

# Persuasion. The Practical Face of Logic.

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HOW CAN THE FIELD OF RHETORIC BENEFIT FROM WHAT A LOGICIAN HAS TO SAY?

My objective in this paper is to present a theory of argumentation rooted in the methods of formal logic. A formal approach to a theory of persuasion enables us to rigorously research issues such as: how we argue, why we quarrel, where we are efficient in persuasion, and when we do win at negotiation. However, since the language of logic is “exotic” and one might even go as far as to say– “unfriendly”, I have decided to articulate my conclusions in manner more accessible to a wider group – specifically, anyone for whom the methods of persuasion are of professional significance (for defense, negotiations, marketing, etc.).

Because I begin by considering specific sorts of arguments, it is my hope that the conclusions here will provide interesting and useful observations when transferred back to an important practical level of argumentation. Still, I am aware that oversimplification may result in inaccuracies from a formal point of view. For those who seek a more rigorous treatment, see my paper [*Argumentation from Semantic and Pragmatic Perspective*, [in:] *Studies in Logic, Grammar and Rhetoric, The Logic of Social Research* 7(20), University of Białystok, 2004, p.127-147]. In some places, though, where a short explanation was absolutely necessary, I have attached more detailed comments in footnotes.

The article divides into four parts. For illustrative purposes, I have chosen examples of arguments from the law, economics and everyday life. In first part, I highlight crucial notions for further consideration: in particular, the notions of reasoning, propositional belief, and subjective and objective probability. In the second part, I present my characterization of

argumentation, where I offer that it is a type of reasoning in which language users and their beliefs play an integral role. In the third part, my study turns to practical questions. I attempt to determine the ways in which we succeed in persuading others. In the last part I turn to “theoretical” aspects of persuasion and try to specify when an argument is cognitively valuable and when it is reliable, in the sense that it helps us to track the truth.

## **PART ONE**

### **SOME IMPORTANT NOTES WE SHOULD REMEMBER**

In this part I present the following basic notions: (i) reasoning, (ii) propositional belief and subjective probability, and (iii) the foundations of derivation and objective (statistical) probability.

(i) How do we think? What is thinking? One of the most important examples of this process is drawing conclusions i.e. deriving new and interesting information based on prior knowledge. We think – this means that we can develop different ideas, and come up with explanations of facts already known etc. In such situations we are reasoning, which means that we derive conclusions (new information, ideas, explanations) from prior beliefs (that are either of long standing or newly acquired or scientific beliefs).

Reasoning always has the same structure: premises – foundation scheme – conclusion. The reasoning person, based on sentences he believes (premises) and based on a certain foundation scheme, derives another sentence (the conclusion) that he believes to some specific degree or other.

(ii) By saying that a given person **believes (accepts) the sentence** we mean that he believes this sentence to be true or right. Thus, when I say Magda believes that euthanasia should be legalized in Poland, I am saying that Magda believes as right the sentence: “*Euthanasia should be legalized in Poland*”. If Adam believes that inflation will cause drop in unemployment, then Adam believes as true the sentence: “*Inflation will cause unemployment to drop*”. Notice that a sentence can be believed not only with the highest degree of certainty – a reasoning person may also practice restraint with regard to truthfulness/rightness of the sentence (and believe it with a lower degree of **subjective probability**<sup>1</sup>).

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<sup>1</sup> Probability is here understood in subjective (psychological) interpretation i.e. as a degree of believing in truthfulness/rightness of sentence indicated by the value from interval of (0, 1).

**Example 1.** Let us consider two pieces of reasoning – each is labeled with the example number and consecutive alphabet letter (which will be our practice throughout):

*Reas.1a: It has been reported in newspaper that 85% of customers of “Kasa” accounting office were satisfied with its services. So, probably I will benefit from its services, too.*

*Reas.1b: All of my friends were satisfied with the services of “Kasa” accounting office. So obviously I will benefit from its services, too.*

In *Reas.1a* from the premise: “*It has been reported in newspaper that 85% of customers of “Kasa” accounting office were satisfied with its services?*” a reasoning person derives the conclusion: “*I will benefit from its services, too*”. In *Reas.1b* the same conclusion follows from another premise: “*All of my friends were satisfied with the services of “Kasa” accounting office*”.

Which of the above mentioned premises is more reliable? The degree of belief is indicated by expressions appearing in the conclusions of these pieces of reasoning – in the first one he uses the expression “*probably*” and in second, the much stronger “*obviously*”. Hence we can assume, in *Reas.1a* he believes as true that he will benefit from “Kasa” service with a lower degree of certainty (probability) than in *Reas.1b*. Affirmations of his friends are more trustworthy for this person than information obtained from a newspaper.

Hence, a sentence can be believed with various degree of certainty. For numerical representation, it can be assigned a psychological (i.e. subjective) probability. Let us assume that a person believes a sentence S. If the subjective probability of S for this person is greater than 0.5, then he is more convinced that the sentence S is true/right than that it is false/wrong. If the value of the subjective probability is equal 1, then the person is absolutely certain that S is true/right. If the value of a subjective probability is lower or equal to 0.5, then the person is not convinced at all of truthfulness/rightness of S. What sense of believing do we have in mind when we say of a person that he disagrees with truthfulness/rightness of the sentence? Most often than not this occurs when the truthfulness/rightness of the sentence is assumed only in order to establish one’s opinion.<sup>2</sup>

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<sup>2</sup> Let us consider following example: Kris quarrels with Sophia about the possibilities of time traveling. Kris believes that time traveling is impossible, but to prove he is right he assumes that true is what Sophia claims. Kris: “*Let’s assume that time traveling is possible. So how come that none of the civilizations of the future has ever visited us up to now? So you can see for yourself that time traveling is nothing but phony ideas of science fiction writers*”. Hence Kris in order to prove the truthfulness of believed by him thesis: “*Time traveling is not possible*” believed (assumed) the sentence: “*Time traveling is possible*”.

