



Universiteit
Leiden
The Netherlands

Relevance in Arguments

Reitan, Magne; Boogaart, Ronny; Garssen, Bart; Jansen, Henrike; Van Leeuwen, Maarten; Pilgram, Roosmaryn; Reuneker, Alex

Citation

Reitan, M. (2024). Relevance in Arguments. *Proceedings Of The Tenth Conference Of The International Society For The Study Of Argumentation*, 786-795. Retrieved from <https://hdl.handle.net/1887/4107885>

Version: Publisher's Version

License: [Creative Commons CC BY 4.0 license](https://creativecommons.org/licenses/by/4.0/)

Downloaded from: <https://hdl.handle.net/1887/4107885>

Note: To cite this publication please use the final published version (if applicable).

Relevance in Arguments

Magne Reitan

*Department of Philosophy and Religious Studies
Norwegian University of Technology and Science
Norway
magne.reitan@ntnu.no*

ABSTRACT: In this paper, I discuss the notion of relevance in arguments. Arguments, being of different types, have different types of warrants. Since relevance is somehow connected to the warrant, there can be different types of relevance. Consequently, there can be no generic concept of relevance that applies to every type of argument. Instead, I suggest that relevance could be viewed under the concept of family resemblance.

KEYWORDS: family resemblances, Freeman, Govier, Hitchcock, Johnson, Næss, relevance, tenability, Toulmin, Wittgenstein

1. INTRODUCTION

Relevance in argumentation may be seen through different lenses. One may either accept or deny that a proposition is relevant to the overall subject one is arguing about. A more specific type of relevance is connected to the relation between a premise and the conclusion in a concrete argument. In this paper I investigate relevance in the context of the relation between a premise and a conclusion.¹

I argue that there is no generic notion of relevance. I do this partly by discussing some proposals of relevance and partly by relating relevance to the warrant of arguments. When connected to the warrant of arguments, relevance varies with the type of argument that one deals with.

Johnson and Blair (1994, p. 49) claim that one first should identify and interpret the arguments of a text. Next, one should evaluate the arguments. Relevance is part of this evaluation process. Thus, it is not part of the argumentative structure.

Let me schematise the basic structure of a simple argument consisting of one premise, *p*, for the conclusion *c*, as in Figure 1.

$p \longrightarrow c$

Figure 1: A simple argument, consisting of one premise and a conclusion.

In the tradition of Næss (1966), one could claim that for an argument to be good, the premise should both have tenability and be relevant to the conclusion. Tenability is an evaluation of how good a premise is, that is, whether the premise is true, probable, or plausible. Tenability is, in principle, independent of the premise staying in support of the conclusion.

Both tenability and relevance are necessary for determining how good a premise is for supporting the truth, probability, or plausibility of the conclusion. The combination of tenability and relevance determines the value of the conclusion and how

¹ Walton (2004) discusses different notions of relevance in argumentation and characterizes among these the mentioned one.

strong it is. If one of them fails, the argument is not a good one, and a rational agent cannot be convinced by the conclusion. This evaluation may be extended to any pair of sentences in an argument structure where one of them stands in an argumentative support relationship to the other.

Johnson and Blair (1994, p. 55) propose three notions in the evaluation of a good argument, that is, in their theory for an argument to be cogent: The premises must be acceptable; the premises must be relevant to the conclusion; and the premises must provide sufficient support for the conclusion. Others, like Govier (2014), have followed much the same line.

As mentioned earlier, relevance is generally considered a core condition for an argument to be cogent. Thus, in Figure 1, if p does not have any relevance to c , this implies that p does not give any support to c , regardless of p 's tenability or acceptability. In short, the relevance between p and c indicates how well the premise supports the conclusion. Govier (2014) prescribes the following conditions for the relevance of premises:

that the premises state evidence, offer reasons that support the conclusion, or can be arranged into a demonstration from which the conclusion can be derived
(p. 87).

