

of which we shall determine where the truth lies, using historical fact sparingly, at least in introductory courses. The college will concern itself secondly with preparing the student for the life of the free man or citizen, and so will include in its curriculum ethics and politics. Since the principles of ethics and politics do have a certain universality and necessity, these disciplines can form an independent part of the college curriculum. These practical studies are, like other studies, dependent on experience, and even more dependent than most speculative studies. For the understanding of character and action requires long life. To overcome the impediment the students suffer due to their youth, examples from history and the examples of the historians themselves can be of great benefit. Furthermore, the need to know one's situation in order to act well within it demands that the liberal arts college consider those theses or texts which are foundations of the political structure and cultural climate of the student.

The consensus of the academy as to the role of history in liberal education is wrong, but not completely so. There is a real and important place for the study of history. When that study becomes our sole or principal focus, however, we are no longer pursuing the best form of liberal education. We may have simply decided to become specialists in history, and I have no criticisms of this except a general objection to early specialization in any field. The study of history is a worthwhile pursuit, just as is the study of logic or of grammar. But whereas logic and grammar (at least in some of its parts) have that necessity required for a speculative discipline, history does not. And yet to treat logic or grammar as the overarching discipline would be a serious error; much more so to treat history that way. The error I have been concerned with consists in thinking that history is identical with or at least a primary part of liberal education.

THE IMMATERIALITY OF THE INTELLIGENCE

Richard J. Connell

In his *De Anima* Aristotle offers to prove that the human intelligence is immaterial in the sense that it is not a corporeal operational power; that is, it does not have and cannot use an organ in its own operation, no matter how great its dependence on the activities of sensory powers that are themselves corporeal and that supply the intelligence with the data necessary for its operations.

Aristotle's proof has been contested, and many difficulties raised against it.¹ When, however, one looks at the *De Anima* with the commentary of Aquinas, he sees that the argument is straightforward and lends itself to a relatively uncomplicated presentation.

Since those unfamiliar with the Aristotelian argument will benefit from certain considerations belonging to the philosophy of nature which are closely based upon observation and experience, we begin with a passage from André Lwoff, who makes a very enlightening comparison of the living to the non-living:

A molecule is the smallest unit quantity of matter which can exist by itself and retain all the properties of the original substance. A molecule can be split into fragments, but each fragment is necessarily different from the original struc-

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¹ See Richard J. Connell, *The "Intus Apparens" and the Immateriality of the Intellect*, (*The New Scholasticism*, XXXII, 2. April, 1958.)

ture. Molecules might aggregate, but a molecule cannot divide. Neither can a molecule grow. Thus the growth and division of a bacterium is not the growth and division of its molecules.²

Lwoff's comparison enlightens because by comparing the smallest unit-individual of the living to a unit-individual of the non-living he makes it very difficult for anyone to deny their irreducible distinction. He focuses directly on the observational ground for distinguishing the living from the non-living, and many there are who wish to make the living nothing more than an organization of material components, an organization that is a property, an accident, of the materials themselves.

Clearly unicellular organisms show themselves to possess an active principle that is the cause of three different activities: reproduction, growth, and self-maintenance, which is a nutritional activity. That these operations do not occur in individual molecules nor in collections of molecules as such need not be argued. We must note, however, that if a cell or multi-cellular organism can reproduce, it must also be able to grow so as to replace its lost mass, and it also must be able to convert inanimate materials into the cellular organelles and other parts necessary for the cell and for the tissues that might arise from its kind. Furthermore, we may not rightly say that these operations stem directly from the nucleus and its chromosomes, in evidence of which we offer the following testimony:

As is well known, anucleate parts still possess marked morphogenetic capacities and are able to form a new stalk, several whorls and even a healthy growing cap. This is especially so if the anucleate parts are cut from a plant which is about

² *Biological Order* (Cambridge, Massachusetts: MIT Press, 1968), p. 9. This and subsequent points are made in our *Substance and Modern Science* (Center for Thomistic Studies, Houston, Texas: University of St. Thomas, 1988). Chapters 13 and 20, especially.

to produce a cap. The morphogenetic capacity is greatest in anterior parts but nearly lacking in posterior parts.³

In short, the active principle does not have its root in the nucleus, and so the nucleus must be regarded as subordinated and as instrumental in relation to the operations and their principle. This substantial principle of operations Aristotle and the medievals called the "soul," and it has within it the roots of all the operations and all the properties upon which the operations depend.

At this point we ought to note that each of these distinct operations is directed to a determinate end state, that is to say, to a determinate *object*—this term is important—which constitutes the goal of the operation. We must also observe that the operations described bring about the goal or object to which they are intrinsically directed. Consequently they and other such powers are said to be *active* principles, active operational capacities. As such they stand in contrast to the senses and the intelligence, both of which have a different relation to their objects, and to them we now turn.

