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INTRODUCTION: On Contemporary Developments in the Theory of Argumentation

Stephan Toulmin's book – *The Uses of Argument* (1958) – was a bold attack against the subsumption of theories of argumentation under formal logic. Toulmin's book received very critical reviews but even his harshest critics cannot deny that many contemporary developments in the field are consistent with his basic line of reasoning. Since the 70's there are broad researches on the theory of argumentation called "informal logic" or "critical thinking". Many flowers have grown – some say too many – and our biotope shows a great diversity.

Some points can be made to show the relevance of this biotope. Here is one of them: The methods of scientific research is observation, description, and theorizing. The medium of understanding scientific and other cultural knowledge are texts with their arguments and explanations. Written language is a medium which takes structural effects in the semantics of social structure.¹ Content analysis is a tool for understanding texts and thereby society and it is therefore a basic research method in the social sciences. The analysis of arguments² is a special form of content analysis and given the frequency of arguments we should expect a lot of work in that area done by social scientists. That is not the case. *Protosociology* intends to popularize the theory of argumentation as a challenge for theoretical research and a possibility for new applications. We publish some papers by leading researchers in the field to outline the topology of a new and powerful interdisciplinary theory. We have compiled these results and hope that this compilation will spur the interest in the field. If so, we intend to publish an issue which shows the possibility of applications for the social sciences.

In contemporary research we recognize elaborated results, expansions of discovery, and new developments of conceptualization of the initial subject. Some of the leading questions in particular in our collection are:

1 See in particular N. Luhmann, *Die Gesellschaft der Gesellschaft* I (2 Vol.), Frankfurt am Main 1997, pp. 249-290.

2 We prefer the terms "analysis of arguments" and "theories of argumentation" over "informal logic" or "critical thinking" simply because the word "argumentation" points to the type of work we are doing.

How shall we *distinguish* between *argumentation* and *reasoning*? What is the meaning of crucial terms like *inference* and *implication*? What type of inferences do we apply in everyday argumentation?

One of the *significant* problems in contemporary research is the analysis of *presumptive* arguments because such arguments are a feature of common argumentation.

How *fruitful* is the conception of New Dialectic to the study of fallacies? What is an argument scheme and how can it be used to criticize an argument?¹ When we write down a coherent sequence of sentences (may be a scientific paper, a report on a sport event, a recipe for cooking, or a letter to a friend) some of these sentences may be identified as an argument. Suppose some days later you read your own paper and you say to yourself: "I tried to find an argument, but I did not succeed." But even if you were not successful in finding the intended argument, your paper contains the trace of a mental activity. Now if you try to describe, what was going on, you might say, "I thought about x" or "I reasoned about x". Most – if not all! – researchers assent to the following statement: You cannot find an argument without reasoning, but you can reason without finding an argument. It follows, that reasoning and argument cannot be the same.

Ralph H. Johnson's contribution gives a highly readable exposition which clarifies fundamental terms in the theory of argumentation. His leading question is:

How shall we *distinguish* between argumentation and reasoning? What is *relationship* between reasoning and rationality, intelligence, knowledge and thinking?

He reviews some of the positions that other theorists have taken on the relationship between argumentation and reasoning. Specifically, he addresses the views expressed by Finochiarro (1984), Govier (1987), and Walton (1990) and discusses their shortcomings. His answer is that *reasoning* can best be understood as the generic concept of which *argumentation* is a species.

Besides that, his paper indicates that there is productive confluence of cognitive science, philosophy and psychology in the theory of argumentation. For the novice the theory of argumentation may seem more like a network of different disciplines.² That is not the use *Johnson* makes of the word "net(work)" but it is a fine metaphor to characterize the multi-disciplinary approach of our discipline. He uses the word to analyze the relationship between the family of terms like reasoning, knowledge, rationality, intelligence

1 See on the topics, the new developments and problems of a theory of argumentation in particular the contributions of R. H. Johnson, D. Walton, and J.A. Blair, in this vol.

2 But that view would disregard the genuine contributions of the theory of argumentation.

etc. Maybe that these philosophical family resemblances are one reason, why the theory of argumentation is not too popular in the social sciences.

