nobler position compared to animals. Behavior that is natural requires no further explanation (it simply reflects the natural state of affairs). Meanwhile, behaviors outside the natural order must be unnatural and therefore requires an explanation. In the case of homosexual behavior, which is described under a negative light (“lower” than animals), the explanation was some mental illness. Hence, this simple sentence implicitly pitted science (represented by the PPDGJ) against a natural order assumed to reflect the normal state of affairs.

3. By highlighting the subjective and uncertain nature of scientific claims about the diagnosis of mental disorders, especially homosexuality.

This strategy can be seen in Nikos’ comment in Lines D.7.1, where he portrayed the science of homosexuality as subjective/uncertain by implicitly contrasting it with what an ideal, objective science should look like. Niko then claimed that “not all psychiatric experts from the USA agreed to the removal of LGBT from the DSM,” hence implicitly suggesting that consensus among experts was a requirement for a claim to have scientific/epistemic authority. This presents an unachievable burden of proof on part of Niko’s interlocutors: to show that there is a complete scientific consensus, otherwise concede that the claim regarding this matter is unsettled.

Niko further claimed that the removal of homosexuality from the DSM was “only a result of social and political *pressures* from a society which has increasingly embraced liberal ideas, as opposed to [being a result of] genuine scientific development.” The key feature of this line is the use of the connective “as opposed to” to present a contrast between real science and the current consensus on the diagnosis of homosexuality. The word “pressure” also conveyed the sense of science or scientists being forced by external factors (in this case, socio-cultural values labeled as “liberal”) to deny “genuine scientific developments.”

In a related move, Niko attached the evaluative term “hoax” to the statement that there is “gay gene”. A hoax is often used to refer to information that is manufactured or skewed with malicious intentions. Overall, these lines present Niko’s interlocutors with the burden on proving that scientific claims on homosexuality is not unduly biased by socio-cultural values, as opposed to being based on objective facts.

#### 4. By associating science with undesirable social consequences.

In addition to portraying science as uncertain and subjective, Niko’s comment also undermined science by associating it with undesirable consequences. This is evident in Lines D.7.3 to D.7.6, where he stated that homosexuality “*must* be classified as a disorder in the next edition of the PPDGJ, *lest* Pedophilia and Bestiality will also ask to be recognized and legalized. *Disgusting*, you know!” The combination of “*must*” and “*lest*” conveyed a sense of urgency, a warning that “*disgusting*” consequences would almost certainly result from failure to re-classify homosexuality as a disorder. At that time, pedophilia had caught a lot of public attention through the reporting of many high profile cases, and hence its reference has the potential to invoke fear.

In the next line, Niko further elaborated: “The key here is that the recognition of LGBT will open the door for other sexual deviations to become widely spread.” In Indonesian parlance, the term “deviation” (*penyimpangan*) is not understood in the sense of non-conformity, which can be good or bad depending on the context. It is firmly associated with the negative connotation of going morally astray. Allowing sexual deviations to become widely spread is akin to approving societal catastrophe. Overall, then, by linking the diagnosis of homosexuality to certain consequences, Niko placed yet another burden on part of his opponents, i.e. either to disprove the link between claiming that homosexuality is normal and morally offensive consequences, or to defend those consequences themselves.

### **Conclusions and limitations**

For many students and teachers in religious societies, such conflicts may stand in the way of meaningful engagement with key aspects of science. Thus, findings of the current study underscore the difficulty and the importance of developing repertoires which allow students/teachers to reconcile conflicts between science and religion. As a small case study, the current study is limited in its generality. Future studies should examine argumentative strategies in the context of other socioscientific issues (e.g. human evolution), as well as look into argumentation enacted in other media (e.g. the classroom and social media such as Facebook).

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