The first point to note is that the senses, unlike the operations we discussed above and unlike the active principles of inanimate entities, do not manufacture or bring about some modification in the objects with which they are in touch. Neither seeing nor hearing nor any other sense does anything to the objects sensed, and the same can be said of the intelligence. In one way the sensory powers are like those that are vegetative insofar as by their constitution they are directed to specific objects. But as we said, the difference is that the cognitive powers do not modify the objects to which they are connaturally ordered. Instead the objects to which the senses are directed modify them, the senses, not in providing them

³ J. Haemmerling, "The Role of the Nucleus in Differentiation Especially in *Acetabularia*," reprinted in *Molecular and Cellular Aspects of Development*, ed. Eugene Bell (New York: Harper & Row, Publishers, 1967). For another illustration of this point see our *Substance and Modern Science*, pp. 187-188.

with their basic nature but in specifying the particular color or sound or other property which the sense attains. Whether we see blue or red or hear high C or a low G depends not on us but on the object-stimulus. On that account the senses, though already capable of their activities, are said to be *passive* operational capacities, not because they are acted upon in the way iron is affected by a magnetic field but because the character or species of the operation is determined by the object-stimulus.

We must emphasize, however, that the passivity of the senses is very different from the passivity of a material which is acted upon by a physical agent. For example, the color red that exists in a tomato requires in the skin of the tomato a very definite physical disposition, a very definite molecular or atomic substratum. It requires that the skin of the tomato contain a distinct pigment in which the color resides and so determines the skin-subject. Every property existing in a substance requires a very special order and arrangement of the molecules that form the surface. But the eye when it is acted upon by the color red is not modified so as to produce the same arrangement of molecules that exist in the original colored object. The eye does not undergo a change that makes its interior red; the retina and the optic nerve do not become colored. This kind of reception of a form traditionally has been called an intentional reception, and the form received is said to be an intentional form, an expression that distinguishes it from those forms that determine a physical, material subject. Thus in the senses the formal principle, the form of the eye, is passive in a special, non-material way, and this mode of receiving is therefore immaterial in the sense that it does not determine the subject that receives it however much it determines the operation.⁴

From what we have said we can see that the senses as pas-

⁴ A reflection in a mirror is received by the mirror without determining the glass of which the mirror is made.

sive are ordered or directed by their constitution to a genus, a class, of properties. Sight is connaturally directed not to just red or blue but to every color, to the entire genus color-light. Similarly, hearing is directed to a range of sounds which extends from 20 to 20,000 cycles per second. The other senses are similar.⁵ And of course the orientation of a sense to one genus or class of object prevents it from being ordered to any other. Sight attains color-light but not sound, flavor, etc.

We wish to emphasize that the sensory powers are active in the sense that they are able to elicit an operation directed to some sensible trait, and this ability is signified by the expression *first act*. Insofar as the senses are able to do something they are said to act; so when they are not acting but yet are capable of acting they are said to be in first act, the word "act" having now been extended to the source of the act or operation. However, unlike the vegetative functions, the senses must be acted upon by the object they know. Stated another way, the senses are indeterminately passive in respect to the many species of sensible traits that fall within the genus or class to which they are connaturally directed. Furthermore, the senses cannot simultaneously attain or know the colors of several objects at once. To be sure, the sense of sight, for example, can be directed to a white golf ball and be aware of the colors of the objects in the general environment which constitutes its field of vision. But when sight is directed to the golf ball it sees only white perfectly, and when it looks at the grass around the pin it sees only green perfectly. Everything else within its field of vision is seen less perfectly.

Our main point can be made more emphatically in a different way. Suppose that the color red were inherent in the eye itself; suppose that the retina took on the color red, then what

⁵ It might seem that touch is an exception to the statement that the senses do not modify their objects because it depends on a physical contact with the object known. Such contact, however, is only the condition upon which the exercise of the sensation depends; it is not the essential nature of the activity.

would happen to the visual operations? Plainly they would all be affected in such a way that everything seen would look to be the color red, or it would be affected by an overcast of red. In short, no other color could be seen *as it is in itself*. Now this condition is the one that Aquinas expresses when he says that whatever appeared intrinsically in the sense would prevent it from knowing anything else, at least in its proper nature. In his own words: *Intus apparens prohibebit cognoscere extraneum et obstruet*, which when translated tells us that “anything intrinsic to nature of the power would prevent and obstruct its knowing anything extrinsic to itself [to that nature].” That is to say, a sensory power cannot be constituted in the same fashion as an active power because if it were it would be able to attain only the one object to which it would be directed and unable to attain anything else. The reproductive power, for instance, can reproduce only one species, the power of growth can bring about only the shaped magnitude of its species, and the nutritional power can repair only the tissues of the species within which it exists. Thus were the sense of sight intrinsically red it would be incapable of knowing green, yellow, or any other color. In short, were the operational principles we have looked at, whether active or passive—were any of them intrinsically determined to one species of object by the power’s form, it then would not be able to attain any other species of object.

