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Chapter 7

Ideo-Motor Action

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The theory of ideo-motor action has been for a generation one of the stock "laws" of orthodox psychology. It is taught as almost axiomatic in standard treatises—is made the explanatory principle for phenomena of suggestion, hypnotism, obsessions and the like—and is used as the basis for recommended practices in education, psychiatry, religion—even in salesmanship and advertising.

In spite of contrary evidence brought forward by Kirkpatrick, Woodworth, Burnett, and others, probably nine out of ten of the members of this association believe, or think that they believe, in one or another form of this doctrine that an idea tends to produce the act which it represents or resembles or is "an idea of," or "has as its object."

Against this most respectable doctrine I early rebelled, and I somewhat greedily seize this occasion, which requires that in courtesy you listen to me for an hour, to justify this apostasy and convert you also, if I

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can, to the view that the idea of a movement, or of any other response whatsoever, is, in and of itself, utterly impotent to produce it.

The course of the argument will be plainer if I state first what potency I do attach to ideas of movements, or of the resident and remote sensations produced by movements, or of other results of movements; or to any image or other inner state of awareness which represents, or means, or is like, or has as its object, a movement or act or, for that matter, anything else. Any such mental state has, in my opinion, no dynamic potency save that its physiological parallel will evoke whatever response is bound to it or to some part of it by inherited connections, or by the law of habit—including in the later the power of satisfying states of affairs to strengthen whatever connections they accompany or closely follow. I admit a slight tendency for a mental state which is produced immediately before and along with a movement—in one pulse of cerebral activity, as it were—to reinstate the movement by reinstating that total pulse of activity. The connections formed by the laws of habit work mainly forward, but slightly sidewise and even, indirectly, backward. The gist of my contention is that any idea or other situation tends to produce the response which heredity has connected with it or which has gone with it or some part of it with a satisfying or indifferent resulting state of affairs. An idea has no power to produce an act save the power of physiological connections born in man, or bred in him as the consequence of use, disuse, satisfaction and discomfort.

The doctrine of ideo-motor action, however stated, means that certain ideas or images have some further power than this—that between them and the responses which they represent, or have as their objects, or are "ideas of," or are similar to, some effective bond creates itself beyond what the connections made in the person's past can explain. Its classic statement by James reads, as you all know,

> We may then lay it down for certain that every representation of a movement awakens in some degree the actual movement which is its object; and awakens it in maximum degree whenever it is not kept from so doing by an antagonistic representation present simultaneously to the mind.

Wundt asserts that the mere apperception of an image of a movement is followed by the movement unless some contrary force acts, and that in children and primitive men the presence of a vivid idea of a movement of their own bodies does therefore cause the movement to take place.

William McDougall writes to the same effect that:

> In the special case in which the object to which we direct our attention by a volitional effort is a bodily movement, the movement follows immediately upon the idea, in virtue of that mysterious connection between them of which we know almost nothing beyond the fact that it obtains,

and elsewhere, "the representation of a movement of one's own body . . . like all motor representations tends to realize itself immediately in movement."

Two intelligible meanings can be attached to the phrases—"the representation of a certain movement by an idea," an idea having a certain movement "as its object," an idea being "of a certain movement," "motor representation," and the like. The first is that the idea in question *is like* the movement—is to some extent a copy or correspondent of it in much the same way that the mental image of a square inch of red is like a square inch of red. The second is that the idea *means* the movement in much the same way that the thought of the words "square inch of red" means such a square. For the sake of clearness I shall in general restrict argument to the first of these meanings of the doctrine, it being an easy task to disprove it in the second sense once it has been disproved in the first.

That the kind of an idea which is supposed by the ideo-motor theory to be able by some "mysterious connection" to produce a movement is the idea which *is like* the movement appears more clearly in Miss Washburn's statement:

> A movement idea is the revival, through central excitation, of the sensations, visual, tactile, kinesthetic, originally produced by the performance of the movement itself. And when such an idea is attended to, when, in popular language, we think hard enough of how the movement would "feel" and look if it were performed, then, so close is the connection between sensory and motor processes, the movement is instituted afresh. This is the familiar doctrine expounded by James.

Professor Calkins still more explicitly states that in voluntary action we arouse a certain response by getting in mind an idea that is *like* the response.

