

entertain a false opinion? Rubbish! There may be questions concerning which it is impossible deliberately to entertain false opinions. Nobody could well deliberately opine that there is no true opinion, - not, at any rate, unless he were a metaphysician. That arises from the fact that a deliberate opinion is ~~a~~ multiple opinion, - in fact, an endless series of opinions. For to entertain a deliberate opinion implies that one has an opinion that one has that opinion, and so on endlessly. Thus deliberately to opine that there is no opinion would lead at once to opine that there is and that there is not an opinion. This is not, properly speaking, a proposition, but is an absurdity. One may commit a mistake, supposing A to be B, when it is not; and then one may opine that ~~A~~ something true of A is not true of B, and thus may seem to entertain an absurd opinion. But one does not really do so. But all this does not touch

the reader's opinion, which simply is that a false proposition may ~~be~~ be feared as possibly possibly liable to appear as the conclusion of an argument.

What does the reader mean by a false and by a true proposition? This is a difficult ~~question~~ and disputed question. The different answers to it that are current are not false: they are only insufficient. They complement one another.

The first answer is this. In the first place, a proposition must not be confounded with an assertion or a judgment. An assertion is an act by which a person makes himself responsible for the truth of a proposition. Nobody ever asserted that the moon is made of green cheese; yet it is a familiar proposition. A judgment is a mental act by which one makes a resolution to adhere to a proposition as true, with all its logical consequences. In the next place,

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it is necessary to distinguish between a proposition
~~a sentence, i.e.,~~ and this or that expression of it, in writing, speech,
thought, etc. A sentence, in the sense here ~~meant~~,
is a single object. Every time it is copied or pronounced,
a new sentence is made. But a proposition is not
a single thing and cannot properly be said to have
any existence. Its mode of being consists in its
possibility. A proposition which might be expressed
has all the being that belongs to propositions although
nobody ever expresses it or thinks it. It is the same
proposition every time it is thought, or ^{spoken,} or ~~expressed~~ written,
whether in English, German, or Spanish, Tagalog, or
how. A proposition consists in a meaning, whether
adopted or not, and however expressed. That meaning
is the meaning of any sign which should signify that

a certain iconic ~~or imaginary~~ ^{sign or} representation, or image,
(or any equivalent of it)
is a sign of something indicated by a certain indexed

Illustrate this, any sign, or any equivalent thereof. To exhibit the mean-
sentence will answer. Take this:

"Go your way into the village which is over against
~~us~~, in the which as ye enter, ye shall find an ass
tied and a colt with her ~~on the sheep~~ ^{whereon} no man
ever yet sat."

As this was said by Jesus to two of his disciples, it
created in their imagination the picture of an ass
tied ~~with~~ and accompanied by a young colt. That
picture was the icon which the definition mentions.

What ^{was} this a picture of? He attached a legend to it in
this way. They were standing looking at the village.
Now, says Jesus, you cannot see the colt from where
we stand, but ~~you~~ go there, and as you enter the
village, look about; and you will see what I describe.
That injunction put a force upon them which tended
to direct their attention to what ~~as~~ Jesus was talking

about. It acted as an indicating sign or indication. The passage will furnish ^{two} further illustrations of the sense of the definition, since ~~there are~~ two other propositions are contained in it. One of these is that no man had ever yet sat upon that colt. Here the iconic sign is any diagram representing negation. Probably every person has his own way, or ways, of picturing negation to himself. ~~The~~ A proposition never prescribes any particular mode of iconization, although the form of expression may suggest some mode. Here, however, the two disciples are left to picture negation in their own fashions. That another might have been to think one transparent image overlaying another and not matching it. Or two separate dots might be pictured as a diagram of non-identity, and each dot might be pictured as having a ~~thin~~ thread running from it to an image of anything identical with it. They were now to think that they would

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be allowed to select any instant of the colt's life they like, and get information of what its situation was at that instant - to get a photograph of it, at that time, instant, or anything equivalent. Then taking this picture and the picture of a colt with a man on its back, to those two the icon of negation would be applicable. Such a complicated idea was expressed by the few words "whereon no man ever yet sat." The other illustration is afforded by the proposition "you will go your way into the village which is overagainst us." Jesus does not assert this proposition, that is, does not make himself responsible for it. On the contrary, he enjoins or commands it, that is, makes the two disciples responsible for it. But that does not affect the proposition itself. The icon, or picture excited in the imagination is here that of two men walking to a village. There are two indices, or labels, to show what this is a picture

of. One of these is their ~~near~~ eye-sight, as Jesus spoke of "that there village over against us." That label is attached to the village in the icon. The other label is the pronoun "you" (in the Greek merely the termination -ΕΤΕ of οὐτόγετε) taken in connection with the look of their master's countenance, which would have been quite sufficient to show them who the two men of the icon were; for in very many languages the second person of the imperative mood dispenses with all terminations or indications of the person addressed. These explanations render the nature of a proposition sufficiently clear for our present purpose. It has, I hope, been made tolerably plain to the reader who thinks the matter over carefully for himself, without allowing himself to be disturbed by perplexities as to details (which are endless), that no matter in what other way a proposition may be comprehended, and whether we are going to the very heart of the matter or not, yet it is true (and

(a significant truth) that every proposition is capable of expression either by means of a photograph, or composite photograph, with or without stereoscopic and cinematographic elaborations, together with some sign which shall show the connection of these images with the object of some ~~forceful~~
^{or experiential} sign, or sign forcing the attention, or bringing some information, or indicating some possible source of information; or else by means of some analogous icon appealing to other senses than that of sight, together with analogous forceful indications, and a sign connecting the icon with those indices. All this shall be more fully considered in the sequel; but thus much may be said at once to advantage.