In our view, this statement is not particularly precise regarding whether relevance concerns the structure of sentences or the evaluation of the relationship between the premises and the conclusion. This paper is aimed at clarifying precisely what relevance in arguments relates to.

Textbooks in the tradition of Næss do not include any theory of fallacies—an argument that does not satisfy both the conditions of tenability and relevance is simply not a good one and should be abandoned altogether. Johnson and Blair view arguments that do not satisfy one of their three conditions as succumbing to a certain type of fallacy. In their framework, an argument can contain a fallacy of relevance when the condition of relevance is not fulfilled.

Walton (2004) uses fallacies of relevance and protests against arguments being relevant as a strategy for defining relevance. I do not follow this line here, as I think that this strategy is not direct in the project of characterizing relevance. In my view, the notion of irrelevance simply presupposes the notion of relevance.

I will begin with describing some formal conditions that characterize relevance. Next, I discuss some attempts to characterize relevance in more detail and I relate relevance to the warrant of arguments. Then I characterize different types of arguments before I discuss relevance connected to those types of arguments. From this it follows that relevance cannot be characterized as a generic concept, but rather a concept of family resemblance.

2. FORMAL CONDITIONS OF RELEVANCE

In this section, I will comment on some works that try to characterize relevance. These works, in different ways, characterize some sides of the relevance between a premise and a conclusion.

Hitchcock (2017, p. 350) proposes that relevance comprises a ternary relation among a premise, a conclusion, and a context. Relevance is thus a relation, $R(p,c,s)$, where p is the premise or a set of premises, c is the conclusion, and s is the situation or the context of the argument. This view makes explicit that relevance cannot be

independent of any argumentative situation. The sentences of an argument belong to a concrete argumentative situation—there are no eternal statements independent of any argumentative situation. However, perhaps in certain areas of mathematics, one can come close to argumentation without a concrete context (Quine, 1960). Nevertheless, daily arguments, or arguments in science, cannot be evaluated as eternal entities independent of the concrete argumentative situation. The notion of relevance needs to reflect this. The third term of the relevance relation refers to the concrete argumentative setting. While remembering this, I ignore the context in what follows and focus on the premises and the conclusion. When needed, one can always specify the context.

With the relation between the premise and the conclusion being one of support, the relation of relevance is directed from the first to the second, that is, the relation is both asymmetric and irreflexive.² Asymmetry refers to the fact that a premise being relevant to the conclusion does not mean that the opposite holds—that the conclusion is relevant to the premise. Irreflexive further means that a premise is not relevant to itself—a relation of relevance occurs between two different sentences. These two conditions express that the direction of relevance is from the premise to the conclusion, not the opposite.

Further, one could claim that there is a backing, *b*, of a premise, the backing being relevant to *p*, and *p* being relevant to *c*, so *b* is relevant to conclusion. Thus, relevance is transitive.³ Hitchcock (2017, p. 357) discusses all these conditions. I think that these conditions characterize relevance in general.

Govier (2014, p. 148) defines three notions that are related: positive relevance, negative relevance, and irrelevance. Positive relevance is the relevance of a premise to the conclusion; that is, the truth of a premise counts in favour of the truth of the conclusion. This is her fundamental definition, and it is generic. However, the phrase “count in favour of” is rather unclear. It may cover all the following:

- The truth of *p* implies the truth of *c*.
- The truth of *p* makes *c* probably true.
- The truth of *p* makes *c* plausible.

It is reasonable that relevance applies to all of these and not only formal logic, the first one.

Suppose *p* is relevant to *c*₁ and *c*₁ \square *c*. The fact that *c*₁ \square *c* implies that *c*₁ is relevant to *c*. In virtue of *p* being relevant to *c*₁ and *c*₁ being relevant to *c*, it follows from the condition of transitivity of relevance that *p* is relevant to *c*. However, suppose *p* is relevant to *c*₂ and *c* \square *c*₂. From this implication, it does not follow that *p* is relevant to *c*.

