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64 Applying this work to both Law and Computer Science, Douglas Walton has helped better understand legal and computational reasoning, as well as to conduct such reasoning more effectively. His recent monograph (2014: *Burden of Proof, Presumption and Argumentation*, CUP), for instance, analyses presumptions and burdens of proof across computational, legal and other argumentative contexts. Professor Walton is Distinguished Research Fellow at the University of Windsor's Centre for Research in Reasoning, Argumentation and Rhetoric.



Conny Rhode

Conny Rhode caught up with him at the University of Granada during the recent conference on *Presumptions, Presumptive Inferences and Burden of Proof*.

CONNY RHODE
MARY LENG

University of York

EDITORIAL

Douglas Walton is well known for a vast body of work on argumentation. He has published over fifty books and over three hundred articles on argumentation in dialogue, in the process greatly illuminating the nature and status of fallacies, describing the functions of different types of dialogue (such as persuasion, deliberation, or inquiry), and distinguishing dozens of schemata that distill the structure of certain forms of argument (e.g., argument from expert opinion), among various other issues in Informal Logic.



Mary Leng

FEATURES

Interview with Douglas Walton

Conny Rhode: Professor Walton, thank you for agreeing to this interview. First of all, how did you initially become interested in the study of argumentation?

Douglas Walton: Logic was my strongest subject in graduate school; so when I moved to my first teaching job I was asked to teach the Logic classes, which included both Formal and

Informal Logic. It was easy to teach Formal Logic, because it's a well-structured subject, but then I had to struggle with teaching the fallacies and the informal part. I was working with my thesis supervisor at that time, John Woods, and having read Hamblin's book, *Fallacies* (1970), I suggested to him that this was really the only good recent and up-to-date book on the subject. So we had the idea that it would be a good to do some work in this area, as it was greatly understudied at the time.

CR: One of your key contributions has been your own work on fallacies. For the benefit of readers, could you introduce that work just briefly?

DW: The problem that I faced in teaching fallacies was giving students some kind of structural guidelines. The assumption at that time was that these so-called fallacies were wrong or erroneous inferences. But as I started to study them, I realized there needed to be some kind of logical structure there. (This was actually before the advent of defeasible reasoning.) I realized from the teaching of the fallacies that it needed to be better recognized that they were reasonable arguments in many instances. For example, argument from expert opinion is associated with the fallacy of appeal to authority—and you quickly realize this could be a very reasonable form of argument in many instances. I think the climate of opinion was changing at that time. Before that time there was a sort of positivist mentality, even amongst the students, that science was the ultimate criterion of everything. Of course in scientific method you were not supposed to not take anything on authority but to use experimental data and so forth. But the climate gradually changed, and I think now everybody realises that, for example in law, argument from expert opinion is one of the most important sources of evidence. So the problem was that, if these fallacies could sometimes be used as reasonable arguments, how do we tell the difference between the one which is reasonable and the one which is fallacious? That was what motivated me.

CR: How exactly does this work on fallacies tie in with your work on different types of dialogue and on schemes representing important forms of argument?

DW: Well, the dialogues (used alongside the schemes) provided needed structure. Again to come back to the example of argument from expert opinion, the dialogues are actually implicit in the schemes, because when you're confronted with an argument, let's say, from expert opinion, the problem is to determine which kinds of reactions to that argument are appropriate, and which are inappropriate. So you can see already the dialogue structure. The proponent is putting the argument forward, and she might invoke her own authority as an expert against challenges, which can be fallacious. On the other hand, it could be that the other party overlooks some question that needs to be asked—maybe this person isn't an expert, or maybe the other person just endorses it uncritically



Douglas Walton

and says 'Okay, it's an expert opinion anyhow, therefore I fully accept it.' Both of those responses are problematic—they are associated with fallacies. In order to model such phenomena it's clear that you need to have some sort of dialectical structure. But the problem is that the dialectical structure containing the types of dialogue is complex and not widely studied or understood so far, and therefore it's hard for the students to apply it as a tool. So that's been one of the challenges. But I have been trying to find some simple techniques that students can use to bring these dialogue notions (such as speech act, replying appropriately, checking the arguer's commitments, and so forth) into play. The use of dialogue structures was initially meant to be used to model informal fallacies. But over time it went well beyond that, and it has been used for all kinds of things. With the adoption of argumentation methods in AI, more and more people are recognizing formal dialogue structures as a legitimate area of formal investigation in its own right.

CR: I find these types of dialogue very interesting. Could you just explain a little further how they relate to each other—are they actually mutually exclusive, even though not necessarily jointly exhaustive? And how many types are there?

