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THE RATIONALE OF REASONING.

In ^{setting} setting forth results of long, deep, scrupulous study, I am not always content to follow usage as to the meaning of every word, for this reason. New classifications must result from such studies, and the new classes ^{being} ~~are~~ defined by new concepts; and the student naturally wishes to express his thoughts as ~~precisely~~ precisely as he thinks them, and without the trammels of circumlocution. He must have a single ^{exact and} expressive word as short as possible for each concept that is often to recur in his argument. But if the concept is novel, there will be no such word in the language; so that he will have no other alternative than either to invent a new one or alter the meaning of an old one after full and lucid warning of the change. If he be

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able to invent a new word that ^{tolerab} meets tolerably answers the requirements, being suggestive and suggestible, not liable to be mistaken, and short without distracting the attention of readers to its singularity, that will probably be the best way; but I should not be able to do that more than two or three times in my life. I am disposed to boast of having invented one of three letters to denote ^{the} units of any ^{formula} multiplicative algebra, and of finding it was actually employed by others than myself. But usually a new word ^{is expected to} must have a derivation; and that will make it long without usually making it expressive with precision; and therefore if there be a word, well-known but not often used which only needs to have its field of applicability stretched, by dropping some items of its meaning, — after due notice, of course, — I usually prefer this way

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of filling the want.

Occasionally, I ~~venture~~ ^{the more freely} venture to restrict a word, if it seems to be going out of use, to a special sense. Although I do not thereby apply the word in any case where good usage would forbid it; yet I consider it a greater liberty than stretching its field of application, because I understand it to imply more than usage allows, and even where usage would not forbid it, I mean more by it than the reader would think, should he have forgotten the warning which I had previously, in every case given. When I say that ^{the application of} a word is stretched (otherwise called its Breadth), is stretched or restricted, I mean, of course, that it is so when it is used affirmatively; for if a "not" or anything equivalent is applied to it, ^{the Breadth} the negated word is restricted when ~~that~~ the word itself is stretched, and vice versa.

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When it comes to established terms of philosophy, I have deeply felt from an early stage of my studies that the responsibility that rests upon everybody who avails himself of this great assistance to serious philosophical research is very heavy. A settled appropriate nomenclature and terminology in general, is an indispensable utensil to any branch of science, and the more abstract a science is the more its ^{special dialect} ~~vocabulary~~ will be a help or a hindrance to ~~progress~~ pushing it further. ~~How~~ How true, for example, is this in mathematics where the algebraical notations and the diagrams (say of the theory of functions) are a part of that dialect. Still heavier is the responsibility of the user of the dialect when this is ^{necessarily} still in a more or less unsatisfactory condition owing to the lack of agreement ~~open~~ & in regard to the most fundamental questions of method. More it is

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the duty of every user of the terminology to improve it by rendering it more precise and by enlarging it provided he can make sure that he is not damaging it in the process. He must, at the same time, feel and acknowledge in his conduct that ^{for him} he who introduces a new conception into philosophy it is a duty to provide a suitable terminology by which to express that conception, and ^{also} further, that when he has satisfactorily performed that duty, it ^{becomes} will be the duty of all his brethren, - ^{since true} for all Philosophists, ^{i.e.,} or persons qualified to ^{push} advance philosophical inquiry further and devoting their lives to doing so, must and will feel themselves to be brethren in heart, however far their opinions may diverge, - ^{become, I say,} it will be the duty of his brethren to regard the terms which he has proposed to set aside for the purpose of expressing that concept as sacred to that use, provided, of course, that there be no serious scientific

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objection to his proposal, and at the same time ^{yet if any other} whoever can
at any time,

[render ~~his~~ that man's terminology more precise, or can
distinctly, ^{to surpass and advance} otherwise modify it so as to further philosophical inquiry, ^{that} it will be
a ^{for him to perform. But he should} his duty to do so, and so to do it as to detract in no way the ex-
pres-
sion of the general gratitude toward ^{the} their first benefactor of the brotherhood,

