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ORIGINAL RESEARCH

Designing Critical Questions for Argumentation Schemes

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Abstract
This paper offers insights into the nature and design of critical questions as they are found in argumentation schemes. In the first part of the paper, I address some general concerns regarding their purpose and formulation. These include a discussion of their evaluative function, their relationship with the patterns of reasoning they accompany, as well as the differing formulations of critical questions currently on offer. I argue that the purpose of critical questions for humans ought to be to provide the means for a scalar evaluation of the reasoning at hand. To do so, critical questions should be closely paired with individual premises in the accompanying pattern of reasoning and be open-ended. Doing so allows the roles of raising considerations relevant for the reasoning and scrutinizing those considerations to be clearly distinguished. In the second part of the paper, I offer a positive methodological proposal for the construction of questions and premises that aims at overcoming a number of the individual and systematic shortcomings of extant question styles. The paper concludes by arguing that the newly proposed approach is both normatively strong and practically useful for argumentation in context.

Keywords Argumentation schemes · Critical questions · Patterns of reasoning · Argument evaluation

1 Introduction

In this paper I propose an approach to critical question design. Specifically, I will focus on critical questions as they are used in argumentation schemes. I hope, however, that the approach propounded here may be of use for those interested in critical questions more broadly, such as by those working in education and critical thinking, or anyone who may use them detached from associated patterns of reasoning.

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Argumentation schemes (patterns of reasoning and their associated critical questions) have been formulated in various ways. In what follows, I use the argumentation scheme for the argument from expert opinion as an exemplar, but as will become clear, the results of the discussion are applicable to all other argumentation schemes as well. I introduce it here to help ground the rest of the introductory remarks. Walton et al. (2008, p. 310) articulate the scheme and questions as:

Major Premise: Source E is an expert in field F containing proposition A.
Minor Premise: E asserts that proposition A (in field F) is true (false).
Conclusion: A may plausibly be taken to be true (false).
CQ1: Expertise Question: How knowledgeable is E as an expert source?
CQ2: Field Question: Is E an expert in the field F that A is in?
CQ3: Opinion Question: What did E assert that implies A?
CQ4: Trustworthiness Question: Is E personally reliable as a source?
CQ5: Consistency Question: Is A consistent with what other experts assert?
CQ6: Evidence Question: Is E's assertion based on evidence?

As can be seen in this example, the two main components of an argumentation scheme are the pattern of reasoning and the associated critical questions. This paper focuses on the design of the latter insofar as they are attached to the former.

The main motivation behind this work is an uncertainty regarding what it is that makes critical questions, critical. While research into argumentation schemes stretches back to Aristotle, most notably in the Topics,[1] the introduction of associated critical questions is much more recent, most commonly being traced to Hastings' (1962) PhD dissertation (Walton et al. 2008; Yu and Zenker 2020). Since then, most of the work on argumentation schemes has focused on the patterns of reasoning.[2] For example, one of the only contemporary articles to specifically and explicitly discuss the construction of argumentation schemes (Hitchcock 2017) mentions critical questions only in passing.[3] This paper aims to fill this gap by providing a critical discussion specifically regarding the normative dimensions of the nature and formulation of critical questions.

To ground the discussion, in the next section (section 2), I will define some of the key concepts worked with throughout the remainder of the paper. In the third section, I provide a discussion of the purpose of critical questions, pointing to the limits of some of the characterizations offered thus far and raising questions for the field. The fourth section reviews the three main formats of question on offer thus far, while assessing their strengths and weaknesses. In the fifth section, I collect the

[1] For a thorough discussion of the history of argumentation schemes, see Rigotti and Greco (2019) who provide an excellent discussion of argumentation schemes from Aristotle, through the Medieval ages, to their own contemporary development of the Argumentum Model of Topics.

[2] A main current focus in the field regards how argumentation schemes ought to be categorized rather than how they ought to be constructed (Bex and Reed, 2011; Walton and Macagno, 2016).

