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Editorial

Dear Reasoners,

Welcome to the last issue of the Year. Many of our daily activities are being disrupted by the continuing pandemic, and The Reasoner is no exception. Since its first number in 2007 this gazzette has been published on a monthly basis. However its prospects are, as many things at the moment, highly uncertain. Hence we decided to switch to bimonthly issues, hoping that brighter days will allow us to switch back soon.

As usual, let me remind you of the many ways you can contribute to The Reasoner. You can serve as a Guest Editor, typically by interviewing a person you think is providing an interesting contribution to the wider field of reasoning. You could submit to The Reasoner Speculates section, as done this month by Lina Lissia. If you're running a project, you may consider reaching the broad audience of Reasoners by contributing to the Dissemination Corner, as done in this issue by Colin Jakob Rittberg. Or, you could send us short summaries of recent meetings, workshops or conferences. This issue reports on two online events that took place –online– in the late summer. You could submit a proposal for a regular column in the What's Hot in ... section – perhaps the most recognisable feature of The Reasoner. And of course you are welcome to send us items for the news and listings section. Whichever your way of contributing to the next issues of The Reasoner, a warm *Thank You* in advance, on behalf of the, resisting, reasoning community!

Hykel Hosni
University of Milan

Features

The Reasoner Speculates

On some analogies between the counterexamples to modus ponens (and modus tollens)

I believe that a single structure underlies the main (putative) failures of modus ponens and modus tollens to be found in the literature. I will not prove this point here; however, I hope that my (unsystematic) remarks will be taken as hints

of the existence of a single structure underlying the different scenarios. That is, I hope my remarks will be taken as suggesting that, in spite of the superficial differences, the four scenarios below are all constructed in the same way. The scenarios are the ones proposed by McGee (1985: A counterexample to modus ponens, Journal of Philosophy, 462–471), Yalcin (2012: A counterexample to modus tollens, Journal of Philosophical Logic, 1001–1024), Kolodny and MacFarlane (2010: Ifs and oughts, Journal of Philosophy, 115–143), and Carroll (1894: A logical paradox, Mind, 436–438) respectively. If this conclusion were confirmed (i.e., if it were indeed the case that these scenarios share the same structure), one important consequence would be that a unified treatment of the different scenarios is what we should aim at. (Before starting, a preliminary clarification for non-specialists: in the literature, the examples below are not regarded as potential threats to modus ponens (or modus tollens) for the material conditional (i.e, "If $P \supset Q$, and P, then Q", or "If $P \supset Q$, and $\neg Q$, then $\neg P$"), but rather to modus ponens (or modus tollens) for the non-material, natural-language indicative conditional.)

The most famous scenario in the literature certainly is McGee's election scenario (1985: 462):

> "Opinion polls taken just before the 1980 election showed the Republican Ronald Reagan decisively ahead of the Democrat Jimmy Carter, with the other Republican in the race, John Anderson, a distant third. Those apprised of the poll results believed, with good reason:
>
> [1] If a Republican wins the election, then if it's not Reagan who wins it will be Anderson.
> [2] A Republican will win the election.
> Yet they did not have reason to believe
> [3] If it's not Reagan who wins, it will be Anderson."

So modus ponens seems to fail in (1)-(3). I will now show that from each of the most prominent scenarios other than McGee's (namely, from Yalcin's, Kolodny and MacFarlane's, and Carroll's scenarios) it is possible to generate a McGee-like argument. I will also show that a Yalcin-style example (see below) can be provided starting from McGee's story.

First of all, note that (1)-(3) can be transformed into what, intuitively, seems to be a counterexample to modus tollens (see Gauker (1994: Thinking out loud, Princeton University Press), but also Kolodny and MacFarlane (2010: 115–143)):

(1) If a Republican wins the election, then if it's not Reagan who wins it will be Anderson.

(4) If it's not Reagan who wins, it's not the case that Anderson will win.

(4) and the nested consequent of (1) seem to contradict each other and therefore seem to imply, by modus tollens, that (5) the winner won't be a Republican. However, intuitively, (5) does not follow from (1) and (4), as "a Republican will win" seems perfectly acceptable if the winning Republican is Reagan.

Now consider another alleged counterexample to modus tollens, that is, Yalcin's example (2012: 1001-1002):

> "An urn contains 100 marbles: a mix of blue and red, big and small. The breakdown:

	blue	red
big	10	30
small	50	10

> A marble is selected at random and placed under a cup. This is all the information given about the situation. Against this background, the following claims about the marble under the cup are licensed:
>
> (P1) If the marble is big, then it's likely red.
> (P2) The marble is not likely red.
>
> However, from these, the following conclusion does not intuitively follow:
>
> (C1) The marble is not big."

However, according to Yalcin (2012: 1002), "[...] this conclusion would follow, were Modus Tollens [...] valid".

