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Arguments and Stories in Legal Reasoning

The Case of Evidence Law

ABSTRACT: We argue that legal argumentation, as the subject matter as well as a special subfield of Argumentation Studies (AS), has to be examined by making skilled use of the full panoply of tools such as argumentation and story schemes which are at the forefront of current work in AS. In reviewing the literature, we make explicit our own methodological choices (particularly regarding the place of normative deliberation in practical reasoning) and then illustrate the implications of such an approach through the analysis of a case study in the English law of evidence. We argue that a clear distinction must be drawn between practical argumentation and stories. Because of the institutional separation between legal judgment and fact-finding in common-law jury trials, we argue for the combination of argument and story-based analysis.

Keywords: Expert evidence, narrative coherence, legal reasoning, argumentation schemes, evidential argumentation, argumentation studies

Schlagworte: Gewissheit der Experten, erzählende Koheränz, rechtliche Begründung, Argumentationsshema, beweisführende Argumentation, Argumentationsstudien

1. Introduction

The debate in the legal reasoning subfield of jurisprudence has paid so far scant attention to the work of those making full use of formal and informal argumentative techniques. It is common to find philosophical reflections where the focus is on legal reasoning as a form of practical reasoning[1], of rhetorical and legal narrative analysis[2] or of argumentative analysis.[3] However, in the field of *general* argumentation theory new developments have emerged[4] which intersect with work in closely related fields such as computational argumentation

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1   Robert Alexy, *A Theory of Legal Argumentation: The Theory of Rational Discourse as Theory of Legal Justification*, ed. Ruth M. Adler / Neil MacCormick, 1989
2   Neil MacCormick, *Rhetoric and the Rule of Law: A Theory of Legal Reasoning*, 2005; see also William Lucy, Rhetoric and the Rule of Law: A Theory of Legal Reasoning, by Neil Maccormick. Oxford: Clarendon Press, 2005, *Legal Studies*, 26 2006, 613–616.
3   Thomas Bustamante / Christian Dahlman eds, *Argument Types and Fallacies in Legal Argumentation*, 2015; see also Eveline T. Feteris, *Fundamentals of Legal Argumentation: A Survey of Theories on the Justification of Legal Decisions*, 2017; Massimo La Torre, *Constitutionalism and Legal Reasoning: A New Paradigm for the Concept of Law*, 2007, Gianluca Andresani / Natalina Stamile, Children of a Lesser God? The Vividown Case and Privacy on the Internet (forthcoming).
4   See Giorgio Bongiovanni / Gerald Postema / Antonino Rotolo / Giovanni Sartor / Chiara Valentini / Douglas Walton eds, *Handbook of Legal Reasoning and Argumentation*, 2018.

and narrative analysis where the focus is not just on arguments but on types of argument, i. e. argumentation schemes, and not just on stories but on story schemes. In this article we critically engage with the literature and suggest our own take on the kind of methodological choices which are available to the legal theorist, and exemplify our approach via the analysis of a case study. We will start first with reviewing the state of the art in Argumentation Studies (AS) in order to set the stage for our own take on current debates.

2. From argumentation studies to practical reasoning and argumentation

In AS three perspectives compete for the attention of scholars: (Informal) Logic (with or without an epistemological focus on truth), Dialectic and Rhetoric. Originally, arguments were the topic of (formal) logic, with its emphasis on deductive and inductive reasoning. The Informal Logic movement originated in the 70s because of a dissatisfaction with the state of the discipline regarding the common use of language in everyday life as well as in specialised fields such as law and (social) scientific disciplines, which could not be made intelligible within the straightjacket of (formal) logic .[5]

Several *informal* forms of reasoning which are neither deductive nor inductive became the focus of this newly-born specialty. Instead of listing all these forms (e. g. abductive, analogical, conductive, etc. reasoning) Bickenbach and Davies,[6] for example, put under the 'practical reasoning' label all those modes of argumentation which are neither deductive nor inductive. We question below this tripartite classification.[7] At this stage, however, we will adopt temporarily Bichenbach and Davies's[8] tripartite classification and focus on the relation between logically-based vs rhetorically-based evaluations of practical reasoning and argumentation and how they relate to dialectic. From Aristotle onwards the focus has increasingly been on the *contest* between logical and rhetorical perspectives with the latter having found their contemporary institutional 'homes' in humanities and social science as well as in philosophy departments. Dialectical approaches have instead tended to align themselves (and find their respective academic institutional places) either with logical[9] or rhetorical[10] perspectives. The more applied investigations of Rehg,[11] for example, show a noteworthy tendency towards the latter position, being more

5   Frans H van Eemeren / Bart Garssen / Erik CW Krabbe / A Francisca Snoeck Henkemans / Bart Verheij / Jean H M Wage mans, *Handbook of Argumentation Theory*, 2014; see also Gianluca Andresani / Natalina Stamile, Transparency in Internet Regulation and Governance: Arguments and Counter-arguments with Some Methodological Reflections, *RBEP*, 117 (2018), 443–476.

6   Jerome E Bickenbach / Jacqueline M Davies, *Good Reasons for Better Arguments: An Introduction to the Skills and Values of Critical Thinking*, 1996

7   See also Andresani/Stamile (footnote 5).

8   Bickenbach and Davies (footnote 6)

9   See e. g. Giovanni Sartor, Legal Reasoning: A Cognitive Approach to the Law, in: *A Treatise of Legal Philosophy and General Jurisprudence,* ed. Enrico Pattaro, Vol. 5, 2005.