~~It is~~ In order to ~~aid~~ aid my reader to ~~understand~~ ^{precisely} what I ~~have~~ ^{am going} to say
as soon as he reads what I have to urge on the subject of,
~~about~~ the rationale of reasoning, to apprehend its meaning and argumen-
tative force, I will here preface it by some remarks on ^{some of} the concepts I shall

● have to apply, and on ~~the~~ some of the words that I shall employ to express
them. I had occasion just now to use the expression, the "Breadth" of
word. Breadth and depth are said by logicians to be two dimensions
of the meaning that any general expression may convey. I think I shall
do well to say something about ^{that pair} these ideas, to which, ~~as I am going to say, these~~ ^{as I am going to say, these} ~~are~~ ^{are} ~~exaggerated~~ ^{exaggerated}

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as the two sole dimensions of the import of any concept, a rather exaggerated importance was attributed by Kant and his early followers, and by me, too, in my early studies.

I will begin by defining the two terms, as I now understand them. I will then illustrate these definitions by comments upon examples; and finally, I will supplement the definitions with some historical notes.

In order to define those two words, I find it convenient to begin by defining several others. A Proposition is any product of language which has the form that adapts it to instilling belief into the mind of the person addressed, supposing him to have confidence in its utterer. By "Uttering" I mean putting forth, whether audibly visibly or otherwise any sort of sign. For instance, I should say that the master of a ship who ^{should} caused signal-flags to be hoisted "uttered" that combination of flags. The persons whom any

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sign is intended ~~directly~~ to affect as such sign may be called the "Addressee." A Proposition is nearly the same thing as an "Assertion." The distinction which I use the two words to mark is that ~~no more than the expression of something (with state of~~ an Assertion includes ~~only what it is the intention of~~ ~~the~~ no more than it is the intention of the Utterer to declare, while the Proposition includes all that he does declare, which is inevitably considerably more than he intends. For example, supposing the Utterer's purpose be to warn the Addressee against the ruinous effects of dishonesty, (and not merely to inform him that another line of conduct is on the whole more politic,) he may say "Relatively very few dishonest ^{men} prosper long;" but his Proposition may be used by the Addressee to convince him that most of the men who have long been prosperous are honest; and that it is impossible to say ~~that~~ of dishonest men who are long prosperous that they are ~~more~~ fewer than honest men who are prosperous without saying

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~~the~~ in the same breath that the latter class is more numerous than the former. Some of the words which are used in an Assertion are used because they are Significant, that is to say, they convey their meaning to an Addressee familiar with the language ~~except~~ in which that meaning is expressed. But at least one other word in the Assertion is used to Denote what it is to ~~which~~ which the Utterer intends to apply some significant word, and the Addressee ~~will~~ can never fully realize the full ^(practical) import of the Assertion ^{so as to be fit to take up the inquiry into its truth} by listening to the mere words. He can only do that when some extraneous experience has made him acquainted with the object denoted. If ^{one asserts "} I say that a line which if it be turned over between its extremities while these latter remain unmoved will exactly fit its former position will be shorter than any other possible line between those extremities," this, no doubt, will be understood in its full practical import at

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once by anybody; but the reason is that everybody has ^{an image} a picture in his ^{mind} ~~imagination~~ of such a line; and his contemplations of that image constitute the extraneous experience that was requisite. I call all that part of the Assertion which is significant, the "Predicate" of the Assertion; ^{while} and all those parts that are Denotative I term its

Subjects. A single Assertion has but a single Predicate; but the simplest Assertion has more than one Subject, unless it be such a statement as "It rains," where one of the Subjects is expressed otherwise than in words. But

● I must explain myself more fully, and in the way which ^{will be} alone truly expressive, namely, by examples. But I will, however, first remark that the Proposition that embodies an Assertion has the same Subjects and Predicate as the Assertion itself. Take the Proposition "Cain killed Abel;" This is identically the same Proposition as "Abel was killed by Cain;" it is only the grammatical dress

