What should a normative theory of argumentation look like?

Work in progress, comments, demands and criticisms more than welcome!

**Abstract:** What makes argumentation reasonable, rational or justified? I address this question by considering two ways of thinking of the relationship between argumentation and reasonableness/rationality/justification that mirror two very different conceptions of what a theory of argumentation should look like. For even if we identify the goals of normative theories of argumentation with the goals of a theory of justification, argumentation theorists can either aim at providing criteria for saying that a target-claim is justified, or at characterizing justification from the point of view of the practice of arguing. I analyze the rewards and shortcomings of both conceptions of argumentation theory and their corresponding criteriological and transcendental accounts of the sort of value that good argumentation is able to provide.

**Keywords:** criteriological conception of Argumentation Theory, justification, LNMA, rationality, reasonableness, reasons, transcendental conception of Argumentation Theory

**1. Introduction**

Argumentation Theory is a normative endeavour in at least the following sense: argumentation theorists aim at providing tools to tell good argumentation from bad argumentation. Most argumentation theorists take this task to be that of providing models to evaluate argumentation as regards its reasonableness, rationality or justification. For them, reasonableness, rationality and justification are semantic primitives, unexplained explainers that work as standards for argumentative goodness. This is, for example, the view of authors within the epistemological approach to Argumentation Theory, who contend that good argumentation is argumentation that, in fulfilling certain epistemic conditions, makes belief in its conclusion (epistemically) rational or justified. It is also the view of Pragma-dialectics, which takes good argumentation to be (procedurally) reasonable as long as it fulfils certain procedural conditions; and it is also the view of the virtue approach to Argumentation Theory, which takes good argumentation to be argumentation conducted virtuously, so that it can be deemed reasonable. So understood, Argumentation Theory would be the task of putting together all that we know about ways of arguing that have proven to be safe, in the sense of warranting –one way or another, and to a certain extent— its outcome. Let’s call this approach the *criteriological* conception of Argumentation Theory.

Yet, it is also possible to think of Argumentation Theory as the endeavour of characterizing reasonableness, rationality and justification themselves. For to say of something that it is reasonable, justified or rational is to say that there are good reasons for it, and on this view, this can only mean that there is good argumentation for it. Good argumentation, and only good argumentation, would justify and make our claims rational or reasonable and, by extension, also our beliefs, actions, decisions, attitudes, etc.

As a proposal within Argumentation Theory, this approach cannot take argumentation goodness as a semantic primitive in turn; that would be viciously circular. Thus, in thinking of normative concepts such as justification, rationality or reasonableness as essentially argumentative, this approach is committed to look for the normativity of argumentation in the very activity of arguing. From this perspective, the main question for a theory of argumentation would be something like “does this piece of argumentation count as good argumentation, taking into account the conception of argumentative value that makes sense of arguing as an activity?” So understood, Argumentation Theory would be the conceptual task of characterizing argumentation and argumentation goodness; and this *transcendental* conception of Argumentation Theory would be called to play a key role within epistemology, theories of rationality, and any other field in which concepts such as justification, rationality, reasons or reasonableness are pivotal.

The main goal of this paper is to analyze the rewards and shortcomings of these conceptions of Argumentation Theory and their corresponding accounts of the sort of value that good argumentation is able to provide.

**2. Argumentation goodness from a criteriological perspective**

The task of warranting our intuitions about what is good (or bad) argumentation is far from trivial. The usual strategy has been to contend that argumentation has an idiosyncratic goal, so that those pieces of argumentation that achieve this goal are said to be intrinsically valuable and, therefore, count as good argumentation.

For example, the hallmark of the epistemological approach to Argumentation Theory is to deal with argumentation goodness in epistemological terms. The core idea is that the intrinsic goal of arguing is achieving knowledge –or at least justified beliefs (Siegel and Biro 1997: 278)— and because of that, good argumentation is characterized as argumentation that justifies believing its conclusion (Biro 1987: 69; Biro and Siegel 1992: 96; Goldman 2003: 58).