10 See e. g. Frans H. van Eemeren, *Strategic Maneuvering in Argumentative Discourse: Extending the Pragma-Dialectical Theory of Argumentation*, 2010.

11 William Rehg, *Cogent Science in Context: The Science Wars, Argumentation Theory, and Habermas*, 2009

attracted by social scientific and rhetorical influences.[12] With the entrance of computing, information systems and artificial intelligence scholars into the field, dialectic has moved to centre stage, with however a stronger influence from (informal) logic. Moreover, dialectical approaches (especially those influenced by research in Artificial Intelligence)[13] have had an impact on legal reasoning scholarship via an engagement with work in other related areas of (practical) philosophy. It will be necessary to briefly review these debates before returning to our approach to legal reasoning and argumentation.

3. Practical reasoning

First of all, a few comments are in order regarding the distinction between (theoretical and practical) reasoning and argumentation. The study of practical reasoning overlaps with investigations in the philosophy and methodology of the social sciences (i. e. it falls between philosophical and social scientific inquires). The study of practical reasoning in the philosophical area of action theory in fact does not necessarily include a focus on ethical aspects and *normative* reasons for action. The mainstream paradigm, also called (with some controversies)[14] neo-Humean, is eminently instrumental in its focus, with an emphasis on the *individual* and *psychological* aspects of practical deliberation. In this article the focus is instead on practical *argumentation* as an *external, social* phenomenon, in both its normative and empirical aspects since legal decisions have a practical orientation.

Although practical reasoning, deliberation and decision-making have been investigated by philosophers since at least Aristotle, we need to address presently the fact that action theory (and practical reasoning)[15] is distinct from moral philosophy. Indeed, the tools of the trade (decision theory, game theory, formal logic, argumentation theory, etc.) do considerably overlap with those of general jurisprudence.[16] And, as mentioned above, legal decisions and actions have also been studied in terms of practical argumentation. But before introducing our *normative* model, we will have to provide first the reasons why theoretical and practical (reasoning and) argumentation cannot be separated, in order to show how legal deliberations and arguments tackle specific (practical) problems.

3.1 Beyond instrumentalism

The issue to be addressed here concerns the fact that mainstream practical reasoning has an instrumental orientation. To begin with, the ends of a decision are given, which is taken to mean that they are like tastes, about which no *rational* deliberation is possible. As in

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12   See also Andresani/Stamile (footnote 5).
13   See Eemeren (footnote 10); also Feteris (footnote 3).
14   See Elijah Millgram, Was Hume a Humean?, *Hume Studies*, 21 (1995), 75–93.
15   See Elijah Millgram, *Ethics Done Right: Practical Reasoning as a Foundation for Moral Theory*, 2005.
16   E. g. game and Bayesan decision theory which are favoured by those scholars influenced by law and economics approaches.

empirical socio-legal science, in practical reasoning too, ends are supposed to be given, in the mainstream's understanding at least[17]. In fact as Ingram[18] has aptly noted: 'Empirical [social, Andresani and Ward] science can tell us whether our ends are "rational" given available technologies and resources, but there is no science that can tell us that these ends are intrinsically "false", "inauthentic," or "delusional" according to metaphysical notions of human nature or history'. Heath[19] has also pointed out that such an instrumental conception is not satisfactory in conceptualising both our desires or wants leading to the goals of action to be achieved, *and* beliefs regarding the states of affairs relevant for the means to be used to achieve such goals. The original sin resides in the *non-cognitivism* that plagues decision/rational choice theory, with its non-cognitive justification of desires. Our own pragmatic theory relies instead on a holistic modeling of *commitments.*[20]

In this view, desires/preferences should be conceived not as physiologically grounded (as in the neo-Humean conception), but rather via an explicit ('cognitive') representation at the level of the 'intentional planning system'.[21] In the same way, according to such a 'holistic' understanding, it is not possible to disentangle 'basic' from the other kinds of beliefs.[22] Therefore, both desires and beliefs require deliberation, i. e. by *dialectically* engaging in (cognitive) interaction.[23] To paraphrase David Ingram,[24] then, understanding and acting are dialogical (read: dialectical).

4. Legal reasoning as practical argumentation

Returning now to dialectical approaches to legal reasoning, the key figure in this computing-influenced sub-field is Douglas Walton. It is to his contribution that we will now turn**.**

4.1 Basic form of practical inference

Walton[25] distinguishes between two (often opposed) models of theoretical and practical reasoning and acting: the BDI and the commitment models. Although, he has a preference for the latter, as it will be shown below, the former plays a role in our framework, particu-