We will call such cases of belief when the person accepts the truthfulness/rightness of the sentence only to a certain degree (higher than 0.5) strict believing. Furthermore we will say, when a person assigns any probability from the interval (0, 1) to a sentence, that he believes it.

**(iii)** There must be an observable relationship between the premises and the derived conclusion in order to say of the reasoning person that he “has a right” to believe the conclusion on the grounds of the premises.

**Example 2.** Kowalski is accused of committing armed robbery. Let us consider three possible attempts to establish his guilt.

*Reas.2a:  $2+2=4$ , so it is Kowalski who committed the robbery.*

*Reas.2b: Kowalski's fingerprints have been found on the crime weapon, so it is Kowalski who committed the robbery.*

*Reas.2c: The cameras in the store recorded Kowalski in the act of the crime, so it is he who committed the robbery.*

Is it legitimate to conclude Kowalski's guilt on the basis of reasoning 2a? Rationally it is not. The premise (i.e. sentence “ $2+2=4$ ”) is entirely unrelated to the conclusion (i.e. the sentence “*It is Kowalski who committed the robbery*”). Such a relationship is, however, observable in the two other pieces of reasoning. What is important is that the relationship in *Reas.2b* is objectively “weak”. This is because there is a comparative low probability that Kowalski will be found guilty on the basis of fingerprint evidence alone. In *Reas.2c* the relation between the recording of the robbery and the actual commitment of a crime is much “stronger”. One can imagine other pieces of reasoning in which the relationship between premises and conclusion is stronger or weaker than in the examples above.

While working with a logical perspective on the relationship between premises and conclusion, its different foundations are considered, in particular, the relationship of entailment. Because these issues require detailed description, we will limit ourselves to simplifications of this point. We will say that in order to infer a conclusion from some premises, it is necessary to use ***the foundation of deriving sentences from other sentences***, which so far has been specified as the relationship between the premises and the conclusion. Let us also assume that this foundation is the conditional “*if... then...*”, where in the first available space we place those sentences that form the premises (optionally joined by conjunction “&”)<sup>3</sup> and in a second space

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<sup>3</sup> As sentence we mean here not only closed, but also open formulae.

– the conclusion. The conditional obtained this way does not describe specific case considered in this piece of reasoning, but an “abstract law” (generalization) based on that case. This way, on grounds of reasoning we obtain a scheme. Hence, in *Reas.2a* the derivational foundation is the conditional: „*If the sum of two numbers equals other number, then someone committed an armed robbery*”. In the reasoning *Reas.2b* we obtain the following deriving scheme: “*If someone’s fingerprints are found on a crime weapon, then this person committed a robbery*” and in *Reas.2c*: “*If the cameras in a store recorded someone in the act of a crime, then this person committed a robbery*”. While formulating the schemes again we can observe a different level of “justifactory strength” in particular inferences. As we understand the meaning of sentence: „*If the sum of two numbers equals other number, then someone committed an armed robbery*”, we easily notice that “it does not make sense”, i.e. the sum of any two numbers will not imply a belief in someone’s guilt. But a belief in his guilt can, in turn, be inclined by the detection of his fingerprints on the weapon used in crime, and even more so with the evidence found on the tape recording from the crime scene.

The derivation foundation can be imagined as a certain scheme created in the scientific way or by “generation’s life wisdom”. It is a pattern ready to use for many pieces of reasoning concerning different situations of one specific kind. Each of us, within the range of one’s beliefs, has plenty of such patterns beginning from the simplest, concerning everyday activities like e.g. “*If someone kicks something in a specific direction, then the object will take course in this direction*”, “*If someone turns a key towards the frame, then the door will close*”, through social ones: “*If someone nods his head up-and-down, then he gives his approval*”, “*If someone is raised in unfavorable conditions and is treated badly, then he turns into an unsociable personality type*”, to the schemes concerning more complex fields: “*If a bank creates reserves for loans offered to people with a bad credit history, then it will reduce the bank’s profits*”, “*If a child enters the next developmental stage, then the new stage absorbs structure characteristic of the previous ones and based on them creates new structures characteristic of this stage*”.

Each of the patterns could be labeled with the specific number from the interval of (0, 1) depending on how probable the relation is that this pattern describes. Here we consider, different than those mentioned above, an objective, statistical interpretation of probability. **Objective probability** is assigned to the relations described by derivation schemes and indicates to what degree we can be mistaken when reasoning with the use of the concerned scheme. Subjective, psychological probability can, in turn, be assigned to any sentence (not only conditional one) and depends on the given person. It indicates in what degree this person believes in the truthfulness/rightness of the concerned sentence.

And thus, it is easy to observe that the sentence "*If someone nods his head up-and-down then he gives his approval*" describes a very probable relation; however, it does not reach the value of 1 – as for instance in Bulgaria there is an opposite rule, i.e. nodding, which we would interpret as “yes”, means there “no” and reversely. In other words – this pattern is not always useful, but most of the time (we have a certain rule at our disposal, but with the condition that there are exceptions to this rule). Hence every time we reason using this scheme with regards to individuals from Poland, Germany, England, United States or Spain, we will derive true conclusions. In such situations the scheme is effective, useful in our action, decision or comprehension of human behaviors. But if we use this pattern with regard to a Bulgarian then from true premise (i.e. from the sentence “*This Bulgarian here nodded his head several times up-and-down*”) we will derive false conclusion (i.e. the sentence “*This Bulgarian here gives his approval*”).