Importantly, this plea for justification does not quite help in discriminating any particular proposal within the field. For it is not just those theories adopting an epistemological approach, but every theory within the field, that is committed to a principled distinction between good argumentation and bad argumentation, and to the corresponding conception of an argumentative intrinsic value. This way, whatever makes the difference in each of these theories between good argumentation and argumentation that falls short of being good can be said to constitute what these theories take argumentation delivering justification, rationality or reasonableness, to be –be it argumentation solving a difference of opinion *on the merits*, or argumentation able to persuade a *universal* audience, or argumentation producing *rational* persuasion, or argumentation conducted *virtuously*, etc.

Of course, there are important differences between theories adopting an epistemological approach and theories adopting dialectical, rhetorical or virtue approaches. Particularly, dialectical, rhetorical and virtue theories of argumentation tend to avoid terms such as ‘rationality’ and ‘justification’ in favour of others such as ‘reasonableness’ or ‘acceptability’. But their point as proposals within Argumentation Theory is to determine what makes argumentation intrinsically good, not merely successful in some respect. So understood, a theory of argumentation would be a set of criteria or norms for warranting argumentation goodness according to one or another conception of the idiosyncratic goal of arguing.

Authors within the epistemological approach have tried to stand out by insisting on two further ideas: on the one hand, that good argumentation turns belief in its conclusion rational, and on the other hand, that good argumentation makes its conclusion more likely (Lumer, 2005: 213-214; Goldman 2003: 62). However, this is, again, something that any other theory within the field may subscribe: pragma-dialecticians, for example, could say both that it is reasonable to believe the conclusion of a piece of argumentation that meets the standards of a critical discussion, and that this is so because it is more likely to get at true beliefs, or at least at beliefs that are likely true, by following all the rules of a critical discussion than by violating any of them.[[1]](#footnote-1) In this respect, the attempt to demarcate the epistemic approach from theories such as Pragma-dialectics by pointing out that the function of argumentation is to reach knowledge (or justified belief) rather than consensus would be flawed: consensus would be just a further criterion to say that the outcome is warranted –i.e., justified, rational or reasonable. And much the same could be said of virtue theories of argumentation: the fact that an arguer is argumentatively virtuous speaks in favour of her argumentation and, in principle, makes belief in her conclusions rational and justified (Aaberdein, 2007).

**3. The justification of the criteria for determining justification**

So, theories such as Pragma-dialectics, virtue argumentation theory, and those within the epistemological approach share the strategy of determining argumentation goodness by providing sets of criteria to warrant that argumentation that satisfies these criteria achieves the type of value that, allegedly, is the sort of thing that we argue for. Thus, regarding the epistemological approach, Lumer says:

[a]n epistemological theory of argument is characterized by two features. 1. It takes the standard function of arguments to be: to lead the argument’s addressee to (rationally) justified belief, i.e., to guide him to realize the truth or acceptability of the argument’s thesis – where ‘acceptability’ is intended to be a broader term, meaning truth, high probability or verisimilitude. 2. It develops criteria for good arguments and argumentation on this basis, i.e., it designs them in such a way as to fulfil their epistemic function. (Lumer 2005, 213-214).

One of the first things we may wonder about criteria for argumentation goodness is: where do these criteria come from? Are they empirical rules of thumb that have proven to be reliable means to avoid falsity over time, or are they more inextricably tied to truth –like, for example, the rules of deductive logic? How can we justify our criteria for determining justification? As Hilary Putnam taught us, this is a tricky question that poses the following trilemma: either refusing the possibility of justifying criteria for justification, or trying to justify them by appealing either to subsequent criteria -which is a strategy doomed to initiate an infinite regress, or to the very criteria that we try to justify -which is a viciously circular strategy (Putnam 1981: 103-126).

At this point, the idea that argumentation has an idiosyncratic goal is meant to be of help. For example, pragma-dialecticians have tried to justify the pragma-dialectical rules for determining argumentation goodness by considering the problem-solving effectiveness and the intersubjective acceptability of the procedural rules that sanction critical discussions (van Eemeren and Grootendorst 2004: 123-157). The claim is that these rules are instrumental in solving differences of opinion *on the merits*; and because pragma-dialecticians assume that this is the idiosyncratic goal of arguing, they contend that argumentation that solves differences of opinion on the merits is argumentation intrinsically good.[[2]](#footnote-2) In turn, within the epistemological approach, both Goldman and Lumer have proposed (incomplete) sets of epistemic principles whose justification would come from the fact that, allegedly, they are efficient in the sense that, by following them, we get at *acceptable* beliefs.