Now, it turns out that starting from Yalcin's scenario we can generate a McGee-style argument (namely a counterexample to modus ponens involving a compound conditional):

(P3) If the marble is not red, then if it's big, it's blue.

(P4) The marble is not red.

(C2) If the marble is big, then it's blue. (!)

In spite of the premises being intuitively acceptable, the conclusion does not seem to follow. A modus tollens, compound-conditional version of Yalcin's argument can also be generated:

(P3) If the marble is not red, then if it's big, it's blue.

(P5) If the marble is big, then it's not blue.

(C3) The marble is red. (!)

Here too, modus tollens seems to fail.

Now let me present Kolodny and MacFarlane's scenario (2010: 115-116).

"Ten miners are trapped either in shaft *A* or in shaft *B*, but we do not know which. Flood waters threaten to flood the shafts. We have enough sandbags to block one shaft, but not both. If we block one shaft, all the water will go into the other shaft, killing any miners inside it. If we block neither shaft, both shafts will fill halfway with water, and just one miner, the lowest in the shaft, will be killed.

Action	if miners in *A*	if miners in *B*
Block shaft *A*	All saved	All drowned
Block shaft *B*	All drowned	All saved
Block neither shaft	One drowned	One drowned

We take it as obvious that the outcome of our deliberation should be

[6] We ought to block neither shaft.

Still, in deliberating about what to do, it seems natural to accept:

[7] If the miners are in shaft *A*, we ought to block shaft *A*.

[8] If the miners are in shaft *B*, we ought to block shaft *B*.

We also accept:

[9] Either the miners are in shaft *A* or they are in shaft *B*.

But [7], [8], and [9] seem to entail

[10] Either we ought to block shaft *A* or we ought to block shaft *B*.

And this is incompatible with [6]. So we have a paradox."

Starting from Kolodny and MacFarlane's story, I can show that, once again, an argument involving an embedded conditional can be generated:

(11) If we ought to block neither shaft, then if the miners are in shaft *A*, we ought not to block shaft *A*.

(6) We ought to block neither shaft.

(12) If the miners are in shaft *A*, we ought not to block shaft *A*. (!)

We intuitively accept both (11) and (6), but we do not accept (12).

A modus tollens version can also be provided:

(11) If we ought to block neither shaft, then if the miners are in shaft *A*, we ought not to block shaft *A*.

(7) If the miners are in shaft *A*, we ought to block shaft *A*.

(10*) We ought to block one of the shafts. (!)

Again, it seems rational to believe the two premises and to disbelieve the conclusion.

Finally, consider Carroll's scenario. In the late 19th century, Lewis Carroll (1894: 436–438) proposed his well-known "barbershop paradox": Carr, Allen and Brown are three barbers who never leave their shop at the same time, as they cannot leave the shop unattended. Moreover, due to the consequences of an illness, Allen never goes out without Brown. Given this background, we accept both (13) and (14):

(13) If Carr is out, then if Allen is out, Brown is in.

(14) If Allen is out, then Brown is out.

Now, it seems that, by modus tollens, we should conclude (15) Carr is in. However, intuitively, we should reject this conclusion, for it is perfectly possible that Carr is out, provided that Allen is in. That is, modus tollens seems to fail. We can also generate a modus ponens version of (13)-(15):

(13) If Carr is out, then if Allen is out, Brown is in.

(16) Carr is out.

(17) If Allen is out, Brown is in. (!)

Here again, we should accept the premises and reject the conclusion.

So I have shown that no matter which scenario we start from (whether McGee's, Yalcin's, Kolodny and MacFarlane's, or Carroll's), we can always generate a compound-conditional, McGee-style counterexample to both modus ponens and modus tollens. This seems to suggest that a same structure hides behind these four scenarios. To reinforce my point, let me add that in McGee's scenario it is possible to proceed the other way around: we can go from an argument involving an embedded conditional (i.e., McGee's original argument) to a Yalcin-style counterexample (to modus tollens), featuring no embedded conditionals. Recall the election scenario. Both "If Reagan doesn't win, then Carter will probably win" and "Carter won't probably win" are sensible claims. However, at least if we stick to Yalcin's perspective, we should not be ready to accept the unqualified conclusion that Reagan will win.

