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MAN AND MACHINE

The modern man perhaps would not find it odd to accept himself as a machine. But he might insist that this contention should not be taken literally meaning that he *is* a machine. In all likelihood, he would say, 'what is meant is to-day's man has in his daily discourse *become* mechanical'. This however would be more a lament than a statement of fact, more a metaphor than an assertion.

In any case, this sort of attitude towards human beings, taken seriously, ultimately amounts to treating people as *things* and to a replacement of our spontaneous and ordinary experience of ourselves. We would indeed find it extremely hard to regard a purely mechanistic view of the human person as consistent with what we know about people by living with them. Truly speaking, I often come to suspect that the mechanist philosophers are less intent on telling me what I am than in telling me what I am not. And it is ironic that anyone who declares himself to be a machine becomes immediately a critic of the mechanistic interpretation of himself, since he, in making this declaration, becomes *self-reflective*. Man would be in constant contradiction with himself insofar as he, implicitly or explicitly, seeks to establish his identity solely in mechanistic terms. Any such attempt — even if objectively made — would be based upon the denial of the feature that most marks man out as unique, namely, his ability to become problematic *to himself*. No machine is a problem *to itself*. But man can hardly escape himself. Hence the most perennial question for him remains What am I? When man asks this question, he is assumed to ask it not just mechanically. Suppose one shouts the question in a good echo-location; the sounds would naturally boomerang back to himself; *if* they could be said to ask the question at all, would do so mechanically. Or, if we speak the question into a tape-recorder, and play it back, then, *if* the recorder could be said to ask the question at all, it would do so mechanically. And it is clear that, in neither case, the question could sensibly be regarded as its (the echo's or the tape-recorder's) question.[1] But when a man asks this question, it is *his* question and not asked mechaniacly.

There is a story that a monk invented a machine that could prove the existence of God. This was a clever thing for a machine to do. The monk however was cleaverer than the machine, cleverer than any machine that has so far been invented; because uptill no machine has invented a monk who could prove anything at all.[2] The moral is obvious : men and machines differ in category. And it is this point that we would try to bring out in the sequel.

I

The points of distinction between man and machine are noted usually in terms of certain 'qualities' held true of man, but are said to be necessarily lacking in the machine. Some such qualities are : intelligence, introspection, imagination, creativity, free will, love, and the like. However, it would perhaps not be controverted that the possession of any such quality ultimately finds its basis in man's being a *conscious* or rather *self-conscious* creature — i.e., in man's being able not simply to become aware of, but to become aware of his own awareness. Thus, one might contend, what crucially differentiates man from machine is the former's distinctive ability to become 'aware of his own awareness' which, as would be argued in this paper, it is difficult to ascribe to a machine. Seen in this light, we may propose our thesis in the form of the following argument :

Premise 1. Man is necessarily a conscious or, more precisely, a self-conscious being.

Premise 2. A machine is essentially bereft of the ability to *be* conscious — not to speak of being self-conscious.

Conclusion. Man could not be *reduced* to a machine.

The argument is obviously valid, since the acceptance of the premises would make it contradictory to deny the conclusion. Now we would try to show the truth of the premises in order.

II

Attempts to explain away man's 'being conscious' in purely physicalistic and hence mechanistic terms have been made most radically by thinkers known as *behaviourists*. Materialistic interpretations of conscious processes are, of course, no new phenomena and have been available since the time of Hobbes, and even as far back as Democritus. Modern behaviourists, however, being equipped with the various findings of neurophysiological experi-

ments, are able to put forward their thesis with more confidence. Anyway we may start with some rather simple forms of behaviourism according to which man *is* a 'physical complex' having nothing but physical attributes and all his so-called mental attributes are reducible to physical ones. For the behaviourist thus a person's being conscious *means* his behaving in a certain way involving certain observable bodily movements. But obviously a person may well remain conscious without displaying any behaviour consisting of *observable* bodily movements. So the behaviourist distinguishes between overt and covert movement, and holds that, while the former is easily observable, the latter is detectable on some further analysis. But still there appears difficulty. Recent work with drug curare which produces temporary paralysis shows that in a conscious state even covert movement may be absent. For example, a patient lying in the state of complete muscular paralysis is, after the state of paralysis is over, found to report that there was no absence of thoughts, sensations, etc, during the paralysis. The behaviourist tries to get over this difficulty by taking recourse to what he calls 'disposition to behave', which is claimed to remain present when no sort of bodily movement occurs. So there would be no difficulty in granting that attributing a state of consciousness to a person *is* attributing a *disposition to behave* in certain ways.