[3] Walton and Gordon (2011) provide a discussion focused on critical questions. However, their focus is on the use of questions within a specific argument diagramming software, rather than the relationship between their nature and design.

insights from the previous sections to motivate my positive proposal for the construction of critical questions, which necessarily includes some discussion of the formulation of patterns of reasoning. The conclusion summarizes the contribution of the work, while acknowledging its limitations.

2 Definitions

Although contemporary work on argumentation schemes has rapidly developed over the past 25 years (or so), as Yu and Zenker (2020) note, a consensus definition and theoretical understanding of argument schemes and critical questions remains absent. In *Argumentation Schemes*, Walton, Reed, and Macagno, define them as "forms of argument (structures of inference) that represent structures of common types of arguments used in everyday discourse, as well as in special contexts like those of legal argumentation and scientific argumentation" (2008, p.1). The pragma-dialectical approach to argumentation characterizes an argument scheme as "the way in which the reason given in support of a standpoint is supposed to bring about a transfer of acceptance to the standpoint in a particular type of argumentation" (van Eemeren 2018, p. 7) and the role of the critical questions is to "capture the pragmatic rationale that is brought to bear in the argumentation in order to bring about a transition of acceptance from the reason that is advanced to the standpoint" (ibid., p. 45). While debates about the definition are important, they are not the main focus here, and so I offer what I think to be sensible definitions for central concepts that are not so controversial as to take away from the focus of the paper.

The most important concept to define here is "argumentation scheme." I understand an argumentation scheme to be a defeasible pattern of reasoning accompanied by one or more associated critical questions.[4] By "pattern of reasoning," I mean what might more commonly be called a line of reasoning or a premise-conclusion complex. In other words, a pattern of reasoning is a recognizably common (stereotypical) organization of premises leading to a conclusion. As defeasible, the purpose of a pattern of reasoning is to justify acceptance of (or adherence to) the conclusion, unless that presumption is somehow otherwise overcome. A critical question in this context may be aimed at testing if the defeasibility conditions of the pattern of reasoning have been met. This is typically done via questioning the premises, inference(s), or the conclusion itself, though some questions have also been formulated to query contextual considerations as well. For example, in the argument from expert opinion above, the conclusion depends on the expert using evidence to support her claim. The expert's claim being based on something other than evidence may be enough to remove the presumption of the acceptance of the conclusion. As such, the 6th critical question investigates just such a possibility.

[4] One advantage to this definition is that it prevents "argumentation scheme" from becoming synonymous with "pattern of reasoning" and captures the importance of both components. I thank Fabrizio Macagno for discussion of this characterization.

Argumentation schemes can be categorized into two broad types, normative and descriptive, though as used in argumentation studies the two are not mutually exclusive. Normative argumentation schemes prescribe how a pattern of reasoning ought to be used, whereas descriptive schemes report how patterns of reasoning are in fact used. The normative is never fully normative, however, because it is always designed with common usage in mind (Shecaira 2016). And, the descriptive is never fully descriptive because users generally maintain ideas regarding their better and worse use when employing them.

Now that we have a general view of argumentation schemes, what is the specific purpose of the critical questions? This is the topic to which we turn in the next section.

3 The Purpose of Critical Questions

It is widely acknowledged that the purpose of critical questions is to function as evaluative tools, but beyond that little else has been consistently agreed upon. Godden and Walton (2007, p. 269) suggest that "[t]he function of a critical question is to test a typical or common way in which an argument of a certain schematic type can fail to meet one (or more) of the R.S.A. [Relevance, Sufficiency, Acceptability] criteria. Thus, critical questions are a kind of evaluative topoi, providing a list of individually necessary conditions for the success of particular schematic arguments." They do not, however, specify what counts as "typical" or "common". They also further specify that although 'necessary', the conditions (i.e., satisfactory answers to the questions) "are not jointly sufficient conditions for the success of a schematic argument" (ibid.) because they only address commonplace ways the reasoning/argumentation can go wrong.