Lina Lissia
University of Turin

Dissemination Corner

Virtues and Vices in Mathematics

Mathematical knowledge-making is done by human agents and human action invites ethical reflection. Mathematicians disagree about who deserves recognition, promotion, power and prizes; the social structure of mathematics is liable to ethical concerns such as power abuse and injustices pertaining to race, gender, and social status; and the products of mathematical activity are not ethically neutral, such as the Black-Scholes formula which impacted economic policy decisions. These ethical dimensions of mathematical knowledge-making shape the who, the how, and the what of mathematical research activity and are hence a socially relevant aspect of the epistemology of mathematics. These insights motivate the Virtues and Vices in Mathematics (VaViM) project, for which Colin Jakob Rittberg is funded by the European Commission via the Marie Skłodowska-Curie Individual Fellowship scheme. The project aims to develop a normative framework for the ethics of mathematical research activity which will be employed to suggest concrete interventions at the individual and structural level, such as explanations of the harm that some actions in mathematical knowledge-making can cause (individual) and recommend policy advice (structural). Thought about the ethics of mathematics goes back to Plato, for whom mathematical knowledge is ethical since mathematics, like ethics, studies unity (according to him). His writing does not, however, provide a normative framework to engage with the ethics of mathematical research activity. Mathematical societies, such as the American Mathematical Society or the European Mathematical Society, provide codes of conduct, but these tend to focus on issues of plagiarism and contain only few remarks on social responsibility, such as respect for mathematical ability regardless of gender. Some mathematicians are aware of the limited scope of these codes of conduct and have called for further debate. For example, mathematician and co-founder of the *Ethics in Mathematics* (EiM) society in Cambridge, Maurice Chiodo, has remarked how numerous mathematicians have told him that they would publish algorithms for fast factorisations if they would develop one, even though such algorithms would be a threat to contemporary encryption methods, jeopardising internet security and the global economy. The EiM focusses on the ethical implications of such products of mathematical knowledge-making rather than their production. Philosophers of mathematics have started to investigate the production of mathematical knowledge, but they mostly treat it as a phenomenon to be described and treated as data rather than as a human activity in need of critical ethical reflection. What is needed, then, is a normative framework for an account of the ethics of mathematical knowledge-making. We need conceptual tools to engage with the ethics of human activity in mathematical knowledge production and a theoretical background to support concrete recommendations for improvement, such as policy advice. VaViM proposes a virtue-theoretic framework to achieve this. For a practitioner to act virtuously is to act in a way that is conducive to the aims of the practice in the context of human life; *rigour* is a virtue of mathematical proving practices because these practices aim at secure knowledge. As such, the virtues generate normative force from careful descriptions of actual goings-on in mathematical practices: virtue-theoretic frameworks can bridge the normative/descriptive divide. This makes virtue-theoretic accounts supple and thereby capable of engaging with the heterogeneity of mathematical research activity. For example, such accounts can explain why rigorous proving often only happens after the creative process in mathematical knowledge-making; *rigour* may not be an aim of creative mathematical practices. VaViM draws on the virtue-theoretic literature provided by the aretaic turn in disciplines such as epistemology, ethics, argumentation theory, or political theory and enriches relevant insights through detailed case studies of mathematical practices. To highlight the impact and social relevance of ethical considerations on the epistemology of mathematics, the project focusses on epistemic injustices in mathematical knowledge-making. Epistemic injustices are injustices that occur on an epistemic dimension. For example, mathematician Olivia Caramello may have suffered such an injustice when the novelty of her work was judged based on unpublished knowledge accessible only to the leading researchers in the field. Rittberg, C.J., Tanswell, F.S. & Van Bendegem, J.P. (2020: Epistemic injustice in mathematics. Synthese 197, 3875–3904) is an indicative story that what mathematicians call "folk-theorems", i.e. often unpublished results that are nonetheless well-known to and relied upon by parts of the community, can provide an unjust standard for judging the novelty of a piece of mathematics. These matters impact both the epistemology of mathematics, because they shape what does and does not get published, as well as the ethics of mathematical knowledge-making, because they impact the career and life of mathematicians. VaViM will employ an empirically informed and case-study driven approach to develop a socially relevant philosophy of mathematics. It is a declared aim of the project to engage with mathematical and philosophical communities in order to develop a virtue-theoretic framework for the ethics of mathematics capable of supporting the project's interventionist stance.

The postdoctoral Marie Skłodowska-Curie Fellow of the VaViM project is Colin Jakob Rittberg. The supervisor of the project is Catarina Dutilh Novaes, who is currently leading an ERC Consolidator project on The Social Epistemology of Argumentation. VaViM's project website is https://vavimproject.wixsite.com/home.

Colin Jakob Rittberg
University of Amsterdam

News

Bayesian Epistemology: Perspectives and Challenges, 10–14 August

The conference and Summer school "Bayesian Epistemology: Perspectives and Challenges" was supposed to take place in Munich, Germany. However, due to the current Covid-19 pandemic, the conference was moved online. The event was organised by Jürgen Landes, funding was provided by the German Research Foundation (DFG) and also the Munich Center for Mathematical Philosophy. Our goal was bringing together scholars exploring applications, challenges and foundations of Bayesian epistemology.