It should be clear that such a strong and historically deeply rooted thesis as behaviourism cannot be simply thought of as speaking nonsense. It is readily understandable that the various outward expressions and activities of a person are often indicative of the sort the person is. But a close-knit behaviourism seems *inadequate*, not comprehensive enough, to capture the *full* intrinsic density of man. The behaviouristic account of man is not being said to be false, but incomplete and hence unsatisfactory.

Our concern in the sequel, it should be borne in mind, would be not against the behaviouristic *method* but the behaviouristic *thesis* purporting to deny man *as a conscious being*. The scientist might well dismiss man's consciousness *methodologically* in pursuing 'scientific study'. In fact, it is often urged that, since *consciousness* cannot be measured or weighed, photographed or otherwise recorded objectively by any scientific methodology, and since also it (consciousness) is experiencially accessible only to one individual,

it simply must be systematically excluded from any scientific model. Granted; but — and this is the point — would it not be unjust to conclude that, *therefore*, our consciousness is *unreal*? To say so would commit the fallacy of 'what my nets will not catch is not fish'. Maybe that scientific programme need have no business with what we call our *consciousness*. Thus we may agree with Eccles when he says, '....as neurophysiologists we simply have no use for consciousness in our attempts to explain how the nervous system works'.[3] But we may ask, so what?. I do not need my pullover in summer, but *that* surely does not make my pullover unreal. If, one might further opine here, science cannot account for man's consciousness, that would be a reflection on the comprehensiveness of science and in no way impede the legitimacy of consciousness. To be sure, no philosopher of man can simplify his task by omitting or dismissing man's *conscious dimension* as unreal, since for him, it should be a real problem whether man is himself quite so simple a being as some philosophers think; and he must resist the comforting inclination to accept a view about man just because it enjoys 'simplicity' or appears to be an 'intellectually satisfying' theory, *if* the view remains incompatible with the facts. If it is the case that man's consciousness in its very nature cannot be 'demonstrated' in objective terms, then it would surely be wrong to demand consciousness be *exhibited* in order to be considered a 'fact'. On the contrary, it might be pointed out that the very peculiarity of my being conscious is that it is visible to none but one, myself and hence not susceptible to intersubjective validation. We should, in this case, not *expect* to see our consciousness our 'being aware of' — in the manner we do see the states of our body. My *awareness* of my, say, being happy, is not the sort of thing that can be observed in the way physical things are seen. If one still remains sceptic about the reality of the phenomenon of man's 'being aware of', the best it can be done is remind him of what happens to him when he underdoes an experience. And one might observe in this connection that the true scandal of philosophy is not its failure to 'objectify' consciousness, but rather its persistence in asking for this absurd objectification. The failure to recognise this point in depth has led many thinkers to wonder about the credibility of states of consciousness on the ground that they escape a full scientific investigation. J. J. C. Smart, for example, writes : '....sensations, states of

consciousness, do seem to be the one sort of thing left outside the physicalistic picture, and for various reasons I just cannot believe that this is so. That everything should be explicable in terms of physics....except the occurrence of sensations seems to me to be frankly unbelievable.'[4] Is Smart suggesting here that science alone is fit to determine what is 'real' in the world? Few scientists would make such a claim. And it would be wise enough to remember in this context the remark of Ryle : 'Physicists may one day have found the answers to all physical questions, but not all questions, are physical questions.'[5]

It does not seem exaggerating to say that man's being has certain aspects that could not be made sense of unless he is regarded as a conscious being. To explain this point, the *feeling of shame* may be a good example. According to the behaviourist, all that would amount to the feeling of shame *is* to behave or to have the disposition to behave in certain ways. This behavioural vindication of shame-feeling in someone, however, appears to run a very serious risk, namely, that of being *erroneous*. I may show all the external indications of being ashamed, yet might not actually *be* so. Had *being ashamed* been identical with *shame-behaviour*, a successful pretence of being ashamed should, but does not, mean the emergence of shame. It may again to be the case that I actually feel shame, but I happen to be so trained that I have exterminated any disposition to behave in any relevant way or may be, my shame is paralysingly great or so trivially slight that there simply is no disposition to behave in me.