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A proposition is the signification of a sign which represents that an icon is applicable to that which an index indicates. The proposition itself does not strictly speaking exist. It is mere possibility. But in order

that it should be either true or false), the object of the index to which the proposition refers must exist and react upon the supporter of the proposition. Without that, a proposition can have no positive truth or falsehood. It is not in such case really a proposition; for an index is a forceful sign and things non-existent exert no force. This is only an empty shell of a proposition, — a form which is like that of the expression of a proposition but with no matter.

The existence of this subject of the proposition which is the object of ^{the} indexical sign, that is, the forceful sign, consists in its actually putting forth force. The existence of a genuine index is a sufficient guarantee of the existence of the subject; for the force the index acts upon us is only an aspect of the force with which the subject acts on the index. I meet a near neighbor — living here in the open country. There only farmers are neighbors. We begin chatting about familiar things. One asks

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"How is that cow coming on?" Nothing could be more impudent and impertinent than the remark of some imaginary young philosopher whom I might bring with me who should doubt the existence of the cow. How should the indication "that cow" have forced my neighbor's attention and mine in ~~a~~ certain way, if no force was in that ~~the~~ cow which the phrase "that cow" indicates? ~~And how~~ And how could the non-existent exercise force?

A pretty sort of non-existence would that be.

But not only must the subject of the proposition exist, but, in order that the proposition should be true rather than false, it must exist in a ~~peculiar~~ special manner which only the proposition itself can describe. It may be that the cordial acceptance of the proposition helps to bring about this ~~such acceptance~~ state of things. But I care not though it should be indispensable to the fact: it still does not constitute ipsa facta that reality ⁱⁿ which the truth of the proposition in turn consists. The truth of the proposition consists

in its accordance with a real state of things; and this
scality consists in its existing in what manner it does
independently of what you or I or any generation of men
may think about it. That is to say, that whether the
acceptance of the proposition is helpful ^{to} or is even a
necessary and sufficient condition of the scality of
the fact or not, ~~that~~ no such acceptance of that same
~~proposition constitutes the fact which the proposition~~
~~affirms if asserted, would assert.~~

An empty shell of a proposition may fail to contain any
genuine proposition for either of two reasons. It may
simply fail to ^{prescribe} offer any icon at all. Or on the other hand
it may prescribe more than can be fulfilled, at once, not
^{because of} through any weakness of our imagination or mind, for
such difficulties can always be evaded, but because ^{the} items
prescribed are of their own nature incompatible. How
insignificant difficulties of the former kind are could be shown

in many ways. But ~~is~~ not to loiter over a secondary matter, let us content ourselves here with noticing that it has not prevented mathematicians, all whose reasonings are diagrammatic, from studying space of four dimensions. Mr. Strangham has even drawn pictures of the regular solids in four dimensions, and has enumerated ~~the~~ and described all the regular solids in spaces of all dimensions. No doubt, a ^{considerable} certain mathematical force is required for such studies; but it may be said ~~that~~ to be now established that no degree of complexity, even if it be infinite, will conquer ~~the~~ the mathematical imagination, so long of course as there is some regularity in the complication. An utterly irregular infinity could probably be proved to ~~be~~ involve a contradiction, as it is ^{already} certain that a complication transcending all multiplicity and yet irregular is contradictory. The kind of prescription which is so excessive, that no icon can fulfill it is that which demands that a character shall be at once present and absent. It is not because we cannot

think it that such a prescription cannot be fulfilled, both because, as we clearly and fully perceive, but because the prescription calls upon the imagination not to obey it; like a pope who should pronounce ex cathedra, ~~and~~ requiring all the faithful to believe him under pain of damnation, that no pope ever did or ever would make any pronouncement ex cathedra that any Christian ought to ~~believe~~ believe. The shell of a proposition which thus fails of being a proposition through prescribing too much is said to be absurd. The shell of a proposition which fails of being a proposition through not prescribing anything is said to be empty or meaningless. But in a wider sense the absurd may also be said to be meaningless. As an example of an empty enunciation, we may take this: 'Whatever phenix there may be is a phenix'. As an example of an absurd enunciation, we may take this: 'Some phenix exists which is not a phenix'. Every denial of an empty enunciation is absurd, and vice versa. ~~An~~ An enun-

ciation like "Every phenix is a bird," may be understood in such a sense as to be a proposition conveying positive information. For it may mean that the name "phenix" would not properly be applied to anything not a bird. This is different with the enunciation, Every phenix is a phenix; for this uses the word phenix as if its meaning were known. If in the enunciation "Every phenix is a bird," the word phenix be supposed to be understood through its definition as a bird, then this also is an empty formula, and not a genuine proposition.