What is important, though, (…) is to underline the necessity and existence of clear and efficient, epistemologically justified truth definitions and criteria as well as procedures for cognizing the truth and the criteria for good argumentation based on them. Only this can cut off the seemingly eternal general objection that some people believe this, other people believe that, where the relevant question is: Which belief is justified? And here a big research task is still waiting for the champions of the epistemological approach, namely to enlarge and further elaborate the arsenal of such epistemologically justified instruments” (Lumer 2005: 192)

Basically, the criteriological strategy for justifying criteria for argumentation goodness is to point out that we must adopt them because, allegedly, they warrant the achievement of the goals that, allegedly again, we pursue when we argue –like getting true beliefs or knowledge, or solving differences of opinion on the merits, or persuading a rational or a universal audience.

But, what if we do not pursue such goals? What would be wrong with arguing without pursuing the resolution of a difference of opinion on the merits, or even without pursuing knowledge or true beliefs? Even if it is true that argumentation has an idiosyncratic goal, why do we have to pursue that goal when we argue? Why arguing so as to achieve this goal is arguing intrinsically well?

No doubt, the epistemic approach may be interpreted as endorsing a *fitting-attitude* account of the intrinsic value of argumentation. However, even under this light, its characterization of argumentation goodness as argumentation that gives us reasons to believe the conclusion (Biro and Siegel, 2006: 94), or at least, “that makes belief in its conclusion justified” (Feldman, 1994: 176) poses two fatal problems. On the one hand, it cannot avoid incoherence: a very bad argumentation whose conclusion is that the arguer is not a good arguer would give us reason to believe so and would make belief in its conclusion justified and rational; yet, by hypothesis, it would be bad argumentation that gives us reason to believe so. And on the other hand, it is open to a version of the *wrong kind of reasons problem*.[[3]](#footnote-3) If by producing a particular piece of argumentation, whether good or bad, it happens to be the case that someone’s life depends on our believing the conclusion, then this argumentation gives us a good reason to believe the conclusion (and it makes it rational, reasonable and justified to believe it); yet, it would be a reason of the wrong kind. In the sec. 5 I am going to argue that both problems have to do with the fact that the very concept of reason is essentially argumentative, and because of that, it cannot play the role of a standard to characterize argumentation goodness in turn.

**4. The internal and the external assessment of argumentation**

Arguing is a kind of doing, and as such, it is something that can be rational or irrational (or justified/unjustified or reasonable/unreasonable) to do depending on the goals that we pursue. From this *external* perspective, it makes sense to question whether or not arguing is a rational (or reasonable or justified) thing to do in the circumstances, and even whether or not it is rational (or reasonable or justified) to pursue the goals that we characteristically pursue when we argue. When we externally assess a piece of argumentation, we consider things such as whether or not it was a good idea to adduce this and that to this particular audience, or even whether or not it was a good idea to argue at all in the circumstances. From such external perspective, the value of argumentation is a matter of its effectiveness as a means to a variety of possible ends, including the end of achieving knowledge or true/likely/verisimilar/acceptable/… beliefs.

On the other hand, arguing is also a means to justify our claims, beliefs, decisions, attitudes, etc (or to render them rational or reasonable), and we can assess a particular piece of argumentation as regards its ability to do this. From this *internal* perspective, the assessment of argumentation is the task of determining its intrinsic value. The criteriological conception of Argumentation Theory conflates these two types of assessments: by positing that good argumentation is argumentation that serves to achieve one or another –allegedly characteristic— goal, these theories deal with the internal assessment of argumentation in terms of its external assessment. In the end, criteriological theories assume an instrumental conception of argumentative value and, as a result, the normativity of their criteria is cast in doubt, as they happen to be merely conditional on the goals that we pursue when we argue.