In my view it is hard to determine the role of individual questions if the broader question of the aim of the overall evaluation is left unclear, and thus far it seems there are two main competing views regarding the overall purpose of these questions. On one view, if a question is inadequately answered (or not answered at all), the reasoning fails and it is no longer reasonable to accept the conclusion:

> If an argument put forward by a proponent meets the requirements of a scheme, and the premises are acceptable to the respondent, then the respondent is obliged to accept the conclusion. But such an acceptance - or commitment, as it is often called - is provisional in the dialogue. If the respondent asks one of the critical questions matching the scheme and the proponent fails to offer an adequate answer, the argument defaults. (Walton, Reed, and Macagno, 2008, p. 9)

On the second view, critical questions lead to a fuller evaluation:

> The use of argumentation schemes, and their close relation to fallacies, also introduces another key advantage: flexibility. By accepting the fact that there may be a scale from good to bad argument, it becomes possible to equip learn-

> ers with the flexibility necessary for handling real – rather than logic-textbook – argumentation. (ibid., p. 22)

The difference between these two approaches is that the former takes a binary approach to the evaluation of reasoning and argumentation while the later takes a scalar approach. The first view presents a sort of checkbox approach, where each question is attributed a "pass" or "fail"—i.e., the questions are considered necessary conditions. If even one question receives a "fail", then "the argument defaults" and the conclusion should not be accepted. On the second model, the reasoning may be graded and the impact of an inadequate answer, while likely detrimental, is ultimately indeterminate until all other considerations are accounted for as well.

Choosing a binary or scalar approach can impact the wording of the individual questions. A question may be designed to check for a minimum satisficing of acceptability, or it may be designed to probe for information from which a more nuanced evaluation may emerge. If designed to check for a minimum, the user need only 'just pass', for the question to receive a stamp of approval. The critical questions should be designed differently if instead of ensuring minimum acceptability, their purpose is to provide advice for how to improve the reasoning or argumentation no matter the current quality.

There are benefits and drawbacks to each approach.[5] On the binary approach, it is unclear how a pass/fail threshold is to be determined. Since premises and answers to critical questions are also defeasible, there are often considerations that count in favour and against determining whether the answer has "passed". Consider, for example, the following question from the appeal to expert opinion (2008, p. 310): "How knowledgeable is E as an expert source?" What constitutes a "pass" in this case? In relation to other so-called experts, should the expert in question be pretty knowledgeable? Decently knowledgeable? Slightly below average knowledgeable? Perhaps measuring expertise in relation to peers is the wrong approach altogether. The situation becomes even more complicated when considering expertise in unrecognized or uncommon fields.

A scalar evaluation provides the evaluator with a more nuanced picture of the reasoning at hand, which may lead to more thorough improvement. The downside, however, is that it is more difficult to determine if the overall conclusion should be accepted or not. As scalar, each answer is considered *pro tanto*, i.e., taken into account as interacting with and working alongside other answers. On this view, one question may receive an inadequate answer, but that alone may not negate an overall transfer of acceptability to the conclusion. The conclusion could be accepted with, say, an asterisk pointing to the acknowledged weakness. In this way, the answers can provide more information.

Next, Bart Verheij (2003, pp. 182–183) has noted that critical questions can do (at least) four things: They can (1) criticize a premise, (2) point to exceptional situations

[5] I thank an anonymous reviewer for pointing out that this does not mean, however, that they are fundamentally opposed. Since in the end both methods are concerned with determining whether the conclusion ought to be accepted on the basis of the premises, they both make use of thresholds in differing ways.

in which the scheme defaults, (3) identify conditions for the use of a scheme, and (4) point to other possible arguments relevant for a scheme's conclusion. When considering these four functions against an extant list of critical questions, it raises the question—why these, and only these, questions? Macagno, Walton, and Reed (2017, p. 2494) explain that "every scheme has a corresponding set of critical questions, representing its defeasibility conditions and the possible weak points that the interlocutor can use to question the argument and evaluate its strength." But to what extent can we be sure that all, or even the most important defeasibility questions have been covered? As we have seen, in some cases critical questions seem to test premises in the scheme, but in other cases they are not connected to the premises. This problem is related to what Godden and Walton (2007, p. 281) call the completeness problem: "Is the evaluation of an argumentation scheme ever sufficiently complete so that its conclusion should be accepted? And if so, when?" As far as I am aware, no response has yet been put forward for this problem. I will present a possible response in my positive proposal below.