If we look at the intelligence, we find that it, too, is a passive operational power insofar as it can exercise its operations only when its action has been determined or specified by an object which it seeks to know and to which it is directed. Moreover, the intelligence is like the senses in that it too receives a form in an intentional way. To repeat: just as the senses are passive in the face of the objects they can know, so the intelligence too is passive in the face of the objects it can know. But there is a difference between the intelligence and the senses, for the latter are able to elicit their operations by reason of their nature, their physical constitution, whereas the intelligence is

not. In other words the senses are constituted in first act by the form of the sense itself.

As for the intelligence, we are all aware that we must pass from a state of intellectual ignorance to a state of understanding, and we do so by learning from observation and experience what the properties and the behavior of the objects around us are. Of course we begin to acquire concepts early in our childhood, but the perfection of the intelligence consists in seeing the real world through principles derived from observation, principles that order the concepts pertaining to the subjects of the various sciences. In other words, the term of our efforts in learning is a systematic understanding of the various genera of objects that belong to the systematic disciplines, and when we once acquire a substantive understanding of the data, principles, and conclusions which belong to a given discipline—mathematics, say—we possess the science habitually and can exercise it when we choose. A mathematician who is not actually proving or explaining theorems is able to do so when occasion requires. This means that a habit bearing on a given scientific subject brings the intelligence to *a state of first act in relation to that science*. In this way the intelligence differs from the senses in having to acquire a principle by which it is in first act, a principle that is very different from the substantial principles of the senses, and there are as many intellectual habits as there are systematic sciences the mind can acquire. In sum, the intelligence possesses a number of first-act-habits no one of which is a principle intrinsic to the intellectual power. This difference is important and needs to be examined further.

To begin we must note that the intelligence is directed to a “genus-object”—permit me the term—that is radically different from that of any other operational capacity, whether active or passive, because the intelligible object of the intelligence is *anything whatever that exists or can exist*⁶ (the Latin

⁶ Just as sight, for example, makes us aware of darkness and hearing

expression that describes the object of the intelligence is *ens inquantum ens*), which of course means that its *object is not in any way a genus*; instead it encompasses every actual category as well as those that are possible. In short, the object of the intelligence transcends every actual and possible category and so is rightly said to be infinite in its "extension," and that tells us something about how the intelligence must be constituted.

If the specifying object of the intelligence is in itself infinite, then it certainly cannot be adequately known by a cognitive power that exists in first act through its nature because no created formal principle can proportion a power to an infinite object. Every created form or formal principle is finite and consequently not proportioned to what is infinite, from which it follows that the intelligence must be purely potential or passive in its nature; for only in that way can it be ordered to an object that is unlimited. On the other hand, because the intelligence is potential in its nature it can be proportioned through acquired determinations (concepts) to any object whatever, whether existing or possible, and so be commensurate with an infinite object. In no other way can a finite intelligence be specified by *ens inquantum ens*.

Now once this is seen a conclusion that says no intelligence can be a corporeal, a bodily, a physical operating power follows rather easily because every such power is constituted in first act by a finite form. Stated syllogistically the argument can be presented as follows:

No operational power that is in first act by its nature is directed to an infinite object;
 Every intelligence is directed to an infinite object;
 Therefore no [created] intelligence is an operational power that is in first act by its nature.

We may then argue as follows:

makes us aware of silence, so too the intelligence enables us to know what is not, the non-existent, that is to say, non-being.

Every corporeal operational power is in first act by its nature;

No intelligence is in first act by its nature;⁷

Therefore no intelligence is a corporeal operational power.

We now see what the *intus apparens prohibebit extraneum* means: it simply says that any form intrinsic to the constitution of a created intelligence, and especially any form that was the form of an organ, would prevent that intelligence from being proportioned to an infinite object, to what exists as such. An intelligence can know some determinate object only through a form that is likeness of the object known, and so to know an infinite object—that is, to know any and every reality that falls under its formality—the form of the intelligence would itself have to be infinite, an infinite likeness, which of course occurs only in God. And so to repeat: a finite formal principle can be a likeness only of a finite object or objects, and even the angelic intelligences are measured by this principle: they are not in first act by their nature. Separated substances know their own substances directly, and through them they can know other things in a limited way. But to be able to know existing reality, as well as that which is possible, they require concepts that are distinct from their natural substance. And so we see that the human intelligence must be an operational power that is only potential and therefore cannot be corporeal or material. And once we see that intelligence cannot be material, the road to seeing the incorruptibility of the human soul is not long.

⁷ We wish only to remind the reader that in the divine intelligence there is no distinction between first and second act because the divine intelligence is an action.