DW: At first I started using the dialogues in a very practical way as the need for them arose out of the study of fallacies. But along the way I realized that in order to deal with argumentation problems you had to postulate certain types of dialogue, such as deliberation and negotiation, in addition to persuasion dialogue. Hamblin did not try to systematically draw distinctions between different types of dialogue, and the formal models of dialogue he built seem to be of the persuasion dialogue type. The persuasion dialogue has always had priority, because you can see in Greek philosophy, for example in Aristotle, that the foremost framework of dialectical argumentation we began with as representing rational argumentation, and that tradition persisted for over two thousand years. Recently Erik Krabbe has built a formal model of persuasion dialogue representing the central features of Aristotelian dialectic. But once you start to study many examples of real arguments of this kind, you realise before long that many of the traditional informal fallacies can only be analyzed by taking more than one type of dialogue into account. When Erik and I wrote the *Commitment in Dialogue* book we built our formal model of persuasion dialogue, a platform that enabled us to begin to systematise and classify the types and subtypes of dialogue in an orderly manner. Since that time other types of dialogue have been shown to be increasingly important, such as examination dialogue, which was already known to Aristotle. The best known modern example would be a cross-examination in a trial. People now are very familiar with that. But prior to Hamblin and *Commitment in Dialogue* we had no real way of modelling the relationship of examination dialogue to persuasion dialogue. Since that time, different subtypes such as examination dialogue came to be studied in greater depth. But the basic typology really hasn't changed very much since then. There's no particular reason for that. I never claimed it was complete. I always just thought these were the main ones that seemed to be important, based on my having studied and written about and analyzed many thousands of examples over 39 years of teaching logic courses to undergraduates.

When I first started teaching informal logic, the students

always asked 'Give us an example'; so that was my method from there on, I always collected examples and used them in my classes. And in all the books that I have written you see they are full of these examples. I wish I would have numbered the examples systematically or even collected them in a database, because some people say 'Well how can you say that these types of arguments and so-called fallacies are very common, because there is no empirical basis for it?' But this field of study does have an empirical component, because after you have collected and analyzed so many examples you see patterns, for example, you see how the problems arise out of matching the schemes to the particular examples. This use of real examples is the basis of the methodology of informal logic, making it an applied field, despite its reputation as resting on normative argumentation models formulated at a high level of abstraction.

CR: Well at that point I'm glad I have not misinterpreted your work in thinking that the types are actually mutually exclusive, and they have subtypes, and in a concrete dialogue we might find several types instantiated, because they're ideal types after all.

DW: Yes, the types are at a high level of abstraction, that's part of the problem. Really the whole problem in the field, as in many fields, is applying these very abstract, formal structures. You can prove that the model is consistent and complete and so on, but it's something else to actually apply it to real examples, which of course as we all know are incredibly complex sometimes, and they have all kinds of Gricean implicatures. The problem is you have to fill in implicit premises, the conclusion may not be explicit, and so on. So there is a lot of work to be done in bridging the gap between the abstract formal theory at a high level of abstraction and real examples of arguments from natural language from natural language databases that are complex and constantly changing.

CR: I see. There was something I wanted to ask you. Would you classify legal dialogues in a courtroom debate as persuasion dialogues or as deliberation dialogues?

DW: In the common law system of trials the trial proceeding is structured. It has stages, and it's clear to me that it does represent a type of persuasion dialogue. I think the clue to this is the basic idea of the burden of persuasion—what most people call the burden of proof. Essentially the structure of a legal trial is that you have someone who brings forward a lawsuit, maybe claiming that they were harmed by some action attributed to the other party for example, and so then you have always two sides to the dispute. It's a more complex type of persuasion dialogue because you have a third party, who could be the judge or the jury or some combination of those two—you have some evaluator who is the third party. Then you have the two sides: in a criminal case you have the prosecution and the defence, so the burden of persuasion so-called is on the prosecution, and all the defence has to do is find enough weaknesses so that the other side doesn't meet its burden of persuasion. So it's really a classic case of persuasion dialogue I would say. The central structure of the argumentation used in it fits persuasion dialogue quite exactly.

CR: Okay. I was asking because my own doubt was that

the persuasion dialogue may be embedded within a larger deliberation as to what sentence to give, if any—what action to take, which is the goal of deliberation dialogue. So that a criminal trial would seem to be a deliberation dialogue with an embedded persuasion dialogue, although the embedded persuasion dialogue takes up almost the entirety of the trial. Hence my question.