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17   Robert Audi, *Practical Reasoning and Ethical Decision*, 2006
18   David Ingram, *Habermas: Introduction and Analysis*, 2010, 34
19   Joseph Heath, *Following the Rules: Practical Reasoning and Deontic Constraint*, 2008
20   See Margaret Gilbert, *Joint Commitment: How We Make the Social World*, 2013; also Heath (footnote 19).
21   See e. g. Heath (footnote 19); Stuart Russell / Peter Norvig, *Artificial Intelligence: A Modern Approach*, 2016; also Martha C. Nussbaum, *Upheavals of Thought: The Intelligence of Emotions,* 2001; and for an application of planning theory to law see Scott J. Shapiro, *Legality*, 2011.
22   See Scott F. Aikin, *Epistemology and the Regress Problem*, 2010.
23   E. g. Michael Wooldridge, *An Introduction to Multiagent Systems*, 2 ed, 2009; but see Robert Brandom, *Making It Explicit*, 1994; Robert Brandom, *Reason in Philosophy: Animating Ideas,* 2009; Heath (footnote 19), for a different take.
24   Ingram (footnote 18), 51
25   Douglas Walton, *Methods of Argumentation*, 2013, 5

larly regarding explanation. Let's move one step back first, and start from the instrumental (and mainstream) conception of practical reasoning (and argumentation). Walton[26] defines it as 'the inferential process of arriving at a conclusion to take action through which deliberation can be understood as goal-directed method of decision-making based on an agent's knowledge of the data of its particular situation'. Therefore deliberation 'cannot be understood without grasping practical reasoning'.[27] Citing Wooldridge,[28] he says that after having deliberated what states of affairs to achieve, the second component activity of practical reasoning would focus on 'the process of deciding how to achieve these states of affairs, called means-end reasoning'.[29] Finally, the end result of means-end reasoning is a *plan* (which he links to the technology of planning, well developed in AI). The basic form of practical inference can now be represented in the following way:

I have a goal, *G*.
Carrying out this action *A* is a means to realize *G*.
Therefore, I ought (practically speaking) to carry out this action *A*.[30]

According to the BDI (Belief-Desire-Intention) model, the first (major) premise would then focus on preferences (desires/wants) and the agent's motivation to carry out the action. The second (minor) premise would focus instead on the agent's beliefs regarding the best means to obtain the goal(s).[31] The commitment model would instead maintain that the major premise should indicate the agent's goal(s) described as *normative* commitments.[32] According to Walton,[33] one 'highly significant difference between the two models is that desires and beliefs are private psychological notions internal to an agent, while commitments are statements externally accepted by an agent and recorded in an external memory that is transparent to all parties'.[34] Before moving to the next step, we'd like to emphasise that it is obvious the relevance of the commitment model for the following analysis and evaluation, being based on publically available data, i. e. court proceedings. It is the preference for this model that characterises Walton's proposal as *dialectical*, since the focus is on agents' speech acts and dialogues. The BDI model instead is relevant in those cases in which it would be necessary to *extrapolate* (read: explain) the motive behind particular plans and actions, which have not been publicly asserted by the agents.[35]

26   Douglas Walton, Evaluating Practical Reasoning, *Synthese* 157 (2007), 197–240, 201
27   Ibid., see also Audi (footnote 17).
28   Michael Wooldridge, *An Introduction to Multiagent Systems*, 1 ed,, 2002, 6
29   Walton (footnote 26)
30   Ibid., 192
31   ibid., 211; cf. Manuel Vargas / Gideon Yaffe, eds, *Rational and Social Agency: The Philosophy of Michael Bratman*, 2014; also Douglas Walton, *Goal-Based Reasoning for Argumentation*, 2015; Audi (footnote 17).
32   Ibid.; Gilbert (footnote 20)
33   Walton (footnote 25), 5
34   Ibid., but see Fabio Paglieri, Committed to Argue: On the Cognitive Roots of Dialogical Commitments, in: *Dialectics, Dialogue and Argumentation. An Examination of Douglas Walton's Theories of Reasoning*, eds Chris Reed / Christopher Tindale, 2010, 59–71 for a critique.
35   See also Gianluca Andresani / Natalina Stamile, Legal Reasoning To The (Barbed) Wire, International Conference on Artificial Intelligence and Law (*ICAIL*), June 12–16, 2017, King's College, London, UK.

4.2 A normative framework for practical reasoning and argumentation

The next step would be then to introduce normative considerations into the basic form of practical reasoning and argumentation. While we will return to the BDI model in the next section, we will now concentrate on a broader conception of practical reasoning according to the commitment model, which goes beyond the narrower and instrumental notion of practical reasoning and argumentation exposed above. The fact is that goals might and do often conflict amongst each other, but the instrumental conception would consider values[36] as species of goals, while a broader, *normative* conception would clearly consider norms as separate from goals. Therefore, such a normative conception would be critical of the instrumental conception, since instead of keeping political and ethical judgments in the background, as *desires* which are not the result of rational deliberation, they become *central* for the evaluation of actions (and events) as conclusions of the deliberation *dialogue*.[37]

4.3 Evaluating practical reasoning

The penultimate step is represented by the introduction of argumentation schemes. In consequence of such a focus on dialogues, the inferential connection from the major through the minor premises leading to the conclusion should be evaluated according to specific dialogue rules. In fact, the commitment model relies for the analysis and evaluation of arguments on such rules, called argumentation schemes. Each argumentation scheme can be evaluated according to how it answers a list of specific critical questions. It is important to note that with this move, practical reasoning becomes then just one argumentation scheme amongst others. By drawing upon Walton's[38] analysis and following the preceding discussion, we would model this scheme as indicated below:

I have a goal G.
G is supported by my set of norms, N.
Bringing about A is necessary (or sufficient) for me to bring about G.
Therefore, I should (practically ought to) bring about A.