Why do we use such schemes that lead sometimes to false conclusions instead of those that always lead to true conclusions? Because most often we do not have other ones at our disposal. The reality that surrounds us is so complex that the relations governing it hardly ever are “exceptionless”, most often are statistical, where a certain dominant characteristic is influenced by disorders caused by various side effects.<sup>4</sup> If in example 2 we had only the weapon with Kowalski’s fingerprints at our disposal, we would be forced to use scheme from reasoning *Reas.2b* instead of the more probable one from *Reas.2c*. Existence in the real world forces us to act, make decisions, choices, evaluations, regardless of what schemes we can use in a specific case.

The schemes from interval of (0; 0.5) are inefficient, because true premises will lead more often or just as often to false conclusions rather than to true ones. If the conclusions of the reasoning person are false, then we can judge that “he is wrong with his thinking/decisions” and the measures taken as the result of such conclusions – are inefficient. As a result, the individual acts poorly in reality.

Certainly, the most effective strategy is always a use of the patterns of the highest available statistical probability. But for various reasons it happens that people choose less probable schemes and sometimes even those from the interval of (0; 0.5).

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<sup>4</sup> In statistics there are two tendencies to vary: systematic tendency (caused by the factors constantly determining the relation) and accidental tendency (caused by the unpredictable factors that put chaotic component into cause-and-effect relation) [Luszniewicz, 1994, p. 21].

## PART TWO

### WHAT IS ARGUMENTATION?

In this part I will present in detail what I mean by argumentation. My characterization will include: (i) parties to a dispute, (ii) definition of simple argumentation, (iii) consequences of this definition, and (iv) a distinction between honest and dishonest arguments.

(i) Let us begin with the discussing the parties to a dispute: proponent, opponent and audience. By a **proponent** I mean any person who proposes a thesis and presents arguments for it. Is the person, whom proponent argues with, always the person that proponent tries to convince? The answer is often, but not always. In a debate between two politicians the targeting group consists of observers or, generally speaking, voters. In legal cases the dispute is between the lawyer and prosecutor, but they do not aim to convince each other – but rather judge or jury. By considering such cases we must distinguish between two groups: *an opponent* – the participant that disagrees with proponent thesis and *an audience* – the participant persuaded by a proponent.

Let us highlight here two important notes – first, when considering each of the argument parties we will mean that it contains one individual or group of individuals. Second, a distinction of three groups of discussion participants is forced by a determination of the notions concerning “spaces” that one can take in argument. But it does not mean that each of these spaces has to be occupied by different persons or groups. It can happen that we quarrel with the one we intend to convince, in that case the person occupies the space of both opponent and audience of the argument. It also can happen that during internal conversation one attempts to persuade himself (then the person is at the same time proponent, opponent and audience).

(ii) I will now formulate definition of simple argumentation (the issue of complex arguments will be taken up in third part of the article). We will consider as an argument only these persuasion methods that are pieces of reasoning. Like any other reasoning, argumentation has the same components i.e. premises, deriving foundation (scheme) and conclusion. Referring to the terminology common in literature, we will call interchangeably the premises the arguments and the conclusion the thesis of the argumentation.

**Definition 1.** The reasoning, which includes premises  $Arg$ , deriving scheme  $\varphi$  and conclusion  $T$ , is the *simple argumentation* with a given proponent, opponent and audience if and only if:

1. The proponent proposes thesis  $T$  that he believes
2. The opponent does not believe  $T$
3. The proponent presents arguments  $Arg$  such as:
  - Proponent believes  $Arg$
  - Proponent selects such a scheme  $\varphi$  that he believes, and according to him it can be used to derive  $T$  from  $Arg$
4. The objective of the proponent is to convince the audience to strictly believe  $T$

Argumentation is thus such reasoning, in which language users play the three roles of proponent, opponent and audience. The proponent proposes the thesis  $T$  (point 1 of the definition) and then intends to convince the audience to strictly believe  $T$  (point 4) by presenting arguments from which, according to him,  $T$  can be derived on the basis of a selected scheme  $\varphi$  (point 3). On the other side, there is an opponent who does not believe  $T$  offered by the convincing person (point 2).

**Example 3.** During a TV-broadcast two politicians dispute the Polish economy. The politician Liberaliński claims that in order to improve its condition it is necessary to introduce basic reforms, of which the most important is the liberalization of the economy. The politician Konserwatyński responds violently. In response to this attack Mr. Liberaliński argues that a weak country, in which oligarchic arrangements dominate, obstructs the citizens' enterprise, which, in effect, leads to economic stagnation. Let us compare this example with the definition 1:

- The proponent (Mr. Liberaliński) presents his thesis: "*To improve the condition of the Polish economy it is necessary to introduce (...) a liberalization of its economy*" (so point 1 of the definition is fulfilled),
- The opponent (Mr. Konserwatyński) does not believe this thesis (point 2),
- The proponent aims to convince the audience (it can be Mr. Konserwatyński or/and the broadcast viewers) to accept his thesis (point 4). To achieve this end he presents the argument ("*A weak country, in which oligarchic arrangements are dominant, obstructs the citizens' enterprises, which in effect leads to economic stagnation*") from which, according to him, thesis  $T$  is derivable on the basis of a selected scheme  $\varphi$  (point 3).

The deriving foundation of this reasoning is the following scheme  $\varphi$ : “*If some country is weak and ruled in accordance with oligarchic arrangements (...), then to improve the condition of its economy it is necessary to introduce (...) a liberalization of the economy*”.