Suppose you are well acquainted with the family resemblances in the argument/reasoning community and you have identified an argument. That must be an easy task – at least under normal conditions – because taking part in a discussion and replying to arguments is a standard social activity. Probably your next step would be to identify certain parts of the argument. You might reason: That must be easy too, because if I can identify an argument, I can identify the parts of an argument. But it is not. Arguments like many other abstract entities are very difficult to break up into smaller pieces, compare the difficulties we have in linguistics with sentences and their parts. Thereby the subject of theorizing shows us a holism like in the semantics of natural language (D. Davidson). It is irritating – not only for the novice – that a reconstructed argument – the real structure of the argument – can be very different from the real argument in a text.

What *are* the premises and what exactly *links* the premises to the conclusion?

The cement of the argument¹ which glues together premises and conclusion(s) is at the center of an intensive debate – see also Gilbert Harman (1986), he suggests it is a mistake to “conflate” reasoned change of belief with argument and proof, Don S. Levi (1995) rejects the assumption that arguments are sets of premises and conclusions, Michael Gilbert (1997) argues for a radically non-standard, non-linear, and non-logical conception of “coalescent argument” which is needed to explain everyday argumentation.

In his contribution, *Leo Groarke* presents a wonderful parable about a hedgehog and a fox. The fox uses 36 tricks to escape his enemies, the hedgehog has only one, but this one and only trick works perfectly. The fox symbolizes of course the type of argumentation theory, which uses many type of *glues* while the hedgehog has *only* logic to tie premises and conclusion together. To understand the hedgehog in his “one glue fits all” theory, lets look at an example:

- (P₁) John is a mountain climber.
- (P₂) All mountain climbers are well trained.
- Therefore
- (C) John is well trained.

¹ This is a variant of J.L. Mackie’s, *Cement of the Universe*, Oxford, 1974, which refers to causality.

This is a perfect argument in the following sense. Since the conclusion is a logical consequence of the premises, you cannot find a better glue between premises and conclusion. Yet suppose you try to find a better connection:

- (P₁) John is a mountain climber.
- (P₂) All mountain climbers are well trained.
- (P₃) If (P₁) and (P₂), then (C) John is well trained.
- Therefore
- (C) John is well trained.

Someone who tries to find an implicit premise would have misunderstood the nature of logical inference. There is nothing hidden and there is nothing to make explicit. The same is true for the next trial, the change of a (deductive) logical conclusion in an inductive one. Such an argument would be absurd:

- (P₁) John is a mountain climber.
- (P₂) All mountain climbers are well trained.
- (P₃) In all known cases: If (P₁) and (P₂), we had (C) John is well trained.
- Therefore
- (C) John is well trained.

The moral is: A deductive logical argument is complete since the conclusion follows from the premises. *Any non deductive argument can be turned into a deductive logical argument, by adding an implicit premise.* It is this asymmetry which seem to give the hedgehog his superiority over the fox. *Groarke's* point is not, that there are *no* other types of argument. You cannot change an inductive argument into a deductive one by any trick, if you consider the force of the argument. But is the distinctive property of deductive arguments that defines a challenge:

Are there arguments which cannot be reduced to deductive arguments in the sense *Groarke* describes?

Groarke illustrates his discussion of persuasion with visual images which are normally taken as paradigm examples of non-logical persuasion. And he argues that the discussion of argumentation, reasoning and persuasion in a variety of disciplines much too quickly dismisses the *classical* approach that he proposes.

The argumentation fauna is inhabited by much more foxes than hedgehogs. Probably *Groarke* is the only hedgehog in our collection. *J. Anthony Blair* discusses the questions that a complete theory of inference/argument schemes should answer. His aim is a *metatheory* of inference/argument schemes.

But what makes non deductive arguments so attractive? Why does the 36 – 1 tricks attract so much attention?

Blair gives an answer by looking at an very important class of arguments. It is no exaggeration to say, that this class of arguments is by far the largest. That an argument as presented in a text does not meet the standards of deductivism is of course *no* problem for *Groarke*. What *Blair* intends to show is, that you *cannot* turn those arguments into deductive ones without *changing* their very nature.¹ Here is a realistic example:

- (P₁) In Kosovo people are murdered by paramilitary forces.
- Therefore
- (C) The use of military force for the protection of the people is legitimate.

This argument seems to be a good one, many would agree. But you cannot deduce (C) from (P₁). Arguments of this type are called presumptive.² *Blair* gives a lot of examples for this type of argument. You can of course add a premise, which makes the argument deductive and turns a presumptive in a deductive argument:

- (P₁) In Kosovo people are murdered by paramilitary forces.
- (P_{2a}) If in Kosovo people are murdered by paramilitary forces then the use of military force for the protection of the people is legitimate.
- Therefore
- (C) The use of military force for the protection of the people is legitimate.

