DESCARTES ON REASONING

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THE seventeenth century French philosopher, René Descartes, devised a system of reasoning which he said consisted of

> . . . certain simple rules such that, if a man observe them accurately, he shall never assume what is false as true and will never spend his mental efforts at no purpose, but will gradually increase his knowledge and so arrive at true understanding of all that does not surpass his powers.[1]

This system of reasoning, he observed, ". . . appears to me to be complete and to omit nothing to which our human powers can apply."[2] Such assurances as these did not come from an overzealous youth who was eager to make his reputation quickly. They came, instead, from the man who originated the idea of describing nature mathematically, who propounded the famous premise "I think, therefore I am," and who invented the analytic geometry. It is Descartes, in fact, who is credited with having fathered modern philosophy.[3] It would seem that we have proof of the pudding.

In a survey of thirty-five bibliographies, journals, and text-books in speech no significant reference to Descartes was found by the writer. It is the purpose here to describe Descartes' system of reasoning and to suggest its uses and limitations from the standpoint of those who teach reasoning in discussion, debate and public speaking courses.

I.

Descartes' method begins by subjecting the ideas of the world to doubt. For Descartes, it was the "universal doubt" which alone could divest the mind of prejudices, half truths, inconsistencies, and phantasmas.

> . . . But as regards all the opinions which up to this time I had embraced, I thought I could not do better than endeavor once for all to sweep them completely away, so that they might later be replaced, either by others that were better, or by the same when I had made them conform to the uniformity of a rational scheme. And I firmly believed that by this means I should succeed in directing my life much better than if I had only built on old foundations, and relied on principles of which I allowed myself in youth to be persuaded without having inquired into their truth. . . .[4]

In contrast to the skeptical approach to knowledge, however, doubting was not to be an end in itself; rather, it was only a means designed to allow the mind to find ". . . good ground for assurance and to reject the quicksand and mud in order to find the rock. . . ."[5]

After clearing the mind of impedimenta by bringing it to doubt the ideas of the world, one must begin the search for that which can be trusted. Descartes believed that any idea that was clear could be trusted. For him, clarity was the test of truth:

> After this [process of doubting], I considered what in a proposition generally is requisite in order to be true and certain; for since I had just discovered one which I knew to be such, I thought that I ought to know in what this certainty consisted. . . . I came to the conclusion that I might assume, as a general rule, that the things which we conceive very clearly and dis-

[1] Descartes, René, "Rules for the Direction of the Mind," *The Philosophic Works of Descartes*, Trans. Haldane, Elizabeth and Ross, G. R. T., (Cambridge, 1931), p. 9.
[2] *Ibid.*, p. 36.
[3] Russell, Bertrand, *A History of Western Philosophy* (New York, 1945), p. 557.
[4] Descartes, René, "Discourse on Method," *The Philosophic Works of Descartes, op. cit.*, p. 89.
[5] *Ibid.*, p. 99.

tinctly are all true—remembering, however, that there is some difficulty in ascertaining which are those that we distinctly conceive.[6]

Propositions that were clear, and therefore supposedly true, could be found by two methods: intuition and deduction. By the former, Descartes referred to those intellectual insights in which a simple truth was grasped. In perceiving such an intuition, ". . . our experience or some inner light within us enables us to behold it as primary and as existing *per se*, not as depending on others. . . ."[7] The perception of a proposition by insight involves only the very simplest mental processes and is given ". . . so readily and distinctly that we are wholly freed from doubt. . . ."[8]

On the other hand, deduction meant the discovery of a truth indirectly:

. . . many things are known with certainty, though not by themselves evident, but only deduced from true and known principles by the continuous and uninterrupted action of a mind that has a clear vision of each step in the process. It is in a similar way that we know that the last link in a long chain is connected with the first. . . .[9]

Deduction, more precisely, was the process of drawing inferences from those first principles furnished by intuition:

If, after we have recognized intuitively a number of simple truths, we wish to draw any inference from them, it is useful to run them over in a continuous and uninterrupted act of thought, to reflect upon their relations to one another, and to grasp together distinctively a number of these propositions so far as is possible at the same time. . . .[10]

Clearly, then, intuition was the sudden perception of a simple truth, while deduction was the discovery of truths by inference from other propositions.