DW: Lawyers generally describe the trial itself as 'fact-finding'. The law is already there, so that gives you your rules of inference: laws and general rules. And the jury, in the case of a jury trial, is often called 'the fact finder', so it's just a kind of collection of propositions (I guess we would call it) that are called 'the facts' or assumed to be the facts in the case. You know, 'was he there at the time of the crime?', 'what kind of clothes was he wearing?', and so on. So then ultimately the judge, let's say, has to combine the rules of law and the facts, and then some conclusion will come out at the back in the criminal case, either guilty or not guilty. Then of course there's a sentencing stage, which is a distinctive stage in its own right, which is essentially a deliberation, because it's about how long a sentence should this person get, or what would be the appropriate penalty. That's the hardest part of the whole methodology of using the types of dialogue: that there are shifts from one type of dialogue to another. This is a weakness of the theory, and at the same time it's a strength.

CR: I was just thinking, 'where's the weakness?' It only seems a strength, because it seems to accommodate so much.

DW: Yes, it's a powerful theory, but the problem in dealing with dialectical shifts in a particular case is: how do you know when a shift has occurred? Suppose we are having a political deliberation on whether to build a new dam. It's a deliberation: should we take this action or not? But then persuasion dialogue comes in immediately, or even inquiry dialogue. In order to make an intelligent decision there is an enormous amount of factual data that you have to bring in—engineers, all kinds of specialists, and especially these days, specialists regarding the environmental consequences of building a dam, make their reports and give their advice. Evaluating this information and advice, and communicating with the experts, may in itself be a difficult task requiring argumentation skills. The problem is that, in a lot of cases it doesn't even matter too much that there has been a shift to a different type of dialogue, but in some cases it can be quite problematic, because a type of argument that might be reasonable in one framework of dialogues might be quite unreasonable in another. For example, persuasion dialogue is fairly adversarial, a kind of contest of opinions, whereas deliberation needs to be more collaborative. You have to go along with the group and give up a lot of your favourite interests and views in order for it to be successful. It won't work if all are just continually attacking each others opinions, you know, in the way you would in a persuasion dialogue. Too much adversarial argument is a problem in the setting of a deliberation dialogue. Critics, I think, have often pointed out that this is a problem. It makes the task of analyzing and evaluating argumentation more complex because you have these shifts, especially when their importance is not understood, appreciated, or taken into account.

CR: Aside from legal argumentation that can be analyzed in

this way, your theory has also contributed quite significantly to AI. One major model of argumentation that you've developed is Carneades. Could you perhaps quickly explain what the Carneades model is and how it facilitates argumentation in Computer Science?

DW: There are several AI systems of which Carneades is one. It uses argumentation schemes, so this provides a way of identifying arguments, and it's all based on the idea of the user being able to input an argument diagram. Once the user has done this and inputted some account of the structure of the argument then Carneades can automatically evaluate the argument. It can also do another thing: it can construct arguments. It has a knowledge base of propositions and it can draw from that and add in implicit premises and other information that is needed. How to describe this in a simple way? You have to put in one proposition designated as the conclusion to be proved in the diagram, and then there will be some premises and other arguments connected to that. And let's say that it's not a valid argument, that it has certain parts missing that would be required to get you from the premises already in there to the ultimate conclusion. Well, Carneades can then search around in the knowledge base and see if there are propositions in it that could be plugged into the diagram so it would complete the sequence from those premises to the conclusion. So it can both evaluate arguments and also construct arguments. And in the history of this subject, of Argumentation, or Logic, we've always concentrated at evaluating arguments as the central skill. But in rhetoric, of course, we are very interested in the idea of inventing new arguments—what is sometimes called 'argument invention', or, in computing, 'argument construction'. Carneades can do both of those.

CR: What other areas (aside from legal argumentation and AI) do you see as within the scope of the application of your theories?

DW: I would like to see it actually applied to some case studies of scientific argumentation, especially with that seventh type of dialogue, the discovery dialogue. Some initial work has been done on that, but I think the area would allow for a lot more attention. I would say explaining the idea of creativity in scientific invention using formal argumentation models would be a suitable area of investigation within the scope of application of my theories. There has been some work on negotiation dialogue. Indeed, in the field of business and related fields there is already a huge literature on negotiation. But I would like to see some examples of negotiation treated as well, to see whether they could be illuminated or modelled in a useful way, using argumentation tools.