Logicians, who are much given to formalities, have wished to extend the ~~pos~~ rule that every proposition is true or false so as to make it include empty and absurd enunciations, calling the empty ones true and the absurd ones false. Nor are they without some tolerable sound reasons for this extension. For ~~the~~ our present purpose, however, such extension is unadvisable. It would compel us to give up the statement that every proposition represents a

reality independent of what may be affirmed or denied of it, thus losing sight of a very important truth. Indeed it obscures all the fundamental parts of logic very seriously. It leads directly to that class of difficulties which the logicians themselves have given the name of the Insolubilia. In order to illustrate exemplify these difficulties, let us suppose that three witnesses A, B, and C, are called in a lawsuit. We will suppose that owing to exclusions of testimony by the court, the testimony as it stands is reduced to this: A testifies that B's testimony is not ~~true~~ altogether true; B testifies that C's testimony is not altogether true; and C testifies that A's testimony is not altogether true. They testify nothing else. None of the three witnesses has any reality in view; that is, nothing which has a ~~moral~~ manner of existence independent of what is asserted of it. Properly speaking, then, there are no propositions and nothing is testified. But the logicians, by insisting that every enunciation is either true or false,

become wound up as follows. Suppose A's testimony to be altogether true. Then, since he testifies that B's testimony is not entirely true, this must be admitted ^{to be} true. But B testifies to nothing else than that C's testimony is not altogether true. Hence, this will not be true; that is, we must admit that C's testimony is altogether true. Now C testifies that A's testimony is not altogether true. Hence, we must admit that A's testimony is not altogether true, reducing our supposition that it was altogether true to an absurdity. We are then driven to suppose that A's testimony is not altogether true. But A testifies to nothing except that B's testimony is not altogether true. If therefore A's testimony is not altogether true, we must admit that B's testimony is altogether true, and therefore we must accept the substance of it, which is that C's testimony is not altogether true. But, C testifies to nothing except that A's testimony is not altogether true. Therefore, it cannot only be amended by

admitting that A's testimony is altogether true. This, however, is contrary to our second hypothesis. Thus, it is equally absurd that A's testimony is altogether true and that it is not altogether true. Two solutions of this puzzle are worth mention. The first, which is stated in various ways, comes simply to this, that the reasonings are good and that they prove that the hypothesis that three witnesses should so testify is absurd. But this is not so: it is perfectly imaginable that those witnesses should so testify, although at least one of the three must be a liar, to be willing to testify about a fact which has not yet occurred. Moreover, the reasonings are not good. The whole of them turn upon the fact that the three propositions of the three witnesses are asserted. Eliminate the element of assertion and no puzzle remains. Now an assertion involves an endless series of ~~assertions~~<sup>enunci-
cations</sup>, or at any rate, two; namely, the assertion involves the proposition forming the asserted and also the ~~proposi-~~^{enunci-}

sition asserting it. And this asserting enunciation is itself asserted. Consequently, ~~when~~ ^{through} A testifies that B's testimony contains something false, if we suppose that A's testimony is not altogether true, we are still not obliged to take B's testimony as not containing anything false. For the falsity of A's testimony may lie in the asserting and not in the ultimate asserted proposition. It is therefore open to us to suppose that all three witnesses ~~testify~~ testify truly, acts in the sense that the propositions to which they testify are true, but all testify falsely since their asserting enunciations are false. It is somewhat paradoxical, no doubt, to say that the assertion of a true proposition is false. Let it be evident that it is the act of act of assertion by each witness which ^{reverses the truth or falsity} ~~reveals the character~~ of the proposition to which he testifies. For example, suppose that the testimony of each witness is that the next one in cyclical order testifies to some thing not true. Then, if A had not testified at all, the testimony of C that A tes-

testifies to something not true would have been false, for A could testify to nothing. Consequently the testimony of B that C testifies something untrue would be ^{entirely} true, and the proposition which A testifies ~~is altogether~~ ^{would be utterly false} if he did not testify to it. It is his ~~testimony~~ lying act of assertion which renders it true, and if this act of assertion asserting enunciation ^{had not been} were not false, — that is, if he had testified, as he ought, that B's testimony is true, there would have been no difficulty. But his asserting enunciation being false, the asserted enunciation of C becomes true; and only the asserting enunciation of C remains false. As to the asserting enunciation of B, that is rendered false only by A's false act of assertion. Suppose on the other hand that what each witness asserts is that if the next in legal order testifies to anything he testifies to something false. Then, if A had asserted nothing, C would assert nothing false, and consequently

B's testimony would be down right false, and what A in fact asserts would have been true. But his act of asserting it renders C's testimony false, except so far as A's assertive enunciation justifies it. ^{This} It does ~~justify~~ justify C's asserted enunciation, but fails to justify C's assertive enunciation, and thus B's asserted enunciation in its turn is rendered true, though his assertive enunciation is false. If the number of witnesses testifying in cyclical order, each to the falsity of the next, had been even, it would be possible to suppose that every other one spoke true and every other one false. But there would be no ground in fact for saying that either half of the witnesses spoke truly rather than falsely. The only proper solution is, as before, that the assertive enunciation of each is ^{false} ~~true~~ and the asserted enunciation true.

Such are the subtleties, one might almost say quibbles, into which we are inevitably led if we follow the logicians

in considering anything in the form of a proposition as being necessarily true or false, ~~indeed~~ without regard to whether it is reality, i.e., represents something not constituted by a representation of it, as not. I do not say that the logicians are wrong. Within their technique there may be, there are, advantages in the course they take. But in any broad view such as we are now taking how much simpler and how much truer it is to say that a proposition, as that which is either true or false, as soon as the individual subject to which it relates has any sort of existence, is something which conforms, or professes to conform, to a reality not constituted by any assignable representation of it.

If philosophers can show us that the realities are so overgrown with thoughts about them that it is impossible by any direct process to compare the thoughts with the real realities, that need not at all disurb us. If idealists can prove that the thought is the cause of the reality which is its object,

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even that will not disturb us so long as the reality does
~~not consist~~ in what ~~there~~ is thought about it. If
a Berkeley can show that all reality is of the nature of
thought, still our opinion is untouched, so long as it is
one a possible thought which constitutes the reality, and
not this or that definite existent thought about that
very thing.