Certainly, argumentation is a type of communication among others, and not necessarily the most efficient one as regards the achievement of the typical goals of communication –such as expressing mental states and influencing others. Sometimes, making promises or threats, rallying, sweet-talking, bargaining, etc may be better means to get these goals. Nonetheless, argumentation is a very special type of communication because, in arguing for our claims, we can make them rational, we can justify them and, thus, we can persuade others of them “in a rational way,” whatever that means... The fact that argumentation is not only a means of influence but also a means to render our claims, beliefs, decisions, attitudes, etc rational (or reasonable or justified) explains why the external value of argumentation as a means to persuade depends on its value as a means to justify: arguing happens to be a powerful tool for persuasion because we all know that it is also a powerful epistemic tool, a means to get true beliefs and right decisions. By arguing well for our points of view (about what is the case or what we should do), we show them to be right, and fortunately, this is an efficient way of persuading others of them. In this respect, argumentation is different not only from mere assertions, but also from any other form of interaction in which elements external to the elucidation of the matter could force the acquiescence of our hearers. In the end, this would be the reason why we trust in argumentation as, for example, a means to solve disagreements or to “rationally” persuade.

**5. Revisiting the *wrong kind of reasons problem*: practical vs. epistemic reasons**

Because of their instrumental conception of argumentation goodness, the criteriological approaches does not adequately deal with the difference between the external assessment of a piece of argumentation, i.e., the task of determining its value as a means to an end, and its internal assessment, i.e., the task of determining its intrinsic value, which, as pointed out before, is a matter of argumentation’s ability to justify our beliefs and claims. But, are we not back to where we were? What does it mean to say that argumentation is a means to justify our beliefs and claims? I will answer this question by showing that the distinction between the external assessment of argumentation and its internal assessment mirrors the distinction between practical reasons and epistemic reasons.

In principle, we can have good reasons for beliefs and claims, and our beliefs and claims can be rational, reasonable or justified, not only on epistemic grounds, but also pragmatically: if I want my kids to be careful, I may have a good reason to say that the river is dangerous –whether it actually is or not; and if I want to calm my nerves in a presentation, I may have good reason to believe that I am not boring –whether I actually am or not. These are practical reasons in that they are reasons for doing something. Because believing and claiming can also be seen as kinds of doings, we can have practical reasons for them.

What is, then, an epistemic reason? It cannot be just a consideration that counts in favour of asserting or holding a doxastic attitude, because, as we have seen, we can also have practical reasons for that. Literature has distinguished between object-given and state-given reasons for belief, in order to shortcut the possibility of having reasons of the wrong kind for our beliefs (Parfit, 2001). However, as Booth (2014) has explained, epistemic reasons cannot be object-given reasons for belief because, otherwise, there could not be epistemic reasons for a belief that are, at the same time, the reasons why some one believed it.[[4]](#footnote-4)

So, let me risk yet another definition of practical and epistemic reasons: if a practical (good) reason is a reason that justifies or warrants intentional states and events *qua intentional* (that is, as aimed at some goal), then an epistemic (good) reason is a reason that justifies or warrants representational states and events *qua representational* (that is, as better or worse descriptions of actual states of affairs). Because beliefs and assertions are not only representational but also intentional, we can have both epistemic and practical reasons for them. Yet, because decisions and actions are not representational, we can only have practical reasons for them.

On the other hand, from the perspective of a transcendental conception of Argumentation Theory, the ontogenesis of reasons is essentially argumentative. Particularly, from this perspective reasons are, precisely, the sort of thing that argumentation *consists of*: they are that part of the argumentation that is meant to justify a reason or a belief.

Neglecting the distinction between practical and epistemic reasons explains why, in contending that good argumentation is argumentation that gives us reason for –or justifies or makes it rational— believing its conclusion, the epistemic approach is bounded to the problems mentioned in sec. 3. For, on the one hand, it makes it possible that bad argumentation gives us reason to believe the conclusion; and on the other hand, it makes it possible that good argumentation gives us reasons *of the wrong kind* to believe the conclusion. After all, good argumentation does not give us practical reasons for our beliefs unless we pursue true beliefs; and whereas we cannot have beliefs if we do not aim at truth, there is no reason why we should aim at having true beliefs. Yet, good argumentation necessarily gives us epistemic reasons for our beliefs because, basically, good argumentation *consists* of epistemic reasons, that is, reasons showing that a target-claim is correct *qua claim*.