One particular area that I have written on but that has not been extensively investigated is the application of argumentation tools, such as argument diagramming, argumentation schemes, and argument evaluation tools available from artificial intelligence to cases of conflicting expert testimony on forensic evidence. One such case that I studied was an example where there was a conflict of opinions about whether a portrait of a young woman in a Renaissance dress could be sold at auction attributed to Leonardo da Vinci. The art critics were divided, but forensic evidence came in from a laboratory in Paris where an expert had been able to examine the painting by prob-

ing beneath the surface using sophisticated scientific visualization tools. Although the claim had initially been dismissed by the majority of leading art experts, this new forensic evidence shifted the burden of proof onto the side of the skeptics. Forensic investigations were carried out, and evidence was collected by art history experts and scientific experts. The analysis of the argumentation in my paper built an analysis of the interlocking argumentation in the case to evaluate the network of evidence pro and con.

I see tackling these sorts of cases where there is a mass of conflicting argument based on expert testimony and scientific evidence as within the scope of the application of my theories.

CR: You said that in deliberation dialogue, at least as far as you argue, there is no burden of proof.

DW: Kind of a shocking claim to make to a lot of people!

CR: I didn't find it that surprising to be honest; because I always thought of a burden of proof as occurring in a persuasion dialogue that may be embedded in a deliberation dialogue (and hence not be in the deliberation dialogue as such).

DW: I agree. People just seem to assume that burden of proof must apply in a deliberation—especially philosophers, who try to see everything in a rational way, and to make it into something rational. In philosophy we always teach our students right from the beginning: 'yes, you have your own opinion, but in philosophy you are obliged to give some evidence to support your opinion'. Adopting this view is very difficult for some people when they first start to study analytical philosophy. But in philosophy we expect that if someone makes a claim, if questioned they need to back it up with an argument. We just assume that it's part of philosophical rationality that if somebody asks you 'well how can you prove that?' that's a legitimate request, and if you fail to respond appropriately you have just somehow moved out of philosophy and into something else. So I think that philosophers take the notion of burden of proof—just as lawyers do actually, and judges—very seriously. They assume it is required for all rational argumentation. So the idea of engaging in deliberation without a burden of proof somehow just seems to jar them. But you are quite right, I think once you appreciate the dialectical shift from persuasion dialogue to deliberation, and realise that in deliberation you are quite commonly having to shift like that in order to, you know, play more of a conciliatory and fact-finding role, it's a lot easier to accept.

CR: The burden of proof seems to run through your work like a thread, recurring in your discussion of argumentation schemes, types of dialogue, it crops up everywhere it seems, and is also the subject of your recent (2014) book. To conclude this interview, could you maybe say a thing or two about what sort of results you obtained from your research into the burden of proof?

DW: Yes, I think that this recognition of the importance of burden of proof started from the fallacies, where I was studying fallacies like arguing in a circle—begging the question. There I had the idea that it was associated with burden of proof somehow, because if you're going to prove B from A but also prove A from B, somehow you're not really going anywhere, that

you're not fulfilling a burden of proof so to speak. Proof is finding some independent proposition or set of propositions that you can use to support rational acceptance of the other thing. If you are going in a circle, then you are defeating that. So that was one of the fallacies where it struck me that the notion of burden of proof is important to grasp the nature of the fallacy. And then there are other fallacies connected to burden of proof. Another famous fallacy is the argument from ignorance—meaning that you haven't been able to disprove it, therefore it must be true. Take the Roman medals example: there is no evidence that medals were given to Roman soldiers posthumously, and so historians, because they've studied this a lot, say this is pretty good evidence that medals were not given to Roman soldiers posthumously. If there were any cases of such awards it would be known from the tombstones and grave markers and memorials of battles. But the historians found nothing like that. So it seems to be quite a reasonable argument that the Romans didn't do this. But of course that's just negative evidence, an argument from lack of evidence. It might be thought, therefore, that it is a fallacious argument from ignorance. But sometimes, as in this instance, it can be a reasonable argument if you have conducted a good search and found nothing. In this case it's a reasonable argument because all these historians who have studied the Ancient world have studied this quite thoroughly. When this hypothesis was announced, a lot of historians would be looking at this, and you can be pretty sure that if they knew a counter-example, someone would have published it, and it would have been pretty exciting news. So even though it's a negative argument based only on lack of evidence, it does meet a burden of proof, because there was a comprehensive search which turned up nothing, a negative finding. I actually wrote a book on that fallacy, argument from ignorance, a very important fallacy, and a lot of that book was concerned with burden of proof too. So it kept popping up and up again with different fallacies, this notion of burden of proof.

NEWS

Properties in the Metaphysics of Science, 19 May

A one day workshop was held at University College London on the 19th May 2016 on the topic of properties in the metaphysics of science. The workshop was organised by Toby Friend (UCL) and Florian Fischer (Bonn) with generous financial support from the Department of Science and Technology Studies at UCL. The aim of the workshop was to bring together graduate students and more established researchers working in the metaphysics of science and metaphysics generally. The workshop was a great success with researchers in attendance from London, the UK and from further afield. The discussion was varied across the metaphysics of science from more general metaphysical concerns about the ontological status of properties to more specific dialogue on properties, laws and dispositions.