Such Norm-based Scheme for Practical Reasoning should be then evaluated according to the following critical questions:[39]

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36 We will follow the custom and use the word 'values' to indicate preference evaluations which might simply refer to prudential considerations for example, and 'norms' for what Heath (footnote 19) calls 'deontic constraints', having a clear normative character, see also Sven Ove Hansson, *The Structure of Values and Norms*, 2001, Gianluca Andresani / Natalina Stamile, Unhum(e)an Reasoning Between Values and Norms, paper presented at the 29th World Congress of the International Association for the Philosophy of Law and Social Philosophy (IVR), Lucerne, Switzerland, 7–12 July 2019.
37 Cf. Walton (footnote 26), 219.
38 ibid., 233
39 Cf. ibid., 222.

(CQ1) What other goals do I have that might conflict with *G*?

(CQ2) How well is *G* supported by (or at least consistent with) my norms *N*?

(CQ3) What alternative actions to my bringing about *A* that would also bring about *G* should be considered?

(CQ4) Among bringing about *A* and these alternative actions, which is arguably the best of the whole set, in light of considerations of other values such as efficiency in bringing about *G*?

(CQ5) Among bringing about *A* and these alternative actions, which is arguably the best of the whole set, in light of my *norms N*?

(CQ6) What grounds are there for arguing that it is practically possible for me to bring about *A*?

(CQ7) What consequences of my bringing about *A* that might have even greater negative value of *G* should be taken into account?

4.4 Other argumentation schemes

So far we have followed Bickenbach and Davies[40] and others, and focussed on practical reasoning as the all-embracing label to catalogue all those forms of reasoning that are neither deductive nor inductive. In the following empirical analysis though, we will consider it as just *one* amongst several other argumentation schemes. Walton, Reed and Macagno[41] categorise a large number of such schemes,[42] each included in three main categories, i. e. Reasoning, Source-Based Arguments and Applying Rules to Cases. The practical reasoning scheme, according to such a classification, would be part of the Reasoning category (together with the Deductive, Inductive, Abductive and Causal Reasoning Schemes). In this article, the relevant schemes used for the analysis and evaluation of the case study will be introduced below.

5. Explanation: Scripts and stories

It is now possible to reach the last step of the construction of the theoretical framework which has informed the analysis and evaluation of the case study. In the previous sections the focus was entirely on the (normative) justification of arguments through the use of argumentation schemes (including that of practical reasoning). After having reviewed the philosophical and AS literatures, it is now possible to add also the focus of (social scientific) explanation as a *complement* to justification. The socio-legal literature[43] because of its focus on the *cognitive construction* of institutions has put particular emphasis on *scripts*. The literature on AS more strongly influenced by Artificial Intelli-

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40 Bickenbach and Davies (footnote 6)

41 Douglas N. Walton / Christopher Reed / Fabrizio Macagno, *Argumentation Schemes*, 2008

42 Walton et al. *ibid.*, count sixty-five schemes.

43 E. g. Sociological Institutionalism, see W Richard Scott, *Institutions and Organizations: Ideas, Interests and Identity*, 2014; also Philip Selznick, Focusing Organizational Research on Regulation, *Regulatory Policy and the Social Sciences*, 1 (1985), 363–67.

gence (starting with its early focus on codified sequences)[44] has also widely used such a notion, by defining scripts as those 'commonly known ways of carrying out everyday activities'.[45] The classic example is that of the restaurant script. Once one decides to enter a restaurant, the following ordered sequence of events[46] are expected: entering the restaurant, being given a seat, then a menu by the waiter, making an order, being served, giving a tip, leaving the restaurant. Again, by relying on *defeasible* inferences based on everyday knowledge, any gaps in the sequence can be addressed. Scripts are just one example of the wider narrative approach used to complement the argumentation one.[47] More broadly, *story schemes* will be used below by adding – in this way – *explanation* to the justification of events (*and* actions).

Walton and other AI scholars[48] have shown that particularly conducive to such an explanation is the BDI model mentioned above. At this point, we will only briefly compare story schemes to argumentation schemes to underline their differences. As we have fully elaborated above, if the latter are general schemes for arguments of a particular type (e. g. deductive, practical reasoning scheme, etc.), story schemes are general schemes for stories of a particular type.[49] Walton et al.[50] in the first instance separate actions and events in the story according to different categories, e. g. waitress and customer as categories of agents or the category of ordering in a restaurant. Next, such schemes will be used to show the relationships between these categories: for example, if and how particular actions and events are related to other actions or events.[51]

Below it will be shown how complementing the argumentation approach with the narrative approach would lead to rich explanations of actions and events (including the Inference to the Best Explanation, or IBE). To sum up: such a framework draws upon that rich field of study in AS, AI and Law that analyses and evaluates arguments, actions and events both *logically* and *dialogically.* Now, this framework needs to be 'embedded' in the institutional peculiarities of legal contexts. It is to this that we turn in the remaining part of this article.