The summer school started with Gerhard Schurz (Düsseldorf) who presented metainduction as a possible response to Hume's problem of induction. Schurz demonstrated how metainduction about object-level inductive methods makes a non-circular a posteriori justification of objection-induction possible. Over a series of two lectures in the summer school and one talk at the conference metainduction was not only applied to the problem of induction, but also to probability aggregation.

Anna Mahtani (London School of Economics) discussed the philosophical problem of what exactly the objects of credence are. In her two lectures at the summer school, she argued that this problem is related to the question of what propositions are. She then applied David Chalmers' two-dimensionalism of propositions to the objects of credences and highlighted some unwelcome resulting implications. Anna also presented Frege's puzzle to the Ex Ante Pareto Principle in a talk at the conference.

In two lectures at the summer school, Leah Henderson (Groningen) first introduced the theory of hierarchical Bayesian modelling and subsequently demonstrated how the theory is applicable to various problems in cognitive science and the philosophy of science. Henderson then defended a view she termed "emergent compatibalism" reconciling inference to the best explanation and Bayesianism in her talk at the conference.

James Joyce focussed his two lectures at the summer school and his talk at the conference on accuracy and evidence. Joyce investigated the epistemic norms which relate evidence and the accuracy of credences. For this aim, Joyce employed a multitude of concepts, most notably the notion of an expert probability (a probability to which an agent surrenders one's own probability). He then attempted to extract epistemic norms from accuracy norms using epistemic utility theory. His presentation at the conference was devoted to an accuracy centered epistemology, which instead of taking the alethic prescription "Hold accurate credences!" as fundamental, incorporates both alethic and evidential norms.

In addition to the double lectures, the summer school also featured two single lectures by Jürgen Landes and Naftali Weinberger. Landes introduced the central notions of objective Bayesianism and highlighted its advantages in comparison to subjective Bayesianism. Weinberger presented graphical causal models and discussed the bridge principles between causal hypotheses and probability distributions.

The conference itself included talks that showcased applications of Bayesian epistemology. Alicja Kowalewska and Rafal Urbaniak (Gdansk) presented a measure of coherence that solve a variety of problems discussed in the literature. Pavel Janda (University of Gdansk) argued that a credence of $\frac{1}{2}$ as a solution to the Sleeping Beauty problem is only valid if one of the key assumptions of the problem is violated and therefore the argument of the solution is invalid. Aviezer Tucker (Harvard) outlined the problem of disinformation and how a genealogy of information in media would help with identifying disinformation. David Kinney (Santa Fe) proposed that stacking individuals' statistical models in order to aggregate credences in a group of agents achieves more accurate results than averaging credences. Mario Günter (Australian National University) provided an analysis of actual causation which captures more scenarios than any counterfactual account to date. Patrick Klösel (LMU Munich) proposed how graphical causal modelling enriches the methodology of econometrics and how a specific philosophy of methodology may contribute to the philosophy of science as well. Rafal Urbaniak presented how imprecise credences can increase accuracy with respect to claims about expected frequencies. Patriyk Dziurosz-Serafinowicz (Gdansk) raised the question whether it was ever rational to postpone a decision in Bayesian decision theory in order to obtain some uncertain future evidence. Michal Godziszewski (MCMP) addressed the question how considerations about fairness and justified representation can be implemented in judgement aggregation and belief merging. It is therefore apparent that the conference hosted an abundance of applications of Bayesian epistemology.

Other speakers challenged certain aspects of Bayesian epistemology, however. Mario Günther and Borut Trpin (MCMP) argued that learning from indicative conditionals fails in Bayesian epistemology. Richard Lohse (Karlsruhe) defended that the notion of accuracy cannot be characterised mathematically, which challenges the accuracy-first programme. Andree Weber (Mannheim) discussed how agents should react to peer disagreement, as simple updating is not the right method. Alex Meehan (Princeton) showed how Kolmogorov conditionalisation is Dutch bookable and proposed the Kolmogorov-Blackwell conditionalisation as a norm to update beliefs when the prior probability of the evidence is assigned 0. Snow Zhang (Princeton) presented and resolved a trilemma involving individual deference, linear averaging and probable disagreement given a Bayesian epistemology.

Finally, some speakers addressed issues about the foundations of Bayesianism. Seamus Bradley (Leeds) proposed a change in the updating rule for imprecise probabilities in order to solve the problem of "belief inertia". Miriam Bowen (Leeds) criticised some accounts of what degrees of belief actually are and proposed that comparative relations between beliefs are fundamental and numerical representations can be explained by the former. Sven Neth (Berkeley) presented that, given a non-zero probability of an agent not updating in a Bayesian manner, it may be rational to reject more (free) information.

From this exposition it ought to be apparent that Bayesian epistemology offers a colourful mix of different research topics. Despite that, the common framework enables the researchers to cooperate and to draw inspiration from each other.