An "outer" volition being a volition to act in a certain way and an "inner" volition being a volition to think in a certain way,

> the volition is the image of an action or of a result of action which is normally *similar* . . . to this same action or result. My volition to sign a letter is either an image of my hand moving a pen or an image of my signature written, and my volition to purchase something is an image of myself in the act of handing out money or an image of my completed purchase—golf stick or Barbédienne bronze.

"Inner volitions," she adds, "do not so closely resemble their results. The volitional image of an act may be, in detail, like the act as performed"; but the volitional image of a thought is followed by only a "partially similar" thought.

The issue is now clear. Does an idea tend to produce only the movements which it or some element of it *has* produced (or accompanied

in one total response), or does it tend also to produce the movement by which the sensory stuff of which it is the image *was* produced, and which it resembles?

I shall try to prove that an idea of a movement has, apart from connections made by use and satisfying results, no stronger tendency to produce the movement which it resembles, than to produce any other movement whatsoever,—no stronger tendency to produce what it represents or has as its object than an idea of an event outside man's body has—that, apart from connections made by use and satisfying results, the idea of throwing a spear or of pinching one's ear, or of saying "yes" tends to produce the act in question no more than the idea of a ten-dollar bill or of an earthquake tends to produce that object or event.

Why should it? Why should the likeness between John Smith's mental image and some event in nature have any greater potency when that event is in the muscles of John Smith than when it is in the sky above or the earth beneath him? Why should McDougall's "mysterious connection" be allowed to "obtain" just here and not elsewhere?

The reasons why it should not are an attractive theme, but the evidence that it *does* not is our present concern.

First of all, an idea or image certainly *need* not arouse the movement which it represents, or "is of." Let each one of you now summon the most lively and faithful representation that he can of sneezing, then, after five seconds, of hiccoughing. Free your mind of any contradictory ideas, giving yourselves wholeheartedly to thinking hard of the "visual, tactile and kinesthetic sensations of sneezing." We hear no universal chorus of nasal outburst or diaphragmic spasm. Either ninety-nine out of a hundred of you cannot get such representations of these movements as the theory requires or the theory is at fault. But if the theory requires a representation which not one person in a hundred can get of so definite and frequent and interesting a movement as a sneeze, the theory seems very dubious. As a matter of fact a large percentage of you would report that you could get as vivid and faithful an image of a sneeze as of the movements of your hand in signing your name or in handing out money.

To retort that sneezing and hiccoughing are not subject to voluntary control is futile. By the ideo-motor theory they *should be*. The retort witnesses rather to the fact that for a movement to be subject to voluntary control means not "to be capable of representation in thought," but "to be connected as response by the laws of habit to some situation which one can summon at will."

In the second place, in at least a majority of the cases quoted to support the ideo-motor theory—cases where an idea of a movement does have the movement as its sequent,—the connection can be shown to have been built up by habit—by use and satisfying results. When one has the idea of going to bed and goes, or of writing the word "cat" and writes it, the explanation is found in the previous training that has connected the idea of going to bed with situations, such as being sleepy, to which the act is the original or accustomed sequent, or has otherwise

connected the act of going to bed as response to the situation of thinking of so doing. The stock case most often quoted from James is that of a man getting out of bed—

> The idea flashes across me, "Hollo! I must lie here no longer"—an idea which at that lucky instant awakens no contradicting or paralyzing suggestions, and consequently produces immediately its appropriate motor effects.

Here the idea is patently not a representation of the movement at all. The *"Hollo"* and *"I must"* show clearly that it is in words,[1] not in images of leg, trunk and arm movements. Its motor effects are appropriate, not in the sense of being in the least like it or represented by it, but in the sense of being the effects which that idea, when uncontested, had, by exercise and effect, come to produce in that man. The "Hollo! I must" is a lineal descendant of the sensory admonitions from others received during life and connected each with its response by use, satisfaction, and the discomforting punishment attached to opposite courses.