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44   See e. g. Roger C Schank / Robert Abelson, *Scripts, Goals, Plans, and Understanding*, 1977.
45   See Walton (footnote 25), 136.
46   Importantly based on common – 'ordinary' – knowledge, see Peter Berger / Thomas Luckmann, *The Social Construction of Reality: A Treatise in the Sociology of Knowledge*, 1966.
47   Floris Bex / Douglas Walton, Combining Explanation and Argumentation in Dialogue, *Argument & Computation* 7 (2016), 55–68
48   Douglas Walton, *Argument Evaluation and Evidence*, 2015; Floris Bex / Henry Prakken / Chris Reed / Douglas Walton, Towards a Formal Account of Reasoning About Evidence: Argumentation Schemes and Generalisations, *Artificial Intelligence and Law* 11 (2003), 125–65
49   Cf. Floris Bex / Peter J Van Koppen / Henry Prakken / Bart Verheij, A Hybrid Formal Theory of Arguments, Stories and Criminal Evidence, *Artificial Intelligence and Law*, 18 (2010), 123–52; Walton (footnote 48).
50   Walton (footnote 48); Bex et al (footnote 49)
51   See Walton (footnote 25), 164–165.

6. Case study: Forensic science and the admissibility debate

We turn now to a specific legal issue, the admissibility of expert evidence in criminal trials. This example suits our purposes for two reasons: because expert evidence is a subject that has been discussed in some detail by Walton and his collaborators; and because although rooted in judge-made common law, the admissibility standards applicable in England and Wales are now largely part of the 'procedural code' comprising the Criminal Procedure Rules 2015 and Criminal Practice Directions 2015.[52] This Code is also a creation of senior judges, acting in an administrative capacity as regulators of the court system.

To set this legal issue in context, it is important to note that many forensic science methods routinely used in the criminal courts – for example, handwriting evidence, footwear comparison evidence and 'facial mapping' – are of unproven validity.[53] By 'validity' we mean primarily what the (US) President's Council of Advisers on Science and Technology (PCAST), in an important report, calls 'foundational validity'.[54] A technique is valid where research has established that a method is reliable (samples from the same source will produce the same result), reproducible (different examiners will get the same result from the same sample) and accurate (in tests where the origin of the sample is known, the results are correct).[55] Crucially, each of these results is obtained 'with known probability', so the jury can be told the chance of an inaccurate result. Forensic science evidence tends to be relied on mainly by the prosecution. The defence will typically use forensic evidence to challenge the conclusions drawn by prosecution scientists. This can be difficult, given the lack of resources and scientific knowledge among defence lawyers.[56]

Awareness of the shaky foundations of much forensic science evidence has led to debate among legal scholars about whether such evidence should be admissible in a criminal jury trial.[57] There is no doubt that a jury which has information about the results of formal validation studies – most importantly, about a technique's level of accuracy – is better placed to judge the weight of forensic science evidence than it would be without it. The question is whether such information is so essential that it should be a prerequisite for admissibility. The conventional common-law view is that the weight of

52   These can be found at https://www.justice.gov.uk/courts/procedure-rules/criminal.

53   Tony Ward / Gary Edmond / Kristy A. Martire / Natalie Wortley, Forensic Science, Scientific Validity and Reliability: Advice from America, *Criminal Law Review* (2017), 357–78.

54   Report to the President, *Forensic Science in the Criminal Courts: Ensuring Scientific Validity of Feature-Comparison Methods* (Washington DC, Executive Office of the President of the United States, 2016), https://obamawhitehouse.archives.gov/sites/default/files/microsites/ostp/PCAST/pcast_forensic_science_report_final.pdf, 4 (Accessed 27 April 2017).

55   Ibid 47, Box 2.

56   See the evidence taken by the House of Lords Science and Technology Committee available at https://www.parliament.uk/business/committees/committees-a-z/lords-select/science-and-technology-committee/inquiries/parliament-2017/forensic-science/forensic-science-publications/ (accessed 2 Dec 2018)

57   See e. g. *Forensic Science Evidence and Expert Witness Testimony: Reliability through Reform?* ed. Paul Roberts / Michael Stockdale, 2018.

expert evidence, that is, the degree to which it tends to prove or disprove an element of a party's case, is, like the weight of any other evidence, a matter for the jury.[58] Where expert evidence relies on an untested or controversial technique this is a matter for the jury to take into account in the assessment of weight.[59] Some reformers argue that these types of expert evidence are similar to improperly obtained confessions[60] or very poor quality eyewitness testimony in being both inherently unreliable and apt to be seriously overvalued by juries, and accordingly should be excluded as evidence, at least when tendered by the prosecution.[61] It is important to note, however, that even the weakest forms of feature-comparison evidence can be backed up by arguments that show they are at least *relevant* in the legal sense of the word: that they make the propositions they ostensibly support more probable, even if to an unquantifiable degree. This is because they are 'anchored' in commonsense propositions:[62] for example, impressions on soft surfaces are similar in shape and size to the objects that made them, and those similarities can be discerned by the human eye; human faces have certain distinctive features that are relatively stable over time and photographic images of faces (sometimes, at least!) have recognisable similarities to the person in front of the camera.

6.1 The argumentation scheme from expert opinion

In the AI and law literature, argumentation schemes have been introduced to formalise and evaluate experts' and laypeople's *practical* reasoning.[63] In this context the argumentation scheme from expert opinion has been suggested which in our view would address the issues raised in the previous section. In fact, the way to make explicit and evaluate expert opinion is by answering specific critical questions (specific to this particular argumentation scheme, that is) which through a dialectical procedure would allow any *reasonable* agent to evaluate the limits of expert opinion, including therefore jury members. Gordon et al[64] have suggested an interesting formalisation of the scheme. They draw upon Walton's definition,[65] according to which the scheme contains the following premises:

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58 *R v Luttrell* [2004] EWCA Crim 1344, [35]–[36]; *R v Stubbs* [2006] EWCA Crim [57]–[59]; *R v Reed and Reed* [2009] EWCA Crim 2698, [165].