As a final point in his system of reasoning, Descartes recommended that if, after spending a sufficient amount of time at a given problem, one did not have an "intuitive cognition" (by which he apparently meant either an intuition or the possibility of making a deduction) one should stop reasoning on the matter for it was beyond human understanding.[11]

It appears that three main conceptions make up Descartes' system of reasoning: 1. Universal doubt to free the mind from prejudice and error; 2. Clarity of a proposition or of the process by which the proposition was discovered as the test of validity; 3. Use of linear inferences to deduce new propositions. We shall examine each of these conceptions from the point of view of the speech teacher.

II.

The "universal doubt" of Descartes is a technique of achieving what we call today an open mind. Descartes believed strongly in technique; one could no more think well by vaguely deciding to, anymore than one possessed by a burning desire to find a treasure could do so by simply wandering the streets. One must have a specific method of achieving his objective. In the instruction to doubt, we find such a method: whenever an idea enters the mind, we are instructed to subject that idea to doubt. The instruction is simple, universally applicable, and methodologically specific. Whether or not it is the best instruction is another question, to be discussed later.

Those of us who wish our students to work open mindedly in coming to grips with the conflicting ideas encountered in discussion, debate and public speaking would probably increase our production of open-minded thinkers if we could furnish our students with simi-

[6] *Ibid.*, pp. 101-102.
[7] *Rules, op. cit.*, p. 16.
[8] *Ibid.*, p. 7.
[9] *Ibid.*, p. 8.
[10] *Ibid.*, p. 33.
[11] *Ibid.*, p. 22.

larly specific directions. To simply appeal to the student to be "open minded" may not be worth much because it does not tell him what to do. In teaching a student to be open minded, *we must discover instructions that are simple in nature, universal in application, and specific in method.*

However, even Descartes' specific direction may not insure an open mind for two reasons: First of all, to simply furnish one with the technique of doubting fails to take into account human motivation. If it is true that one cannot simply "turn on" an open mind, it is probably true that one cannot always "turn on" the technique of doubting. Even before Descartes had begun to doubt, he had been psychologically prepared for a mental search by his studies and travels:

> For myself, I should doubtless have been one of these last people [who cannot think] if I had never known more than a single master, or had I never known the diversities which have from all time existed between the opinions of men of the greatest learning. But I had been taught, even in my College days, that there is nothing imaginable so strange or so little credible that it has not been maintained by one philosopher or other. . . .[12]

Even an impassioned plea for open mindedness coupled with specific instructions designed to achieve more objective thought perhaps are not enough to insure a large quota of open minds. It may be that only when the student has suddenly become aware of the conflicting schools of philosophy, of the conflicting means and ends in human affairs, of conflicting information, discoveries and experiments that he *feels the need* for doing anything to insure validity for his thoughts. This subjugation of the self to the material and ideological conflicts of the world may be the first step in enabling a student to seek the virtue of a more objective way of thinking. *Only after one senses the enormity of the conflict of ideas will one feel the need to use specific methods for either opening the mind or for thinking.*

A second reason that Descartes' instruction to doubt may not secure an open mind is that the attitude of the careful thinker is at once more complex and less decisive than the attitude of doubt. Perhaps Dewey's term "suspended judgment"[13] is a better term to describe the characteristic Descartes seemed to be searching for, since it is less apt to lead to skepticism. But that even suspended judgment is not the sum total of the attitudes that a careful thinker must have can be seen immediately by examining the behavioristic concept of the "delayed response," the semantic conception of "extensional orientation," or the logician's description of "constructive reasoning." If we are going to secure the proper attitudes for thought, we will have to supplement Descartes' treatment with a more thorough exposition of the nature of the scientific or investigative mind.