What will be the impact when *p* makes *c*₁ probable or plausible, that is, *p* is relevant to *c*₁, and *c*₁ \square *c*? Of course, also now *p* will be relevant to *c*. But what if *c*₁ makes *c* probable or plausible? In this case, *c*₁ may be relevant to *c*. Since I accept that transitivity extends to these weaker cases, the fact that *p* is relevant to *c*₁, and *c*₁ is relevant to *c*, *p* will be relevant to *c*.

This discussion indicates that “count in favour of” may be wider than what *prima facie* seems to be the case.

Govier defines negative relevance thus: “the truth of \square the premise \square counts against the truth of \square the conclusion \square ” (p. 149). This is again not very precise. It is reasonable to interpret this statement to mean that the following are covered:

- The truth of *p* implies that *c* is false.

² Asymmetry, $\square x \square y (R(x,y) \rightarrow \neg R(y,x))$ and irreflexive, $\square x \neg R(x,x)$.

³ Transitive means: $\square x \square y \square z ((R(x,y) \& R(y,z)) \rightarrow R(x,z))$.

- The truth of p makes it probable that c is false.
- The truth of p makes c non-plausible.

The first case above may rise from either of two possibilities: p implies a proposition that is the negation of the conclusion, $\neg c$, or p implies a proposition that is contrary to c . However, there may be an infinite number of propositions that are contrary to c . Thus, negative relevance does not seem to be very manageable.

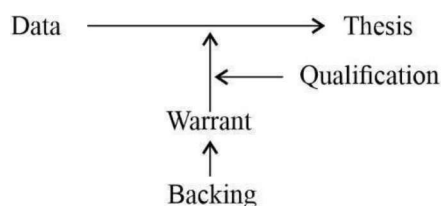
Let me now turn to the last two cases. From Govier's examples in the text, it is reasonable to take negative relevance to be when the premise has some plausibility to a contrary proposition. Thus, everything that I have said about negative relevance with respect to implying that c is false may also be said about c being probably false or not being plausible. Assigning negative relevance turns out to be a rather complicated issue, as it involves ascribing relevance to some proposition other than c .

Govier claims that a premise is irrelevant to a conclusion when it is neither positively nor negatively relevant to the conclusion. This means there is no directness from p to c , nor to the negation of c , nor to a contrary to c . Even though p is irrelevant to c , there may, of course, be many other propositions than c which p is relevant to.

Suppose there is a set of linked premises, p_1, \dots, p_n for a conclusion, c . Linked premises mean that all the premises are necessary to support the conclusion; they are not independent of each other in providing support for the conclusion. Hitchcock (2017, p. 360-1) makes the following analysis of relevance for this combined set of premises: If one of these premises, for example, p_1 , is eliminated from the set of premises and the conclusion is still supported by the set, then p_1 is not relevant for c . If one tests for all premises in the set and every premise passes this test, then all the premises in the set are relevant to the conclusion. However, this test presupposes that one knows what relevance is and that one has already characterized the notion of relevance.

3. THE GROUNDS FOR RELEVANCE

I will in this section present some grounds for analysing relevance. I start with referring to Toulmin's structure of arguments: Arguments for a thesis (claim) have basically one of two roles: data or warrant. The data refer to certain descriptions of facts that support the thesis. The warrant is a legitimation that the data do support the thesis. The warrant may be a general rule that licences that the data support the thesis (Toulmin, 1958, p. 44-45). It may be of the form "if D then T ", without referring to any formal logical inference rule. Warrants are not self-validating (p. 58); they are field-dependent. Normally, there will be a backing of the warrant within the field.⁴ This feature of the warrant makes arguments field-dependent. In some cases, there may be qualification of the warrant, that is, the warrant may not be a categorical rule, but may be modified by an "unless" or "in most cases". Toulmin's structure of these different roles in arguments for a thesis is illustrated in Figure 2.



