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THE CRITIC OF ARGUMENTS.

I. EXACT THINKING.

BY CHARLES S. PEIRCE.

"CRITIC" is a word used by Locke in English, by Kant in German, and by Plato in Greek, to signify the art of judging, being formed like "logic." I should shrink from heading my papers *Logic*, because logic, as it is set forth in the treatises, is an art far worse than useless, making a man captious about trifles and neglectful of weightier matters, condemning every inference really valuable and admitting only such as are really childish.

It is naughty to do what mamma forbids;
Now, mamma forbids me to cut off my hair;
Therefore, it would be naughty for me to cut off my hair.

This is the type of reasoning to which the treatises profess to reduce all the reasonings which they approve. Reasoning from authority does, indeed, come to that, and in a broad sense of the word authority, such reasoning only. This reminds us that the logic of the treatises is, in the main, a heritage from the ages of faith and obedience, when the highest philosophy was conceived to lie in making everything depend upon authority. Though few men and none of the less sophisticated minds of the other sex ever, nowadays, plunge into the darkling flood of the medieval commentaries, and fewer still dive deep enough to touch bottom, everybody has received the impression they are full of syllogistic reasoning; and this impression is correct. The syllogistic logic truly reflects the sort of reasoning in which the men of the middle ages sincerely put their trust; and yet it is not true that even scholastic theology was sufficiently prostrate before its authorities to have possibly been, in the main, a product of ordinary syllogistic thinking. Nothing can be imagined more strongly marked in its distinctive character than the method of discussion of the old doctors. Their one recipe for any case of difficulty was a distinction. That drawn, they would proceed to show that the difficulties were in force against every member of it but one. Therein all their labor of thinking lies, and thence comes all that makes their philosophy what it is. Without pretending, then, to pronounce the last word on the character of their thought,

we may, at least, say it was not, in their sense, syllogistic; since in place of syllogisms it is rather characterised by the use of such forms as the following:

Everything is either *F* or *M*;
S is not *M*;
∴ *S* is *F*.

This is commonly called disjunctive reasoning; but, for reasons which it would be too long to explain in full, I prefer to term it dilemmatic reasoning. Such modes of inference are, essentially, of the same character as the dilemma. Indeed, the regular stock example of the dilemma (for the logicians, in their gregariousness, follow their leader even down to the examples), though we find it set down in the second-century commonplace-book of Aulus Gellius, has quite the ring of a scholastic disquisition. The question, in this example, is, ought one to take a wife? In answering it, we first distinguish in regard to wives (and I seem to hear the Doctor subtilissimus saying: *primo distinguendum est de hoc nomine uxor*). A wife may mean a plain or a pretty wife. Now, a plain wife does not satisfy her husband; so one ought not to take a plain wife. But a pretty wife is a perpetual source of jealousy; so one ought still less to take a pretty wife. In sum, one ought to take no wife, at all. It may seem strange that the dilemma is not mentioned in a single medieval logic. It first appears in the "De Dialectica" of Rudolph Agricola.* But it should surprise nobody that the most characteristic form of demonstrative reasoning of those ages is left unnoticed in their logical treatises. The best of such works, at all epochs, though they reflect in some measure contemporary modes of thought, have always been considerably behind their times. For the methods of thinking that are living activities in men are not objects of reflective consciousness. They baffle the student, because they are a part of himself.

"Of thine eye I am eye-beam,"

says Emerson's sphynx. The methods of thinking men consciously admire are different from, and often, in some respects, inferior to those they actually employ. Besides, it is apparent enough, even to one

* Or possibly in some other Renaissance writing. My memory may deceive me; and my library is precious small.

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who only knows the works of the modern logicians, that their predecessors can have been little given to seeing out of their own eyes, since, had they been so, their sequacious successors would have been religiously bound to follow suit.