The second answer to the question what the reader means
by a true and by a false proposition ought to be understood
as fully admitting the correctness of the first answer, but as
further explaining what this reality is to which the propo-
sition professes to conform and which it itself ~~is~~ does not
consist in any actual representation of it. In order to
understand that, we must first ask what is the meaning
of any statement, what is the meaning of any word or
of any sign or whatever. Until we have a clear idea
of what we mean by "meaning," it is useless to inquire

what the meaning of any particular sign is. It is evident then in order to answer a question we must understand what the question is; and we cannot understand what it is to ask for the meaning of true and false until we know what is meant by meaning.

Meaning is the character of a sign; and therefore in order to find what meaning is we must consider what a sign is. Before entering on that inquiry, however, let us note that meaning is something allied in its nature to value. I do not know whether we ought rather to say that meaning is the value of a word, - a phrase often used, - or whether we ought to say that the value of anything ~~is~~ to us is what it means for us, - which we also sometimes hear said. Suffice it to say that the two ideas are near together. Now value is the measure of desirability; and desire always refers to the future. That leads us to inquire whether meaning does not always refer to the future. We cannot answer this question with

certainty until we have inquired into the nature of a sign; but it will help us to bear it in mind. If a man is brave now, his present possession of that character cannot mean that he behaved in certain ways in the past; for though he acted as a brave man would have done, still, it was only upon a limited number of occasions; and therefore it might have been accidental that from quite other motives and causes he then happened to act as if he were brave. But braveness does not mean that, it is a quality which would make ^{the man} him act in certain way every time no matter what the multitude of the occasions. It means that we can predict with certainty how he will act whenever an occasion shall present itself. To say that a man is brave means that a certain kind of conduct is to be expected of him. Here, then, is a case in which meaning refers to the future; and there are evidently multitudes of similar cases. The question is whether or not all meaning refers to the future.

X

What is a sign? It is anything which in any way represents an object. This statement leaves us the difficulty of saying what "representing" is. Yet it affords help by pointing out that every sign refers to an object. Let us begin by looking at this word object. It came in with scholasticism, and is somewhat remarkable as a fundamental term of philosophy that is not a ^{translated} translation from the Greek. Its earliest occurrence is in a translation from the Greek; but there is no corresponding word in the original. Another somewhat noticeable thing about the word is how little it has been deflected from its original meaning, of that which a representation in some sense reproduces or aims to ~~show~~ exhibit in its true light. Aquinas already slightly distorts the meaning, but by a hardly perceptible ~~one~~ deviation; and very little further distortion has taken place. Aquinas, in using the word, commonly illustrates his meaning by a reference to the object of sight. This

use of the word belongs to our familiar speech: we detect nothing out of the common in the sentence,

"Think on thy Proteus, when thou haply seest
Some rare note-worthy object in thy travels."

This use of the word arose from the fact that vision is conceived as furnishing images, pictures, of outward things. Our idea of an object of sight is a trifle closer to the original sense than is the idea of a sign. For he thought that the rays shoot out from the eye and on being reflected from the object bring back with them the species, or appearance. His notion of sight, therefore, does not altogether set aside the element of active looking. Consequently, it does not strike him that an object is essentially a correlate of a sign: he considers it to be the correlate of any power or habit. Let us turn over a few familiar locutions in which the word object is used. A person loved is the lover's "beloved object." In the delirium of his fever, an

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image painted in roseate hue appears to him as the faithful representation of the person loved. Hence she is only said to be his beloved object. She is for all the world a woman who is loved; but she is the beloved object of his delirious fancy. So we speak of an "object of pity"; because pity depends upon a lively imaginative representation of the plight of the person pitied. But when we speak of an "object of wrath," we are thinking rather of the person or thing upon to which the angry person is aiming his injuries. The thing at which a shooter aims is the "object" at which he aims. This, we may suppose, is due to the circumstance that the shooter has to look along his arrow or his gun and ~~to~~ make that thing the object of vision ~~as~~ ^{distant} while he is ~~sighting~~ along his weapon. From applying the word "object" to the thing aimed at, we soon pass to speaking of the "object" of endeavors and of contrivances in general. But there is another way in which the word is

appropriate here. For in all serious endeavor it is requisite that which should form a distinct an idea as possible of precisely the state of things that one ~~wishes~~^{desire} to bring about and then try to make the ^{actual} results of our ~~effort~~ labor as close a copy of that "object" as we can. Thus it comes about that a lover's "beloved object" and the "object of his desire" are quite different meanings. The one is the cause of his conduct, the other the effect of it. As for the present use of the word "object" in grammar, it is almost recent. Thus the Post Royal Grammar, which was used into the nineteenth century says, "The accusative denotes the subject that receives the action of the verb;" and this use of the word subject remains quite correct to this day. What is often called the subject of a sentence is properly called the 'subject nominative' or the 'principal subject'. These remarks are intended to impart a preliminary rough idea of the sense in which I shall endeavor consistently

to employ the word 'object,' namely, to mean that which a sign, so far as it fulfills the function of a sign, enables one who knows that sign, and knows it as a sign, to know.