⁴ It may be reasonable to question this with respect to logical truths, like the law of identity, which can be inserted at any line in a formal proof, without any backing. Logical truths are then not field -dependent.

Figure2: Toulmin's structure of arguments

This structure should be enriched with the possibility of *con* arguments at any level in the argument structure. This must also be reflected in the notion of relevance.

Toulmin proposes that the warrant be field-dependent. One could elaborate on this using Kuhn's theory of paradigms, according to which the backing of the warrant forms part of the paradigm that bounds a field. However, it is problematic to characterize what a certain field is and how one should identify a field. Some fields may *prima facie* be thought to be clear, such as physics, biology, technology, and historical science, but characterizing others such as astrology, common sense, ethics, and daily argumentation may be more problematic (see Johnson 1996, p. 134). However, when arguing across different fields, for example, utilizing data from astronomy to make astrological claims, there is no common field. Such problems may require what Johnson calls a "super-field". Overall, the notion of field is problematic, but this does not imply that the notion of warrant should be abandoned altogether.

Freeman (2006) argues for an epistemological foundation of warrants. Owing to *immediate apprehending* of general connections between data and thesis in inference connections, one accepts a warrant according to this apprehension. There are, according to Freeman (p. 92–93), four modes of immediate apprehensions: necessary apprehension, empirical apprehension, institutional apprehension, and evaluative apprehension. These may be subdivided further, and each subdivision gives rise to acceptance of a warrant. These warrants in turn result in different types of relevance. Relevance is then ultimately grounded in the apprehension.

I think that Freeman's suggestion is too tentative to help one determine how to analyse concrete cases and how to treat warrants of *con* arguments. It also raises questions about the place of logic. Nevertheless, Freeman's suggestion rejects a universal notion of relevance.

4. WARRANT AND RELEVANCE

Suppose that the evaluation of an argument is a function of two notions: the tenability of the data and the relevance of the data to the thesis. The strength of the thesis will then be the result of considering both notions together. In a simple case, as in Figure 1, where the data (D) support the thesis (T), D has a certain tenability, and the support relation between D and T has a certain relevance.

If there is a specified warrant, the case becomes more complicated. In this case, one also needs to consider whether the warrant has tenability and is relevant to the case. The combination of the warrant's tenability and relevance then determines the relevance of the data to the thesis (resulting in the structure depicted in Figure 3). If the warrant is false, that is, if it has no tenability, it is of no use. Further, if the warrant is not relevant to the case at hand, it is again of no use. This means that for the warrant to work, it must be both tenable and relevant. If one of these conditions fails, the warrant fails, and hence the movement from D to T is not supported.

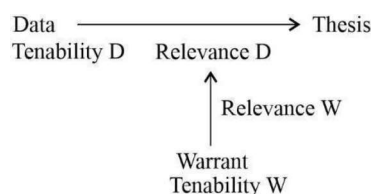


Figure 3: Evaluation of a warrant

To illustrate why one needs to differentiate between the warrant's tenability and its relevance for the case, consider a case of empirical research where some evidence has been collected for statistical analysis. The statistical method one uses needs to be sound in general, that is, it must have tenability, but it also needs to be relevant to the case at hand. If the method cannot be properly applied to the case, it is simply not relevant, regardless of whether the method is sound or not. Thus, a warrant's tenability and its relevance need to be differentiated.

Let me now return to Figure 2. This structure has the two special features of backing (b) and qualification (q). The backing, to be valid, must have both some tenability and possibly some relevance to the warrant. The qualification is a sort of modification of the warrant, and it must have some tenability and relevance to the warrant, too. These two aspects combine to give the warrant a modification, that is, a reduction in support of the movement from the data to the thesis.