The workshop began with John Pemberton (LSE) on 'Properties in a Changing World'. He discussed the notion that change, on many accounts, is the obtaining of properties at one spatial region at some time and then the obtaining of another set of perhaps slightly different properties at an adjacent spatial region at a slightly later time. This type of conception of change fits nicely with Russell's 'at-at' theory of motion. We then dis-

cussed how various theories of properties might best fit this view. John Pemberton argued that if we take such modalised change to involve a diachronic relation between collections of properties, perhaps grounded by causation, necessity or powers, then such relations are subject to serious timing challenges. It was then argued that if such relations are grounded by powers perhaps the timing challenge can be met.

In the second discussion Rory Jubber (UCL), 'Immanent Realism, States of Affairs and Partial Identity', considered the Instantiation Problem, arguing that if one accepts that there are both universals and particulars then one has to account for how it is that these two fundamental ontological categories are 'brought together' at states of affairs. He argued that Armstrong's notion of a non-mereological tie is insufficient to account for this given that he employs a truthmaking argument. It was then argued that to account for states of affairs as truthmakers one should supply a 'difference-maker' between states of affairs and mereological fusions with the same components. It was then argued that this could be given if one takes particulars to be partially identical with the properties that they instantiate.

Florian Fischer (Bonn), 'On the Modal Status of Laws of Nature', then sketched the three most prominent accounts of laws of nature: regularity theory, contingent physical necessity and dispositional essentialism. Fischer argued that only a dispositional account can sufficiently account for the peculiar necessity given by laws of nature. It was then argued that the metaphysical necessity posited by dispositional essentialists such as Alexander Bird is unattainable but the dropping of necessity by Mumford and Anjum is an overreaction to this. Fischer's own account of the necessity of natural laws is to accept a rainforest ontology and take this version of necessity as given by the dispositions of natural kinds, arguing that the ontological benefits outweigh the costs.

In the penultimate talk, Toby Friend (UCL), 'Can Laws Explain?', asked whether an account of laws can be developed that confers explanatory power. Typically the apparent inability of regularity theories to confer explanatory power has been taken as a slight against such theories. Friend argued that two prominent alternatives—the contingent necessitarian account seen paradigmatically with Armstrong and the dispositional essentialist account—fail also on the demand for explanatory power. It was then discussed whether dispositional essentialists in particular have done enough to distance themselves from problems of circularity taken as so problematic for the explanatory power of regularity theory. It was concluded that the rival theories discussed are themselves not capable of being explanatory.

We ended the day with our keynote speaker Alexander Bird (Bristol), 'Overpowering: how the ontology of powers has over-reached itself', who argued that the ontology of powers does not provide insight into problems concerning causation, representation, intentionality, free will and liberty. Rather the ontology of powers provides insight only when accounting for fundamental natural properties. Luke Fenton-Glynn (UCL) offered a response largely focusing on implications for causation and laws, agreeing with Bird's view but offering some friendly scepticism as to whether the powers ontology is successful even for fundamental natural properties.

We hope to run a second workshop in the metaphysics of science on some other fundamental topic in the summer of 2017.

RORY JUBBER
University College London

Philosophical Methods, 16–17 June

The workshop “Philosophical Methods” took place at the Institute for Advanced Study in the Humanities (KWI, Essen). It was organized by Anna-Maria A. Eder, Insa Lawler and Raphael van Riel and funded by the German Research Foundation, the University of Duisburg-Essen, the KWI, and by the Volkswagen Foundation project “A Study in Explanatory Power”. The focus of the workshop were meta-philosophical issues in general with an eye on questions regarding conceptual clarification in particular.

Magdalena Balcerak Jackson discussed the view that propositions are analytic in virtue of being assented to, once they are understood. She argued that it results in a dilemma: if understanding is thinly construed, the claim is not convincing; if it is thickly construed, it is too demanding a concept to render the claim convincing.

Daniel Cohnitz offered a general idea of the function of philosophical reasoning, including the role of thought experiments.

Catarina Dutilh Novaes argued that explication has to be classified as an ameliorative project. It is a kind of conceptual engineering which aims at enlightening our conception of reality.

Anna-Maria A. Eder suggested that the concept of epistemic justification should be explicated. She argued that the standard conception of explication is not entirely suitable for epistemic purposes and improved it for such purposes. Based on her conception she argued for a pluralistic picture of epistemic justification.