Finally, it is also not always clear who the critical questions are designed for. If the questions are to be asked internally (by one's self, applied to one's own reasoning) they would benefit from a different formulation than if they are to be asked in a dialogical situation. Shecaira (2016) argues that not all schemes neatly fit a real dialogical setting. To support his claim that questions do not constitute a vital part of an argumentation scheme but could constitute an improvement, Shecaira points to the legal domain, which is "characterized by formality, hierarchy, authority, and a strong institutional incentive toward settlement" rather than dialogue. In this part of his argument, it seems that he is using the word 'scheme' as limited to 'pattern of reasoning', implying that schemes are non-dialogical. If this is correct, then in so doing, he also seems to be restricting himself to descriptive claims about legal reasoning because even though a judge may not allow for dialogue (though they do often dialogue with lawyers in and out of the courtroom), it does not mean that the judge may not ask herself the critical questions when coming to a judgement. Shecaira is careful to point out that someone evaluating the judgement from the outside might benefit from the guidance of associated critical questions to construct their evaluations, but denies that they should "figure in a depiction of the argument *as given by the court"* (ibid., p. 515. Emphasis in original).

While I agree with the observation that not all schemes fit a real dialogical situation, perhaps because they are not designed to,[6] I disagree with Shecaira's further contention that this means critical questions do not constitute a vital part of an argumentation scheme. This is largely due to the distinction between 'dialogical' and 'dialectical'. I have previously argued (Baumtrog 2018) that dialectical argumentation can happen within an individual's own thought process even if no other participants are envisioned. One way for this to happen is for an individual to follow the

[6] Walton, Reed, and Macagno (2008, pp. 323–326) specifically include a scheme for "Two-person practical reasoning", leading me to believe that other schemes for practical reasoning are envisioned for a monological setting. However, this also shows that each scheme can be given a 'dialogical garb', i.e., amended to fit a dialogical setting. I thank an anonymous reviewer for raising this point.

pattern of reasoning and address the critical questions on their own. I see no reason why a judge would not do so when preparing the court's arguments. She would do so in part to ensure strong reasoning, even if no dialogue is envisioned. Further, I think if we aim to be good critical thinkers, this kind of thinking should happen within each individual as often as possible. Without the critical questions, a reasoner would simply reach a conclusion, accept it, and move on. Asking the critical questions brings an argumentative element to an individual's reasoning, even if the questions are only raised within the individual's own mind. Last, there is nothing particularly argumentative about a pattern of reasoning: we reason all the time without arguing. For 'argumentation' schemes, the critical questions are essential if the term is not to be synonymous with 'pattern of reasoning'.

Nevertheless, there can be important differences in how questions are designed and formulated if who the end user will be is not clear in the mind of the question designer. As I argue in the next section, this is readily noticeable in the case of binary 'Yes/No' questions.

4 Question Formulation

In the argumentation schemes literature, critical questions seem to be formulated in three main ways, what I call (1) binary (Yes/No) questions, (2) 'really/indeed' questions, and (3) open questions.[7] Binary questions simply ask the respondent for a confirmation or denial. For example, in the scheme for the argument from expert opinion, critical question two asks, "Is E an expert in the field F that A is in?" On the surface this question seems to fail to count as critical for two main reasons. First, there is nothing explicitly critical in the question—it is asking for a fact, moreover, a fact that has already been addressed by the person being asked the question. Recall that the first premise in the argument from expert opinion states, "Source E is an expert in subject domain S containing proposition A". As such, asking this question in a dialogue would sound odd. If I tell you that my roommate Seth is an expert in biology, which contains the proposition that all life produces waste, and you asked me "Is Seth an expert in the field that propositions about life producing waste are in?", I might ask you if you were listening. At best, I would simply say "yes". Perhaps the point is to mark a difference between, "domain" and "field", but if this is the case it is unclear from the wording of the question. If the 'critical' part of critical questions is not found in the way they are worded, then perhaps it is a matter of the asker's intent.