For more information visit the conference website

Andreas Lüchinger
Munich Center for Mathematical Philosophy

"If ifs and ands were pots and pans…": Qualitative and Quantitative Approaches to Reasoning and Conditionals, 27-28 August

The virtual online workshop *"If ifs and ands were pots and pans…": Qualitative and Quantitative Approaches to Reasoning and Conditionals* (27.–28.08.2020) brought together recent developments in different paradigms in theoretical and empirical research on conditionals. It featured qualitative and quantitative approaches to conditionals, exploring their differences and similarities from philosophical, formal, and empirical viewpoints. The major issues of debate were the "Equation" and truth-conditionality, trivalence, connexivity, causality, inferentialism, and coherence-based probability. This workshop was co-supported by the projects *Reasoning With Conditionals in a Qualitative Cognitive Framework* (DFG Project Nr. 272903199) as well as *Logic and Philosophy of Science of Reasoning under Uncertainty* (BMBF Project Nr. 01UL1906X).

Dorothy Edgington (Birkbeck College, University of London) pointed out that probabilities also apply to counterfactual conditionals without there being any fact of the matter. Building on Richard Bradley, who suggested representing conditionals by ordered pairs of worlds and assigned truth conditions in a way that validates the "Equation", Edgington showed how to assess conditionals with false antecedents probabilistically and assign them truth-conditions, even if their truth value is indeterminate. In Edgington's account, probability comes out as probability of truth, truth-functional embeddings are available, and validity can be preserved as necessary preservation of truth.
Mario Günther (ANU) proposed a unified theory of conditionals, where the probability $P(A \boxrightarrow C)$ of the Lewis conditional is equal to the general image $P^A(C)$ on A of C. The probability that a Lewis conditional is true is thus equal to the probability that its consequent is true under the supposition of its antecedent. Günther has shown that one subtype of general imaging mimics Bayesian conditionalization. This explains why the 'Equation' is intuitive for certain conditionals while it does not hold in general. Notably, the probability of counterfactuals is well defined on his theory because the general image is defined even if the probability of the antecedent is zero.
Hans Rott (University of Regensburg) introduced a "relevantised" version of the Ramsey Test for conditionals in the context of the classical theory of belief revision. The antecedent is relevant to the consequent in the following sense: a conditional is accepted just in case (i) the consequent is accepted if the belief state is revised by the antecedent and (ii) the consequent fails to be accepted if the belief state is revised by the negated antecedent. Rott showed that the "difference-making conditional" thus defined violates almost all of the traditional principles of conditional logic, but that it obeys an interesting logic of its own.
Paul Egré (CNRS/ENS, PSL University Paris; joint work with Lorenzo Rossi & Jan Sprenger) discussed Allan Gibbard's result that if a conditional operator satisfies the Law of Import-Export, is supraclassical, and stronger than the material conditional, it must collapse to the material conditional. This leads into a dilemma for truth-functional accounts of indicative conditionals: give up Import-Export, or embrace the two-valued analysis. Egré et al. demonstrated how Import-Export and truth-functionality can co-exist in trivalent logics. For the Cooper-Cantwell conditional, collapse is prevented. Even if the collapse occurs, the indicative and material conditional fail to be intersubstitutable (de Finetti-Reichenbach conditional), undermining Gibbard's triviality result. The second day of the workshop started with an emphasis on psychological applications.
Hitoshi Omori (Ruhr-University Bochum) gave an overview on connexive systems, focusing on ways in which conditionals are negated in these systems. For example, he showed how Wansing's connexive logics C and his three-valued paraconsistent CLuNs are well behaved and compatible with a wide range of indicative conditionals. Omori demonstrated that Cantwell's logic of conditional negation CN, interpreted in a Dunn semantics, possesses connexive properties and also mentioned that Stalnaker's conditional logic satisfies connexive principles.
Nicole Cruz (UNSW; joint work with David Over) levelled criticism at accounts that have argued for the importance of an inferential relation between antecedent and consequent based on missing-link conditionals at the expense of the widely endorsed probability conditional. Cruz raised logical, conceptual, and empirical challenges for inferentialism and cited examples for pragmatically sound "non-interference conditionals" and "reductio conditionals" that lend no support to inferentialism.
Shira Elqayam (De Montfort University; joint work with Igor Douven and Patricia Mirabile) provided evidence in favour of the Hypothetical Inferential Theory, which proposes that individuals evaluate conditionals by heuristically gauging the strength of the inferential connection from antecedent to consequent rather than by conditional probability. Elqayam et al. experimentally pitted their inferentialist interpretation of the Ramsey Test against their main competitor, the suppositional account. With everyday causal conditionals, Elqayam reported inference strength to be a strong predictor for the probability of conditionals relative to conditional probability or Δp. They report similar results for negative inference, missing link, and positive inference conditionals.
Building on the work of Judea Pearl, Niels Skovgaard-Olsen (Georg-August-Universität Göttingen) tested in a series of experiments the hypothesis that causal relations require multiple conceptual dimensions (prediction, intervention, counterfactual dependence), which are diff erently encoded in indicative and counterfactual conditionals. Results supported the idea that the acceptance of indicative and counterfactual conditionals can come apart and that the acceptance of both is needed for accepting causal relations. These results were interpreted in light of recent debates in the psychology of reasoning concerning the Relevance Effect on conditionals.
Departing from Ryle's original suggestion that inferences apply conditionals, Christoph Michel (University of Regensburg) introduced a conception of indicative conditionals as inference tickets. Inference tickets restore consistency for belief states that fail to cohere with the validity of the ticket. A valid inference ticket implies the truth of a contextually strict conditional as well as a specific doxastic preference. Michel showed why inference tickets provide an intuitive and parsimonious qualitative rationalisation of the asymmetry between Modus Ponens and Modus Tollens.
Giuseppe Sanfilippo (University of Palermo) analysed compounds of conditionals and iterated conditionals in the setting of coherence. Specifically, he illustrated how to overcome Lewis's Triviality results and discussed logical operations among conditional events in terms of conditional random quantities. Various results include how to recover nonmonotonicity, De Morgan's Law, making latent information explicit,

