An Analysis of the Dispute

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Abstract: The goals of the paper are: to build a general model of the discussion; to define in a clear manner the phenomenon regularly called "dispute"; to define the argument and to build a model of the argumentation; to identify, to classify and to analyze the frequent logical mistakes in dispute/argumentation.
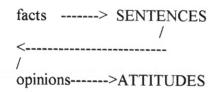
The intended audience is the average reader, with no special training in Logic, Mathematics, etc.

1. Building A General Model of the Discussion

The model is based solely on the observable, measurable parameters encountered in a discussion:

    a) the **sentences** uttered by the participants, and

    b) their explicitly expressed **attitudes** regarding the truth of the sentences.

The sentences assert something about some facts, but the facts themselves cannot be verified and are beyond the scope of this study. Similarly, the attitudes (regarding the truth of the sentences) derive from opinions, but the opinions, the real thoughts of the participants, cannot be observed:

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facts  ------> SENTENCES
                    /
<--------------------------
 /
opinions------->ATTITUDES
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                only sentences and
          attitudes can be observed

With respect to a sentence, the model considers three possible attitudes:

— true ("I agree that...")

— false ("I disagree that...")

— undecided ("Well, it could be so, or it could be otherwise... I don't know...")

As shown above, these attitudes are not necessarily the real beliefs of the participants – they only act **as if** they thought that way.

Given a sentence S and two participants in a discussion, they could:

— disagree upon S (one has the attitude "true", the other "false") – we call this **dispute** with subject S;

— agree upon S (both have the same attitude, be it "true", "false" or "undecided") – we call this **consensus** with subject S;

— have different degrees of certainty regarding S (one has an undecided attitude, the other is decided to consider it either false or true) – we call this **inducement** with subject S; the undecided participant is the **spectator**, and the decided one is the **advocate**.

These definitions cover all the possible relationships between two participants – which means that with respect to a sentence, two participants can engage either in a dispute, in a consensus or in an inducement.

If a participant changes his attitude regarding a sentence S, we say that he makes a **transition** with respect to S. Considering two participants, a transition made by one of them will change the type of discussion. This leads to a practical criterion for detecting the end of a dispute, a consensus or an inducement:

A dispute (or a consensus, or an inducement) between two participants reaches an end whenever one of them makes a transition with respect to the subject of the discussion.

In a dispute, we define **the winner** as the participant who makes no transition; an **absolute victory** occurs whenever one of the participants agrees with the other's attitude (which leads to consensus); a **relative victory** occurs whenever one of the participants retreats in uncertainty (which leads to inducement). An inducement generates asymmetrical victories: if

the spectator accepts the advocate's attitude, we call it **the advocate's victory** (which leads to consensus); if the spectator comes to the opposite conclusion, it is **the advocate's failure** (which leads to dispute); if the advocate becomes undecided, it is **the spectator's victory** (which leads again to consensus).

For more than two participants, there can be only one additional type of discussion: **the debate**. A debate occurs when all the three types of attitudes (regarding a sentence S) are present: some say S is true, some say S is false, and some do not know what to say. We call these groups **the pro-advocate**, **the counter-advocate**, and **the spectator** (these are the three participants in a debate). Similarly to the other three types of discussion, the debate ends whenever one of the participants makes a transition. (It is interesting to note that a transition can lead from debate to dispute or to inducement, but not to consensus).

For a better understanding of the notions defined here, let us take an example: Let us suppose X says "This wall is white" and Y says "This wall is red." This is not a dispute, because there is no sentence triggering opposite attitudes. If X adds "Red, you say? That's not true!," then we have opposite attitudes and a dispute with the subject "The wall is red." Now, if Y adds "I disagree: the wall is definitely not white," we will have two disputes: one with the subject "The wall is red," and a second one with the subject "The wall is white." This is what we call **associated disputes**. They have a **swivel**: "This wall is .....*(colour).......*" X claims the swivel is satisfied by "white", and Y claims it is satisfied by "red".

The solutions of the associated disputes are not necessarily connected:

— X and Y could finally come to the conclusion "The wall is neither white, nor red, but is pink," which means each of them loses the dispute he/she started;

— X and Y could finally agree that "On this side, the wall is red, and on the other side, it's white," which means that each participant wins the dispute he/she started.

In other words, if X wins (or loses) his dispute, that does not necessarily mean Y loses (or wins) his own dispute.