A sign does not ~~fulfill~~ function as a sign unless it be understood as a sign. It is impossible, ~~into the~~ precisely, present state of knowledge, to say, at once fully, ~~and~~ with a satisfactory approach to certitude, what it is to understand a sign. Consciousness is requisite for reasoning; and reasoning is required for the highest grade of understanding of the most perfect signs; but in view of the facts adduced by Von Hartmann and others concerning Unconscious Mind, it does not seem that consciousness can be considered as essential to the understanding of a sign. But what is indispensable is that there should be an interpretation of the sign; that is that the sign should, actually or virtually, bring about a determination of a sign of the same object.

of which it is itself a sign. This interpreting sign, like every sign, only functions as a sign so far as it again ~~itself~~ is interpreted, that is, actually or virtually, determines a sign of ~~the~~ same object of which it is itself a sign. Thus there is a virtual endless series of signs when a sign is understood; and a sign ~~never~~ understood can hardly be said to be a sign. There is an endless series of signs, at any rate, in the same sense in which Achilles runs over an endless series of distances in overtaking the tortoise. It may be asked why we are not immediately conscious of this infinite process. To begin with, let us not be too sure we are not ~~conscious~~ conscious of it in that kind of understanding into which consciousness enters. We have no direct means of ascertaining what we have been conscious of during a moment of thought. It is only the resting-places which affect the memory. But let us consider roughly

"Then came
Omar"
جاء عاصم

what must pass within us, when we read a sentence. It is a significant fact that those languages in which the prevailing form of sentence places the predicate first, ^{the kind of sentence called in Arabic} ~~like~~, ^{like 'Beati omnes'} ~~the Dead~~ ^{and less fatigue} are read with more pleasure than our own languages. The reason is that a picture begins to be painted in the imagination almost as soon as the utterance begins, and details are put it as it proceeds; ^{and finally a label is attached to the picture} while with a German or Latin sentence, the materials for building up the idea are brought one after another, stored away somewhere in the mind; and it is not until the sentence is done that we can survey our materials and consider how they ^{can} be put together, and having decided, by that way of ~~putting~~ building up the meaning, in order to see whether it makes ^{has the} sense. English is not quite so bad; but it ~~is bad~~

same fault. In either case, the process of understanding is quite a gradual operation. Ideas ^{in clouds} that lie hid in the depths of memory have to be brought up toward the surface of consciousness; and this ~~go~~ increase of vividness is a gradual process. They have to be adjusted somewhat nicely, no one being made too prominent. During all this time there ^{must be} is a sign before the mind, and a sign ^{there must besides} that that sign is not yet quite the sign wanted. When we do understand the sentence, our sense of understanding it is a consciousness that we have begun at the uttered sounds and gradually transmuted them, without a break of continuity, into the idea we gain. We feel that every step was reasonable. Now a reason for which there is no reason is no reason at all. Perfect reasonableness implies an, at least virtual, endless series of reasons. Moreover, when the meaning of the sentence is once understood, let us suppose that ~~the~~ all

sentences

memory, record, or possibility of effect of the sign should utterly perish, so that neither the listener nor anybody else should have their consciousness, ideas, or conduct, in any way shaped or modified by it; but everything ^{necessarily} should be precisely as if it had never been uttered. In that case, I ask, Could it properly be regarded as a sign at all? Has it not been, in that case, absolutely insignificant, non significant? Is it not essential to a sign's being a sign that its influence should ~~live forever~~, ^{or at least} never cease finally to live, as lending strength to a habit, or ~~rule~~ of action which is ready to produce action when ~~an~~ occasion may arise, even although the ~~assertion of the proposition to be true or falsehood be denied~~? What is anything that has ~~perished and left nothing~~ behind but a forgotten dream? Let the earth be struck by a comet and reduced to gas, let the whole universe, and space itself be annihilated, and forgotten, yet still one or other of two alternatives remain, either

it is a living law that if ~~any man~~^{mind} should discover and read
Book of Euclid, the 42nd proposition ~~would~~^{pro or con} produce
its effect upon that mind, or else that proposition is
utter nonsense and has no meaning. In this sense, every
sign must be followed by an absolutely endless virtual
succession of interpretant signs, or not be ~~at bottom~~^{of} ~~in very truth~~
a sign.

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In the light of these considerations it is easy to see,
that the object of a sign, that to which it ~~professes~~^{virtually at least,} to
be applicable, can itself be only a sign. For example,
the object of an ordinary proposition is generalization from
a group of perceptual facts. It represents those facts. These
^{perceptual} facts are themselves abstract representatives, through
we know not precisely what intermediaries, of the percepts
themselves; and these are ~~viewed~~ themselves viewed and
are, — if the judgment has any truth, — of a dark under-
lying something, which cannot be specified without its

manifesting itself as a sign of something below. There is, we think, and ~~sight~~^{reasonably} think, a limit to this, an ultimate quality like a zero of temperature. But it can only be approached, or can only be represented. The immediate object which any sign seeks to represent is itself a sign.

The sign is never the very object itself. It is, therefore, a sign of its object only in some aspect, in some respect. Thus, a sign is something which brings another sign into ~~that is~~ objective relation to that sign with which it represents itself, and brings it into that relation in some measure in the same respect or aspect in which it is itself a sign of the same sign. If we attempt to say what respect or aspect it is in which a sign is a sign of its object, that respect or aspect must then appear itself as a sign. Its own full aspect, the sign cannot evoke or endeavor to evoke. It is only some aspect of that aspect that it can aim to reproduce. Here again there will be an

endless series. But this aspect is only a character of the necessary imperfection of a sign. A sign is something which in some measure ^{and in some respect} makes its interpretant the sign of that of which it is itself the sign. It is ~~a mean~~ ^{like a} mean function in mathematics. ~~say~~ We call Φ_{xy} a mean function of x and y , if it is such a function that when x and y are the same, it is itself that same. So a sign which merely represents itself to itself is nothing else but that thing itself. The two infinite series, the one back toward the object, the other forward toward the interpretant, in this case collapse into an immediate present. The type of a sign is memory, which takes up the deliverance of past memory and ~~delivers~~ ^{delivers} a portion of it to future memory.