5. CHARACTERIZATION OF DIFFERENT TYPES OF ARGUMENTS

There is not one common general type of argument, that is, there is not one super-type of argument having one type of warrant that all arguments instantiate. In this section, I characterise a few different types of arguments with respect to different types of warrants, and in the next section, I characterise relevance for each type of argument.

Let me start with formal, logical, and valid arguments. Here, one infers sentences by virtue of some inference rules. An inferred sentence follows validly by virtue of the specific system's inference rules. For example, starting from the assumption that Albert is a philosopher and that if he is a philosopher, then he knows *modus ponens*, one can conclude that Albert knows *modus ponens*. This inference follows in virtue of the logical inference rule of the *modus ponens* of sentence logic. The inference rules one needs in the reasoning can be viewed as the warrant of the inference. I schematize the *modus ponens* in Figure 4. The backing of the warrant will be the proof theory for sentence logic, where the concrete deduction belongs. Inferences in other logical systems follow similarly from the inference rules in those systems as warrants.

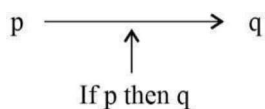


Figure 4: A formal logical argument

Some arguments in natural language can be viewed as instantiation of an argument in a certain formal logical system. One can reconstruct such arguments with the help of an appropriate formal logical structure.

Let me proceed to numerical induction. Suppose someone conducts empirical research in a specific area. The researcher takes a sample and registers a certain property in the sample. Subsequently, the researcher forms a hypothesis and test it against the data. In doing this, the researcher uses a certain statistical method. Using this statistical method, the researcher forms a concrete thesis as a hypothesis. See figure 5. The statistical method is warranted, and the backing of the warrant provides the mathematical proof of the method's soundness.

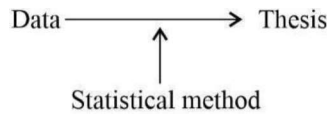


Figure5: Numerical inductive argument

Inductive arguments can also be found in daily argumentation, where one makes casual observations and argues from experiences. The warrants in such cases are simply more casual than in numerical induction.

Consider an analogy or argument based on likeness. As a matter of fact, arguments based on likeness conform not to one type of argumentation, but rather to several related types. One often finds analogies in science, for example, that of Schrödinger's cat. As psychologists have documented, analogies often have a role to play in scientific discoveries. In science, one sometimes makes a physical scale model that displays a certain likeness to nature. One studies the scale model in the laboratory instead of directly studying nature.⁵ In virtue of the likeness between the model and nature, one infers that nature displays the same properties as the model. One uses arguments of likeness in political debates, in the court, in casuistic ethics, in aesthetics, in science, and in daily argumentation.

The data may describe one case, while the conclusion may describe another. The warrant in the argument is a description of the likeness between the cases. See Figure 6. In both the data and the warrant, there may be descriptive, normative, or aesthetic elements. Thus, analogies form a very variable group of arguments. Since the areas differ a lot, it is natural that the likeness is diverse and that the warrant also differs. Given the diverse nature of the areas, it is difficult to provide a common specification of their warrant.

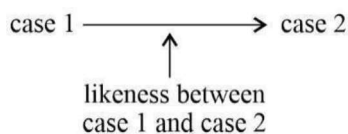


Figure 6: Analogical argument

The backing of the warrant in analogical arguments is in general problematic to specify, partly because the areas differ much and partly because the likeness being related to properties of case 1 and also being related to properties of case 2 is rather problematic specify. In specifying the likeness, one may refer to theories, perspectives, and the like.

6. RELEVANCE AS A CLUSTER OF CONCEPTS

Let me now turn to the concept of relevance in more detail. Relevance is not part of the argumentative structure; it is not intrinsic to the statements of an argument but is an evaluation of the argumentative structure.

One needs some principles to start with. Suppose D is a ground for the thesis T, and suppose D has tenability. Relevance relates to a relationship of goodness in the evaluation of the support between D and T. The support relationship is basically provided by the warrant.