It is commonplace that a specific disposition of a person is *explained* (and the explanation is taken to be a genuine one) in terms of a certain mental state of that person; e.g. my disposition to withdraw my hand from the hot water may well be said to be explained by my 'being in pain' as my hand is immersed. This clearly implies a distinction—at least a conceptual one — between mental states of a person and the dispositions which these states give rise to. This surely points at a difficulty of *identifying* 'dispositions to behave' with 'states of consciousness.'

One would indeed be on the wrong track, if he insists that the bodily expressions become the *criteria* of the feeling of shame. Once criteria have been set up, the relationship between the criterial characteristics and that which they are the criteria of is analytic,

in that it would then become self-contradictory to affirm the criteria, to accept that the criteria have been fulfilled, and deny that which they are the criteria of. But, as is already intimated, it would *not* be self-contradictory — although may often be false — to maintain that I do all that is usually taken to be the outward expressions of shame and that I am not really ashamed. But, the behaviourist may ask, do not other people often infer that I feel shame upon the observation of my bodily expressions? Well, the notion of criterion seems to be ambiguous between the idea of a way of *telling* that a certain sort of fact obtains, and the idea of what is *constitutive* of its obtaining.[6] In application to the case of feeling, the distinction is between the *evidence* we use to ascribe a feeling to someone, and the feeling itself of what this is evidence *for*. And the two, however, intimate might often become, are nevertheless distinguishable. Moreover, it would surely be wrong to *identify* the meaning of something with what would be taken as sufficient evidence for it. Precisely for this, the conclusion other people draw about my feeling shame is liable to be false. *My* awareness of my shame, on the other hand, is direct and ontologically prior to any information of observable behaviour. To reduce this awareness to a set of bodily expressions appears queer; it would mean, quite contrary to the fact, that I need *evidential support* and make an observation of my own bodily expressions in order to determine for myself that I *am* ashamed.[7] Such outward bodily expressions may be of immense use to others for concluding or inferring that I am ashamed; but these outward bodily phenomena surely *are* not what I myself *experience* as shame. For me, my 'being ashamed' is a 'primitive fact' which I neither conclude nor infer, but simply *experience*. Understood in these terms, the inability to produce adequate criteria of any such sensation would imply neither our intellectual limitations nor the incoherence of the notion at issue; it would just mean the primitiveness and irreducibility of this sort of subjective phenomenon. If someone still insists that a mental phenomenon *is* just a bodily event, he must doubtless distinguish between *this* kind of 'bodily' event and other kinds that have no such subjective overtones.

To the charge that he dismisses the areas of experience like shame-feeling as illusory, the behaviourist might reply that he not only mentioned these phenomena but explained them, and explained in quite intelligible terms, namely, in physical terms.

If, however, it is suggested to him that such explanation virtually omits what is of the essence of the matter, he might sharply retort that these 'alleged' phenomena *are* illusory. And precisely at this point the behaviourist would, in our view, expose himself to the charge of *denying the obvious*. Having shame-feeling in me is, on my part, an *experience* rather than a *judgement*; the essence of *being in shame*, it should be clear, derives from the essence of the experience, namely, *being aware of shame*. And if and when I truly say, 'I am ashamed', I do want to direct attention to my this sort of awareness of 'being in shame' — and not to some bodily states of myself. What I myself sense as 'being in shame' is not thus replaceable by a set of my bodily states. To discard this sort of awareness as unreal would allow the possibility of someone's being ashamed without his being aware of it — and this appears quite unintelligible.

It is sometimes argued that one can apply the *concept* 'shame' successfully without *having* ever the awareness of shame in himself. Maybe true, but it is hard to see how this argument could be used to negate the subject's *awareness* of shame as something 'subjective'. Let us grant that it is at least conceivable that someone can apply the concept 'shame' successfully without ever having in himself the feeling of shame. It may also be granted that someone may fail to apply the concept ' shame ', or does make an incorrect identification of this mental state, because he simply does not understand or know it, although he could well have in himself the feeling of shame. All this should not surprise us, once we keep in mind the distinction between the *phenomenlogy* of shame— shame as it figures in the *experience* of the subject, and the *concept* 'shame' the knowledge of which enables the subject to interpret the content of his experience *as shame;* and it may well be that the *latter* has some sort of tie with public circumstances and behaviour, while the *former* is available to the subject alone and has no such tie. The possession of consciousness and the capacity to characterise its contents, however combinable, are distinct.