why the Fréchet-Hoeffding properties of conjunctions of conditionals are preserved, and how p-consistency and p-entailment are characterised within coherence. Finally, he discussed the relations of independence and uncorrelation between random quantities.
Niki Pfeifer (University of Regensburg) presented a unified framework for investigating Aristotelian syllogisms and connexive principles within the coherence approach to probability. The validity of all Aristotelian syllogisms and selected connexive principles can be recovered within the quantitative framework of coherence. Pfeifer built bridges from Aristotle's logical thinking on how to negate conditionals and on how to draw inferences to nonmonotonic reasoning and generalised quantifiers. We look forward to future collaborations among experts of qualitative and quantitative approaches to reasoning about conditionals and uncertainty.

Christoph Michel
Regensburg, Philosophy
Niki Pfeifer
Regensburg, Philosophy
Hans Rott
Regensburg, Philosophy

Calls for Papers

Pursuitworthiness in Scientific Inquiry: special issue of *Studies of History and Philosophy of Science, Part A*, deadline 1 May.
Classic Methodologies in the Philosophy of Science: special issue of *Journal for General Philosophy of Science*, deadline 30 April.

What's Hot in ...

Science Policy

A common language of science facilitates the exchange of ideas and results, their replication, application, and further development. There are undoubtedly many advantages of using a *lingua franca* in science. The ideal of having scientific findings available to everyone requires using a common language. On the other hand, researchers report that it would be easier for them to publish in their own language and that they often feel frustrated with their knowledge of the *lingua franca* (e.g., Tardy, Journal of English for academic purposes. 2004; 3:247-269). Moreover, learning a foreign language takes a significant amount of time and in most cases also requires considerable financial investments. The effort is also unequally divided, as difficulties in learning a *lingua franca* also depend on how similar it is to the mother tongue or other languages the person speaks.

We should always keep in mind that the *lingua franca* of science is arbitrarily chosen, i.e., based on non-epistemic factors, and that the background also plays an important role in which someone will adopt it. As some researchers are in this sense disadvantaged, it is valuable to promote equity measures such as free lector services in scientific journals, translations of important findings, and simultaneous translation at big scientific events.

Even from the purely epistemic perspective, it is beneficial to practice linguistic tolerance and promote linguistic pluralism in science. If academics with less linguistic competence get excluded from the scientific discourse, their findings might be lost. Linguistic tolerance means showing understanding towards non-native speakers both when it comes to their written and oral abilities, while linguistic pluralism stands for supporting and preserving communication and discoveries in diverse languages.

Researchers that are insecure in their foreign language skills might feel uncomfortable to present their results at conferences, hesitant to participate in discussions, or even to publish. In this way, some parts of the scientific community might lose or be slower with catching up with the contributions of these researchers. Moreover, their results might not be taken with equal consideration because of their language proficiency – a phenomenon called linguistic epistemic injustice (Peled, Bioethics. 2018; 32:360-367). International funding agencies evaluate proposals written in the *lingua franca*, thus, to avoid linguistic epistemic injustice, referees should also practice linguistic tolerance.

Linguistic pluralism in science, on the other hand, is related to the idea that some discoveries are language-dependent. Such discoveries are often associated with linguistics and anthropology; however, even in philosophy, it makes sense to ask oneself whether the emergence of some theories was at least facilitated through the language. For instance, Plato formulated his famous theory of ideas in Old Greek – a language that has indefinite articles and in which it is possible to refer to an object in general. It is a legitimate question whether it would be significantly more difficult to propose such a theory (exclusively) using a language that does not have articles, such as Latin. In this type of language, one does not refer to an abstract general entity, but only to the instantiations of an object.