One has to confess that writers of logic-books have been, themselves, with rare exceptions, but shambling reasoners. How wilt thou say to thy brother, Let me pull out the mote out of thine eye; and behold, a beam is in thine own eye? I fear it has to be said of philosophers at large, both small and great, that their reasoning is so loose and fallacious, that the like in mathematics, in political economy, or in physical science, would be received in derision or simple scorn. When, in my teens, I was first reading the masterpieces of Kant, Hobbes, and other great thinkers, my father, who was a mathematician, and who, if not an analyst of thought, at least never failed to draw the correct conclusion from given premisses, unless by a mere slip, would induce me to repeat to him the demonstrations of the philosophers, and in a very few words would usually rip them up and show them empty. In that way, the bad habits of thinking that would otherwise have been indelibly impressed upon me by those mighty powers, were, I hope, in some measure, overcome. Certainly, I believe the best thing for a fledgling philosopher is a close companionship with a stalwart practical reasoner.

How often do we hear it said that the study of philosophy requires *hard thinking*! But I am rather inclined to think a man will never begin to reason well about such subjects, till he has conquered the natural impulse to making spasmodic efforts of mind. In mathematics, the complexity of the problems renders it often a little difficult to hold all the different elements of our mental diagrams in their right places. In a certain sense, therefore, hard thinking is occasionally requisite in that discipline. But metaphysical philosophy does not present any such complications, and has no work that *hard thinking* can do. What is needed above all, for metaphysics, is thorough and mature thinking; and the particular requisite to success in the critic of arguments is exact and diagrammatic thinking.

To illustrate my meaning, and at the same time to justify myself, in some degree, for conceding all I have to the prejudice of logicians, I will devote the residue of the space which I can venture to occupy to-day, to the examination of a statement which has often been made by logicians, and often dissented from, but which I have never seen treated otherwise than as a position quite possible for a reputable logician. I mean the statement that the principle of identity is the necessary and sufficient condition of the validity of all affirmative syllogisms, and that the prin-

ciples of contradiction and excluded middle, constitute the additional necessary and sufficient conditions for the validity of negative syllogisms. The principle of identity, expressed by the formula "*A is A*," states that the relation of subject to predicate is a relation which every term bears to itself. The principle of contradiction, expressed by the formula "*A is not not A*," might be understood in three different senses; first, that any term is in the relation of negation to whatever term is in that relation to it, which is as much as to say that the relation of negation is its own converse; second, that no term is in the relation of negation to itself; third, that every term is in the relation of negation to everything but itself. But the first meaning is the best, since from it the other two readily follow as corollaries. The principle of excluded middle, expressed by the formula "*Not not A is A*," may also be understood in three senses; first, that every term, *A*, is predicable of anything that is in the relation of negation to a term which is in the same relation to it, *A*; second, that the objects of which any term, *A*, is predicable together with those of which the negative of *A* is predicable together make up all the objects possible; third, that every term, *A*, is predicable of whatever is in the relation of negation to everything but *A*. But, as before, the first meaning is to be preferred, since from it the others are immediately deducible.

There is but one mood of universal affirmative syllogism. It is called *Barbara*, and runs thus:

Any *M* is *P*;
Any *S* is *M*;
∴ Any *S* is *P*.

Now the question is, what one of the properties of the relation of subject to predicate is it, with the destruction of which alone this form of inference ceases invariably to yield a true conclusion from true premisses? To find that out the obvious way is to destroy all the properties of the relation in question, so as to make it an entirely different relation, and then note what condition this relation must satisfy in order to make the inference valid. Putting *loves* in place of *is*, we get:

M loves *P*;
S loves *M*;
∴ *S* loves *P*.

That this should be universally true, it is necessary that every lover should love whatever his beloved loves. A relation of which the like is true is called a *transitive* relation. Accordingly, the condition of the validity of *Barbara* is that the relation expressed by the copula should be a transitive relation. This statement was first accurately made by De Morgan; but it is in substantial agreement with the doctrine of

Aristotle. The analogue of the principle of identity, when *loves* is the copula of the proposition, is that everybody loves himself. This would plainly not suffice of itself to make the inferential form valid; nor would its being false prevent that form from being valid, provided loving were a transitive relation. Thus, by a little exact thinking, the principle of identity is clearly seen to be neither a sufficient nor a necessary condition for the truth of *Barbara*.

Let us now examine the negative syllogisms. The simplest of these is *Celarent*, which runs as follows:

Any *M* is not *P*;
Any *S* is *M*;
∴ Any *S* is not *P*.