In the third place, the supposedly crucial cases in favor of the ideo-motor theory really show the person *making the movement in order to get the idea of it.* Some of you have doubtless instructed your students as follows:

> Try to feel as if you were crooking your finger, whilst keeping it straight. In a minute it will fairly tingle with the imaginary change of position; yet it will not sensibly move because *its not really moving* is also a part of what you have in mind. Drop *this* idea, think of the movement purely and simply, with all brakes off; and, presto! it takes place with no effort at all. (James's "Principles," 2, p. 527)

Now the essential fact here is that when anybody is told to try to feel as if he were crooking his finger, he tends, in the case of many subjects, to respond by taking an obvious way to get that feeling, namely, by actually crooking his finger. He responds to the request, regardless of any ideas beyond his understanding of the words, by a strong readiness to crook his finger. Being forbidden, he restrains the impulse. The "tingling" is not from the *imaginary change* of the finger's position but from the *real restraint from* changing its position. The tingling occurs with individuals who cannot image the finger's movement. Far from showing that the imagined movement is adequate in and of itself to cause the movement, such cases show that it is unsafe to infer that the image comes first in cases where deliberately evoked images of movements are accompanied by the movements or parts thereof. If, in the experiment with ideas of sneezing, a stray individual does sneeze, it is

1. If by any sophistry it could be twisted into a representation of leg and trunk movements, it would be only the representation of lying still plus the idea of negation.

ten to one that he has the rare power to make himself sneeze and has done so, intentionally or unintentionally, in order to get a more adequate idea of how it feels to sneeze.

These facts have long seemed to me adequate evidence that an idea can produce only what it, in whole or in part, has produced in the past, not what it is like or what it means. And I venture to hope that, by realizing just what the somewhat cryptic terms—to represent, to have as object, to be an idea of—mean and by noting just what happens in even the most favored cases for the production of a movement by an idea's likeness to it, you are made somewhat suspicious of the "mysterious" and "so close" bond by which every "motor representation tends to realize itself immediately in movement."

I shall now attack the doctrine from within, showing first that its own apostles think more highly of it the less clearly and emphatically it is stated, and even believe that the power of an idea's likeness to a movement to produce that movement is in inverse ratio to the amount of likeness—that the power of an idea to arouse the movement it is like grows greater, the less alike they are!

Last spring many of the members of this association kindly ranked in order of truth from four to ten statements concerning the general power of ideas to produce the acts which they resemble, or the power of some particular idea to produce some particular act. I take this occasion to thank them for their cooperation. These rankings, to which reference will be made repeatedly in what follows, represent a collection of judgments that are expert and, so far as my argument is concerned, impartial. Whatever errors of carelessness in reading, writing and the like affect them are such as have no prejudicial effect upon any of the conclusions which will be drawn from them.

From them we can measure the relative acceptability of each of a series ranging from clear and emphatic to obscure and mild statements of the power of motor representations to realize themselves in movement.

Consider, for example, these four statements:

30. A movement idea is the revival, through central excitation, of the sensations, visual, tactile, kinesthetic, orginally produced by the performance of the movement itself. And when such an idea is attended to, when, in popular language, we think hard enough of how the movement would "feel" and look if it were performed, then, so close is the connection between sensory and motor processes, the movement is instituted afresh.

32. In the special case in which the object to which we direct our attention by a volitional effort is a bodily movement, the movement follows immediately upon the idea.

31. We may then lay it down for certain that every representation of a movement awakens in some degree the actual movement which is its object.

33. If a child or a primitive man has a vivid idea of a movement of his own body, that movement is thereby made unless it is prevented by some contrary idea.

The first two are obviously more emphatic statements of the doctrine of ideo-motor action than the last two, but they are less acceptable to a random picking from this association. Respect for the genius of James perhaps accounts for part of this, but other features of the returns show that the belief in ideo-motor action thrives on qualifications—turns gladly to "a child" or a "primitive man," "a vivid idea," "unless it is prevented," and the like.

Consider next what should be the effect of attention to an idea upon the strength of its tendency to arouse the movement which it represents, supposing it to have such a tendency. Should we not, on all general principles, expect with Miss Washburn that "when such an idea is attended to, when we think hard enough of how the movement would feel and look," its power would be increased? Such seems the inevitable inference from consistent use of the ideo-motor theory. But, as will be seen still more clearly later, there is in the adherents to the theory a struggle between its principles and their sense of actual concrete facts; and the result here is that, in their concrete judgments, they deny the implication of the theory and insist that attention to the idea *weakens* its tendency to arouse the movement which it represents.