We have now a general notion of what a sign is. But this idea ~~will become~~ ^{can be rendered} much more distinct if we by pointing three radically different types of signs. No sign

perhaps, can perfectly realize any one of these types. They are little chemical elements, which the very laws of chemical reaction prohibit us from obtaining in absolute purity, but to what the purification of gold etc. we can so far approximate ~~and~~ as to get ^{tolerably} accurate ideas of their nature, and which present themselves habitually in such a degree of purity, that we have no hesitation in saying, this is gold, that silver, and the other copper; or this is iron, that nickel, and the third cobalt; although all are ~~really~~ ^{strictly} mixtures of the three. The three types of signs are icons, which are the simplest, ^{next} indices; third and highest, symbols. Let us begin with the Index. An Index is a thing which having been forcibly affected by its object, becomes forcibly affects its interpretant and causes that interpretant to be forcibly affected by the object, and to affect its interpretant in turn; and which, further,

so far as it is a sign, ~~is~~ becomes a sign in this way. So far as it is a sign in any other way or sense it ~~is~~ belongs to one of the other types of sign and is not a pure Index. For example, a man in a town happens to spy a balloon and goes into the middle of the street and stares up at it. He is forced, by virtue of his natural instinct to do so, and others seeing him so intent in his gaze, are forced in their turn to look up and see what he sees; and they attract still other gazers. That man's upward gaze is a tolerably pure Index. A man driving a pair of horses rapidly through a tangled and crowded thoroughfare, sees himself in danger of running over an old woman. "Hi!" he shouts, quite automatically; and she automatically flees to the sidewalk, and exclaims, as automatically, "Ah! A narrow escape!" whereupon ~~bystanders~~ ^{passers by} automatically turn ^{their eyes} and look at her. Here, the man's "Hi!" is an index, but of a somewhat more perfect

kind, - not a more perfect index, but a more perfect sign, - than the other man's upward gaze. Because that upward gaze did not tell anything. There was no profession of seeing ^{any specific thing} ~~anything~~ in particular in the upward gaze. But the exclamation "Hi!" both ~~of~~ the syllable itself, and the urgent tone in which it is uttered suggest, and - even assert, - danger. The "Hi!" might be true or false; the gaze could not be either.

An icon is a pure image, not necessarily visual. Being a pure image it involves no profession of being a sign, because such profession would be a sign not of the nature of an image. There is no known cause making it an image of its object; for if there were it would in part have a significant character of the Indexical type. I take ship and sail into the tropics for the first time. The

first ~~and~~ time we come into port, I lean over the
tafrail and gaze at the scene. There is no known
reason^{known time} why that scene should be typical of the
tropics, in general; and it does not occur to me that
is perhaps so. Yet a general impression is pro-
duced on my imagination, a ^{generalised} picture of the
picture before me; and in point of fact, I already
know the tropics, or that which is most ^{distinctive} ~~striking~~
about that climate. Although I have only seen some
palm-trees from a distance, I already, without sus-
pecting it, have an idea which fits the whole vege-
table kingdom of the Tropics, and its animals as
well, including its men and women, their physique,
their dispositions, their manners and customs, and
their whole life. That view from the tafrail is an icon
of the Tropics. All icons, from ~~but~~ mirror-images to
algebraic formulae, are much alike, committing

themselves & nothing at all, yet the source of all our information. They play in knowledge a part iconized by that played in ^{evolution, according to} the Darwinian theory, by fortuitous variations in reproduction.

It will be observed that an Icon represents whatever object it may represent by virtue of its own quality, and determines whatever interpretant it may determine by virtue of its own quality; while an Index represents its object by virtue of a real relation with it and determines whatever interpretant ~~it~~ may be in a real relation with it and the object. A Symbol differs from both of these types of sign inasmuch as it represents its object ~~and~~ solely by virtue of being represented to represent it by the interpretant which it determines. But how can this be, it will be asked. How can a thing become a sign of an object to an interpretant sign which itself determines by virtue of the recognition of that, its own creation? The reply

R.R
H.H

To this question is best given in the form of an illustration.

Certain facts are stated in such array as to convince a

person of the ~~truth~~^{reality} of a certain true ~~proposition~~^{truth}, that is,
~~the argumentation is designed to~~
to determine in his mind a representation of that truth.

Now if in the acknowledgement of that truth he recognizes
that that argumentation is a sign of that truth then it

has really functioned as a sign of it; but if he does not

then the argumentation fails to be for him a sign of
that truth. Next consider, not an argumentation, expressly
~~designed to lead to a given belief, but a simple mere~~

statement of fact, a true proposition. That proposition
may not be admitted by anybody. In that case, it does

not function as a sign to anybody. But to whomsoever
shall believe it, it will be a sign that under certain
circumstances, with a view to certain ends, certain lines
of conduct are ~~to be embraced~~^{and pursued as a sign} ~~propositions~~^{to that effect}

the import of it will be a rule of conduct established,

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not in consciousness necessarily, but in the nature and
soul of the believer.

to employ the word 'object' to mean that of which a sign, — so far as it fulfills the function of a sign, — enables one to know ~~knows~~ who knows the sign and knows it as a sign. ~~A sign does not~~