**(iii)** Now let us note a few direct conclusions implied by the formulated definition:

(1) Which parties in argumentation are “passive” and which are “active”? Points 1, 3, 4 indicate the active role of the proponent – he presents the thesis and supports it with arguments. Point 2 shows the active role of the opponent – he disagrees with the proponent and introduces a difference of opinion in the conversation. However, he is not as active as the proponent. The function of the audience is emphasized in point 4. It is highly evident that it is passive – the role of this group consists in taking an attitude towards the proponent thesis. The audience does not participate in the exchange of views and is somehow the outside observer who is supposed to return the final verdict. Certainly this is only applicable when the audience is distinct from the opponent.

(2) The statement mentioned in point 2 of the definition, i.e. the opponent does not approve of proponent thesis, does not result in a approval of the antithesis, i.e. sentence contradictory to the thesis. Let us assume that two men discuss the subject of the European Union. Euro-Enthusiast claims that joining the EU will bring welfare to present and future generations in Poland. The other man disagrees. However, we cannot conclude on this basis that the opponent is an Euro-Anti-Enthusiast. He may just reserve judgment on this matter. Hence, not accepting that “*Joining the EU will bring welfare to Poles*” does not necessarily imply that he does accept that “*Joining the EU will not bring welfare to Poles*”.<sup>5</sup>

(3) Let us take a closer look at degrees of believing in the sentences included in the discussion. The proponent can believe the thesis, arguments and deriving scheme with any value of psychological probability i.e. not necessarily in strict meaning. If the probability belongs to the interval of (0; 0.5), then he is trying to defend a thesis that he does not really believe in.

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<sup>5</sup> It is characteristic of believing – the given person with regard to the sentence S may choose one of three different approaches: (1) believing sentence S, (2) believing negation of S or (3) believing neither S nor negation of S. We deal with a different situation, when the person believes the expression. Then he cannot believe the sentence contradictory to it. For instance if Jan accepts that it would be profitable for the Polish economy to decrease rate of interest then Jan cannot at the same time accept that it would not be profitable for the Polish economy to decrease rate of interest.

For instance a broker may persuade a single living Mr. Nowak that possession of life insurance is his top necessity. At the same time his private opinion is quite different – thus he thinks the insurance is beneficial only for those who must financially insure for the people they care for. Hence, the salesman assigns to the thesis: “*You need this life insurance, sir*” a probability lower or equal to 0.5. On the other hand he assigns a degree higher than 0.5 to his private, untold opinion: “*Mr. Nowak does not need this life insurance*”.

The opponent, similarly to the proponent, may not accept the adversary opinion with any degree of certainty. He may just “tease” the proponent, pretending only that he disagrees. Some people like discussion so much “for the mere fun of it” and not for the sake of their own views, deny the opinions of others.

The audience need not initially take a stand on the opinions of the arguing parties. The objective of the proponent is to influence the discussion so that the audience backs him up by believing his thesis, but – what is important – in strict meaning. Thus we may say that apart from the audience all other participants of the discussion can “fake” their approval.

(iv) When at least one of the sentences is believed by the proponent with nonstrict meaning, then the argumentation should be treated as dishonest. Is this the only moment that we can judge the discussion according to such a principle? Aristotle distinguished three conditions the fulfillment of which determines ***argument as honest (rhetorical)***. These conditions are: *logos*, *ethos* and *pathos* [Aristotle, 2001, 1356 a]. By interpreting his standpoint, the condition *logos* is fulfilled when the deriving foundation  $\phi$  is the scheme that leads to true conclusions always or almost always. It means that the statistical probability of the relation described by such derivation foundation equals 1 or approaches 1.<sup>6</sup> The condition *ethos* is fulfilled when proponent strictly believes all the sentences that appear in the discussion, i.e. the subjective probability assigned to these sentences is higher than 0,5. The argument fulfils the condition *pathos* when it is adequate to the rules of stylistics (e.g. to the eloquence, language culture), what puts the audience into “appropriate mood”.

***The argument is dishonest (eristic)*** when at least one of the conditions mentioned above is not fulfilled.

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<sup>6</sup> The value approaching (close to) 1 for a coefficient of statistical relation (an equivalent to the statistical probability of such relation) is described by: [Ajdukiewicz, 1965, p. 336], [Luszniewicz, 1994, p. 23].

Notice that argumentation is here understood as dishonest not only when a proponent uses on purpose a low probable scheme just pretending that he believes it, but also when he is mistaken, i.e. when according to him it is highly probable, but in fact it is not. Such a notion does not comply with the common meaning of dishonesty. However, it may become handy when we want to evaluate whether we should approve the argumentation of the proponent, whether we may “rely on” his argumentation (i.e. if it will lead us to the true conclusion). When the proponent deliberately builds his reasoning on a low probable scheme, taking advantage of the audience’s lack of knowledge, then such eristic persuasion is named in literature as “argument *ad ignorantiam*”. It does not fulfill the conditions *ethos* and *logos* – since the proponent intentionally uses a low probable scheme only to make the audience accept his thesis even at a time when he knows that it is false.

### **PART THREE**

#### **WHEN DO WE GET A CHANCE TO WIN A DISPUTE?**

In this part I would like to explore practical issues concerning persuasion: (i) efficiency of simple argumentations, (ii) types of complex argumentation and their efficiency and (iii) methods permitting for an increase in our chances for victory in the discussion.

(i) Following the introduced definition of argumentation the proponent’s purpose is to convince his audience. Once he achieves his goal, we say that the argumentation is efficient.

**Definition 2.** *The simple argumentation is efficient* if and only if the audience of this argumentation strictly believes its thesis.

Let us think now about how proponent should act to reach his goal. We will not study all the possible ways of influence on human convictions known in the history of persuasion – torture, intimidation, bribery etc. We will restrict our efforts to the level of rational activities and determine what sufficient conditions the proponent should meet so that the audience is in his favor.

