Audiences and Argument Strength

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Argument strength is revealed when one argument attacks another: a stronger argument can resist the attack of a weaker[1]. An abstract argumentation framework comprises a set of arguments and a binary attack relation on those arguments. Strengths have been represented by assigning each argument a *weight* (e.g. [1]) or associating the arguments with a *ranking*, a pre-order on the set of arguments (e.g. [10])[2]. But whether an argument A defeats an argument B is not a simple matter. A number of different aspects of the arguments need to be considered, especially in the context of decision making, deliberation and practical reasoning, which will be my focus in this paper. We must take account of all these various aspects, which means that a single ordering does not adequately capture argument strength if there are several potential audiences.

Consider the arguments *We should raise taxes to reduce inequality* and *We should not raise taxes as people have a right to spend their money as they wish.* Which is stronger? I would say the former and Boris would say the latter. It is a matter of the *values* to which one subscribes. Or consider *P is true because Ludwig Wittgenstein says so* and *P is false because Ayn Rand says so.* Which is stronger? I would say the former and Sajid would say the latter. It is a matter of

[1] This is the notion used in extensions to Dung's abstract frameworks [14] designed to accommodate preferences, e.g. [1] and [6], where attacks are resolved before the admissible extensions are determined. Here I adopt this view that strength relates to comparison of individual arguments, sometimes termed *ranking-based* semantics. I argue, however, that a single, objectively applicable, ranking is inadequate, and that the relative strengths of arguments vary according to audiences and contexts. An alternative is to consider and compare sets of arguments, identifying the admissible extensions and then choosing between extensions on the basis of an aggregation of the strengths of the arguments they contain (e.g. [13]). This would facilitate treatment of cumulative attacks and accrual. It is also possible to combine the approaches, so as to secure benefits from them both [9]. None the less the variety of aspects identified in this paper that should be considered when assessing strengths of individual arguments are also relevant to the assessment of sets of arguments, which, in the context of practical reasoning, may be seen as plans or programmes of action.

[2] The arguments may be ranked with reference to a property of the arguments, such as the value they promote [6], or the concern they address [11]. In this paper I use "values" as in Value Based Argumentation Frameworks [6]. More recently, others, perhaps most notably Hunter and his colleagues (e.g. [11]), have used "concerns" rather than "values". Although they have different connotations, functionally these play exactly the same role: they are what actions are performed for the sake of, the reasons why certain states of affairs are considered goals [3], and different audiences order them differently. Which term is better depends on the context: "values" is perhaps more appropriate for legal and moral debates, whereas "concerns" is perhaps more appropriate in matters such as persuasion to adopt a healthier diet.

which *authority* one respects. Or *We should ϕ because the reward is substantial* and *We should not ϕ because we are risking a lot.* Which is stronger? I would say the latter but Rishi would say the former. It depends on one's degree of *risk aversion.* As well as risk aversion there is *loss aversion*[3]. Whereas risk aversion leads us to prefer the certain promotion of a less important value to the uncertain promotion of a more important value, loss aversion leads us to prefer avoiding the demotion of a lesser value to the promotion of a more important one. Risk aversion can also arise with respect to a single value, if degrees of promotion are allowed so that one action may strongly promote a value while another action may weakly promote that value. Degrees of promotion are considered in [12]. These four aspects may not be exhaustive, but suffice to show that which argument is considered stronger will depend on the aspirations, judgement and temperament of the *audience*, and that characterising audiences by a single aspect, such as values as in [6], is an over simplification. Audiences will disagree and their disagreement is not irrational: there is no sure route to agreement. Moreover, in practical reasoning there is no right answer determined by the actual facts: what is right for one person may be wrong for another.

Nor does conflict arise only *between* audiences. People may be confronted by advice from a trusted authority which goes against their current value ordering or which suggests more risk taking than is desired. But the various aspects have no fixed preference order. Which argument is considered stronger on a particular occasion is revealed by the choice, but the choice depends on which aspect is given more importance by *that audience* on *that occasion.* Moreover, there is no reason to think that people will make the same decision every time they are confronted with a particular choice. Sometimes one feels lucky and is willing to accept risks that would be avoided on other days.

Of course, it would be possible to abstract all these very different considerations into a single set of weights or ranking, just as different kinds of attack are abstracted into a single relation in standard abstract argumentation. For example, the expected utility of an action can be calculated with respect to values as in [4], and then adjusted according to the current degree of risk and loss aversion. But whereas attacks can be objectively determined by a consideration of the structures of the arguments concerned, so that the abstract framework remains generally applicable, the abstracted weights will apply only to a single audience in a particular context, since people frequently reorder their values (e.g. [18]), and their attitudes to risk and loss will vary. Moreover the aspect they emphasise may vary also. Any unified ranking of argument strength thus lacks general applicability: it may be useful for a single instance of problem solving for a particular audience, but is likely to change when the next problem is addressed. Whether an argument resists the attack of another is a question

[3] Sometime matters such as risk and loss aversion are handled through choice of strategy, as in [16] where optimistic agents adopt a Maximax strategy while pessimistic agents adopt a Maximin strategy. These strategies are, however, selecting the strongest argument for the agent concerned, and so these considerations remain an aspect of argument strength.

answered according to the specific audience and the particular decision making context. Thus the strength of an argument is not a persistent property, but should be determined afresh each time a conflict arises.

The fact that a variety of factors influence the subjective strength of arguments has important consequences for deliberation and persuasion concerning actions. Whereas [5] considered only values, a general account will have to consider these other aspects also. In deliberation a consensus must be reached on values, authorities and acceptable degrees of risk and loss: in persuasion the persuadee can determine all these aspects. In both cases arguments about the orderings on values [8] and the other aspects may be required to achieve success.

Exploring these different aspects of strength requires both technical and empirical investigation. With regard to technical matters, the different strengths for a variety of audiences with respect to values have long been represented in a single framework using Value Based Argument Frameworks (VAF) [6]. VAFs improved on Preference Based Frameworks [1] by representing a variety of audiences in the framework, rather than considering only a single preference ordering. What is now needed is a framework able to accommodate not only values but all the various aspects which motivate audience preferences. VAFs have been combined with an ordering on sources in [2]. This was applied to legal arguments, where value based arguments relating to the social purposes of the law must be considered alongside arguments based on the testimony of different witnesses and different legal authorities. To combine theoretical and practical reasoning value based frameworks were combined with standard argumentation frameworks in [15]. The techniques used in these papers could be extended to include the other aspects of argument strength identified above. Perhaps the most promising way to handle the matter would be through metalevel argumentation frameworks [17], wherein preferences relating to the different aspects can be seen as the source of arguments attacking the attacks between object level arguments.

However, perhaps more important is a detailed investigation of the different sources of argument strength and how they interact in practice. A fertile area in which to look at such aspects is provided by US Supreme Court decisions. In a Supreme Court case both sides present their arguments in the oral hearing. The justices must then decide which arguments they find stronger and give a detailed justification for their choice in their opinion. Moreover, where there is disagreement, different justices can write their own opinions, some concurring and some dissenting. A particularly fertile case is *Furman v Georgia*, where all nine justices wrote an opinion. This case was modelled in [7], with the emphasis on values. Extending this model to include the other aspects will provide an interesting case study of how questions of relative strength should be handled. For example, there is an explicit conflict between the authority of precedents and the current ordering of social values. One Justice, Marshall, concluded that "*stare decisis* would bow to changing values", whereas Chief Justice Burger argued that the decision in *McGautha v. California* should be followed, irrespective of any consideration of values. Examining the arguments which led to their different conclusions will give insight into how these two aspects interact.

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