Now the premises entail the conclusion but (P₂) is too special. It is not the added premise which gives the argument its force. If you ask someone “why do you believe (C) given (P₁), (P_{2a})” will not be the answer. Let’s try a more general solution:

- (P₁) In Kosovo people are murdered by paramilitary forces.
- (P_{2b}) If people are murdered by paramilitary forces – in Kosovo or else-where – then the use of military force for the protection of the people is legitimate.
- Therefore
- (C) The use of military force for the protection of the people is legitimate.

1 But *Groarke* might still insist, that his framework is the best way to analyze arguments.

2 This is a rather rough classification. Presumptive arguments are those where you jump from the premises to the conclusion(s). The exact nature of presumptive arguments is the focus of an intense debate.

(P_{2b}) is a much better candidate for the answer you will get, when you ask someone why he believes (C) given (P₁). But (P_{2b}) is too general; it is easy to find counterexamples. The problem is to find a missing premise which belongs to the argument – i.e. the added premise must be an arguers premise – and not only a missing premise for the sake of deductive argument. You will find presumptive arguments in virtually any text. The popularity of this argument-type poses a serious challenge to the theory of argumentation:

What is the *glue* between premises and conclusion in a presumptive argument?

We can phrase the question in another way:

How can we differentiate between a *good presumptive argument* – where the premises support the conclusion – and a *bad one* – where this is not the case?

This leads us to *Robert C. Pinto's* comment to *Blair's* analysis of argument schemes referring also to *Walton's* account. *Pinto* evaluates *Blair's* concept of presumptive reasoning. He agrees with *Blair's* that we do not evaluate all given inferences with our traditional logical procedures, but he makes an important difference concerning the use of argument schemes. Argument schemes in presumptive reasoning in contrast to those used in deductive reasoning have no normative force. To conform to an argument scheme is a necessary condition for the correctness of a presumptive argument, it shifts the burden of proof, but it is not a sufficient condition for its correctness.

Douglas Walton's paper raises many fundamental questions of argumentation theory and that is no surprise, since *Walton* has published extensively on nearly any aspect of the subject. He outlines a new dialectical framework – called *New Dialectic* – for the evaluation of arguments. Having its origins in the old dialectic of the ancient world, the new dialectic is centrally concerned with *presumptive* reasoning of a kind that is not well represented by either the forms of deductive or inductive reasoning. To represent the forms of argument of this third type of reasoning, argumentation schemes are used that model the structures of common types of arguments like argument from sign, argument from analogy and argument from commitment.

We will concentrate our discussion on this type of argument and include some of the results published in his book on presumptive reasoning.¹ For a social scientist, the inference from correlation to causality defines an important class of presumptive arguments. Look at the following example: In a certain

1 D. Walton, *Argumentation Schemes for Presumptive Reasoning*; Mahawh, N.J., Erlbaum 1996. A book in German language on the subject is by M. Kienpointner, *Alltagslogik: Struktur und Funktion von Argumentationsmustern*, Stuttgart 1992.

population 50% of all woman and 20% of all men get low payment. Using the terminology of social science, we can say, that there is a correlation between sex and payment. You want to infer that sex is the cause of the difference in payment, but a social scientist knows that this inference is defeasible. We can test the inference by asking critical questions.¹ Walton specifies 7 critical questions:

- Q₁: Is there a positive correlation between A and B?
- Q₂: Are there a significant number of instances of the positive correlation between A and B?
- Q₃: Is there good evidence that the causal relationship goes from A to B, and not just from B to A?
- Q₄: Can it be ruled out that the correlation between A and B is accounted for by some third factor – a common cause – that causes both A and B?
- Q₅: If there are intervening variables, can it be shown, that the causal relationship between a and B is indirect – mediated through other causes –?
- Q₆: If the correlation fails to hold outside a certain range of causes, then can the limits of this range be clearly indicated?
- Q₇: Can it be shown that the increase or change in B is not solely due to the way B is defined ... or classified?