Another important thing to notice is that a dispute does not necessarily end by reaching consensus. If X finally says "Well, I don't know any more if the wall is white or not," this means the dispute "The wall is white" has ended. Y won a relative victory and this dispute became an inducement. Y might want to continue to persuade X towards his position, but he might also be satisfied with his relative victory in the dispute and stop the discussion, leaving the inducement unsolved.

2. Defining the Argument and Building A Model of the Argumentation

An **argument** is a logical conjunction between two sentences:

S: an implication between two predicates: $B(x) \Rightarrow C(x)$, and

B: a sentence $B(a)$, obtained from $B(x)$ by assigning the value a to the variable x.

We call S **the structure** of the argument and B **the base** of the argument. $C(a)$ is **the conclusion** of the argument (note that it is not part of the argument).

Given a sentence C, supported by an argument A, we call this pair (C, A) **an allegation**. We furthermore define:

- a **counter-argument** is an argument A' having the conclusion non-C;

- an **objection** is non-A;

- a **rejection** is an argument with the conclusion non-A (in other words, an objection supported by an argument); there are **base rejections** (concluding non-B) and **structure rejections** (concluding non-S).

If one wants to fight an allegation (A,C), he must complete two tasks:

1) to show that C is false (i.e. to find a counter-argument), and

2) to show that A is wrong (i.e. to find a rejection).

This means an allegation can be destroyed only by a counter-argument **and** a rejection. One of them alone is not enough.

3. Identifying, Classifying and Analyzing the Frequent Logical Mistakes in Dispute/Argumentation

One of the sources of frequent mistakes is the language itself.

For example, ask someone to express the negation of the implication "If A happens, then B will follow". You will notice the natural attempt of inserting somewhere a negation (such as "If A **does not** happen, then B will follow," or "If A happens, then B **will not** follow," or even "If A **does not** happen, then B **will not** follow."). The trouble is that the negation of an implication cannot be phrased in terms of "if..., then..."

Another example is given by the equivalence: the implication does not pass falsehood (from A => B it is wrong to infer non-A => non-B), but the equivalence does pass falsehood (from A <=> B it is correct to infer non-A <=> non-B). Unfortunately, the equivalence is often phrased like a plain implication; encountering such an "implication" and seeing it transfer falsehood, one concludes that implications generally act in this manner. For example, when Mom says "You are allowed to go out and play with the kids if you drink all your milk," the boy sees that he isn't allowed to go out if he doesn't drink all his milk. This leads him to the wrong conclusion that "B if A" also means "not B if not A." What Mom intended to say was not a plain implication, but an equivalence: "You are allowed to go out and play with the kids **only if** you drink all your milk."

The word "counter-example" can also lead to misconceptions: let us suppose John is trying to prove that "Any X is P," and I disagree with him. I can "attack" his sentence using a counter-example: "Look, this particular X, namely A, is not P, so you're wrong." Seeing that a counter-example can destroy a universal sentence, John might reason that the opposite of a counter-example (i.e. an example) will have an opposite effect (i.e. it could prove a universal sentence).. So he will try to bring tens of examples, hoping to convince me this way.

Other possible error sources are:

— the incorrect identification of the subject (for a dispute or inducement);

— mixing up a simple dispute with two associated disputes;

— reasoning such as "I destroyed your argument, so your conclusion is wrong".

4. Conclusions

1. It is possible to build a model of the discussion without referring to the "meaning" of sentences. Also, thinking of attitudes as of real beliefs of participants is not necessary. Neither is it to consider that sentences are "true" or "false". This proves that the inner mechanism of discussion is not related to notions such as "meaning", "truth" or "opinion"- the discussion can be studied solely in terms of sentences and formal attitudes regarding the sentences.

These apparently poor "bricks" can build a relatively powerful model, with results such as:

— there are only three types of discussion: dispute, inducement and consensus (plus a fourth type-debate-for more than two participants). Any discussion falls in one of these categories;

— it is wrong to think that a dispute ends only when the participants reach consensus. A dispute ends when the participants do not have opposite attitudes any more-and this can happen if one of them switches from "I disagree" to "I don't know what to say", for example.

2. An analysis of the argumentation shows that if one claims the sentence C is true, bringing the argument A for this, then this allegation-i.e. the pair (A,C) -can be fought only by "attacking" simultaneously both the sentence C and the argument A. Fighting only one of them is not enough.

3. Many logical mistakes in argumentation occur because the natural language does not always have proper means to express logical notions such as implication, equivalence, etc.

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