**Example 4.** On TV there are two experts invited to the studio discussing economic subjects. The expert Pessimist sees the future of his country in dark colors. The expert Optimist tries to convince him that their economy will now develop at a high speed, because taxes were lowered

and investments increased. As a matter of fact both these changes have recently occurred in this country, so Mr. Pessimist accepts immediately the proponent's argument (i.e. the premise). What will happen if the set of his recent beliefs include also the sentence describing the positive relation between these changes and development? In other words – what will happen if he believes as highly probable the derivation foundation applied in this argumentation “*If the taxes are lowered and the investments increase in some country, then the economy of this country will develop at a high speed*”? Since he acknowledges the fact that there is such a relation in the economy and simultaneously he knows that taxes and investments achieve an adequate level then he will be “forced” to believe that the economy will develop. This way he will accept the thesis and presented argumentation will become efficient.

When the audience believes the premises and the scheme that the reasoning is based on, then it is “forced” to believe the thesis of the discussion and this, according to the definition, implies that the persuasion will be efficient. Certainly, this enforcement of thesis acceptance is imposed by cognitive principles: rationality and consequences in reasoning, but not threats, bribes or pretty eyes. Hence, we will say that in argumentation believing is inherited by the conclusion from its premises. Now I am going to summarize these important notes with the following theorem:

**Theorem:** If the audience believes strictly the premises and the derivation foundation of the simple argumentation, then it will also believe strictly its conclusion.

(ii) So far we studied very simple examples of discussion – the ones that consisted of one argumentation. However, in the everyday life we deal most often with sequences of successive simple argumentations i.e. with complex discussions.

Among **complex argumentations** there are:

- (1) arguments with an invariable proponent, and
- (2) arguments with a variable proponent.

(1) In the first type of discussion, presentation of another simple argumentation is induced by the audience response to the proponent's previous argumentation [Nieznański, 2000, p. 117; Łuszczewska-Romahnowa, 1966, p. 164]. The audience may question:

- the premise – claiming that it is either not true/right or it is ill-founded,

- the derivational scheme – claiming that it is either not general/high probable or it is ill-founded.

**Example 5.** During the court trial the plaintiff-proponent wants to include as evidence a testimony of an eyewitness. The audience (judge/jury) does not need to acknowledge proponent premise replying that it is insufficiently founded. As the eyewitness was highly intoxicated at the time when the crime was committed, this testimony does not sound reliable.

When proponent is confronted with any of the above mentioned responses, then his first argumentation is inefficient. It is easy to show that it is a consequence of the theorem above. However, the beliefs just as much as they tend to change with different people may as well tend to change with the same person in a different time frame. In other words – people change their opinions. So the proponent may expect that by presenting another simple argumentation he will be able to influence the beliefs of the audience in such a way so that ultimately it will come to accept his thesis even though initially the group was ready to deny it. He may use following strategies:

- (a) he may put an unbelieved premise/scheme in the conclusion of next simple argumentation,
- (b) he may reject an unbelieved premise/scheme and, in order to establish the same thesis, select other premise/scheme.

(1a) **Example 6.** Weronika and Grzegorz talk about the situation in the job market in Poland. Grzegorz claims that soon the employment rate will accelerate (this is the thesis of first simple argumentation which will be symbolized as thesis<sub>1</sub>), because Polish businesses have started to be more competitive (argument<sub>1</sub>). Weronika agrees that the thesis<sub>1</sub> can be derived from argument<sub>1</sub> i.e. she believes the scheme<sub>1</sub>: “*If in some country businesses start to become more competitive, then in this country the employment rate will accelerate*”. But she disagrees with argument<sub>1</sub>. That is why Grzegorz makes up his mind to present a second simple argumentation, in which he is going to convince Weronika to accept argument<sub>1</sub>: Polish businesses are more competitive (thesis<sub>2</sub>), because for some time wages in Poland have been going up slower than productivity (argument<sub>2</sub>). Weronika accepts the argument<sub>2</sub> as well as the scheme<sub>2</sub> that lays the foundation for derivation process: “*If wages in some country go up slower than productivity, then businesses will be more competitive in this country*”. Following our theorem she will also acknowledge thesis<sub>2</sub>. Notice here that thesis<sub>2</sub>=argument<sub>1</sub>. Hence in effect she will acknowledge the premise of first simple argumentation. And because all the time she believes derivational scheme of argumentation<sub>1</sub> then ultimately (according to the

theorem) she will believe thesis<sub>1</sub>. So argumentation becomes efficient. In the end Grzegorz convinced Weronika to his main opinion: the employment rate in Poland will soon accelerate.

(1b) **Example 7.** Weronika and Grzegorz have changed the subject of the discussion – now the topic is Microsoft. Weronika claims that this company advocates monopolistic activities (thesis<sub>1</sub>), because it denied Sun Microsystems access to the information allowing the introduction of compatible products along with the products of Microsoft (argument<sub>1</sub>). But Grzegorz does not think that this creates a sufficient basis for such a “severe” criticism of Microsoft. So Weronika presents another simple argumentation: Microsoft is in favor of monopolistic activities (thesis<sub>2</sub>), because, since this company supplied Windows system with a multimedia player as a free bonus, which practically deprived competition of any chances of selling similar products (argument<sub>2</sub>). Let us assume that Grzegorz accepts argument<sub>2</sub> and scheme<sub>2</sub>. In consequence he will believe also thesis<sub>2</sub>. And because thesis<sub>2</sub>=thesis<sub>1</sub> then as a result he will also accept thesis<sub>1</sub>. So finally the complex persuasion of Weronika will be efficient.