Two of the seven answers are easy: Q₁ “yes” and Q₇ “yes”. The answer to Q₂ is “yes” too, but with a qualification. If we compare the results of different studies, we will find a considerable variance between different correlations. In few cases, we may even find, that woman are better paid which implies a change in the sign of correlation between sex and payment. This variance poses a serious problem which might be cured by an answer to Q₄. But any attempt to find a *third* factor – or many third factors – will not lead to a stable correlation. We simply do not have theories in the social sciences, which can precisely give us the factors to control. But we have some knowledge how to influence the correlation between sex and income – and do that all the time, at least we try to change it. But since a causal relation cannot be changed by any means, we probably do not have a causal relation between sex and income.

Why should the *non* existence of a causal relationship between sex and income be of any methodological importance in the theory of argumentation? The problem is that over and above the criteria given by *Walton* – or any other

¹ These critical questions belong to an argumentation scheme. Walton discusses 25 of these schemes in his book in the framework of his dialectical approach to argumentation.

criteria – you need some substantial field dependent knowledge¹ to judge the correctness of this type of presumptive argument. If this is correct, we will never – in principal – be able, to have an “Alltagslogik” as a kind of generalized logic to judge the correctness of an argument. Argumentation schemes are of great value for a practical criticism of arguments. But one fundamental difference between logic and Alltagslogik remains. Logic works in any context, Alltagslogik cannot be used, without considering the context of an argument.²

We can differentiate between two hypotheses:

- (H₁) To judge the correctness of a presumptive argument you can use a set of (sufficient) rules, which define a reasoning scheme. We do not know at present if there are 25 or 250 schemes, but research in the theory of argumentation will find these schemes.³
- (H₂) Schemes for presumptive reasoning are of great pragmatic value for judging arguments, but you can never give a set of sufficient rules. You will – always? / in a certain percentage of cases? – need some domain specific knowledge which cannot be captured in rules.

The difference between H₁ and H₂ may be residual importance from a practical point of view. But if one looks at the possible shapes of a theory of argumentation, the difference is large and reflects another difference: Between those who *think*, that human rationality consists of a set of rules – or algorithms, if you like – and those who *deny* that. The slow development of Artificial Intelligence seems to support the skeptical position.⁴

Manfred Kienpointner responds to *Walton's* conception to outline an alternative against the classical scientific philosophy and contemporary post-modernism⁵, and evaluate his New Dialectic. He emphasizes the fruitful frame

1 This term has been coined by S. Toulmin (1958).

2 On the foundation of contexts in the theory of interpretation see G. Preyer, “Interpretation and Rationality: Steps from Radical Interpretation to the Externalism of Triangulation, *Protosociology* Vol. 11, 1998: Cognitive Semantics II - Externalism in Debate.

3 C. Lumer has defended an algorithmic/logical theory of argumentation in *Praktische Argumentationsrheorie*, Braunschweig 1990. On Lumer's account D. Mans, “Argumentation im Kontext, Exkurs: Zu C. Lumers “Praktischer Argumentationstheorie”, in: G. Preyer, M. Ulkan, A. Ulfig, *Intention - Bedeutung - Kommunikation*. Kognitive und handlungstheoretische Grundlagen der Sprachtheorie, Frankfurt am Main 1997.

4 One might reply, that argument schemes can never give sufficient conditions. They can only indicate, when to shift the burden of proof. But I doubt that you will get very far with that substitution. We might still ask “how many rules do you need in a certain context to shift the burden?”. You can't escape contextuality.

5 On modernism and postmodernism see also G. Preyer “Moderne and Postmoderne im Kontext von Globalisierung”, <http://www.rz.uni-frankfurt.de/protosociology>

of Walton's research but articulates also some reservations toward his criticism of ancient dialectic, and the conceptualizing of presumptive and abductive arguments.

Cartesian epistemology has rejected the "argument from authority" in principle, and the refusal of this argument takes effect in modern thinking. From this point of view the judgement of other people can not be the foundation of knowledge. Yet central parts of our knowledge is not grounded in personal experience but relies on expert knowledge. One of *Walton's* 25 argumentation schemes¹ is the argument from expert opinion or appeal to authority. *Chris Tindale* takes up *Walton's* argumentation scheme but his contribution discusses the appeal to authority from a different and surprising perspective. Suppose you are told by a medical expert, that taking a certain sort of pills will cure your disease without serious side effects. You – as a layperson – can believe the expert or you can begin to investigate his claims. In most cases – since your no pharmacologist – the second route is not open for you. You cannot think through the matter that obviates any appeal to authority. But frequent appeals to authority reduce your autonomy. This cognitive threat to our autonomy by our dependence on authority raises some questions:

What is the relation between *my* cognitive autonomy and the cognitive autonomy of *other* people? *How* is our empirical knowledge *formed* by the fact, that we are social beings? And *what* are the necessary cognitive capabilities to *create* and *maintain* our autonomy?