For example, the second of the two statements which I shall presently read differs from the first by supposing the movement-idea to be attended to (and also by supposing the idea to be one which resembles the movement a little more closely). The first statement is:

6. To make your spear fly straight and pierce the breast of your enemy it is useful to call to mind the sensations you had when, on other occasions, you saw your spear hurtling through the air straight at an enemy and striking him full in the breast.

The second is:

9. To make your spear fly straight and pierce the breast of your enemy, it is useful to think hard of the visual sensations, originally produced by the performance of the movement itself.

This association would vote over three to one that the second statement was the less true or more false.

The same point can be tested by two other statements from those rated. These are:

8. To make your spear fly straight and pierce the breast of your enemy, it is useful to imagine the sensations you had when, on other occasions, you felt the spear leave your hand, saw it fly through the air straight at an enemy and strike him full in the breast.

11. To make your spear fly straight and pierce the breast of your enemy, it is useful to think hard of the visual, tactile and kinesthetic sensations originally produced by the performance of the movement itself.

As before, the second statement adds the element of attentiveness (and also makes the idea in question a closer representative of the movement and emphasizes the kinesthetic element). This association would vote over two to one that the second statement was less true or more false than the first.

Still more damaging to the theory that ideas tend to evoke the movements which they resemble is the fact that, within certain limitations, the more closely they resemble them the less likely they are, according to your own judgments, to evoke them.

Among the forty statements rated were eight forming a series beginning with:

4. "To make your spear fly straight and pierce the breast of your enemy, it is useful to imagine the spear striking him full in the breast,"

in which, as you see, the idea is of a very remote result of the movement, not at all clearly like it or representative of it more than of many other movements. From this the series proceeded by graduated differences, through cases of closer and closer resemblance to the movement, to number 11, which was an almost verbatim adaptation of Miss Washburn's general statement to this particular case, namely:

11. To make your spear fly straight and pierce the breast of your enemy, it is useful to think hard of the visual, tactile and kinesthetic sensations originally produced by the performance of the movement itself.

The ratings show that although nine out of ten members of this association assert the truth of one or another form of the ideo-motor theory, their sagacious sense of fact compels them to go dead against it by assigning an order of truth to these eight statements, directly opposite to that which the theory requires. You vote overwhelmingly that a mere picture of the spear striking the enemy is more likely to produce the proper cast of the spear than a full and exact representation of the movement itself. You vote that "any idea tends to produce that act which it resembles" but you vote that the more it resembles it the less it tends to produce it! The first vote you cast under pressure from the "steam-roller" of traditional orthodoxy; the second is the result of the "direct primary" permitted by my questionnaire and reveals you as true progressives at heart.

If we let distance along a horizontal line *FT* stand for differences in truth, as judged by you, one foot equalling such a difference between two statements as seventy-five out of a hundred expert psychologists will distinguish correctly, No. 11, the statement concerning the close representative of the movement, is put nearly three feet *falser* than No. 4.

Some of you may suspect that my earlier phrase "within certain limitations" conceals facts favorable to the ideo-motor theory. On the contrary, if time permitted, these limitations could be shown to be those expected by the habit-theory. The rule is that mere likeness does nothing; when, as here, an increase in likeness goes with a decrease in the strength of habit's bonds, likeness has the appearance of diminishing an idea's potency to arouse its act; when greater likeness of an idea to an act implies greater frequency of the idea as *situation leading to the act* in past behavior, then greater likeness has the appearance of increasing the tendency of the idea to arouse the act. Nor is the series quoted above a solitary or exceptional one. If one were free to get forty statements rated by each of you instead of four, one could report a dozen similar cases.

In general the ratings witness to a conflict in the minds of psychologists between adherence to the speculative doctrine that the conscious representation of a movement is, in and of itself, potent to produce it and a sense for concrete facts which insists that it is thus potent only when it has for some reason been in the past the situation leading to it. The theory claims that an idea produces what is like it; observation teaches that an idea produces what has followed it.

Why, then, one naturally asks, did the theory ever gain credence, and why is it still cherished? The answers to these questions which I shall try to justify furnish my last and perhaps strongest reason why it should be cherished no longer. My answers are that the ideo-motor theory originated some fifty thousand years ago in the form of the primitive doctrine of imitative magic, and is still cherished because psychology is still, here and there, enthralled by cravings for magical teleological power in ideas beyond what the physiological mechanisms of instinct and habit allow.