⁵ See, for example, Hackman's (1995) discussion about exploiting models in research on aurora borealis.

One needs to investigate the type of argument one is dealing with—whether it is formal–logical, inductive, analogical or some other type—and one then needs to characterize the warrant of the argument. As noted earlier, there is no super-argument, and thus there is no super-warrant that the warrant of a concrete argument instantiates. Therefore, one needs to characterize the concrete warrant of an argument.

First, in evaluating the warrant, one should evaluate its tenability and then its relevance to the concrete support relationship. Based on these two aspects, the relevance of the warrant to the D-to-T relationship can be determined. These principles would then be the guiding principles for how to establish the relevance of the warrants. The relevance would accordingly change with the type of argument and its warrant.

Let me now comment on the individual types of arguments characterized above, starting with formal logical arguments. Figure 4 illustrates an example of *modus ponens*. If the warrant is applied to p , and p is true, then the warrant legitimates q as true, that is, the warrant is truth-preserving from p to q . The truth preserving is the relevance for p to q . But what about the warrant's truth and relevance? The *modus ponens* belong to the proof theory of sentence logic, a specific formal–logical system. Given that this system is sound, the warrant is deemed tenable and relevant with respect to p 's relation to q . However, one cannot isolate the warrant's tenability from its relevance—the warrant's tenability is simply hypothetical.

The case is similar for other formal–logical systems that are sound, like first-order predicate logic, that is, preserving soundness in inferences. For an argument in natural language that instantiates a structure of a formal logical system, the relevance is given by the formal logical system.

Next, let me consider numerical inductive arguments. These start with descriptions of properties in a sample taken from a population, from which a general hypothesis about the population is generated. See Figure 5. The warrant is a probabilistic method. The relevance of the warrant depends on the warrant being both sound and relevant to the data. With these two conditions satisfied, the relevance of the data to the thesis is deemed good.

The soundness of the statistical method is a question of mathematics relating to the backing of the warrant. However, the method must also be relevant, that is, the method must be legitimately selected based on the type of sample at hand. Perhaps, the character of the data is such that a specific statistical method cannot be used legitimately on these data. In this case, the method is not relevant for the inference of the hypothesis. In everyday inductive arguments, one starts from some casual and inaccurate observations and uses these to ground a general proposition or another singular proposition. The warrant in this type of inductive argument tends to be rather inaccurate, making the determination of relevance in such inductive arguments rather problematic.

Next, let me look at analogical arguments. See Figure 6. As stated above, analogical arguments can be used within descriptive, aesthetics, and ethical areas. Since there are fundamental differences among these areas, one should expect the warrant in analogical arguments to be fundamentally different too; consequently, the relevance will also be different. However, all types of analogical arguments have in common that one compares two phenomena or two types of things and transfers a property or structure in virtue of likeness between the mentioned phenomena or things.

The relevance in analogical arguments depends on the likeness between case 1 and case 2 being true and that the warrant also can be applied to the case 1. The likeness may be closely related to the property one transfers or not so closely related. In the first case, the relevance between case 1 and case 2 is strong.

However, analogical arguments are a problematic type. While such arguments may seem good because of being creative or funny, determining their relevance is nevertheless problematic.

7. RELEVANCE AS FAMILY RESEMBLANCE

Scientists and philosophers strive for generality, for concepts and theories that cover all cases. The argumentation theory is no exception. Since ancient times, one has tended to believe that terms are grounded in essences. An essence is the core of a thing or a concept. An essence can be captured by a definition that stipulates the necessary and sufficient conditions for a concept. Relevance between a premise and a conclusion is usually thought to be a generic concept that is common to all arguments.