Tindale reasons convincingly, that testimony is a key to answer these questions. My knowledge about Patagonia for example, can go back to two sources: Personal experience, and testimony by others.² To criticize their testimony, I have to develop a certain *cognitive* competence. Since testimony seems to be a more fundamental source of knowledge than expert opinion, this cognitive competence is the kind of competence we need to criticize expert opinion. *Tindale* names basic *skills* in scientific methodology, *reasoning* and *ethics*. His contribution is a further example for the strong connections the theory of argumentation has with other disciplines especially with philosophy. A trained philosopher might not be surprised, that the basic cognitive mechanism of acquiring knowledge are of great importance for the theory of argumentation. But all others will benefit as well from his intriguing and thorough discussion of testimony.

1 D. Walton, op.cit. 1996.

2 To simplify the matter we disregard, pictures, films etc., since it is not easy to separate these sources from testimony.

John Woods' contribution is about abduction or abductive inferences. Abduction is a sibling of induction and deduction and Peirce is its philosophical father. If a bag contains red marbles and you take out one marble, you may infer that the marble is red. This is *deduction*. If you do not know the color of the marbles in the bag and take out one marble and it is red, you may infer that all marbles in the bag are red. This is *induction*. But if a bag of red marbles is standing at some place and a red marble lies in the vicinity of the bag, you may infer, that the marble is from the bag. And that is *abduction*. What you infer from the premises – “A bag of red marbles is standing at some place.”, “A red marble lies in the vicinity of the bag.” – is the conclusion – “The marble is from the bag.” The hypothesis “the marble is from the bag” could serve as part of an explanation for the fact, that a red marble lies on the floor. As you will have noticed, *abductive reasoning is a special kind of presumptive reasoning*.¹ Abductive reasoning is part of our everyday life – if we are looking for explanations – and it is very essential part of any science. Finding explaining hypotheses is one of the most challenging creative task and that may be the reason why stories like those about Newton’s apple are so popular.

Abduction is an inference to a *potential* explanation. Those sociologists who are engaged in hermeneutic text interpretation know the relevance of abduction and its problems too. We will illustrate the point with one of Peirce’s examples. You find a stone which looks like a petrified fish far in the interior of the country. You can explain the finding by any of the following hypothesis:

- a The sea once washed over this land.
- b John Doe has left the petrified fish at that place to fool me.
- c The petrified fish was transported by some geological process to the location.

How many potential explaining hypothesis exist?

There are good reason that one will always find an additional potential explanation beyond a given set of potential explanations. Thus there is a potentially infinite set of potential explanations.

How do you rule out a potential explanation as incorrect – or probably incorrect –?

Just take same deductive consequences with an empirical content and test them. In real life situations very few from a small set of hypothesis will survive – in many cases there is only *one* hypothesis to test. That very abbreviated

1 If you take your first steps in the theory of argumentation, you are advised to differentiate carefully between explanations and arguments. Abduction ties both together, which indicates that you have left the initial stage.

description points to three ingredients in any theory of abduction. The first ingredient is a hypothesis generator, the second ingredient is a generator of testable deductive consequences and the third ingredient is theory of refutation. Even the best understood ingredient – the second one – is very difficult to formalize, because only a small subset of deductive consequences is “empirically interesting”. If you still ask yourself:

“what makes abduction so terribly difficult, after all, even the layperson does it all the time?”

you should carefully read the first sentence of *Woods’* paper. Any research on the computational aspects of abduction requires a high degree of formalization. So *Woods’* contribution touches an ambitious aspect of argumentation theory, namely the goal to clarify *crucial* concepts with formalized methods. The explication of creativity within a computational framework would have far reaching consequences over and above the theory of argumentation.

Henry W. Johnstone’s contribution reminds us, that reasoning about reasoning has a long tradition. Probably men begun to use deductive and non deductive arguments not too long after they begun to use language.¹ But the logic of Aristotle has been for a long time the only tool for the analysis of arguments. Therefore we are pleased to include a paper with a strong reference to one of the most influential of all philosophers. Nonetheless our edition may have convinced some readers that modern theory of argumentation is more than just a footnote to Aristotle.

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¹ We are not aware if the search for “the oldest published argument” is a topic in the community. Hints are welcome.

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