Attributing the 'critical' part of critical questions to intent, however, seems problematic, especially when it comes to monological argumentation (arguing by

[7] Some of the literature on critical thinking also addresses the critical questions from at least two perspectives. There is theoretical work discussing the "questioning approach" to critical thinking (see Brodin, 2015; Trede and McEwen, 2015) and there are practical guides for designing critical thinking questions (see e.g., Elder and Paul, 2019). Since, however, neither approach is directly concerned with testing the use of a pattern of reasoning as found in an argumentation scheme, I leave the investigation of that work and its possible connections to argumentation schemes for a future work.

oneself). This is problematic in no small part because we all suffer from confirmation bias (see Nickerson 1998; Kahneman 2011, pp. 80–81)—the tendency to seek evidence confirming our beliefs. If I have already asserted in my head that E is an expert in a domain S, I would likely search for confirming evidence if/when asked if the expert is in the appropriate field. In addition, since we also have a tendency to stop testing our reasoning as soon as we have found any confirming evidence (Mercier and Sperber 2011), we are most likely to miss the intent of the critical question altogether. Thus, the reason the abovementioned question seems to fail to count as critical is because it invites confirmation, when critical thinking is more commonly associated with skepticism. Putting the critical component in the wording, rather than leaving it to intent, while also insisting all questions be addressed, would likely help avoid this tendency.

To heighten the critical component in the questions, some questions add "really" (Garssen 2001, p. 92) or "indeed" to the question. For example, in relation to the argument from expert opinion, Wagemans (2011, p. 335) contends that the most important critical question is ''Is being asserted by expert E indeed an indication of [opinion O] being true or acceptable?'' As with normal binary questions, this question is asking for a reaffirmation of a part of the pattern of reasoning, since the associated conclusion states that being asserted by expert E is an indication of [opinion O] being true or acceptable. However, the addition of the "indeed" component has the merit of encouraging a reflective pause on behalf of the answerer, to 'really' ensure they are sure. While helpful, this formulation is also not without its problems. The most important, I believe, is its vagueness. When we ask someone if they really mean something, what are we asking for? The answer to that question is, to my mind, what the question should really ask. Instead of hiding that request within a word like 'really,' it would be better to make the request for information clear and explicit. I try to articulate what I think the 'really' in these questions is asking for in my in positive proposal below. Before moving on, however, we should review the third common question style—open questions.

Open-ended questions generally take the 'wh' form—who, what, where, when, why (and how). Since these questions move beyond calling for yes and no answers, they necessarily elicit more information from the respondent. More information may not, however, be more helpful. It depends on the purpose of the questions. In addition, just because the questions are open-ended does not mean they will focus on the correct content. Open-ended or not, *what* is being questioned is just as important (perhaps more so) as *how* it is being questioned. In short, while wh-questions appear to be generally better than the alternatives, their mere presence is not enough to ensure they function as critical questions.

Finally, it is worth noting that some questions are formulated in the first-person and some in the third-person tenses. For example, the first question associated with the pattern of reasoning for value-based practical reasoning (Walton et al. 2008, p. 324) asks, "What other goals do I have that might conflict with G?" The first critical question associated with two-person practical reasoning (ibid. pp, 325–326) asks, "Does X have other goals (of higher priority) that might conflict with the goal of realizing A?" As mentioned above, formulating the questions in this way may make sense depending on who is envisioned as the end user. From a theoretical

perspective, however, if the questions are generally envisioned as a part of a dialogue, the lack of the second person perspective is noticeable: e.g., "Do you have other goals (of higher priority) that might conflict with the goal of realizing A?".

Once a question designer has settled on the overall purpose of the questions (Sect. 3 above), he or she will have a better idea of how to go about formulating them. In the next section, I take some sides on the issues raised above to support a positive proposal for question design, which necessarily involves the pattern of reasoning as well.