In order to epistemically benefit from linguistic pluralism in science, researchers who speak more than one language are valuable as they can act as mitigating agents and share the results and ideas that would otherwise remain inaccessible for the rest of the community. In this light, we can remember the Latin proverb *Quot linguas calles tot homines vales* [How many languages you speak, that many people you are worth]. In our context, researchers who can speak more than one language are valuable for the scientific community, since they can bridge the language barrier while keeping the epistemic benefits of linguistic pluralism in science.

Vlasta Sikimić
University of Tübingen

Uncertain Reasoning

Ordinary people encounter many new things as they go through life. Recently I learned about that distinctive Swedish item of cutlery, the smörkniv – a smooth wooden "knife" used exclusively for butter. After reading a Karolinska Institute report, I learned that Covid-19 sufferers may develop two distinct kinds of immunity: in addition to antibodies, which I was familiar with, they may develop T-cell immunity.

In different ways, these experiences led me to form new beliefs. The fact that Swedes use elegant juniper wood implements for spreading butter is a prosaic proposition that I had simply never encountered before. In the medical case, I learned new concepts and some elements of a new (to me) scientific theory concerning human immunity. It is a strange failing of our formal models of belief that they have little to say about this kind of learning. Consider "Bayesian" models of belief, those that represent beliefs with probabilities and insist that learning is accomplished by conditionalization. In these models, all resolutions of uncertainty take place by updating pre-existing beliefs. Agents must have priors for propositions to learn about them at later stages. In this way, Bayesianism leaves no room for agents to learn about genuinely new states of affairs and has no guidance for real agents when they undergo such changes of awareness. It also conflates two different kinds of uncertainty, and the corresponding ways of resolving them. The first is when an agent is aware of a set of possible outcomes but does not know which is the case. A common example is drawing playing card from a standard 52 card deck. The agent's uncertainty about which card it will be is resolved by observing which of the 52 known possibilities is the case.

The second kind is when an agent is unaware of the relevant possibilities and becomes aware of them for the first time, while possibly also learning which of them is the case. Suppose that I show you an unfamiliar deck of cards and tell you that it is a 60-card tournament deck of the Beta series of Magic: The Gathering. I'll assume most of you don't know what that is and ask you to consider your credences about the cards I will draw from the deck. Presumably, you have no idea what to expect. You don't know what MTG cards look like, what kinds there are, what a playing deck usually consists of, and so on. What you learn when I show you the first card is completely unlike what happens in the playing card case This kind of uncertainty, which I will call "unawareness", and its resolution, "awareness growth", are the subject of a small but fascinating literature in philosophy and economics. This is related to a rather larger literature in logic and computer science about the logic of unawareness and the revision of qualitative beliefs due to awareness growth. I want to touch on a few developments in the probabilistic literature.

What principles of rationality constraint an agent's beliefs across awareness changes? The economists Edi Karni and Marie-Louise Vierø have derived a constraint for growths of awareness axiomatically ('"Reverse Bayesianism": A Choice-Based Theory of Growing Awareness'. American Economic Review 103:7, 2013, and 'Awareness of Unawareness: A Theory of Decision Making in the Face of Ignorance'. Journal of Economic Theory 168, 2017). Roughly, their result is that the ratio of probabilities of states should be preserved across awareness changes. A state is a maximally specific possibility for the agent, and I'm referring here to states which the agent was previously aware of and assigned non-zero credence to. Suppose you receive a bunch of flowers, and you think that one of two friends is equally likely to have sent it. You later realise a third person might have done so. Karni and Vierø's principle requires that you still think the first two friends equally likely to be the sender. Richard Bradley endorses a principle similar to "Reverse Bayesianism" in his recent book, *Decision Theory with a Human Face* (2017, Cambridge University Press). Bradley provides a framework not just for belief change but also for preference change due to awareness growth, and for belief and preference changes due to awareness contractions, brought about by shifting attention or forgetting.

Anna Mahtani challenges Karni, Vierø and Bradley in a 2020 paper in Synthese "Awareness Growth and Dispositional Attitudes". Mahtani's challenge concerns how we identify propositions across the awareness change. She presents cases in which a proposition can be described in two ways before the change, and which splits into two distinct propositions after the change. This presents a challenge to Reverse Bayesianism because we can apply the principle in different ways and generate inconsistent constraints for the agent's posterior credences. In assuming that the "same proposition" appears unambiguously in the domain of the old and new probabilities, Reverse Bayesianism has left something out.