Let us substitute *injures* for *is not*. Then the form becomes

Every *M* injures *P*;
Every *S* is *M*;
∴ Every *S* injures *P*.

This is a good inference, still, no matter what sort of relation *injuring* is. Consequently, this syllogism is dependent upon no property of negation, except that it expresses a relation. Let us, in the last form, substitute *loves* for *is*. Then, we get

M injures *P*;
S loves *M*;
∴ *S* injures *P*.

In order that this should hold good irrespective of the nature of the relation of *injuring*, it is necessary that nobody should love anybody but himself. A relation of that sort is called a *sibi-relation* or *concurrency*. The necessary and sufficient condition of the validity of *Celarent* is, then, that the copula should express a *sibi-relation*. This is *not* what the principle of identity expresses. Of course, every *sibi-relation* is transitive.

The next simplest of the universal negative syllogisms is *Camestres*, which runs thus:

Any *M* is *P*;
Any *S* is not *P*;
∴ Any *S* is not *M*.

Substitute *injures* for *is not*, and we get,

Every *M* is a *P*;
Every *S* injures every *P*;
∴ Every *S* injures every *M*.

This obviously holds because the *injuring* is to every one of the class injured. It would not do to reason,

Every *M* is a *P*;
Every *S* injures a *P*;
∴ Every *S* injures an *M*.

We see, then, that the principal reason of the validity of *Camestres* is that by *not*, we mean *not any*, and not

not some. In logical lingo, this is expressed by saying that negative predicates are distributed. But the condition that the copula expresses a *sibi-relation* is also involved.

The remaining universal negative syllogisms of the old enumeration, *Celantes* and *Cesare*, depend upon one principle. They are:

<i>Celantes</i>	<i>Cesare</i>
Any <i>M</i> is not <i>P</i> ;	Any <i>M</i> is not <i>P</i> ;
Any <i>S</i> is <i>M</i> ;	Any <i>S</i> is <i>P</i> ;
∴ Any <i>P</i> is not <i>S</i> .	∴ Any <i>S</i> is not <i>M</i> .

Substituting *fights* for *is not*, we get

Every *M* fights every *P*;
Every *S* is *M*;
∴ Every *P* fights every *M*.
Every *M* fights every *P*;
Every *S* is *P*;
∴ Every *S* fights every *M*.

What is requisite to the validity of these inferences is plainly that the relation expressed by *fights* should be its own converse, or that everything should fight whatever fights it. This is the analogue of the principle of contradiction.

We see, then, that the principles of universal syllogism of the ordinary sort are that the copula expresses a *sibi-relation*, not that it expresses an agreement, which is what the principle of identity states, and that the negative is its own converse, which is the law of contradiction.

The authors who say that the principle of identity governs affirmative syllogism give no proof of what they allege. We are expected to see it by "hard thinking." I fancy I can explain what this process of "hard thinking" is. By a spasm induced by self-hypnotisation you throw yourself into a state of mental vacancy. In this state the formula "*A is A*" loses its definite signification and seems quite empty. Being empty, it is regarded as wonderfully lofty and precious. Fired into enthusiasm by the contemplation of it, the subject, with one wild mental leap, throws himself into the belief that it must rule all human reason. Consequently, it is the principle of syllogism. If this is, as I suspect, what hard thinking means, it is of no use in philosophy.

As for the principle of excluded middle, the only syllogistic forms it governs are the dilemmatic ones.

Any not *P* is *M*;
Any *S* is not *M*;
∴ Any *S* is *P*.

Putting *admiring* for *not*, we have:

Everything admiring every *P* is an *M*;
Every *S* admires every *M*;
∴ Every *S* is a *P*.

To make this good, it must be that the only person who admires everybody that admires a given person is that person. This is the analogue of "everything not not *A* is *A*," which is the principle of excluded middle.

A STUDY OF FOLK-SONGS.

BY L. J. VANCE.