5 A Positive Proposal

Frist, I will address the decision between a binary or scalar approach. I argued above that using critical questions to provide a scalar evaluation of the use of a pattern of reasoning was problematic because it was hard to determine the point at which the reasoning was good enough to transfer acceptability to the conclusion. I also argued, however, that if aiming at a pass/fail approach for individual questions, that same problem persists, but is moved to the question level since premises in an argumentation scheme are also defeasible. Given that there is not yet a systematic solution for how to attribute weight to reasons that would guide us in determining if the answers to individual questions pass the threshold of acceptability, I think it is best that argumentation schemes designed for humans be aimed at eliciting all of the important considerations involved in making a reasonable decision. Then, a further argument can be made for why those considerations, on the balance, support assent or dissent from the conclusion. Doing so requires a particular use of open-ended questions.

On this approach, instead of looking for *pro toto* pass/fail conditions, the premises and questions are considered *pro tanto*. That is, they provide contributory reasons for and against assent to the conclusion. As contributory, however, they do not merely accumulate on their respective 'for' or 'against' sides. Each consideration operates in relation to the rest and may be an affirming, dissenting, or neutral consideration depending on the situation (see Dancy 2007, pp. 17ff). In practice this means that an individual critical question could receive an inadequate answer, yet the balance of considerations still points to accepting the conclusion. I thus support a scalar approach that uses open questions for the evaluation of patterns of reasoning.

Given the purpose of the critical questions and the argument that they should take an open-ended form, we can now discuss which critical questions should be included and why. In my view, there should be a close connection between premises and critical questions. Stepping back for a moment, we can see that both premises and critical questions have a common core component—they both introduce considerations important to the reasoning at hand, albeit they do so in different ways. If this is correct, then if a consideration ought to be included in the scheme, the impact of its inclusion on the reasonableness of accepting the conclusion ought to be scrutinized. Doing so means maintaining a connection, a pairing, between premises and critical questions so that the role of the question is to test the use of premise.

To do so, I follow Sàágua and Baumtrog's (2018) recommendation for formulating the premises in the pattern of reasoning so that each premise only contains one

term with inferential power (i.e., one consideration). The critical question is then tasked with evaluating the use of that singular term. On this approach, you would have as many critical questions as you do premises and the answer to the question, "which questions should be included and why?" turns out the be the same as "which considerations are needed for a reasonable assent to the conclusion?" Philosophers and experts in specific contexts may continue to debate this latter question, but at least when it is sorted out the completeness problem pertaining to critical questions is sorted out with it.

One more theoretical consideration needs resolving before illustrating how the suggestions come together. As mentioned, the wording of the critical question is essential to answering "what makes a critical question, critical?" It is not enough to rely on the asker's intent, and as I argued above, including an additional term such as 'really' or 'indeed' is rather vague. I think when a critical question asks if x is 'really' the case, it is meaning to ask 'what counts in favour and what could count against x being the case?' As such, I suggest that the questioning of the premise be formulated as a critical question pair (CQP). The first question in the pair asks for a justification of the use of the term with inferential power, while the second question in the pair takes a skeptical stance toward its use.

To illustrate, I will now amend the already familiar scheme from expert opinion to meet the recommendations suggested above, namely (1) to aim the questions at providing a full evaluation via open questions, rather than a binary pass or fail, (2) to keep the premises limited to one term with inferential power, and (3) to attach the questions to the evaluation of that term. To recall, Walton et al. (2008, p. 310) articulate the scheme as:

Major Premise: Source E is an expert in field F containing proposition A.
Minor Premise: E asserts that proposition A (in field F) is true (false).
Conclusion: A may plausibly be taken to be true (false).

CQ1: Expertise Question: How knowledgeable is E as an expert source?
CQ2: Field Question: Is E an expert in the field F that A is in?
CQ3: Opinion Question: What did E assert that implies A?
CQ4: Trustworthiness Question: Is E personally reliable as a source?
CQ5: Consistency Question: Is A consistent with what other experts assert?
CQ6: Evidence Question: Is E's assertion based on evidence?