A second question concerns what to do when you expect your awareness to grow. In a forthcoming book, Katie Steele and Orri Stefánsson defend a reflection principle for awareness, which they justify via a Dutch Book argument (Beyond Uncertainty. Cambridge University Press). There should be there should be no expected change of credence after awareness growth, where the expectation is based entirely on the agent's prediction about their future epistemic state. As Steele and Stefánsson say, this is a powerful constraint on decision-making under extreme uncertainty

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Events

HE: Historical Epistemology, virtual, November 4, 12, 18, 25.
PotS: Philosophy of the Senses: Seeing, virtual, 13 November.
d.whiting@soton.ac.uk: H-OE, Higher-Order Evidence Online Workshop, virtual.25 January

Courses and Programmes

Courses

Programmes

MA in Reasoning, Analysis and Modelling: University of Milan, Italy.
APhil: MA/PhD in Analytic Philosophy, University of Barcelona.
Master Programme: MA in Pure and Applied Logic, University of Barcelona.
Doctoral Programme in Philosophy: Language, Mind and Practice, Department of Philosophy, University of Zurich, Switzerland.
Doctoral Programme in Philosophy: Department of Philosophy, University of Milan, Italy.
LogiCS: Joint doctoral program on Logical Methods in Computer Science, TU Wien, TU Graz, and JKU Linz, Austria.
HPSM: MA in the History and Philosophy of Science and Medicine, Durham University.
Master Programme: in Statistics, University College Dublin.

LoPhiSC: Master in Logic, Philosophy of Science and Epistemology, Pantheon-Sorbonne University (Paris 1) and Paris-Sorbonne University (Paris 4).
Master Programme: in Artificial Intelligence, Radboud University Nijmegen, the Netherlands.
Master Programme: Philosophy and Economics, Institute of Philosophy, University of Bayreuth.
MA in Cognitive Science: School of Politics, International Studies and Philosophy, Queen's University Belfast.
MA in Logic and the Philosophy of Mathematics: Department of Philosophy, University of Bristol.
MA Programmes: in Philosophy of Science, University of Leeds.
MA in Logic and Philosophy of Science: Faculty of Philosophy, Philosophy of Science and Study of Religion, LMU Munich.
MA in Logic and Theory of Science: Department of Logic of the Eotvos Lorand University, Budapest, Hungary.
MA in Metaphysics, Language, and Mind: Department of Philosophy, University of Liverpool.
MA in Mind, Brain and Learning: Westminster Institute of Education, Oxford Brookes University.
MA in Philosophy: by research, Tilburg University.
MA in Philosophy, Science and Society: TiLPS, Tilburg University.
MA in Philosophy of Biological and Cognitive Sciences: Department of Philosophy, University of Bristol.
MA in Rhetoric: School of Journalism, Media and Communication, University of Central Lancashire.
MA programmes: in Philosophy of Language and Linguistics, and Philosophy of Mind and Psychology, University of Birmingham.
MRes in Methods and Practices of Philosophical Research: Northern Institute of Philosophy, University of Aberdeen.
MSc in Applied Statistics: Department of Economics, Mathematics and Statistics, Birkbeck, University of London.
MSc in Applied Statistics and Datamining: School of Mathematics and Statistics, University of St Andrews.
MSc in Artificial Intelligence: Faculty of Engineering, University of Leeds.
MSc in Cognitive & Decision Sciences: Psychology, University College London.
MSc in Cognitive Systems: Language, Learning, and Reasoning, University of Potsdam.
MSc in Cognitive Science: University of Osnabrück, Germany.
MSc in Cognitive Psychology/Neuropsychology: School of Psychology, University of Kent.
MSc in Logic: Institute for Logic, Language and Computation, University of Amsterdam.
MSc in Mind, Language & Embodied Cognition: School of Philosophy, Psychology and Language Sciences, University of Edinburgh.
MSc in Philosophy of Science, Technology and Society: University of Twente, The Netherlands.
MRes in Cognitive Science and Humanities: Language, Communication and Organization: Institute for Logic, Cognition, Language, and Information, University of the Basque Country (Donostia San Sebastián).
Open Mind: International School of Advanced Studies in Cognitive Sciences, University of Bucharest.
Research Master in Philosophy and Economics: Erasmus University Rotterdam, The Netherlands.

Jobs and Studentships

Studentships

Doctoral Programme in Philosophy: Language, Mind and Practice, Department of Philosophy, University of Zurich, Switzerland.
LogiCS: Joint doctoral program on Logical Methods in Computer Science, TU Wien, TU Graz, and JKU Linz, Austria.

Jobs

Post doc: in Inferences Under Severe Uncertainties, University of Technology of Compiégne, open until filled.
Post doc: in Models, Uncertainty, and Rational Decisions, deadline 9 November.
Post doc: in Logic (uncertain reasoning), deadline 16 November.