In the last number of the *Journal of American Folk-lore* the editor, Mr. Newell, says that "the time has not yet come for a comparative study of folk-song." It is argued that the materials for such a study are wanting. That may be so—in part. But many students of folk-lore will find the materials already gathered sufficient for their purposes; for example, to show the evolution of song. The evidence is about all in. If any branch of folk-lore has been thoroughly explored, and the results published, it is popular song. It is not likely that many new discoveries will be made to change commonly-accepted opinions on the subject.

The significance and value of folk-song are now pretty well understood. Whenever the folk-song has sprung up and flourished it has come from the life of the people, and has grown out of the soil they trod and ploughed. Hebrews, Greeks, and Romans all had these songs, and while the house-wives lightened their domestic labors with their country melodies, the men ploughed many a furrow to their tune, and forged the war-weapon to their rhythm. Centuries later the Mastersingers came and chanted rude poetic strains.

"As the weaver plied the shuttle, wove he too the mystic rhyme;
And the smith his iron measures hammered to the anvil's chime."

With the migration of the German, the warrior Teuton sang as he lived. The greater part of his life was devoted to hunting and fighting, broken into by rude enjoyment and wild revelry. Now and then his land-song was attuned in peaceful key, but more often urging the singer to battle-axe and oar with a dash and a vigor that made Roman enemies fear him as a fierce and cunning foe. It is strains such as these—strains which have sprung out of conflict and plundering expeditions, and out of the every-day joys and sorrows—that reflect human nature in its natural moods and aspects.

Mr. Darwin refers to that deep-seated instinct of man, which impels him in all moments of strong or intense feeling to break out into a kind of chant. Such emanations well up from the heart: the lover describing the charms of the maid, the sower casting seed, the reaper swinging his sickle, the shepherd minding his flock, the fisherman mending his nets, the soldier on the march, the mourner at the grave—these chanted a something, when music as an art still was not, and what such was is more or less faithfully reflected in *Volkslieder*, and in every country's national melodies.

Above all, folk-song tells of the existence and everyday life of the workers, in-door and out-door, and that has, for us, a special value and significance. It is the habit of uncultured peoples to break out into song at the slightest provocation. Many individuals can compose *extempore*. Thus the New Zealand singers describe passing events in *extempore* songs. The Dambarrans, says Park, lightened their labors with songs, "one of which was composed *extempore*, for I was the subject of it." The Kirghese in Asia, says the Rev. Dr. Lansdell, "have a keen appreciation of singing and improvisation. No young girl commands such admiration of men as one who is clever at singing repartee; and no men are so liked by the Kirghese girls as good and able singers."

In the lower stages of culture the *improvisatory* often claims to be inspired. He obtains his songs from spirits. In Australia the "song-makers" are Bira-arks, or Shamans. According to Mr. A. W. Howitt, the Bira-arks of the Kurnai tribe "profess to receive their inspiration from the ghosts (mrart) as well as the dances, which they were supposed to have seen first performed in ghostland." The Eskimos have singing-masters, who instruct both young and old in the ancient songs. The natives build large houses for singing. The master of the singing house is a *tornaq*, or spirit, with whom the Angakut, or Shaman, is supposed to be in communication.

Dr. Franz Boas, who has made a careful study of Eskimo songs, says that "the form of both old and new songs is very strict." There must be no deviation from the words and rhythms fixed for all time. According to the same authority, the Kwakiutl Indians of British Columbia are very particular in this respect, and any mistake made by a singer is considered opprobrious. "On certain occasions the singer who makes a mistake is killed." The savage, in the practice of his religion, regards song as a very serious matter. His medicine-men obtained the verses from the spirits, and they would be offended by any change.

Perhaps the most irregular kind of singing are the dirges, or "laments," which are chanted over the graves of the dead. And yet a comparative study of these mournful tunes, will show that the wailings of widely-separated people have elements in common. The rudest funeral chants consist simply of howlings and cryings and irregular callings. The words of a death dirge sung by the Senel Indians of California, as given by Mr. Powers, are as follows:

"Hel-lel-le-ly,
Hel-lel-la,
Hel-lel-lu."

The Basques of Spain ululate thus:

"Lelo-il-Lelo, Lelo dead Lelo
Lelo il Lelo
Lelo zarat, Lelo zara
Il Lelou killed Lelo."

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