**6. A proposal within the transcendental conception of Argumentation Theory**

As pointed out before, from a transcendental perspective, justification, rationality and reasonableness are not semantic primitives, but values that spring from the very practice of arguing. Basically, the idea is that argumentation is a practice with constitutive correctness conditions, like that of making assertions or holding beliefs. Thus, if the constitutive correctness conditions of asserting come from the fact that whatever counts as an assertion counts as an attempt at saying how things are, the constitutive correctness conditions of arguing come from the fact that whatever counts as argumentation counts as an attempt at justifying a claim. On this view, justification is not the idiosyncratic goal of argumentation, but its constitutive goal (for there is no argumentation if there is no attempt at justifying) and argumentation actually providing justification for its conclusion is argumentation intrinsically good.[[5]](#footnote-5)

 Importantly, that the normativity of argumentation is constitutive of the very practice does not imply that we cannot argue badly: I count as arguing if I count as trying to justify a claim; yet, I may try it and not succeed.[[6]](#footnote-6)

From the perspective of the transcendental conception of Argumentation Theory, a normative model for argumentation is nothing but a description of argumentation as a practice with constitutive correctness conditions. In Bermejo-Luque (2011) I offered one such type of proposal, i.e., a *linguistic normative model of argumentation*, which characterizes argumentation as a second order speech act complex that counts as an attempt at showing a target-claim to be correct. Correspondingly, in LNMA, (epistemically) justifying is adducing reasons actually showing a target-claim to be correct, which is an achievement that involves both semantic conditions determining whether or not a target-claim is correct and pragmatic conditions determining whether or not a speech act of arguing is a good act of showing.

**7. Conclusions: Argumentation Theory and the search for objectivity**

It is possible to think of Argumentation Theory either as a sort of “applied epistemology” or as a conceptual endeavour. The former is the option of those defending a criteriological conception of the discipline. Their goal is to offer criteria to establish the truth –or to warrant the acceptability— of our assertions and beliefs. Contrastingly, the goal of a transcendental conception of Argumentation Theory is to characterize argumentation as a normative activity and, as a result, to give an account of the normative conditions that constitute it.

In a way, advocates of a criteriological perspective see themselves as fighting scepticism. This is why they think that we cannot accept as a condition of argumentation goodness the semantic correctness of the claims that we put forward in arguing: that would amount to beg the question against the sceptic. Instead of that, they put as criteria of good argumentation things such as the condition that “a speaker should assert a premise only if she is justified in believing it,” or that “a speaker should assert a premise only if she thinks she is justified in believing it”, or the condition that the arguer has this or that virtue, or the condition that parties do not impede each other to raise questions, etc.

Yet, for an advocate of the transcendental conception, this fight against scepticism is alien to Argumentation Theory. From this perspective, a theory of argumentation should not aim to be a *theory of all*: its goal is not to offer criteria to determine which claims are true, likely or close to truth. Actually, this is the business of argumentation itself. Rather, the goal of a theory of argumentation is to propose adequate descriptions of the normative activity of arguing and its underlying conception of argumentation goodness, in order to provide not only models for the assessment of argumentation, but also adequate accounts of normative concepts such as justification, rationality, reasons and reasonableness, as resulting from the very practice of arguing.

As regards truth attributions, an advocate of the transcendental conception just records that arguers behave all the time as if they had access to truth and knowledge: this is exactly what they do when they make assertions and hold beliefs. Maybe, in the end, we can never be sure of our truth attributions; but this doesn’t really matter to engage in the practice of arguing. For we keep making assertions and holding beliefs, and we argue for them by adducing reasons and rendering them rational and justified. Actually, regarding our epistemic goals, this seems to be the most we can do.[[7]](#footnote-7)

**References:**

Aberdein, A. (2007). “Virtue argumentation,” in F.H. van Eemeren, J.A. Blair, C.A. Willard & B. Garssen (Eds.), *Proceedings of the Sixth Conference of the International Society for the Study of Argumentation*. Amsterdam: Sic Sat, pp. 15-19

Bermejo-Luque, L. (2011) *Giving Reasons. A linguistic-pragmatic approach to Argumentation Theory*. Dordrecht: Springer

\_\_\_\_\_ (2015) “Giving reasons does not always amount to arguing,” in *Topoi*, online first: [http://link.springer.com/article/10.1007%2Fs11245-015-9336-1](http://link.springer.com/article/10.1007/s11245-015-9336-1)

Biro, J. (1987) “A Sketch of an Epistemic Theory of Fallacies,” in Frans H. van Eemeren [et al.] (eds.), *Argumentation, Analysis and Practics. Proceedings of the 1986 Amsterdam Conference on Argumentation*. Dordrecht: Foris, 65-73.