On my approach, the major premise contains two terms with inferential power—'expert' and 'containing'. As such, I recommend splitting the premise into two premises. There is only one term with inferential power in the second premise—'asserts'—so that premise does not need altering. On this method, the pattern of reasoning would be.

P1: Source E is an **expert** field F.
P2: Field F **contains** proposition A.
P3: E **asserts** that proposition A (in field F) is true (false).

C: A may plausibly be taken to be true (false).

In light of the close connection suggested between premises and critical questions, and following the approach to work with critical question pairs, the associated questions could be[8]:

CQP1:

What counts in favour of E being an expert in F?
How might E not be considered an expert in F?

CQP2:

What makes A a part of F?
How could A be considered outside of F?

CQP3:

How did E assert that P is true?
How could E be seen not to have asserted that E is true?

At this point, you may be wondering about the work the other critical questions in the original scheme did. As mentioned above, premises and critical questions share the common characteristic of introducing relevant considerations into the reasoning, and if this is correct, then a question points to a premise and vice versa. Accordingly, if the considerations raised in the critical questions are deemed pertinent to assessing the reasonableness of the assent to the conclusion, then they can also be inserted into the scheme. Including the considerations raised in CQs 4–6 from the original scheme, would mean adding them to the pattern of reasoning and adjusting the corresponding questions.

The full pattern of reasoning would be.

P1: Source E is an **expert** field F.
P2: Field F **contains** proposition A.
P3: E **asserts** that proposition A (in field F) is true (false).
P4. E is **personally reliable** as a source.
P5. A is **consistent** with other experts' opinions.
P6. E's assertion is based on **evidence.**
C. P may plausibly be taken to be true.

The additional critical questions could read:

CQP4:

What makes E personally reliable?

[8] The exact wording of the questions is flexible.

How might E not be considered personally reliable?

CQP5:

To what extent is A consistent with other experts' opinions?
How might A be seen to be inconsistent with other experts' opinions?

CQP6:

To what extent is A's assertion based on evidence?
How might A's assertion not be based on evidence?

Operating with premises and critical question pairs in this way means that for each argumentation scheme there is a menu of considerations available. Given an ideally complete menu, debates about normativity would take the shape of selecting which considerations from the complete menu ought to be included in the specific instantiation of the pattern of reasoning at hand, or if there are essential considerations critical to every instantiation of the argumentation scheme.

For example, we can compare the schemes for value-based practical reasoning presented by Walton (2007) on the one hand, and those provided by Atkinson and Bench-Capon (2007) and Fairclough and Fairclough (2012), on the other. The latter two works make a point to include 'circumstances' as a valuable consideration in the scheme and questions, while the former does not. Such a discrepancy fits with my account of the primacy of considerations in that it demonstrates how the latter authors find the circumstances to be an integral consideration in conducting and evaluating value-based practical reasoning, thus including it (albeit in a less than systematic way) while the former does not. Should those subcribing to the Waltonain scheme change their position on this matter and find the circumstances to be an integral consideration, on the approach advocated here, they could readily incorporate a new premise with a matching pair of critical questions.

This approach thus also allows the scheme to become flexible and adaptable to context. It also means this methodology can be used for any argumentation scheme. While debates about which considerations remain essential to the deployment of a specific scheme in a specific context will remain open, when settled, the methodology proposed here can guide the construction of that scheme and set of corresponding questions: the premises can be used to assert the relevant consideration, and the questions can be used to evaluate the quality of the assertion.

Since some considerations are only relevant when schemes are employed in certain contexts, the normative version of the contextually specific schemes can be specified as contextually appropriate. For example, an appeal to expert opinion in a legal proceeding will likely involve considerations not relevant to an appeal to expert opinion around the dinner table. Surely some considerations will overlap, but likely not all. Normative versions of these context specific schemes can be created by selecting the appropriate considerations from the ideally complete menu. As

such, one job for philosophers would be to identify the essential considerations that should be included in every instantiation of the argumentation scheme—what might be thought of as its universal or essential variant. Further, they might identify considerations to be included under certain common stipulations, such as when there is reason to suspect the failure of a meta-assumption, for example, people being trustworthy or consistent (as Walton and colleagues worry about). In most cases, we trust the testimony of others and we suspect that they are reasonably consistent. If something happens that gives us reason to doubt the assumption, then these second-tier considerations can be activated into the scheme. In the end, then, on this approach there are three tiers of considerations to be included when designing an argumentation scheme: (1) essential considerations, which are present in all instantiations of the scheme, (2) stipulative considerations, to be included with cause, and (3) context specific considerations available for precision use.