59 *R v Robb* [1991] 93 Cr App R 161, 164–6; *R v Broughton* [2010] EWCA Crim 549, [32], [36]; *R v C* [2010] EWCA Crim 2578, [26]

60 Police and Criminal Evidence Act 1984, s 76.

61 See e. g. Gary Edmond / Andrew Roberts, Procedural Fairness, the Criminal Trial and Forensic Science and Medicine, *Sydney Law Review*, 33 (2011), 359.

62 Willem A Wagenaar / Peter J van Koppen / Hans F M Crombag, *Anchored Narratives: The Psychology of Criminal Evidence,* 1993

63 See e. g. Katie Atkinson / Trevor Bench-Capon, States, Goals and Values: Revisiting Practical Reasoning, *Argument & Computation* 7 (2016), 135–154; Andresani/Stamile (footnote 35), Gianluca Andresani and Natalina Stamile, Games Conventionalists Play (working paper).

64 Thomas Gordon / Henry Prakken / Douglas Walton, The Carneades Model of Argument and Burden of Proof, *Artificial Intelligence* 171 (2007), 875–896

65 Douglas Walton, *Appeal to Expert Opinion. Arguments from Authority* (1997)

Major premise: Source E is an expert in the subject domain S containing proposition A.

Minor premise: E asserts that proposition A in domain is true.

Conclusion: A may plausibly be taken as true.

Gordon et al[66] suggest then six critical questions to evaluate this scheme:

CQ1:   How credible is E as an expert source?

CQ2:   Is E an expert in the field he is in?

CQ3:   Does E's testimony imply A?

CQ4:   Is E reliable?

CQ5:   Is A consistent with the testimony of other experts?

CQ6:   Is A supported by evidence?

Finally, Gordon et al[67] recast the scheme to fit their proposed Carneades model.

Premise.	E is an expert in the subject domain S containing proposition A.
Premise.	E asserts A.
Assumption.	E is a credible expert.
Exception.	E is not reliable.
Exception.	A is not consistent with the testimony of other experts.
Assumption.	A is based on evidence.
Conclusion.	A.

In the Carneades model an 'assumption' can be taken as true unless it is challenged by a party to a dialogue, which places the onus on the proponent to prove the assumption. An 'exception' has to be proved by the party who asserts it. Therefore the effect of the scheme, in a case where the prosecution adduces the expert evidence, is to place a burden (a tactical or argumentative burden rather than a legal one) on the defence to question the assumptions and/or adduce evidence to establish an exception. This shifting of the burden to challenge unreliable expert evidence onto the defence is one of the features of the traditional common-law approach to expert evidence to which critics most strongly object.[68]

In fact, English law, at least on paper (it is unclear how rigorously the law is applied in practice) has moved away from this kind of burden-shifting. Under the Criminal Procedure Rules, the *expert* must provide a report prior to trial, which must, *inter alia,* 'summarise the range of opinion' in the expert's field about matters dealt with in the report and 'include such information as the court may need to decide whether the expert's opinion is sufficiently reliable to be admissible as evidence'.[69] The latter requirement is amplified by the Criminal Practice Direction, which in effect asks a series of critical questions

66   Gordon et al (footnote 41)

67   Ibid.

68   Gary Edmond / Richard Kemp / Glenn Porter / David Hamer / Mike Burton / Katherine Biber / Mehera San Roque, *Atkins* v *The Emperor*: the 'Cautious' use of Unreliable 'Expert' Opinion, in *Int. J. Evidence & Proof* 14 (2010), 146–166.

69   Criminal Procedure Rules 2015, r. 19.4 (f) and (h).

(more detailed than Gordon et al's) intended to elicit how reliable the evidence is.[70] The initial dialogue envisaged in this procedure is, then, *not* one between the prosecution and defence but rather between the expert and the judge. If judges do their job effectively in pre-trial proceedings, the effect should be that the 'critical questions' are answered before trial, and if the evidence is admitted, the answers to those questions should be before the jury from the start, not left for the defence to elicit in cross-examination.[71] This point is particularly important in a type of case which has the following features:[72]

(1) The prosecution seeks to rely on a form of evidence that has not been scientifically validated (for example, facial image comparison);

(2) As a matter of common sense, the method used by the expert (for example, methodical visual comparison of face shapes) appears to have *some* efficacy as a means of detecting similarities and differences between two items;

(3) The similarity in question (for example between a face in a security camera photograph and that of the defendant) fits very well into the story advanced by the prosecution (and supported by various items of circumstantial evidence), while the defence can explain it only as an unfortunate coincidence.

Point (3) refers to a story but can also be formulated as an argument. In terms of Walton and colleagues' classification of argumentation schemes it involves a type of defeasible causal argumentation scheme: the argument from effect to cause[73]. Walton et al[74] formalise the *abductive* version of the scheme as it follows:

Premise 1:   *F* is a finding or given set of facts in the form of some event that has occurred

Premise 2:   *E* is a satisfactory causal explanation of *F*.