Finally, it must be noted that Descartes' system of doubting places upon the individual the complete responsibility for the determination of world's truths.

> Now no more useful inquiry can be proposed than that which seeks to determine the nature and scope of human knowledge. . . . This investigation should be undertaken once at least in his life by anyone who has the slightest regard for truth, since in pursuing it the true instruments of knowledge and the whole method of inquiry come to light. . . .[14]

At the time that Descartes originated this system, this shift of responsibility from authoritarian to individual responsibility was a fresh approach to the problem of

[12] *Discourse, op. cit.*, p. 90.

[13] Dewey, John, *How We Think* (New York, 1910), p. 13.

[14] *Rules, op. cit.*, p. 26.

truth.[15] But in our age where complete knowledge is clearly beyond the range of any man, it is necessary to accept the authority of investigating boards, experts, fact-finding committees, and authorities of all kinds. The system of individual determination of truth cannot be followed as fully as one might wish. We are, however, faced with a dilemma: It is true that if the world is so over-technical as to be beyond the sphere of the individual, Descartes' system cannot work. By the same token, however, neither can democracy, for both systems are based on the ability of the individual to make discriminations in those fields that concern him. We must either go in the direction of Descartes and lead the individual to accept more intellectual responsibility, or we must abandon the theory of democratic action as we have conceived it.

In conclusion, we may say that Descartes was correct in preparing one for valid creative work by attempting to free him from prejudice and past errors and that he was probably correct in giving a simple and specific instruction to secure this freedom. The instruction to doubt would probably be followed more frequently if one's motivation were increased by the knowledge that there are different and contrasting opinions in all fields of human knowledge. At the same time, Descartes' instruction was too much in the direction of skepticism and too limited in scope to secure all the best qualities of thought. Finally, whether or not the individual can accept the responsibility implied in Descartes' system remain to be determined. At the present, emphasis seems to increase pressure for individuals to specialize and thereby to accept authorities and experts in all fields except the one they professionally practice. Our conceptions of democracy, however, are at odds with the more modern approach of specialization; when men realize this, perhaps once again man may be encouraged to take all knowledge for his province.

Descartes was correct in believing that the mind must be opened, and that it can be done best by a specific method; his method, however, was both incomplete and philosophically over-ambitious.

III.

Descartes believed that he had made clarity the sole test of truth. For him, any intuition which was clearly perceived or any deduction which could be clearly followed should be accepted as true. The opinion expressed here, however, is that clarity is not the essence of reasoning, but the by-product of reasoning.

To begin with, even Descartes used an additional logical method in establishing the proposition "I think, therefore I am." Vietch points out that it is not clarity which guarantees the truth of the proposition, but the law of non-contradiction.[16] To illustrate, when one denies that thoughts exist, that denial is itself a thought; hence even the denial of thoughts force one to conclude that there are thoughts. Descartes was, however, unaware that he had used any principle save that of clarity.

Clarity is insufficient for demonstration for a more obvious reason: frequently ideas may be clear and yet false. The shadows in Plato's cave may be clear to their observers, but they are none the less, shadows. Many a normal illusion is clearly perceived. Presumably, the delusions of the psychotic possess for him the same clarity that Descartes' "I

[15] Ganguli, Sanjiban, *Descartes* (Bombay, 1900), p. 7.

[16] Vietch, John, *The Method, Meditations and Philosophy of Descartes* (New York, 1901), p. 28.

think, therefore I am" did for the philosopher. Red and green may be clear to both you and me, yet different for us both. One may *clearly* argue in a circle, yet certainly not have made a demonstration. One may easily confuse clarity and familiarity so as to assume as true that which is only better known. Finally, as Hobbes pointed out, clarity may be the *reason* a man defends a belief, but clarity itself cannot tell one whether or not a belief is correct.[17]

If clarity cannot be the final and only test of a demonstration, what is its place in logic? The position taken here is that clarity is the *result* of careful use of logic and thought, but it is not the test of that logic or thought. We perceive a thing clearly after we have carried out a careful logical process which has forced us to become familiar with the various aspects of our problem. *In brief, clarity is only the subjective by-product of careful attention to a problem, not the test of validity.*

IV.