Shocking as it may seem, it can be shown that the orthodox belief of modern psychologists, that an idea of a movement tends to produce the movement which is like it, is a true child of primitive man's belief that if you sprinkle water in a proper way your mimicry tends to produce rain, that if you first drag a friend into camp as if he were a dead deer you will be more successful in the day's hunt, or that if you make a wax image of your enemy and stab it he will tend to sicken and die.

Evidence that the accepted doctrine of ideo-motor action is homologous to, and a lineal descendant or vestigial trace of, the crassest forms of imitative magic may be sought along two lines—the comparative and the historical or, as the biologists would say, the palaeontological. In comparative anatomy two forms of an individual or of an organ testify to a common ancestry—are rightly suspected of being homologous—in proportion as they are linked by intermediate forms and differ only, as we say, in degree. After a somewhat similar fashion I shall try to prove that the difference in falsity (or truth) between the absurdest magical superstition and the most approved form of the ideo-motor theory is one of degree only, and that the latter is linked to the former by a chain of intermediate forms.

As magical superstitions we may take the following:

1. "To make your spear fly straight and pierce the breast of your enemy it is useful to make a wax image of your enemy with a spear stuck through his breast."

24. "If a man draws secretly a picture of you with the words 'Yes, I will!' coming out of your mouth and then asks you 'Will you give me your coat?' you are more likely to answer 'Yes, I will' than you would have been if he had not drawn the picture."

As what is in fact the most approved of the stock statements of the ideo-motor theory we may take James's familiar statement:

31. "We may than lay it down for certain that every representation of a movement awakens in some degree the actual movement which is its object."

Either of the two assertions of magical potency would be voted false by the association with practical unanimity. James's statement would be voted true by a comfortable majority. We regard the doctrine of imitative magic as sheer nonsense and the doctrine of ideo-motor action as substantially true. But our own judgments indicate that the latter is close kin to the former, when we treat them as we treat any set of judgments of difference in measuring the discriminability of objects.

Indeed only two intermediate links are required to show and measure the kinship. Recall Professor Washburn's statement:

30. "A movement idea is the revival, through central excitation, of the sensations, visual, tactile, kinesthetic, originally produced by the performance of the movement itself. And when such an idea is attended to, when, in popular language, we think hard enough of how the movement would 'feel' and look if it were performed, then, so close is the connection between sensory and motor processes, the movement is instituted afresh."

And consider also this vague statement, that:

5. "To make your spear fly straight and pierce the breast of your enemy, it is useful to imagine the spear hurtling through the air straight at him and striking him full in the breast."

These five statements, James's, Miss Washburn's, the one about an

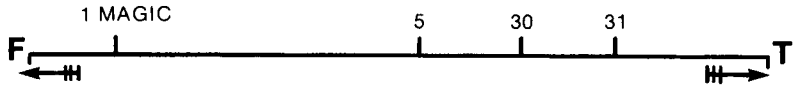

Figure 1.

image of a hurtling and striking spear, the one about contemplating a wax image, and the one about writing in secret the words you wish a man to speak, differ, in respect to truth, only in degree. For people are able to compare them as to truth nearly or quite as readily and confidently as they can compare in respect to truth any five dubious statements chosen at random from psychological treatises. And when they so compare them the results are as follows:

Let the line *FT* represent a scale for truth. Let the point marked 1. Magic represent the location on the scale of the truth (or falsity) of the statement (No. 1) about the potency of the wax image. Let each inch on the scale represent the amount of difference in truth necessary in order that seventy-five per cent of this association shall judge the difference correctly, one out of every four being in error. Then statements 5, 30 and 31 are located as shown in Fig. 1. For the difference in truth between statement 1 and statement 5 is 1.64. It is measured by the fact that of 37 psychologists who compared them, 28 judged that 5 was truer or less false, 5 rated them as equally true or false, and 4 judged 1 to be truer than 5. The difference between statement 5 and statement 30 is .53. It is measured by the fact that of 24 psychologists who compared them 14 judged that 30 was truer or less false, 2 that they were equally true, and 8 that 5 was truer than 30. The difference between statement 30 and statement 31 is .5. It is measured by the fact that of 17 psychologists who compared them 9 judged that 31 was truer or less false, 3 that it was equally true and 5 that 30 was truer than 31.