Premise 3:   No alternative causal explanation *E'* given so far is as satisfactory as *E*.

Conclusion: *E* is plausible, as a hypothesis for the cause of *F*.

The critical questions to assess such a scheme would then be:[75]

CQ1: How satisfactory is *E* as an explanation of *F*, apart from the alternative explanation available so far in the dialogue?

CQ2: How much better an explanation is *E* than the alternative explanations available so far in the dialogue?

CQ3: How far has the dialogue progressed? If the dialogue is an inquiry, how thorough has the investigation of the case been?

CQ4: Would it be better to continue the dialogue further, instead of drawing a conclusion at this point?

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70 Criminal Practice Direction V, Evidence, 19A.5–6.

71 We have argued this in detail in Tony Ward, Admissibility, Reliability and Common Law Epistemology, in *Forensic Science Evidence and Expert Witness Testimony: Reliability through Reform?* ed. Paul Roberts / Michael Stockdale, 2018.

72 As in the controversial case of *R v Atkins* [2009] EWCA Crim 1976; see also Edmond et al (footnote 68).

73 Walton et al (footnote 41)

74 Ibid., 172

75 Ibid., 171

Let us suppose that *F* is a set of facts which includes an unvalidated piece of forensic science – a finding that the defendant (D) closely resembles an image captured by a security camera at the scene and time of the crime – and several pieces of circumstantial evidence.[76] *E* is a hypothesis that explains the image and the other pieces of evidence by a series of events that includes D's committing the crime. The alterative hypothesis or story advanced by the defence explains some of the circumstantial evidence and posits that D has an alibi for the crime, although the evidence supporting the alibi is weak.

In terms of the above argumentation scheme, the objection to relying on *E* is that it fails to provide a good answer to CQ2. The defence could suggest a number of explanations for the incriminating expert evidence: the poor-quality photograph of the person at the crime scene may be distorted;[77] the resemblance may be simply a coincidence; the expert may have been given information that created an unconscious bias towards identifying the defendant.[78] In the absence of any rigorous testing of the expert's technique, the likelihood of any of these explanations is unknown. It is therefore impossible (so the argument goes) to answer the question *how much* better *E* is than the defendant's alternative explanation.[79]

Against this, it can be argued that CQ2 can be answered well enough to make the argument plausible, in the sense that if a jury were to be convinced of the truth of *E,* accepting *E* as true for practical purposes would be consistent with the legal system's normative commitments. On this view, the answer to CQ2 is that, at least in the absence of positive evidence of bias on the expert's part, *E* is clearly a better explanation than one that combines a weakly-supported alibi with a fairly unlikely coincidence (that a person incriminated by considerable circumstantial evidence should happen to bear a close resemblance to the image of the perpetrator). Although it is true that the unlikelihood of this coincidence cannot be quantified, the same is true of many coincidences that make any explanation that depends on them seem weak. Without a willingness to accept such imprecise judgments of the strengths and weaknesses of competing stories, the criminal justice system would be unable to function.

Our view of this particular controversy, which we have discussed elsewhere,[80] is that in some cases the answer to CQ2 sketched above should be accepted as adequate, but that to comply with the court's commitment to a fair trial the scientific weakness of the evidence must be clearly explained to the jury at the outset, so that there is no tactical burden on the defence to elicit this evidence. The resolution of this dispute depends, however, on quite fundamental and difficult questions about how to interpret

76 Again, this a simplified and schematic version of *R v Atkins* (footnote 72).

77 Gary Edmond / Katherine Biber / Richard Kemp / Glenn Porter, Law's Looking Glass: Expert Identification Evidence Derived from Photographic and Video Images, *Current Issues in Criminal Justice* 20 (2009) 338–377.

78 Gary Edmond / Jason Tangen / Rachel Searston / Itiel Dror, Contextual Bias and Cross-contamination in the Forensic Sciences: the Corrosive Implications for Investigations, Plea Bargains, Trials and Appeals, *Law, Probability and Risk* 14 (2015) 1–25.

79 Gary Edmond, Forensic Science Evidence and the Conditions for Rational (Jury) Evaluation, *Melbourne Law Review* 39 (2015), 77–127.

80 Ward (footnote 71).

the norms and goals of the system – including the priority of protecting the innocent and whether one of those goals should be to provide strong incentives for forensic scientists to subject their techniques to rigorous testing. The important point for our present purposes is to avoid confusion between two senses in which an argument or story can be considered 'plausible'. In the context of practical argumentation, a plausible argument is one that can be accepted (defeasibly) as true, consistently with relevant norms, for the purpose of pursuing certain goals. In the context of persuasive story-telling, a plausible story is one that is capable of inducing belief. In the absence of a plausible alternative story, a very high degree of plausibility in this sense may justify asserting that the story is true, even where this means asserting that someone has committed a grave crime.

7. Evidence, argumentation and stories

We have taken our case study from the field of evidence law, which is one of the areas that has been most studied by argumentation theorists.[81] In order to understand how the above discussion of practical reasoning is relevant to evidence law, it is important to clarify the nature of the law of evidence in common-law systems. In such systems the most serious, contested criminal cases, as well as some civil cases, are tried by juries. It is the jury's task to evaluate the evidence and return a verdict. We agree with Ho that at least in the case of a criminal verdict of guilty, the verdict is a speech-act which asserts the truth of a defendant's guilt.[82] To return such a verdict in good conscience the jury must categorically believe that it is true. The test that English and Welsh juries are instructed to apply is whether they are 'sure' of guilt – a word that clearly implies that they believe the defendant is guilty.