Descartes proposed no rules to insure the validity of inferences such as those set forth by Aristotle in the *Analytica Priora*. He believed that since good sense was possessed by all men in equal amounts that such rules were unnecessary.[18] He further explains his position by saying

> . . . none of the mistakes which men can make . . . are due to faulty inference; they are caused merely by the fact that we found upon a basis of poorly comprehended experiences, or that propositions are posited which are hasty and groundless.[19]

Of the syllogism and the rules concerning them he believed that they

> . . . are well suited for polemics. They indeed give practice to the wits of youths and, producing emulation among them, act as a stimulus; it is much better for their minds to be moulded by opinions of this sort, uncertain though they appear . . . than to be left entirely to their own devices. For thus through lack of guidance they the students might stray into some abyss. . . .[20]

The only rule that he suggests, therefore, is that in drawing inferences, that the inference be clear. The "natural light of reason" alone is enough, according to Descartes, to insure validity.

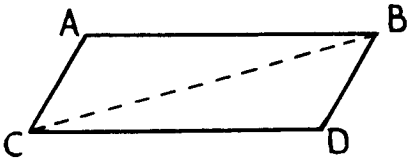
If Descartes is correct, then the teaching of logic and argumentation is a waste of time. The experience, however, of those of us who have taught reasoning often tells us differently. More objective evidence is offered in an experimental attempt to investigate errors in inference by the late John J. B. Morgan. Morgan found that inferences involving emotionally loaded concepts tended to be markedly in agreement with the prejudices of the reasoner[21] and that even when strong emotional biases are absent, the reasoner may make errors in inference as a result of following the line of least resistance.[22] People evidently do need training in the technique of drawing inferences despite Bacon's observation that "God did not simply make man two-legged and leave it to Aristotle to make him wise." It may be true that the person who attempts to remain objective and who pays careful attention to the process of reasoning may, without being taught the rules of reason, arrive at correct judgments. Yet, recent experiments show that the person who has been taught the "rules of reason" tend to be able to do a better job of

[17] Ganguli, *op. cit.*, p. 19.
[18] *Discourse*, *op. cit.*, p. 1.
[19] *Rules*, *op. cit.*, p. 5.
[20] *Ibid.*, p. 4.
[21] Morgan, John J. B., "Distortions of Syllogistic Reasoning Produced by Personal Convictions," *Journal of Social Psychology*, v. 20 (1944), pp. 39-59.
[22] ———, "Following the Path of Least Resistance in Thinking," *Journal of Educational Psychology*, v. 35 (1944), pp. 27-38.

critical thinking than those who have not.[23]

Descartes' system of reasoning may have been at fault at another point. Descartes believed that he had found a method of *discovery* rather than a method that was of use in proving some hypothesis that had already been hit upon.[24] It is doubtful, however, that men make use of axioms in thinking. It is not necessary here to review the classic attacks on deduction by Locke, Hume, Mill, Bosanquet and others.[25] Instead, let us see if modern attempts to describe the process of thought seem to differ from Descartes' analysis. In referring to the method of reasoning from axioms to a conclusion, Albert Einstein observes ". . . 'No really productive man thinks in such a paper fashion. . . . The way two triple sets of axioms are contrasted in the Einstein-Infeld book is not at all the way things happened in the process of actual thinking.' . . ."[26] Einstein states that proof by axioms is a good method of expressing one's self, but it is not the pattern of human thought.[27] Wertheimer believes that ". . . The axioms were not the beginning, but the outcome of what was going on. . . ."[28] If a man does not think using axioms, how does he think? John Dewey's answer is standard: One must start with a difficulty and work one's way toward the suggestion of solutions. *After* the solutions are suggested, one used reasoning to determine the consequences of the solutions.[29] Thinking seems to proceed in part by finding and trying out various answers rather than by the evolution of the solution slowly through the combinations of axioms.