A relatively recent theory, usually known as identity theory (I. T.), tries to explain away our consciousness by arguing that feelings, thoughts, etc., are *identical* with, one and the same thing as, states and processes of the body — or more precisely, of the brain. Among the philosophers who have recently espoused

some version of I.T. are : J. J. C. Smart, U. T. Place, H. Feigl, Richard Rorty, R. J. Hirst, D. M. Armstrong, Paul Feyeraband, A. Quinton. We shall however, in what follows, take issues with some of these thinkers.

I. T. takes its cue from the idea that thinking is carried out in the brain and that there is a specific mechanism in the brain that must be active whenever some sensation takes place. But it should be evident that what this at best warrents us to assume is that mental phenomena do or even must have some physical *correlates* in the brain. But clearly a correlation-analysis does acknowledge, and indeed implies, the legitimacy of the distinction of two mutually exclusive kinds of phenomena — one of mental and another of bodily, and hence here mental phenomena are not denied. To elaborate the point, suppose that in all cases where sensations of a certain sort occur, a corresponding brain process of a certain sort *also* occurs. From this, we would at best be entitled to assume that there is an invariable correlation between all types of sensations and specific types of neural processes. But *this* certainly does not suggest the *identity* of the two. The neural correlates of a sensation and the sensation itself, however invariably they go 'hand in hand', cannot be, on this ground, regarded as one and the same thing. A statement made long ago by Frederich Paulsen may be of some relevance here : 'I understand by a thought a thought and not a movement of brain molecules; and similarly, I designate with the words anger and fear, anger and fear themselves and not a contraction or dilation of blood vessels. Suppose the latter processes also occur, and suppose they always occur when the former occur, still they *are* not thoughts and feelings.'[8] To be sure, to cite or find out the detailed correlates of a sensation is only to give the *conditions* for the occurrence of that sensation — and *not* the sensation itself. Ernest Nagel once observed : '....if and when the detailed physical, chemical, and physiological conditions for the occurrence of headaches are ascertained, headaches will not thereby be shown to be non-existent or illusory.'[9] Thus even if it could be established as a fact, as Smart and Armstrong consider this to be a possibility,[10] that a certain sensation, e.g., of pain, uniformly involves certain neural processes and that we could always tell that someone has a sensation of pain *on the basis of* the fact that he undergoes certain neural processes, still we should remain unable to conclude that these neural processes

are his sensation of pain. In such a case, the neural processes could at best be regarded as the *criterion* of the person's being in pain. But if neural processes could be a *criterion* of pain, how could they *be* pain? Some science-oriented philosophers seem not to recognise this point sufficiently. Richard Rorty, for example, appears in favour of dropping altogether mental phenomena on the ground that any mental phenomenon can be found to be 'constantly correlated' with certain 'brain-process'. Rorty thus is in favour of replacing the expression, e.g., 'I am in pain' by the neurological statement 'My C-fibres are stimulated'.[11] But surely this claim is not, if our foregoing argument is correct, equivalent to the claim of treating mental phenomena as utter illusions. Besides, as Wittgenstein once notes[12], the expression 'I am in pain' does an expressive and evaluative job which 'My C-fibres are stimulated' does not. When I say 'I am in pain' I do not merely report a fact but also express my abhorrence for the state I am in and my desire to get rid of it. *If* we employ expressions like 'My C-fibres are stimulated' to do this expressive-evaluative job, then obviously such expressions would have acquired the same psychological meaning as expressions like 'I am in pain' already have, and hence would no longer function as a purely neurological report. In *that* case, the difference between the two would be merely terminological.

Anyway the *identity* theory is not the *correlation* theory. I. T. will say that conscious processes are not merely linked with neural processes, but actually *identical* with them. According to I. T., mental states *are* brain processes, just as water *is* H_2O. I. T. thus denies altogether anything like mental states and processes *as distinguished from* brain processes. Be it noted that I. T. does not deny or rule out the use of mentalistic terms. But I. T. is against the existence of any mental state to be referred to by any such mentalistic term. A distinction is in this connection drawn between the *meaning* of a mental term and the *property* it denotes; and it is urged that 'pain' and 'C-fibre stimulation', though may differ in their meaning, denote the same property. However there should not be any ambiguity as to what I. T. claims to establish, which is a straightforward *numerical* identity of a certain mental state and a certain brain event. I. T., in other words, holds that some one and the same phenomenon *is* both an experience and an event in the brain.

One may be tempted to dismiss I. T. outright by arguing that it clashes with an intuition that we all seem to share : namely that the consciousness of a man is not there at death, but the brain continues to exist; so how could be they identified? This sort of argument, whether true or false, ultimately seems to support the behaviouristic contention. For, the question may be raised : how could it be ascertained that the 'dead body' is not conscious? Surely, that the 'dead body' is not conscious is a conclusion made by others exclusively upon the examination of its bodily states.