Eve Kitsik was concerned with how philosophical explications of concepts relate to their common sense meaning, distinguishing between theoretical beliefs about concepts and ordinary action-oriented beliefs.

Hannes Leitgeb introduced what he refers to as mathematical empiricism, which is based on the method of rationally reconstructing objects of philosophical interest in an empirical-mathematical framework that consists of “mathematical structures with empirical labels”. The exact framework to be chosen depends on meta-level considerations.

Sebastian Lutz introduced an artificial language method that is based on Carnap’s account of conceptual engineering. He argued that this “method fulfills a strong form of methodological naturalism” and defended this kind of naturalized armchair method against some objections.

Christian Nimtz argued that puzzle cases can provide empirical evidence for abductive arguments for philosophical theories if the propositions highlighted in the respective cases are (near) actual truths.

Mark Pinder argued for interpreting Carnapian explication as concept illumination, a thesis famously denied by Strawson. He suggested that Schupbach’s recent attempt to overcome this objection is too weak, and he introduced an alternative.

Marc Andree Weber took issue with T. Williamson’s interpretation of the structure of thought experiments. Agreeing with Williamson that thought experiments can be reconstructed as arguments, he suggested that one should interpret the modality involved not in terms of metaphysical possibility, but, rather, in terms of conceptual possibility.

Timothy Williamson argued that philosophers should use the method of inference to the best explanation, where ‘explanation’ is understood in non-causal terms. In line with this ab-

ductive method, Williamson proposed to compare philosophical theories with respect to their simplicity and fitting with the evidence.

One can find more information on the workshop [here](#).

ANNA-MARIA ASUNTA EDER

University of Salzburg

INSA LAWLER

RAPHAEL VAN RIEL

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Calls for Papers

BIG DATA AND BUSINESS ANALYTICS ECOSYSTEMS: special issue of *Information Systems and e-Business Management*, deadline 16 October.

THE BACKGROUND OF CONSTITUTIVE RULES: special issue of *Argumenta*, deadline 10 November.

WHAT’S HOT IN . . .

Uncertain Reasoning

Statistician Stephen Stigler put forward in the 1980’s the amusing Law of Eponymy which bears his name(!). According to Stigler’s Law, the vast majority (some say all) of scientific discoveries are not named after those who actually made the discovery. Wikipedia lists a rather [impressive number of instances](#) of Stigler’s Law, featuring the Higgs Boson, Halley’s comet, Euler’s formula, the Cantor-Bernstein-Schroeder theorem, and of course Newton’s first two laws of mechanics. Of particular interest is the case of Gauss, who according to this list, has his name mistakenly attached to three items.



Rather coherently his recent book, S. Stigler (2016: *The Seven Pillars of Statistical Wisdom*, Harvard University Press), presents the fascinating edifice of statistics by giving more emphasis to the key ideas on which its foundations rest, rather than to the figures who came up with them. The seven pillars are *Aggregation*, or how to discard information to make things clearer; *Information measurement*, or why not all pieces of information are equally important; *Likelihood*, or how probability plays a fundamental role in the calibration of statistical inference; *Intercomparison*, or why the internal variation in data sets is fundamental in statistical comparisons; *Regression*, explaining why tall parents tend to have, on average, children who are shorter than themselves; *Design*, or why asking well-posed questions is fundamental in statistics; and *Residual*, or how to simplify the analysis of complicated phenomena by abstracting from the effects of known causes. To each of the seven pillars, Stigler devotes a chapter which outlines the history of the idea, and illustrates its relevance with many examples, ranging from astronomy to biology to medicine—as the saying goes statisticians do really get to play in everyone’s backyard. In the con-

cluding chapter Stigler identifies “the site” for the eight pillar, which is nonetheless still waiting for someone to be wrongly credited with its introduction.

Interestingly, logicians also have some merit in the construction of the seven pillars of statistical wisdom. In the chapter devoted to Design, for instance, Stigler points out that C.S. Peirce explicitly theorised on the key concept of *randomisation* in his criticism to the then emerging theory of *just noticeable differences* in psychophysiology. In the 1885 essay [On Small Differences in Sensation](#), published in *Memoirs of the National Academy of Sciences* 3:73–83, C. Peirce and J. Jastrow argued experimentally against the existence of a discrete threshold past which a detectable stimulus ceases to be so. The crux of their argument, as reported by Stigler, consists in the extremely careful experimental design, of which Peirce and Jastrow give ample documentation, aimed at ensuring the most rigorous randomisation in their lifted weights experiment. Stigler suggests that Peirce was aware of the methodological importance of randomisation well beyond the specific case of this experiment. To this effect it is recalled that Peirce had defined “induction” as “reasoning from a sample taken at random to the whole lot sampled”.