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that is different. Other things being equal, everybody will prefer the former. Why? Because it is simpler; but why is it simpler? Because in putting the cause before the effect, it in that respect diagrammatizes the truth. What are the Subjects of this Proposition. Cain, first: that is not only a Subject of the Proposition, but is the principal Subject of the Assertion which a historian would naturally make. But in the Proposition Cain and Abel are ^{as Subjects,} on one footing precisely (or almost precisely, for Cain is preponderant in causality). But besides these, "killed" = committed murder upon, is a third Subject, since no study of the words alone, without extra-
neous experience, would enable the Addressee to understand it. What, then, is left to serve as Predicate? Nothing but the flow of causation. It is true ^{that} ~~that~~ even ^{we are made acquainted even with that in} ~~that is brought to recognitions by~~ Experiences. When we see a babe in its cradle bending its arms this way and that, while a smile of exultation plays upon its features, it is making acquaintance with the flow of causation. So acquaintance ~~is~~ with

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the flow of causation so early as to make it familiar before speech is so far acquired that its ~~assertion~~ an assertion can be syntactically framed and it is embodied in the syntax of every tongue. However, it is not because of this physiological fact, that it ^{becomes} proper to draw the line between Subjects and Predicates here; neither is it because of the ~~psychic~~ ^{psychical} fact that human minds naturally think in a way broadly (i.e. a little) similar to the forms of syntax; nor is it ~~even~~ even because of the metaphysical truth, that the order of syntax is the law of ^{Time and of} ~~Being~~ ^{Becoming}. This is proved by the facts, first, that it is necessary that the Reasonings by which we discover and defend the orders of Causation, of Human thought, of time, and of becoming, themselves presuppose the recognition of the corresponding order in syntax; and secondly, by ^{this} ~~the~~ fact, that it has not been the order of Time, or Causation, or the structure of the human mind, nor human anatomy and physiology that have, any or all of them, de-

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terminated that that ought to be the order of syntax that in fact ought to be so, but precisely the contrary, it is the fact that the order of Syntax ought to be as in fact it ought to be that has determined, first, Real Being and Time to take the same form, and then, that it should become natural to the mind and ~~to be~~ should be the pattern of physical action. If you ask me how I know all this, I reply that, so far as I do know it, I know it in the only way to attain positive truth, (by "Positive" truth, I mean truth about Real Subjects; and by "Real," which I shall soon come to define, I may now say, in advance, that I mean what every Tom, Dick, or Harry means, that is, what is not fictitious, or made up,) namely, by 1st, having soaked and saturated myself in the relevant experiences, lived in them, and lived them; by 2^d, thereupon framing the most rational ~~theory~~^{guess} I could, to account for those experiences; and concerning ^{the} subjects of a kind so ^{excessively} extremely simple

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as this one, and consequently so lacking in any features by which one could handle it, a ^{welland} deeply considered guess free from Dirt, i.e. matter out of place and irrelevant, is ^{seldom far removed from} almost sure to be substantial truth as far ~~as~~ as it goes; by 3^{rdly}, deducing from my conjecture all the consequences I could ~~that~~ whose ~~truth~~ falsity, if they contained any, it seemed practicable for me to expose; and 4^{thly}, by comparing these deductions with the facts, and failing to find any of them false. But I will remit the whole question of the origin of the sequence of Predicates from Subjects, and to the moment when it shall press upon us as a question that needs to be answered.

~~The relation of a Predicate to its Subject is a true Proposition of the kind called Categorical, i.e. composed of Predicate and Subject differs from the relation of the Consequent to its Antecedent in a Proposition of the kind called~~

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✂ In discussing the rationale of reasoning, we must consider examples of reasonings, and consequently examples of Propositions. The importance ^{of examples} of either of these kinds will commonly consist in the probability that we shall meet with others essentially like it in our future reasonings. Whether a proposition taken as an example be true or false, even to absurdity, will usually be a matter of indifference, though true propositions will require less effort of attention. What is important is that our examples should cover all varieties of structure that can affect the justice of reasonings. Were I simply to follow the usage of the best English writers of our language in wording my examples of propositions, the Reader and I would lose ourselves in discussions of language that would have no

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bearing on our subject. ~~This~~ This is a real danger, as anyone conversant with the literature of logic, especially with those writers who endeavour to give a literary charm to their writings, must be well aware. Immense enjoyment and even solace can be derived from the study of our subject at times when one feels the need of vigorous exercise of a purely intellectual sort; but at times when one is not equal to this, it is wiser to put it aside and turn to literature or history. The only sensible way in our examples is to ~~follow~~ do as logicians usually have done and either express propositions in diagrams or arbitrary signs devised for the purpose, or else to use words in certain exact senses ~~which~~ so as to readily distinguish ~~between~~ ^{types} the differences of structure which bear upon the validity of inferences.