(2) In the second type of complex discussion, the next simple argumentation is carried out, when the opponent makes an active effort to convince the audience of his opinions. In such cases, he is not satisfied with disagreement over proponent thesis, but he presents his own simple argumentation. Such dispute consists of a counterargumentation, in which the opponent trades places with proponent of the previous simple argumentation.

**Example 8.** During the conference two professors argue about the methods of government to rule the country. Professor X convinces participants that the field of political decisions is unlimited (thesis<sub>1</sub>), since the main subject of government decisions is political nation (argument<sub>1</sub>). The audience believes the premise and the scheme of this argumentation. Thus following our theorem in the end of this argumentation<sub>1</sub> the audience also believes thesis<sub>1</sub>. But Professor Y is not going to give up without a fight. He comes up with the following counterargumentation: the field of political decisions cannot be unlimited (thesis<sub>2</sub>), because in such a case we will have to accept the concept of totalitarian democracy and the tyranny of the majority (argument<sub>2</sub>).

Notice that proponent<sub>1</sub>=opponent<sub>2</sub> and opponent<sub>1</sub>=proponent<sub>2</sub>, but audytorium<sub>1</sub>=audytorium<sub>2</sub>. Let us assume that this counterargumentation “hits the target” – the participants of the conference refused to accept totalitarianism and tyranny. Therefore, following our theorem, the audience believes thesis<sub>2</sub>. However, when believing thesis<sub>2</sub> the audience cannot at the same time believe a contradictory sentence i.e. thesis<sub>1</sub> (thesis<sub>2</sub>='not-thesis<sub>1</sub>'). That is why by the end of

the counterargumentation the audience will stop believing thesis<sub>1</sub>, even though it believed this very sentence by the end of the previous simple argumentation<sub>1</sub>. So in spite of the fact that Professor X won the first round, the overall winner of the “bout” was Professor Y.

**Definition 3.** *The complex argumentation is efficient* with regard to the proponent *P* and the audience *Aud* if and only if in the end of the discussion *Aud* believes the conclusion of *P*, while this thesis is neither a premise nor a scheme of another simple argumentation in this complex discussion.

In the example 6 the complex argumentation is efficient, because the audience (Weronika) accepted thesis<sub>1</sub> of proponent (Grzegorz) and this sentence was neither premise nor scheme of another simple argumentation. When determining the efficiency of the whole discussion we will not consider that Weronika believes thesis<sub>2</sub>, because that sentence was the premise of argumentation<sub>1</sub>. This makes us think that Grzegorz was convincing for thesis<sub>2</sub> only “accessorily” – aiming to make Weronika believe his main opinion i.e. thesis<sub>1</sub>. In the example 7 the complex argumentation was efficient, because even though the audience (Grzegorz) had disapproved thesis<sub>1</sub> in the end of argumentation<sub>1</sub>, it had approved it in the end of whole discussion (after argumentation<sub>2</sub>). In example 8 the whole complex argumentation was efficient with regard to Professor Y, even though the audience also believed the thesis of Professor X. However, in the final moment of the discussion the audience believed thesis<sub>2</sub> of Professor Y, what “canceled” belief in the thesis<sub>1</sub> of Professor X.

(iii) So in order to efficiently convince, it is sufficient that the audience believes our arguments and derivational scheme. But what can we do to make the audience believe it? The proponent may increase chances to achieve his goal by selecting the premises and the derivation scheme that belong to: (a) popular sentiments or (b) the set of audience beliefs.<sup>7</sup> The proponent may take advantage of beliefs shared by everybody or by a majority of people, such as: “*Good is positive value*”, “*Aristocrats have/had good manners*”, “*Children love candies*”. If in a specific argumentation the proponent is not able to select such opinions that on the one hand are “common” and on the other hand – are related to the discussed subject, then he must switch

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<sup>7</sup> Of course there are many other „catches” (“tricks”) which enable influence on human beliefs e.g. “denial through approval” (“*Absolutely yes, but...*”), or the use of body language etc. However, they are not the subject of logic, but of other sciences (psychology, sociology), so we will just mention them without further elaboration.

over to another strategy. In the literature the application of preparatory knowledge concerning audience beliefs seems at this point to be a very important problem [Perelman, 1984, p. 149]. If the proponent has such knowledge at his disposal, then it is nothing easier for him to ensure efficiency – it is enough to select as arguments and scheme such sentences that he knows belong to the set of audience beliefs. Then the audience will be “forced” to believe the proponent thesis (following our theorem).

Preparatory knowledge should refer to:

- (1) sentences included in the set of audience beliefs – in particular to this subset which describes the subject under dispute,
- (2) sentences not included in the set of audience beliefs,
- (3) sentences “neutral” with respect to audience opinions,
- (4) degrees of subjective probability that audience assigns to their individual views.

(1) Hence to achieve efficiency of persuasion it is sufficient that the proponent makes his selection of premises and scheme dependent only on the audience set of beliefs relying on his preparatory knowledge. The proponent does not have to follow either truthfulness or high statistical probability of these sentences (then the argument does not satisfy the condition *logos*) or his own beliefs (then it does not satisfy the condition *ethos*). But the fact that the proponent is guided by his knowledge of beliefs of the audience does not have to mean that the argument will be dishonest. Note that an argument can satisfy condition *ethos* and at the same time it aims at efficiency, as long as premises and scheme belong to common part of the audience beliefs and his beliefs (i.e. to the intersection of these two sets).<sup>8</sup>

The proponent may acquire knowledge of the group’s beliefs in a variety of methods. One of them is to determine whether the audience represents some group whose beliefs he is aware of. This type of argument in literature is called “argument *ad populum*”. It is possible then to choose the appropriate premises and scheme “targeting” feminist, radical church movements, young environmentalists etc. The proponent may presume that since the given sentence belongs to beliefs of the group, i.e. is accepted by this group, then, as a result, it will be accepted by its representatives – his audience.