HYKEL HOSNI
Philosophy, University of Milan

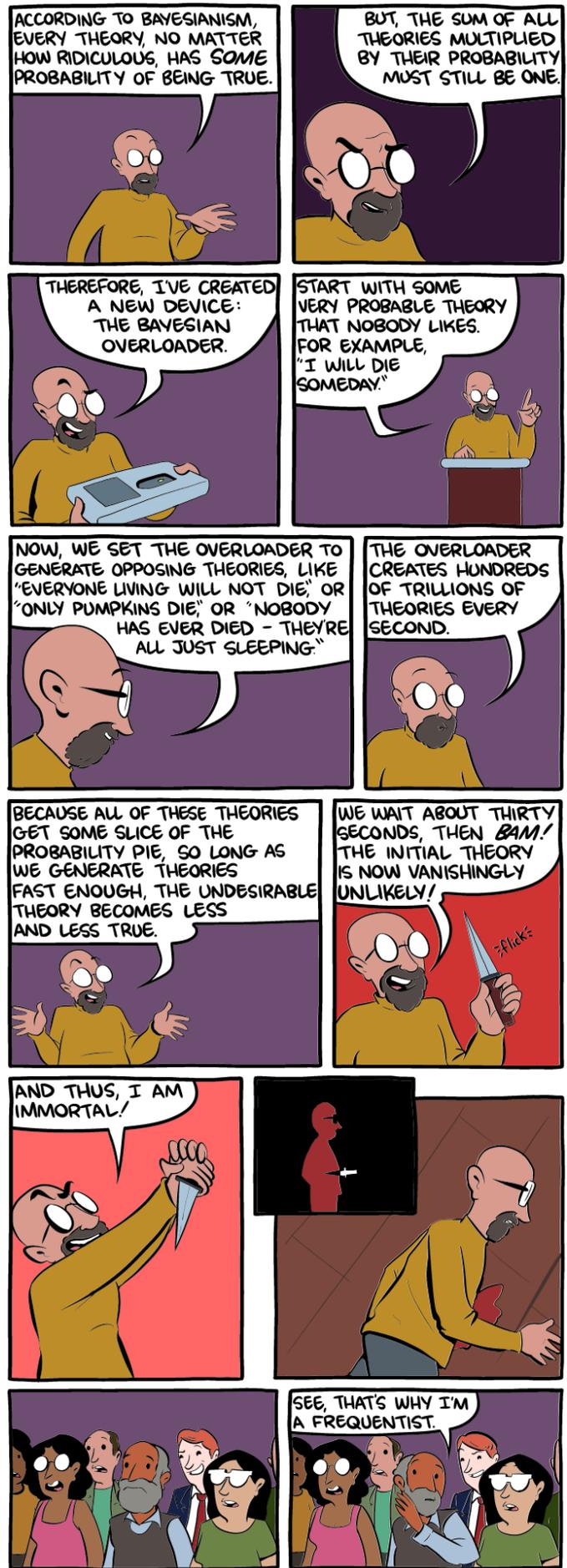
Evidence-Based Medicine

The [EBM+ consortium](#) recently held a workshop on new frontiers for evaluating evidence in medicine. It featured a number of presenters from different backgrounds, presenting on different topics related to the evaluation of evidence in medicine. For example, there was a talk by [Jeffrey Aronson](#) on the use of evidence of mechanisms to classify adverse drug reactions. There was also a talk by [Malcolm Galloway](#) on the various cognitive errors that may act as barriers to evidence-based diagnosis.

[Beth Shaw](#) gave a talk about how evidence is considered in coming up with the public health and social care guidelines produced by the [National Institute for Health and Care Excellence](#). She gave an account of the process by which such guidelines are produced. The process begins with the formulation of a review question. This question is then used to search for relevant evidence. A committee of lay members and experts is then involved in appraising the evidence. Ultimately, this process leads to a set of recommendations in the form of guidelines, which are intended to help make better health care decisions. All this is done with the guidance of a [methods manual](#). In a number of places, this manual recommends using a variety of different types of evidence, from both quantitative and qualitative studies.

However, although explicit methods for assessing the quality of quantitative studies have been established, this is typically not so much the case for assessing qualitative studies. At least, this is the view of a working group of the [Guidelines International Network](#). The [Appraising and including different knowledge](#) working group say:

Although a range of useful tools has been developed for grading [randomized controlled trials], methods for appraising and including knowledge from other sources are in earlier stages of development.