Let us examine a theorem of Euclid from this standpoint.[30] If we wish to



prove that "The opposide sides of a parallelogram ABCD are equal," we can do it by dividing the parallelogram into two triangles CBA and ACD and proving that the two triangles are congruent. It then follows by definition that side AB equals side DC and that AC equals DB. Now let us suppose that some eager high school sophomore who has mastered all of geometry up to this theorem has been assigned the proof of that theorem for the next day, but that he has lost his geometry book. He may, of course, derive the proof. But before he gets the answer, it will be necessary for him to look for methods of proof. At the moment he hits upon the correct solution of dividing the figure into two triangles and proving the triangles congruent, the *creative* process, or the process of *discovery* is over! From then on the solution to the problem is no longer new; he knows from previous lessons how to prove two triangles are congruent. The portion of the proof where he uses axioms, therefore, is *not* a creative part of

[23] Bembreck, Winston L., "The Effects of a Course in Argumentation on Critical Thinking Ability," SM, v. 16 (1949), pp. 176-189.

[24] *Rules, op. cit.*, p. 9.

[25] Most of these critics were concerned with the idea that the syllogism is question-begging. For a clear refutation of this notion, see Cohen, Morris and Nagel, Earnest, *Logic and the Scientific Method*, (New York, 1934), Ch. IX.

[26] Wertheimer, Max, *Productive Thinking* (New York, 1945), pp. 183-184.

[27] *Ibid.*, p. 184.

[28] *Ibid.*, p. 183.

[29] Dewey, *op. cit.*, p. 94.

[30] As a supplementary support of the thesis that men cannot discover a new truth by reasoning from axioms to the new truth, it is fairly certain that Euclid did not *discover* his theorems. While he was at Alexandria, he merely collected and systematized those proofs already known. See Durant, Will, *The Life of Greece*, (New York, 1939), p. 628.

the solution. It would seem, then, that deduction would not be a method of discovery. Furthermore, a man who wished to re-construct the whole of Euclid's *Geometry*, assuming he knew nothing of the discipline would (if he thinks as Dewey says people do) have to have a hypothesis that expressed the thing to be proved; even the theorems would have to be suggested. He would then have to find the hypothesis that expressed the method of proving each theorem. The actual proof of the theorems would be *ex post facto*. Once the correct hypotheses are perceived, the proof of them, which follows Descartes' method, is no longer discovery.

It may be possible to train men to think with axioms in order to reason to new conclusions. Most modern psychologists seem to suggest that thought does not proceed by this method.[31] The fact that we have not thought to proceed from axioms may be *prima facie* evidence that men cannot. Yet the evidence is not conclusive. Of all the areas in which research in reasoning is needed, the problem of whether or not a man may make discoveries that are new to him by thinking with axioms is one of the most important. Present evidence, however, suggests that man cannot uncover a new solution by Descartes' system of reasoning. Perhaps we are correct in discussion in following the lead of John Dewey.

V.

Our final estimate of Descartes will be much more kind than the preceding pages. Taken as a whole, his method was basically an attempt to free the mind from the prison it had built around itself by accepting the method of authority.[32] It was an attempt to return the individual to the position of judge instead of jailer. As such, his system re-shaped the minds of men so that they could no longer be contained within the cellars of their static method. To be sure, his specific formulations in methodology will be of little help to us today, but his basic attempt to cut the bonds of authority helped give the world the freedoms that it has today.

[31] Woodworth, Robert, *Experimental Psychology* (New York, 1938), p. 819.

[32] Nicholson, J. A., *An Introductory Course in Philosophy* (New York, 1939), p. 139.