A sign does not function as a sign unless it is understood as a sign, that is to say, unless it determines an idea to be itself a sign of the same object. This, of course, implies an infinite series of sign after sign. Now so wretchedly inaccurate has been the thought even of eminent philosophers, that the prevailing notion is that an infinite series cannot be completed, and that the idea of an infinite series cannot be completely formed. The classical example of Achilles and the Tortoise, instead of serving, as it ought to have served, to show that both these notions were unfounded, and to suggest the simple solution of the sophism, has, by a leagues between babyhood and pedantry, been held up as a support of the absurdity it ought to have refuted. It is truly astonishing

to find what powerful minds, as they seem to be, should be taken in by this silly trick. One can understand that even a Kant should not see precisely how it is that there is no contradiction in an endless series being completed; but that a mind like his should think that a mere definition could arrest the course of real events is amazing. Our wonder is still greater when we find those ~~whose~~ ^{the} whole theme of whose song is that "abstract" ideas have not the life that belongs to "concrete" ideas, boggling over this most abstract of abstractions. An endless series is so called because it cannot be completed by successive additions of units. That does not hinder its being otherwise completed. Achilles runs. We apply a certain method of measuring his run. This does not hamper him. If the method of measurement turns out to be inadequate, it is that which has to be abandoned: Achilles will not stop without some force stops him. Does no glimmer of the light of reality reach the minds of philosophers, that they should

imagine it otherwise? Those who deny that an endless series exists take two separate grounds; and still a third might be taken, which stronger than either. Let us examine them in succession. Some go so far as to say that an Endless series is a logical impossibility embodying a contradiction. Others admit that in itself it is possible, but that its actualization would involve absurdity. These are the two positions ~~not~~ actually taken. The latter is easily refuted. To be possible means no more nor less than to be possibly actual. There is no distinction. Actuality is not a peculiar character which can be in contradiction with another character. Therefore, to say that a hypothesis involves no contradiction and yet that its being true does involve contradiction is to use a phrase to which no meaning can be attached. As a step toward rendering this clear, let us examine two possible objections to it. Namely, it might, in the first place, be

objected that to say that a thing is neither ~~black~~^{black} nor not. ~~black~~ involves no contradiction; that a horse that is ~~not~~ wished for, and not actualized, may ~~not~~ be indeterminate as to whether, in its state of being conferred upon it by the desire, that is, in its mere possibility, it shall be black or not black; yet as soon as the ~~horse~~ desire is fulfilled, and the wished for horse is actualized, it must either be a black horse or a non-black horse. In the second place, it might be objected that if actuality could bring no contradiction with it, to predicate actuality would have no meaning.

~~Now~~ But we find that, on the contrary, it does mean something to say that Washington might have made himself the emperor of the United States, but that in fact he did not do so. The Emperor Washington involves no contradiction. It is a non-actual possibility.

Now add actuality to this, and it would become an

actual non-actual possibility, which involves a contradiction in terms. These two objections are as plain, and clear, and bright as snow; but they cannot be handled with shelling away like the snow of congealed air. It is true that one can wish for a horse without wishing it to be black nor wishing it not to be black; but one cannot even wish it to be neither black nor not black; and the reason is that this is in conflict with the meaning of negation; for to wish it to be neither black nor not black would be to wish it to be not black and at the same time not not black, which is a flat contradiction. An indeterminate logical possibility is an indeterminate which without contradiction may be determined in one way or another; but if it could not be determined in any way without contradiction resulting, then it cannot with developing a contradiction be determined, that is, it is not logically

possible. As to the second objection, a hypothesis may,
^{be free from self-contradiction}, no doubt, as far as we, can see and yet not be true. Thus,
^{There seems to be no absurdity in the supposition.} the our Moon may itself have a moon. A moon's moon,
then, is a logical possibility. But if, as a matter of fact,
there is no such thing, it is a non-actual possibility. But
what is possible in one state of information is not so in another.
The possible is that which in a given state of information is
not known not to be true. Logical possibility refers to a
state of information in which nothing ~~of~~ ^{else} would be known
of positive facts, except so much as is necessary to know
the meanings of words and sentences. A man may know
what is meant by the Moon and not know that the Moon
has itself no moon. ²² In this sense, the Moon's moon is
a possibility. ~~But grant that if a man~~ But ~~it~~ a man in
the same state of complete ignorance will not know that
the Moon has a moon, any more than that it has not
a moon. It is, therefore, logically possible that the possible

Moor's moon should not be actual. The ignorant logician ^{would} may not ~~but~~ know but that a man who was sufficiently informed would know that there was no Moor's moon. It is, therefore, logically possible that the possible Moor's moon should not be actual. But ^{even} ~~too~~ the ignorant logician knows that no man however suffi-
^{at once}ciently informed ~~knows~~ that there is a Moor's moon and knows that there is not a Moor's moon. ~~Therefore,~~ ^{Thus,} ~~a thing cannot be~~ it is logically impossible that ~~there is~~ ^{and} ~~is not~~ the same thing should be at once actual and non-actual. But this is no objection to the principle that ~~if anything~~ ~~whatever~~ is logically possible, it is logically possible that it is actual. To say that a thing is logically possible is to say that a good logician, if sufficiently ignorant, may not know ~~it~~ to be non-existent. That is the same as to say that he does not know but that it actually exists. The possibility of a thing and the logical possibility of

its actually existing are absolutely the same.

Grant that the most perfect logician — If you grant that the idea of an ~~an~~ endless series involves no absurdity, you grant that the most perfect logician may not know that it does not actually exist; and consequently you grant that there is no absurdity in its actual existence.

Now let us examine the ~~poor~~ position that an endless series involves a contradiction. To hold that is to hold that however ignorant a man may be, if he can put two and two together he will know that any series is not endless. Certainly, if a man is ignorant enough, he may not know but that there is somewhere written, or about to be written, a series of numbers, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, etc. or in the binary notation 1, 10, 11, 100, 101, 110, 111, 1000, 1001, 1010, 1011, 1100, 1101, 1110, 1111, 10000, 10001, etc.