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<sup>8</sup> Brockriede claims that dispute will not be settled as long as both proponent and opponent do not share common beliefs in the optimal degree. Since a discussion does not make sense not only when the beliefs of the dispute parties do not differ much from each other, but also when they are highly different [Brockriede, 1992, p. 77].

(2) The preparatory knowledge may also indicate to the proponent as to which sentences not to select as premises or deriving schemes. He is not supposed to choose the sentences to which contradictory sentences belongs to audience beliefs. If the proponent knows that his audience believes the sentence: “*In a few years the pensions in Poland will not be acceptable*” then he may presume that the audience does not believe the contradictory sentence: “*In a few years the pensions in Poland will be acceptable*”. So from the point of view of efficiency it would be pointless to use this second sentence in argumentation.

(3) Some other benefits result from knowledge concerning sentences, which are “neutral” with regard to the audience set of beliefs. These are the expressions, which neither are approved nor disapproved by this group, simply speaking, the expressions to which the group has an indifferent attitude.<sup>9</sup>

How different does the proponent perceive the above mentioned types of sentences (of type 2 and 3)? If the audience believes a sentence contradictory to the argument presented by the proponent, then the audience will not accept this very argument. The only rational solution in that situation would be to present another simple argumentation in which an unaccepted argument is a conclusion. Had such an argumentation proved to be effective, the audience would be “forced” to change its opinions in favor of the proponent. However, additional argumentation is not necessary with regards to “neutral” sentences. The audience may easily change its attitude in the course of an argumentation.

(4) The preparatory knowledge should also refer to psychological probability degrees assigned by the audience to their opinions, as it is of crucial importance to support the discussion with statements of the highest certainty degree with the audience.

Of course the proponent argumentation will be efficient only when his knowledge concerning audience beliefs turns out to correspond to real beliefs of the group.

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<sup>9</sup> The situation described as one of most beneficial in negotiations from viewpoint of its effectiveness is the one in which the audience does not have formulated opinion in subject for which the proponent persuades [Myśliwiec, 1999, p. 119].

## PART FOUR

### WHAT IF WE CARE MORE TO FIND THE TRUTH THAN TO WIN A DISPUTE?

In the last part of the article I would like to talk about theoretical goals, which may guide a discussion. Thus I will present: (i) inheritance of believing on the subjective level, (ii) inheritance of truthfulness on the objective level, and (iii) the point of contact of these levels i.e. an area where beliefs meet the truth.

(i) What is the difference between argumentation and other types of thinking (reasoning)? The most important thing in cognition is that the conclusion believed as true is actually true. We can be sure then that our conclusions, new information, we introduce into our knowledge of the world, are the real description of this world.<sup>10</sup> It looks quite different in argumentation – as its main goal is not a search of truth, but a persuasion the audience to believe that something is true. The most important here is subjective side – human convictions about reality and not what objectively happens in this reality. This “subjective” purpose of persuasion may be executed by means of appropriate selection of premises and deriving scheme, because in argumentation *believing in truthfulness/rightness is inherited* by the conclusion from premises. If Kuba accepts that Americans possess crushing military power and that there is the relation between overwhelming forces of some group and its victory then he will accept that Americans will win the war with the world terrorism. In other words the conclusion: “*Americans will win the war with the world terrorism*” inherits Kuba’s belief from premises: “*Americans possess crushing military power*”.

(ii) Let us now turn in our considerations from subjective level of beliefs and images of reality to the objective level of reality itself. I mentioned that the most important thing in cognition was the arrival at the true conclusions. From this point of view a deduction seems to be the “finest” method, because in this very case a conclusion always *inherits truthfulness* from its premises. For instance – let us assume it is true that it is raining in Warsaw. Prior to the start of reasoning I possess the news about the weather in the capitol, however I do not know

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<sup>10</sup> According to some cognitive psychologists, the reason for which humans are interested in drawing conclusions is their truthfulness, what in effect facilitates problem solving and decision making processes – two of the crucial cognitive operations. Fulfillment of such a function of reasoning is possible only because true conclusion “represents” with reliable probability the facts which do or will really happen and therefore allows us to predict what action we should undertake to achieve our goals. [Leighton J.P., 2004, p. 4-5]

(just inquire) if there is wet or not. Basing on my present knowledge I can conclude that: “*It is now wet in Warsaw*”. Since what we deal here with is a deduction it is warranted in 100% that my conclusion is true.<sup>11</sup> In other words the conclusion: “*It is now wet in Warsaw*” inherits truthfulness from its premises: “*It is now raining in Warsaw*”.

However, a deduction has one serious disadvantage – it is founded upon general schemes. And those are not always at our disposal – most often only with regard to such simple fields of reality as in the above example (“*If in a certain place and certain time it is raining then in this place and that time it is wet*”). In these fields where general schemes do not exist, the schemes available to us are: (▣) highly probable, (▢) probable in some degree or (■) invalid.<sup>12</sup>

The first type of schemes describes statistical relations. Since the reasoning is founded on such scheme then it is highly probable that we will obtain true conclusion from true premises i.e. truthfulness will be almost always inherited by the conclusion from the premises. A situation like that occurred in the example concerning a nodding motion of the head. If we apply the scheme to conclude about the intentions of our partner in conversation then most of the times our reasoning will be correct. But chances are that when we use that scheme for instance towards a Bulgarian it may lead us to a wrong interpretation of his behavior (to false conclusion).