Following this approach also allows for Walton and colleagues' worries regarding the role of the burden of proof involved in connecting premises and critical questions to be alleviated. Their worry is that in some cases "the asking of an appropriate critical question is not sufficient by itself to defeat the original argument" (Walton and Gordon 2011, p. 4). In the argument from expert opinion, this worry is directly connected with the trustworthiness question and the consistency question. Walton et al. (2008, p. 30–34) explain that "[t]he trustworthiness and consistency critical questions seem to have a positive burden of proof attached to the side of the questioner. The other critical questions can just be asked out of the blue, so to speak. Once asked, this type of critical question must be given an appropriate answer, or the original argument falls down. With these critical questions, the burden of proof remains on the side of the proponent of the appeal to expert opinion." Two important factors contribute to the solution to the problem. First, the worry seems to assume a pass/fail conception of the purpose of the critical questions. On the account proposed here, merely asking a critical question is never enough by itself to defeat the original argument. Moreover, a non- or imperfect answer *may* still not be enough to defeat the original argument. This is because the answers are understood as contributory. Second, on the menu conception of considerations, these considerations can be activated into the argumentation scheme when necessary.

Finally, considerations in the third tier would be argued for and decided upon by experts in their respective fields. This helps avoid the perception of inapplicability that many abstract philosophical objects seem to carry into other domains. Taken together, this three-tiered consideration model, where each consideration is articulated in the form of a premise with an associated critical question pair, allows for the normative articulation of schemes at any level of specificity.

6 Conclusion

In this paper I have proposed a systematic methodology for creating critical questions in argumentation schemes, a methodology that thus far seems to have been missing. The approach to question (and consequently premise) formulation here is grounded on the notion of considerations. I have argued that the considerations

important for an argumentation scheme may be listed to create a sort of menu. Using an ideally complete menu of this sort, someone concerned with the descriptive use of schemes would be able to select the considerations raised matching those used in real life, but it is doubtful that their systematic formulation and phrasing would be exactly mimicked in practice very often. As such, it is important to keep in mind the normative limits of the proposal here. On the theoretical level, philosophers and discipline specific experts could argue about and potentially agree upon what might be considered an 'essential list' of considerations for each argument scheme, thus presenting it in its basic form. I have argued that beyond the basic form, the flexibility of this approach to adapt to specific contexts helps alleviate worries regarding the completeness problem and determination of the burden of proof.

Unfortunately, however, when it comes to use, there is no guarantee that using an argumentation scheme, no matter how well constructed, will lead to a reasonable conclusion. At the end of the day, an argumentation scheme is like any other tool in that its efficacy depends in part on the user's knowledge and competencies: some people know how to use some tools better than others. My hunch is that when done properly, formulating the patterns of reasoning and critical questions in this way would improve the likelihood of reaching a more reasonable conclusion, but I admit that it is ultimately a question for empirical study. One last mechanism that might help in this regard is to include a meta-critical question into every scheme: "Is there any other reason why the conclusion should not be accepted?" This would also help avoid worries regarding whether the questions taken together are jointly sufficient to justify the transfer of acceptability from the premises to the conclusion.

Last, not all critical questions are created equal: some formulations are better than others. In my view, what makes a critical question better or worse depends on the function it is supposed to serve. In this paper I have argued that critical questions designed for human use should be constructed in such a way as to provide as much relevant information as possible to facilitate a scalar evaluation of the reasoning or argumentation under consideration. I have done so while acknowledging some of the limitations of this approach, but have argued that these limitations are better than the limitations facing the alternatives.

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