Now if there is a last one of that series, let that last number

be N . The regular law of formation of the series shows how another might be added to it, $N+1$. How then is the ignorant man to know that there is any number not followed by another number? Where is the contradiction in the assertion that every number of the series is followed by ^{the} number one greater than it? It is plain that there is no particular number which may not be followed by another. How, then, can the ignorant man know that there is a particular number that is not followed by another? Again, is not every number which can be produced by successive additions ^{of} one to one possible? Evidently it is. Then all numbers which ^{could} be produced by counting are possible. But there is no particular place in the series at which counting must stop. Therefore the numbers that might be produced by counting, all of which are possible, constitute an endless series. Therefore, an endless series is possible. Various diffi-

culties have been suggested; and they might be multiplied indefinitely, since they one and all depend upon assuming that the endless series has an end. For example, there are countless easy ways of proving that if an endless series existed, a part could be as great as the whole. Thus, every number has a double, which is an even number. Consequently, for every number there is a distinct and separate even number, so that the even numbers are just as multitudinous as the whole. But what of it? An infinite part may, of course, be equal to its whole: every ~~wise~~ thinking man has recognized that from the dawn of thought. When we say that the part is less than its whole, we are using the word "whole" in the sense in which it means a whole whose measurement comes to an end.

The two positions which are commonly held against infinite series are, therefore, untenable; but it might be

maintained with some show of reason that the evidence of experience is that, as a matter of fact, there is no endless series. Here we must be upon our guard against what may be called the metaphysician's fallacy, which consists in exaggerating enormously his conclusion, — carrying all the way from somewhat to altogether. The ^{question} matter cannot be profitably discussed in all its length and breadth until the principles of reasoning have been thoroughly considered; but this much we may at once say. We none of us in the least doubt the reality of time. When we come to ~~minutiae~~ details, as to just how much and what this reality amounts to, there is room for doubt. But in a general way we do believe that time flows. Now we can certainly say that the natural belief that time and motion are continuous, so that a moving body has an innumerable multitude of positions in any ^{has met} space of time, ~~is~~ sets with nothing whatever in our ex-

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perience hitherto to cause us any doubt of it. The vibrations
of light could not ^{well} be as uniform as they are through many
hundreds of thousands of vibrations if this were far from
the truth. For if it be not true, motion ^{the simplest} must be a most intricate
and irregular thing. It cannot be said, then, that experience ab-
all disapproves, or tends to disprove, the actuality of infinite
~~numbered~~ multitudes.

entertains a false opinion. Rubbish! There may be questions concerning which it is impossible deliberately to entertain false opinions. Nobody could well deliberately opine that there is no true opinion, - unless he was a metaphysician. But that does not come near conflict with the reader's opinion which relates to what may be feared as the conclusion of an argument.

What does the reader mean by a false and a true proposition? This is one of the disputed questions. Two answers often supposed to conflict seem to be true, and a third is perhaps not false.

First answer. The truth or falsity of a proposition is not a character that the proposition must first exist in speech, writing, thought, or otherwise, and then, ~~or~~ ^{such} you or thereby, acquire the character. On the contrary, the proposition though it never comes into existence will be true or false. Yet, ~~as~~ ⁱⁿ general, something must exist

entertains a false opinion. But that is aside from the point. You might grant them that nobody entertains any opinion and still maintain your ground that there are false opinions and that there are true opinions; since it is sufficient to cover your meaning that it should be possible to write down two propositions the one precisely denying the other; such as

Some man opines that he has an opinion;

No man opines that he has an opinion.

For as long as a false proposition can be written down it is t

entertains a false opinion. Surely, this is rubbish.
There may perhaps be questions concerning which it is impossible deliberately to entertain false opinions.
Perhaps nobody can deliberately opine that there is no such thing as an opinion; though I would not warrant that a metaphysician could not. But that is not the point of ^{the reader's} your opinion in question, which relates to what may turn up as the conclusion of an argument.

Now what does the reader mean by a false proposition and a true ^{proposition?} A false proposition is unsatisfactory, a true one satisfactory, in some respect. When is this satisfaction satisfaction to be experienced; in the past, the present, or the future, relatively to ~~the~~ time of utterance of the proposition.

in order that a proposition should be true or false.

For example, the proposition, "There is no such bird as a phénix," means that there is no such bird in the created universe; because there is such a bird in fable. Therefore the proposition could not be ~~differently~~ ^{positively} true or false if the universe did not exist. Were it meant that there was no such bird in fable, this ~~the~~ world of fable would have to have such mode of being as it has to confer positive truth or falsity upon the proposition. If this ^{"subject"} to which the proposition applies exists, the proposition is either true or false; but which it is depends upon how that subject exists. If it exists in one manner the proposition is true; if in any other manner, false. But it is impossible to say or think what these manners are except by means of the proposition or ~~not~~ ^{some} equivalent of it. An equivalent of a proposition is the same proposition, differently ~~and~~ materialized.

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For the proposition consists in its meaning.

sign (or any equivalent thereof.) For example, any preposition will do. Take this:

"Go your way into the village which is over against
~~in the which~~
you: and straightway as ye enter into it, ye shall find
an ass tied ^{with her}, whereon no man ever yet sat."

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be allowed to select any man they pleased; and that they would be allowed to select any instant of the colt's past life they please. ~~that~~^{Those two} permissions would constitute the indication of what was the subject to which the proposition related; and the proposition itself was the meaning of any sign which should signify that to the position of the man chosen at the instant chosen and to the being on the colt's back the icon of negation would be applicable as a sign. It was thus a highly complex idea that was expressed by saying that no man had ever yet sat on that colt's back.