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By Information I mean all that knowledge that we collect from the experience of ourselves or of others. Yet this is not a correct statement, since all our knowledge of whatsoever kind is derived from experience. To be sure Kant endeavours to draw a distinction between knowledge drawn from experience and knowledge that begins in experience.* [Foot-Note * Dafs alle unsere ~~Erfahrung~~ Erkenntnifs mit der Erfahrung anfangt, daran ist gar kein Zweifel... Wenn aber gleich alle unsere Erkenntnifs mit der Erfahrung anhebt, so entspringt sie darum doch nicht eben alle aus der Erfahrung. Beginning of the Einleitung of the Second Edition of the Critik der reinen Vernunft, to which I shall here after refer by the initials C.d.r.V. End of [Foot-note] Text resumes.] But whatever the value of Kant's distinction may be, it is certain that all every item of one's knowledge ~~is~~ has become known by what he has experienced.

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For instance the knowledge that if two pairs of numbers, such as $\overset{14}{14}$ and $\overset{8}{8}$, and $\overset{33}{33}$ and $\overset{9}{9}$, are such that the sum of the ^{one} first pair is to their difference, as the greater of the second pair is to their lesser, then reciprocally the sum of this latter pair is to their difference as the greater

of the former pair is to the lesser. That is, because $\overset{14+8}{(14+8)} : (14-8) = 33 : 9$, it must be that $\overset{33+9}{(33+9)} : (33-9) = \overset{14}{14} : 8$. Now ^{one} may have learned this by considering that any two such pairs of numbers may be represented by rp, rq or $\frac{r}{s} \frac{p+q}{2}, \frac{r}{s} \frac{p-q}{2}$, where p, q, s are primes; and the sum and difference of the latter pair will be $\frac{r}{s} p, \frac{r}{s} q$, without even imagining any four particular individual numbers that are so related. Nevertheless, it would have been by experience of the images $\frac{r}{s} \frac{p+q}{2}$ and $\frac{r}{s} \frac{p-q}{2}$ that he would have learned that their sum and difference would be of the forms $\frac{r}{s} p$ and $\frac{r}{s} q$. It would therefore be knowledge derived from experience although only from imaginary

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experience. Now I call any ~~to~~ acquisition of knowledge "informa-
tion," which has ^{logically} required any other experience than experience of
the meanings of words, I do not call the knowledge that a person
~~nor the knowledge that a corpse is not a woman~~
known to be a ~~female~~ woman is an adult, ^{exper} because a woman means

~~a living adult female human being~~, nor the knowledge that a corpse is
not a woman, by the name "Information," because the word "woman"
means a living adult ^{human being} having, or having had, female sexuality. Knowledge
that is not Informational may be termed "Verbal", ~~the knowledge that~~ ^{though the}

● Though we know that a corpse ~~is~~ would not be a woman by the
meaning of woman; and know that a woman is not an infant in the
same way, but knowledge that a negro is a woman is no part of the
meaning of the word ~~is~~ "woman"; it is a part of the meaning of "negro."
Nor is our knowledge that a woman is not a brute a part of the meaning

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of woman; but is due to the meaning of brute being that ^{a "brute" means} ~~it~~ is ^{any} ~~any~~ ^{normally} living animal ^{and by the meaning of "lower than" what is lower than any thing is not that kind,} lower in its mental faculties than a normal human being, while a woman is, by the meaning of that word a human being.