Many of daily human concepts, like those of game, table, chair, art and so on, are difficult to define by specifying necessary and sufficient conditions that make explicit the common essence of these types of things. For example, at the outset one might think that it would be trivial to give a generic definition of the concept associated with the term “chair” which expresses the common essence one finds in all chairs. However, chairs are very diverse. A chair may be made with four or five legs made of plastic, metal, or wood; it may be an office chair, an armchair, or a beanbag chair—but all these falls under the same term: “chair”. But there is no common essence that is shared by all these chairs. And thus, it is not possible to give a definition by necessary and sufficient conditions that cover all chairs.

Wittgenstein (1953, 1.66-1.67) coined the notion of *family resemblance* to explain how entities may belong to the same group, without there being any common essence binding the group. Suppose there are three items, A, B and C. Suppose A and B have resemblances, and B and C have resemblances, but A and C do not have any resemblance. According to Wittgenstein, one can talk about family resemblances across A, B, and C. However, one need not assume that there is any shared essence common to all A, B, and C, as in the case of chairs. Wittgenstein's phrase “family resemblance” is a metaphor on the likeness in a family. The different members of a family display variations in properties like tallness, fairness of hair, cleverness at school and so on, but they still have some likeness to each other. The Wittgensteinian view is anti-essentialist in that it rejects that there are common underlying essences in human conceptualizations of things—one need not presuppose essences in one's mastering of language. Supposition of essences is simply not necessary to know about or conceptualize things. Likewise, one needs not presuppose an underlying common essence of relevance to evaluate arguments.

In our view, relevance is not a generic concept. As the warrant varies across arguments, so does relevance vary. One may consequently talk about different concepts of relevance, which all fall under the umbrella term of family resemblance.

This view of relevance is pluralistic, but not sceptical. For arguments to be good or cogent, the premises should be relevant to the conclusions. However, one cannot provide a definition of relevance that covers all cases. One must specify the relevance of a concrete argument with respect to its warrant.

8. CONCLUSION ARGUMENTS

In this paper I have presented some formal conditions of relevance that can be accepted for every type of argument. However, the formal conditions do not prescribe the meaning or grounding of relevance. Arguments are of different types and are thus characterized by their warrants. Using a few types of arguments, I have shown how relevance is connected to the warrant of an argument. Relevance is an evaluation of how good a warrant is, and it is thus of different types, depending on the warrant. Overall, using Wittgenstein's concept of family resemblance, I have shown that relevance, instead of being a generic concept, involves a cluster of related concepts.

REFERENCES

- Freeman, J. B. (2006). Systematizing Toulmin's Warrants: An Epistemic Approach. pp. 87-101. In D. Hitchcock & B. Verheij (Eds.), *Arguing on the Toulmin Model: New Essays in Argument Analysis and Evaluation* (pp. 87-101). Dordrecht: Springer.
- Hackman, W. (1995). Instrument and Reality: The Case of Terrestrial Magnetism and the Northern Lights (Aurora Borealis). In R. Fellows (Ed.), *Philosophy and Technology* (pp. 29-51). Cambridge: Cambridge University Press.
- Hitchcock, D. (2017). Relevance. In D. Hitchcock (Ed.), *On Reasoning and Argument. Essays in Informal logic and on Critical Thinking* (pp. 349-369). Dordrecht: Springer.
- Johnson, R. H. (1996). *The Rise of Informal Logic*. Newport News: Vale Press.
- Johnson, R. H. & Blair, J. A. (1994). *Logical Self-defense*. New York: McGraw-Hill.
- Govier, T. (2014). *A Practical Study of Argument*. 7th edition. Wadsworth.
- Næss, A. (1966). *Communication and argument. Elements of applied semantics*. London: Allen and Unwin.
- Quine, W. Van O. (1960). *Word and object*. Cambridge, Mass: The MIT Press.
- Toulmin, S. E. (1958). *The uses of argument*. Cambridge: Cambridge University Press.
- Walton, D. (2004). *Relevance in Argumentation*. London: Lawrence Erlbaum Associates.
- Wittgenstein, L. (1953). *Philosophical Investigations*. Oxford: Basil Blackwell.