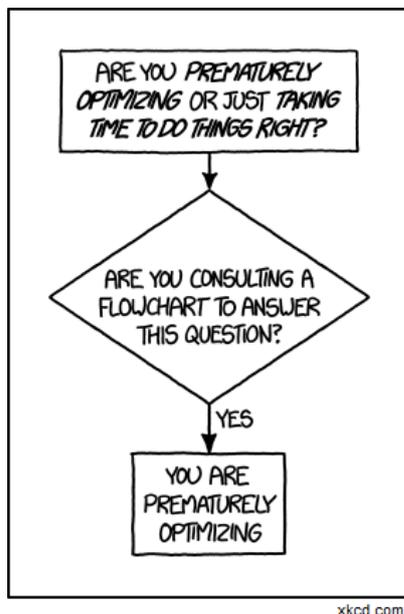


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But the group aim to remedy this state of affairs. In particular, they aim to identify methods for including and evaluating a wider range of evidence. For example, they are interested in methods for including and evaluating expert opinion in coming up with guidelines. [Beth Shaw](#) is the chair of this working group. It will be interesting to follow the progress of this group, as it looks to develop current best practice in providing evidence-based health care guidelines, especially because the group seems to have much in common with the [EBM+ consortium](#).

Some other members of the consortium also presented at the workshop. [Andy Fugard](#) talked about [mechanisms in psychological therapies](#). [Federica Russo](#) discussed the controversy surrounding the [hypothesis that cholesterol causes heart disease](#). And [Donald Gillies](#) discussed some lessons that could be learned from the thalidomide case about the role of different types of evidence in assessing drug safety. Some of the details of these talks, including slides and papers, are available at [the EBM+ blog](#).

[MICHAEL WILDE](#)
Philosophy, Kent



EVENTS

AUGUST

[P&QM](#): Probability and Quantum Mechanics with G. Baccigaluppi, Utrecht University, 1–5 August.

[KbL](#): Knowing by Looking: Workshop in the Epistemology of Perception, University of Southampton, 4 August.

[ISCB](#): Conference of the International Society for Clinical Biostatistics, Birmingham, 21–25 August.

[PMS](#): Post-Model Selection, Leuven, 22–23 August.

[EJ](#): Workshop on Expert Judgment, University of Strathclyde, 26 August.

[ECAI](#): European Conference on Artificial Intelligence, The Hague, Netherlands, 29 August–2 September.

[BBD&I](#): Bayes, Big Data, and the Internet, Villa del Grumello, Como, Italy, 29 August–2 September.

SEPTEMBER

[CS&ML](#): Workshop on Computational Statistics and Machine Learning, University of Edinburgh, 1 September.

[PoSGC](#): Philosophy of Science Graduate Conference, University College London, 1–2 September.

[PLP](#): Probabilistic logic programming, London, 3 September.

[ILP](#): International Conference on Inductive Logic Programming, London, 4–6 September.

[BiC](#): Bias in Context: Psychological and Structural Explanations, The University of Sheffield, 5–6 September.

[EPoSA](#): Conference of the European Philosophy of Science Association, university of Exeter, 6–9 September.

[GPoS](#): Ground in Philosophy of Science, University of Geneva, 13–14 September.

[CMB](#): Complex Models in Biology, University College London, 19 September.

COURSES AND PROGRAMMES

Programmes

[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.

[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 & 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.

MA IN REASONING

A programme at the University of Kent, Canterbury, UK. Gain the philosophical background required for a PhD in this area.

Optional modules available from Psychology, Computing, Statistics, Social Policy, Law, Biosciences and History.

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.

PhD POSITION: in Philosophical Logic, Université catholique de Louvain, deadline 31 August.

JOBS AND STUDENTSHIPS

Jobs

ASSISTANT PROFESSORSHIP: in Mathematical Logic, Jagiellonian University, Krakow, deadline 2 August.

LECTURESHIP: in Statistical Science, University of Bristol, deadline 7 August.

POST-DOC: in Machine Learning, University of Skövde, Sweden, deadline 12 August.

POST-DOC: in Knowledge and Decision Theory, University of Hamburg, deadline 15 August.

PROFESSORSHIP IN THEORETICAL PHILOSOPHY: The Frankfurt School of Finance & Management, deadline 1 September.

PROFESSORSHIP: in Statistics and Data Mining, University of Melbourne, deadline 30 September.

Studentships

PhD POSITION(S): in Data Mining & Machine Learning, National University of Ireland Galway, open until filled.

PhD POSITION(S): in Computer Science and Artificial Intelligence, Delft University of Technology, deadline 14 August.