Thus the truth of statement No. 1—of the potency of fabricating a wax image of your enemy—is about 1⅔ below the truth of statement No. 5—of the potency of vague thoughts about the spear striking him, 2¼ below the truth of Miss Washburn's statement and 2¾ below the truth of James's statement. The links are truly intermediate. The most approved statements of the ideo-motor theory are by their own advocates confessed to be only a little more truthful or less false than the rankest magical nonsense.

Using the same criterion of expert judgment in each case, the most approved statement of the ideo-motor theory is only about as far above a barefaced statement of the primitive superstition of imitative magic on a scale for truth as composition *B* is above composition *A* on a scale for merit in English writing; or as drawing *B* is above drawing *A* on a scale for merit in drawing.

A.

B.

Figure 2.

A

The book I refer to read is Ichabod Crane, it is an grate book and I like to rede it. Ichabod Crane was a man and a man wrote a book and it is called Ichabod Crane i like it because the man called it ichabod crane when I read it for it is such a great book.

B

First: De Quincys mother was a beautiful women and through her De Quincy inhereted much of his genius.

His running away from school enfluenced him much as he roamed through the woods, valleys and his mind became very meditative.

The greatest enfluence of De Quincy's life was the opium habit. If it was not for this habit it is doubtful whether we would now be reading his writings.

His companions during his college course and even before that time were great enfluences. The surroundings of De Quincy were enfluences. Not only De Quincy's habit of opium but other habits which were peculiar to his life.

His marriage to the woman which he did not especially care for.

The many well educated and noteworthy friends of De Quincy.

Some of you may be skeptical concerning this method of measuring differences of credibility in the minds of a given class of thinkers, harboring the suspicion that the individual reports were invalidated as measures of the individuals' opinions by the incommensurability of the statements. Some of you, indeed, refused to rate the statements. But, as a matter of fact, the main difficulty experienced with the various sets out of the forty-two statements which were issued was not that they were incommensurate as to truth, but that the differences were too small to be distinguished with any feeling of surety. I regret that the poll of this association is not complete, owing to the fact that some individuals refused, justly enough, to spend their time in grinding my axe, and that some canny ones refused to be drawn into any testifying that might conceivably be held against them later. It seems, however, certain that the membership of this association experienced—or would have experienced, had they tried to make the comparisons—no greater sense of

incommensurability than they would have experienced in grading advertisements for "appeal," drawings for skill, or poems for beauty. Reports of such difficulties were very rare.

Whatever validity attaches to your belief that you know what you are about and mean something real when you judge that James's familiar statement is less false than the assertion about the potency of secretly writing "Yes I will" as a persuasive fetich, or that about the potency of wax constructions of one's enemy in warfare, attaches to all the comparisons that I have used. But had I asked for only this one comparison every member of the association would have made it with no sense of incommensurability or trickery, but only with a sad surprise that I should ask so foolish, because so easy, a question. This method of measuring differences in credibility in the minds of a defined group is in fact sound, and, I may add, is useful in the case of very many problems in the mental sciences.

In the present case it teaches us that our belief that an idea tends to produce the act which it is like, or represents, or "is an idea of" or "'has as its object," is kith and kin with our forebears' belief that dressing to look like a bear will give you his strength or that burning an effigy of the foe will make him die, and with the modern charlatan's belief that thinking one can walk will mend a broken bone. It is kith and kin with them, own grandchild of one and own brother to the other—and as false as either.

> An image, idea or any other mental fact, has, apart from connections made by heredity, use and satisfying results, no stronger tendency to produce the movement which it resembles, or represents, or has as its object than to produce any other movement whatsoever—no stronger tendency to produce it than ideas of dollars and earthquakes have to produce them. Why should it? Why should the likeness between John Smith's mental image and an event in nature have any greater potency when that event is in the muscles of John Smith than when it is in the sky above or the earth beneath him? Why should McDougall's "mysterious connection" be allowed to "obtain" just here and not elsewhere?

It obtains nowhere. The connection whereby likeness or representative quality, in and of itself, created a bond between a thought and an act, would indeed be "mysterious" if it existed. But it does not exist.