~~and by the~~ The meaning of most ~~of~~ ^{not} common nouns and ordinary adjectives consist in their ^{not} being applied ~~exclusively~~ to ~~wholes~~ objects that ~~have a number of~~ lack any one of a number of characters, and to their being applied to whatever there may be that has all of these characters. There are however a few terms, such as a "constitutional law of congress" which ^{provides they have certain requisite characters, such as, in that instance, having been passed by both houses of Congress and either signed by the President or passed over his veto by a requisite majority} are applied, each to whatever has any one of a number of distinct characters, such as its laying taxes, duties, or imposts, or providing for the defence of the ^{United States} government, or providing for the general welfare of the United States, or ~~or~~ pledging the credit of the government, or regulating foreign commerce, or regulating interstate commerce, or establishing

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a uniform rule of naturalization, etc, etc. These alternative characters can, however, in this instance, and in almost every instance that could be given, excepting ^{two} ~~one~~ class^s of cases, be replaced by a single character, as in this instance by the character of ~~it~~ having

been delegated to the United States and to Congress ⁱⁿ the Constitution as it stands with its amendments. ^(One of the two) ~~The~~ exceptional ^{classes} ~~class~~ of instances I allude to

are negative terms; such as Non-woman. A non-woman is either not living, ^{whatever is,} or not adult, ^{whatever is,} or not human, ^{whatever is,} or not female, is a Non-woman. The

other exceptional class of designations, are those ~~which~~ vocables which ^{are either} ~~are~~ ^{of entirely different origins in different senses, or are words which,} in the course of time have come to be used in senses quite disconnected or even directly contrary to one another, such as ~~rest~~ restive, and the adverb fact.

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Substitute for this sheet AR³.4 unusual

I do not intentionally take any liberties with the meanings of generally ~~used~~ terms which ought to be considered as established terms of philosophy. I have paid special attention to the terminology and history of logic, and have endeavoured, without ~~not~~ being satisfied with my endeavours to draw up a code of rules in imitation of those followed by the biological taxonomists. But though I have not met with the degree of success I could desire, my studies have, I ~~trust~~ ^{am confident} ~~made me as competent~~ educated & my judgment of what is permissible in the use the philosophical vocabulary so as to make it, at any rate, much better than it was at first or would have been by this time if ~~my attention~~ had not always been ~~so~~ scrupulously attentive to the subject. ~~I shall~~ ~~at~~ meantime I shall always lay before the reader my reasons for any deviation from usage.

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Conditional, each of which is composed of antecedents and a Consequent
~~only is that, the former kind, of Prop in addition to asserting that~~
~~the Being of a~~ as follows. The following is an example of the kind
of Proposition called by the logicians, a "Conditional." ^{*Foot-note} [German
since Kant, and some earlier than he, call Conditionals "Hypotheticals." But in
my opinion we ought to adhere to the universal scholastic nomenclature
rather than to ^{a nomenclature only,} a partially received ~~one~~ which ~~has~~ presents the ~~an~~ unpardonable
feature of retaining an old term ^{by} upon which all men were agreed to
express an indispensable conception, and while retaining the word
using it in a new sense for which another word was already in universal
use. Had the Germans succeeded in forcing this ~~new~~ objectionable nomen-
clature upon logicians, we might have admitted that might make right,
a doctrine ~~to~~ which Germans admire, though it is only a counterfeit right

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that can be gained in that way. But in point of fact, they have not so succeeded. They have only brought over such English writers as ^{either} defer to the authority of Kant (without realizing, I suppose, how flippant was his treatment of logical questions proper) or else are dazzled by the prestige of German science (not being aware, perhaps, that Logic, in the sense in which the English conceive it, making the subject in which the Reader and I are engaged its very heart, is no longer studied, to any extent in Germany, and when studied is so very superficially.)

● The scholastic usage, which I follow, makes a Hypothetical proposition to be any proposition which is composed of other propositions and the medieval doctrine was that a Hypothetical is either a Conditional or a Disjunctive (whose members are, at least, in sense, connected by conjunction or), or a Copulative (whose members are, in sense, conne

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Foot-note continued

that can be gained in that way. But in point of fact, they have not so succeeded. They have only brought over such English writers as ^{either} defer to the authority of Kant (without realizing, I suppose, how flippant was his treatment of logical questions proper) or else are dazzled by the prestige of German science (not being aware, perhaps, that Logic, in the sense in which the English conceive it, making the subject in which the Reader and I are engaged its very heart, is no longer studied, to any extent in Germany, and when studied is so very superficially.)