Biro, J., and H. Siegel (1992). “Normativity, Argumentation, and an Epistemic Theory of Fallacies,” in *Argumentation Illuminated: Selected Papers from the 1990 International Conference on Argumentation*. in Frans H. van Eemeren, R. Grootendorst, J. A. Blair and C. A. Williard. Dordrecht: Foris, 81-103.

\_\_\_\_\_ (2006) “In Defense of the Objective Epistemic Approach to Argumentation,” in *Informal Logic* Vol. 26, No. 1, 91-101

Booth, A. (2014) “Two Reasons Why Epistemic Reasons Are Not Object-Given Reasons” *Philosophy and Phenomenological Research*, Vol. 89, No 1, 1–14

Eemeren, F.H. van, & R. Grootendorst (2004) *A Systematic Theory of Argumentation. The Pragma-dialectical approach.* Cambridge: Cambridge University Press

Feldman, Richard (1994) “Good arguments,” in F. F. Schmitt (Ed.) *Socializing epistemology: the social dimensions of knowledge*. Lanham, MD: Rowman & Littlefield Publishers, 159-188.

Goldman, Alvin. I (2003) “An Epistemological Approach to Argumentation,” in *Informal Logic* Vol. 23, No.1, 51-63

Hieronymi, P. (2005) “The Wrong Kind of Reason,” in *The Journal of Philosophy* Vol. 102, No. 9, 437–57.

Lumer, C. (2005). “Introduction: The Epistemological Approach to Argumentation –A Map,” in *Informal Logic* Vol. 25, No.3, 189-212.

Parfit, D. (2001) “Rationality and Reasons” in D. Egonsson, B. Petersson, J. Joselfsson, & T. Rønnow-Rasmussen (Eds) *Exploring Practical Philosophy: From Action to Values*. Aldershot: Ashgate 17-39

Putnam, H. (1981) *Reason, Truth and History*. Cambridge: Cambridge University Press

Siegel, H. and J. Biro (1997) “Epistemic normativity, argumentation, and fallacies,” in *Argumentation* Vol. 11, 277-292.

1. For Pragma-dialectics, truth is not a requirement of good argumentation, but because of its endorsement of Popper’s critical-rationalism, it can be said to constitute the ultimate goal of a critical discussion. [↑](#footnote-ref-1)
2. Importantly, however, pragma-dialecticians have made no attempt to show that these rules are sufficient to warrant the outcomes of the procedures that play by them, or to show that each of these rules is necessary for a warranted outcome, or just to explain what does it mean “on the merits”. [↑](#footnote-ref-2)
3. As Hieronymi (2005) has argued, this problem results from the vagueness of thinking of a reason for something as a *consideration that counts in its favour*. [↑](#footnote-ref-3)
4. Actually, Booth (2014) provides two arguments against the view that epistemic reasons are object-given reasons. The second one is that, if they were, we would never have epistemic reasons for suspending judgment. I am not persuaded by this argument, but I must leave this discussion for another occasion. [↑](#footnote-ref-4)
5. Unfortunately, this strategy is not available for characterizing artistic or scientific value, because we do not have incontrovertible definitions of either art or science as intentional activities. In turn, we have such definitions of argumentation (which aims at justification), assertion and belief (which aim at truth), and even politics (which aims at adequately responding to the question “what shall we do”); and because of that, we can say that argumentation, assertion, belief and even politics are normative: because of their constitutive aim, they inaugurate a principled distinction between right and wrong. [↑](#footnote-ref-5)
6. Yet, given the fact that in order to count as arguing I must count as trying to justify, I cannot argue (because I cannot count as trying to justify) if I argue badly in a deliberate and ostensible manner. In turn, if my addressee replies that I am arguing badly, I cannot say “yes, never mind” and still pretend that I am arguing. In arguing, one thereof commits himself to arguing well. [↑](#footnote-ref-6)
7. This view supersedes the debate between advocates of a subjective epistemic approach and advocates of an objective epistemic approach. Basically, the idea is to acknowledge that we argue as if we had access to truths. After all, this is what we do when we make any of the assertions that a piece of argumentation consists of, including the conclusion. In a few words, the “objective duty” would be constitutive of arguing. Yet, we can only assess argumentation by assessing the correctness of such assertions, and this is always something that we do from a subjective point of view. [↑](#footnote-ref-7)