   The judge, on the other hand, has to decide, as a matter of law, what evidence can properly be put before the jury. This involves evaluating the 'relevance' of the evidence, that is whether it has a tendency to make a fact that a party has to prove more or less probable, and its 'probative value', that is the *degree* to which it makes the matter more or less probable.[83] It also involves considering the 'prejudicial effect' of the evidence, that is its tendency to mislead the jury or be given undue weight in the jury's deliberations. The judge also gives instructions to the jury on how to assess the evidence (these are more detailed in the jurisdictions of the British Isles than they are in the USA). If the jury returns a verdict of 'Guilty' the judge has to pass sentence. The judge need not believe that the verdict is correct. All that judges, and those who carry out the sentences imposed, have to believe is that they are justified in *accepting* the verdict as determining what is to be treated as true for practical purposes. This follows from their *commitment* to acting on the verdict of a jury following a fair trial, irrespective of anything they may

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81   E. g. Walton (footnote 48).
82   Hock Lai Ho, *A Philosophy of Evidence Law: Justice in the Search for Truth*, 2008, 12–21.
83   Ian Dennis, *The Law of Evidence* (6th ed), 2017, 67–76, 113–116.

happen to believe either about the accuracy of the particular verdict or the cognitive competence of the jury. What we find, then, in the law of evidence is a division between two types of reasoning, which in serious criminal cases are addressed to two different decision-makers. Judges make practical decisions guided by explicit rules and by the commitments that underlie these rules. As it happens, the Criminal Procedure Rules in England and Wales make the underlying commitments explicit in Rule 1.1., which sets 'The overriding objective':

1.1.–(1) The overriding objective of this procedural code is that criminal cases be dealt with justly.

    (2) Dealing with a criminal case justly includes –

    (a) acquitting the innocent and convicting the guilty;

    (b) dealing with the prosecution and the defence fairly;

    (c) recognising the rights of a defendant, particularly those under Article 6 of the European Convention on Human Rights;

… and several further desiderata that need not concern us here. The rights of the defendant, of course, include the presumption of innocence, which sets an important if vague limit on the degree to which courts can seek to maximise the conviction of the guilty. The distinction between belief and acceptance is important because in the account of plausible argumentation developed by Walton and Zhang,[84] the aim of such arguments is not to induce belief but to persuade an audience that a proposition can plausibly be accepted as true for practical purposes. It is therefore a species of practical reasoning. Given that the criminal court system has a public commitment to 'convict the guilty and acquit the innocent', to safeguard the right to a fair trial, etc., the aim of practical argumentation is to persuade the court that it would (or would not) be consistent with those norms to accept a verdict based on a certain body of evidence. This is the right kind of argument to address to a judge who has to decide a point of law. It is not the kind of argument to address to a jury.

Regarding jury decision-making, there is strong support from both the empirical and theoretical literature for the proposition that juries (and judges, where they determine the facts) decide cases by evaluating stories.[85] Where a story consistent with defendant's guilt explains a body of evidence in a way that is much more plausible and coherent than any story consistent with innocence, the jury may well come to believe that story and may be justified in doing so. Stories are not practical arguments, although they can be embedded within practical arguments. Such an argument can take the form that accepting the truth of a story for given practical purposes is a way of achieving a goal to which one is committed.

To put our view in a nutshell, *practical argumentation is for judges, stories are for juries* (although in the lower courts of the British Isles, both roles are played by the same judi-

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84   Douglas Walton / Nanning Zhang, The Epistemology of Scientific Evidence, *Artificial Intelligence and Law* 21 (2013) 173–219.

85   Nancy Pennington / Reid Hastie, A Cognitive Theory of Juror Decision Making: The Story Model, *Cardozo Law Review*, 13 (1991), 519–557; MacCormick (footnote 2) Ch. 11; Wagenaar et al. (footnote 62).

cial personnel at different phases of the trial). This crucial point has not, we respectfully suggest, been sufficiently appreciated in the existing argumentation literature.

8. Concluding remarks

The issues surrounding knowledge, justification and causality (and its relation to inference to the best explanation) have been extensively discussed by both the philosophical and evidence law communities.[86] In this paper, our focus has been on how theoretical debates can be informed by relating them to the principles and practices underlying English case law. In particular, we have argued that it is crucial to distinguish between practical argumentation concerning the probative value and admissibility of evidence, and argumentation aimed at establishing the truth about past events. If this distinction is kept clearly in view, both argumentation theory and theories of narrative can shed significant light on current debates about evidence law and practice. We have discussed this exclusively in a common-law context. Whether similar perspectives can be fruitfully applied to questions of procedure and proof in civil law systems must be left for another occasion.[87]

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86   Timothy Williamson, *Knowledge and its Limits*, 2002; Judea Pearl, *Causality*, 2009; John L Pollock, *Thinking about Acting. Logical Foundations for Rational Decision Making*, 2006; Walton (footnote 48).
87   We are grateful to William Lucy, Nancy Cartwright and Sara Uckelman for their comments.