● The scholastic usage, which I follow, makes a Hypothetical proposition to be any proposition which is composed of other propositions; and the medieval doctrine was that a Hypothetical is either a Conditional or a Disjunctive (whose members are, at least, in sense, connected by the conjunction or), or a Copulative (whose members are, in sense, connected

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by the conjunction 'and'. I reject the class of Disjunctives since I regard a Disjunctive, as merely that kind of Conditional whose condition, or Antecedent, is negative. To say that anything is either right or agreeable, means precisely that If it be not right it is agreeable. A Copulative is the denial of a Conditional. In order to deny that If a man ^{is} were wise he ~~would~~ ^{will} be happy we must say that there is a wise man (or might be one) and he is happy; and whenever we say that A is true and B is true, we say no more ^{nor less} than that it is false that if A be true, B is false; for there is no falsity in the disjunctive Conditional (which is equivalent to 'B is false, or else A is false') if B is false, nor is there if A is false, since regarding those cases it says nothing; but if neither of these cases be true, it certainly is false. End of foot note.] Text resumes.

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opponent
game or

by the conjunction 'and'. I reject the class of Disjunctives, as not coordinate with ^{that of} the Conditionals and ^{that of the} Copulatives, but as ^{being} merely that particular class of Conditionals whose condition, or Antecedent, is conceived negatively. Thus, if a chess-player says, "I ~~will~~ ^{mate my} win ~~the~~ opponent ~~game~~ or I will be mated by him," he means, "If I cannot mate my opponent, I ^{probably} will be mated by him." He ^{probably} means to exclude the idea of a draw; but ^{he does not say so;} he mentions the two possibilities as being the only ones. The ^{two} ~~three~~ classes of Hypotheticals are not grammatical or in any other way linguistic: they are the different kinds of meaning that can result from compounding two propositions. It is sufficiently obvious that there is no other kind. For if one were for example to propose to erect, as a distinct kind of Hypotheticals, such a Temporal proposition as, "I shall dress before I dine," the response would be that this is not a logical variety, but is merely a Copulative, with the addition of a Relative proposition; the whole meaning, I shall dine and I shall

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dress; and the act of dressing will be previous to that act of dining. I shall ~~not~~ presently show how Relative Propositions are to be treated, ^{in a variety of ~~meanings~~} and how a Categorical Proposition has a meaning quite distinct from that of a Hypothetical, — a distinction which might easily escape ^{or not the meaning of} the Reader, since ~~there~~ there has been a controversy as to whether a Hypothetical could be expressed in a Categorical Proposition. While the Germans retain Disjunctives as a class coordinate with Conditionals, which (to my mind (if I am entitled to one, after studying Logic incessantly for three score years lacking three)) is a mark of inaptitude for the subject, they reject the class of Copulatives, which seems to me a singular illustration of how we are apt ^{we are} to think that the word "and" ~~does~~ has no meaning, — I suppose, because it can be omitted from the expression, since the mind so easily supplies it as hardly to be aware what it is doing. Many think 'and' expresses a dyadic relation, or relation

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between two subjects. But I am sure that it is usually triadic and opine that it is always so. "I love you and esteem your neighbour"

Here, surely, the and connects the first, second, and third persons. You, ^{Reader}

probably think otherwise, because it is not needed to connect two subjects; as in "I love you," or "I esteem your neighbour." But perhaps when I show you that a triadic relation is quite a different affair from two dyadic relations, you will review your opinion, at least. But the purpose of this note is to explain ~~why~~ how it comes about that I, — a man who ^{am} aware

that apples fall from trees because of gravity, which is nearly equal to the Earth's gravitation; and further who believe that gravitation varies ap-
proximately as the reciprocal of the square of the distance; though the motions of Mercury, confirmed by those of Venus, forbid me to say it is precisely
exactly so, — how I can think the ^{medieval} scholastics used the terms of logic more