In case of reasoning based on statistically probable schemes, truthfulness will be inherited in a same degree as the scheme probability is. If the statistical probability of the relation described by the derivational foundation equals 0.3, then it is warranted that in 3 reasonings out of 10 – true conclusion will be derived from true premises.

Notice that the probability of obtaining true conclusion can be increased in argumentation by providing some additional premises.

**Example 10.** Two women talk about marriage of their friend Maria: “*I’m telling you – they have family problems as in every marriage*”. So the convincing person takes scheme<sub>1</sub> as the deriving foundation: “*If some couple is married then this couple has family problems*”. This scheme is not highly probable. So the woman offers immediately other arguments: “*I have noticed that these days Maria stays late at work, started to volunteer for business trips and seems to be somehow different – she looks depressed*

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<sup>11</sup> In this reasoning there exists hidden premise: “*If it is raining at some place and time, then it is wet at that moment and place*”. So, the reasoning has the scheme of *Modus Ponendo Ponens*, and therefore it is deductive.

<sup>12</sup> This is one of the reasons why we evaluate some argumentations as stronger and others as weaker. See: [Szymanek K., Wiczorek K.A., Wójcik A.S., 2003, p. 43]

*all the time*”. The offered premises “support” the premise included in the first argumentation and simultaneously there is a change of derivation foundation – for scheme<sub>2</sub>: “*If one of the spouses stays late at work, starts to volunteer for business trips and (...) then the married couple has family problems*”. The relation described by the scheme<sub>2</sub> has higher statistical probability than scheme<sub>1</sub>, that is why probability of obtaining true conclusion in this argumentation gets higher.

In pieces of reasoning built on invalid schemes we have no guarantee that the conclusion, derived from true premises, will also be true. In other words – a conclusion never inherits truthfulness from its premises.<sup>13</sup>

From the objective point of view it is possible to determine following schemes, which make a foundation for deriving sentences in argumentation:

- *schemes generally valid*: a conclusion always inherits truthfulness,
- *schemes highly probable*: a conclusion almost always inherits truthfulness,
- *schemes not highly probable*: a conclusion sometimes inherits truthfulness,
- *schemes invalid*: a conclusion never inherits truthfulness.

What argumentation differs from the reasoning typical for science is the use of the schemes, above all, probable. The point is that most often we discuss or argue about the things that are uncertain and complicated and not the ones that are simple, obvious or proved.

**(iii)** Let us try now in our considerations to **connect these two levels**. We know already that in terms of the efficiency of the argumentation, the proponent does not have to take into account if objectively the scheme he chosen is general/highly probable or if it is invalid – as long as for any reasons it is subjectively believed as such by the audience. Obviously such an approach from ethical point of view is amoral and from the cognitive point of view – of no value. However, the proponent, who takes it into consideration and has honest intentions, limits this way his “area of activity”. To start with, by choosing an appropriate strategy of argumentation he is forced to use the narrower group of derivational foundations – only the ones contained in the set of general/high probable schemes. Despite of limited field of selection both the proponent and the audience have a guarantee that they will find (always or

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<sup>13</sup> This does not imply that the conclusion of such reasoning cannot be true. However upon these circumstances the truthfulness of the conclusion would be just a pure coincidence. “The placement” of true sentence in the conclusion of reasoning would have nothing in common with truthfulness of premises. It could happen in *Reas.2a* if it turned out that Kowalski really was guilty. Nevertheless the truthfulness of the sentence would not be determined on the basis of premise:  $2+2=4$ .

almost always) true conclusions with the help of true premises. In the second place, cannot be denied that we always argue to sell our personal viewpoint represented at a given moment of discussion. The honest proponent must limit this viewpoint to the approved by himself set of his beliefs (he must accept expressed opinions in strict way). As far as his intentions are concerned, persuasion to his own opinions will then be the same as the persuasion to the truth, because just like everyone else, he too will think that his images of reality match the reality itself. Have both these limitations been met, the discussion will no longer be mere challenge for parties of dispute, but will also achieve higher cognitive goals. Accordingly its purpose will be a subjective conviction and furthermore objective quest for “eternal” truth.

Will the use of the general/high probable schemes in her/his argumentation guarantee the proponent that his persuasion is effective? In other words: will the fulfillment of “objective” condition result in fulfillment of “subjective” condition? No – it just warrants that obtained conclusion is true (certainly or almost certainly). However, if the audience does not believe derivation scheme in the way it is in reality then a condition sufficient to achieve efficiency of argumentation (defined in the theorem) will not be met. So in effect – the audience will not necessarily accept proponent thesis. A similar situation will take place when the audience will not acknowledge in argumentation the premise that really is true. As the result we come to the conclusion known every person that deals with persuasion in everyday life: honest argumentation is not always efficient one.

The above question can be “reversed” - does the use of the scheme believed by the audience as generally valid guarantee obtaining the true conclusion from true premises? In other words: will the fulfillment of “subjective” condition result in fulfillment of “objective” condition? The answer is: not, again. Let us assume that the premise and the scheme, which in the reality is neither general nor high probable, are believed by the audience. Thus the audience will believe proponent thesis. But the thesis as such does not need to be true, as for instance when premises were true, but the scheme were invalid. The proponent might have applied perhaps catchy, but low probable and cognitively useless scheme.

So the argumentation may be considered on two different, independent levels. The subjective level is essential foundation of all persuasion – every time we aim to make the audience believe our opinions. The second level is an objective field, where we can consider if the given argumentation will lead us to true or false conclusions. These two levels, though acting apart from each other, may at the same time interact with each other in a discussion. And

then surprisingly – the truth will not only be an issue of logic, but also of proponents ethics – it will be determined by the selection of premises/scheme made by the proponent in his argumentation: if he chooses those true/general or catchy, but false/low probable ones.

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