Another unjust criticism is sometimes lodged against the identity theory. It is thus argued that, since a man may and often does know about his states of consciousness without knowing anything about his brain processes, the two cannot be treated as identical. But *if* I.T. succeeds in showing that states of consciousness are in fact brain processes, then, whether I know this or not, in talking about states of consciousness I am talking about brain processes, and it cannot be objected to I. T. that, since a man may know about his states of consciousness without knowing about his brain processes, the things he is talking about cannot be his brain processes.

In any event, there appear some more persuasive grounds the acceptance of which makes I. T. a rather implausible thesis or at least not an impelling one. It is clear that in order to be *identical*, it is necessary that the two items — a state of awareness and the associated brain state — should occur exactly in the same place at the same time. But one might wonder in exactly what sense a *physical* location could be assigned to any *state of awareness.* One is hard put to admit that his states of awareness — the experience of shame, for example take place in parts of his body. Where in my body do I experience shame? This sort of question appears quite bizarre. Truly speaking, spatial properties, such as, being circular or straight, are not of the kind to be ascribable to experiences. But brain states, being physical events, can well be said to have spatial properties. This being the case, experiences cannot *be* brain states. To say that experience of a certain sort and the associated brain state occur at the same *time* would not help, since simultaneity is no mark of identity.

Some thinkers, here, make a distinction between *states of consciousness* and *the experience of having* a state of consciousness,

and contend that not the former but the latter *is* a brain process. J. J. C. Smart, thus, claims that it is not that *an afterimage* is a brain process, but that *the experience of having* an afterimage is a brain process.[13] But it is difficult to understand how this is an improvement. Could we meaningfully assign a *physical* location to the *experience* of having a sensation? As Malcolm observes : 'It has no meaning to ask for the bodily location of *an experience*, or of *the having* of a sensation. It could acquire meaning only through a new convention.'[14] Smart, too, confesses that 'it is contrary to ordinary language to say that conscious experiences are brain processes'; but he insists that a 'conceptual revision' would easily make room to locate 'conscious experience' in physical space, i.e., in the head.[15] This claim of Smart appears really perplexing. One would not, surely, wish to be dogmatic in demanding a complete *status quo* with regard to the use of concepts and for that matter to the meaning of them. But, one might ask, is Smart claiming that any damn combination of concepts — however impossible in appearence could be made possible by such 'conceptual revision'? If so, one would simply wonder what Smart's theory is aiming at !

It is not quite clear — at least not to me — whether Smart is claiming identity between states of consciousness and brain processes *as a matter of logical necessity*. He writes : "When I say 'I have a yellowish-orange after-image' I cannot *mean* that I have such-and-such brain-process."[16] Smart seems at least part of the time to concede that talk, about states of consciousness ('inner experiences') is legitimate, and is not logically reducible to talk about the behaviour of organisms. If this be his position, then it is difficult to see how Smart could claim the explanation of 'inner experiences' to be no more than physical explanation. Smart, as I understand him, claims a rather *empirical* or *factual* identity between states of consciousness and brain processes. States of consciousness are *in fact*, not of necessity or by definition, brain processes. The claim, in other words, is that states of consciousness will *eventually* be reduced to brain processes, i.e., be fully explained by some eventual comprehensive theory of neural processes. To quote Smart : 'It may be the true nature of our inner experiences, as revealed by science, to be brain-processes....'[17] Smart's hope is that it is scientific discovries in this area which would one day, by revealing the specific physiolo-

gical bases of specific contents of consciousness, vindicate the identity of 'inner experiences' with 'brain-processes.'[18] This sort of conjecture, the sceptic might observe, draws large blank cheques on future theory and needs to postulate enormous and radically novel advances in neurophysiology. A remark made by Karl Popper — made in a tone of sarcasm — may be quoted here : 'Smart ....has a different attitude towards scientific knowledge from mine : while I am impressed by our immense ignorance on all levels, he holds that we can assert that our knowledge of physics — (neurophysiology) will one day suffice to explain everything....'[19] And it would be interesting to note here what Smart himself once remarks : 'There is no conceivable experiment which could decide between materialism and epiphenomenalism.'[20] But if no experiment could possibly be conducted for deciding between identity theory and some other theory, how would then it become possible to use scientific means to 'reveal' the 'true nature' of our 'inner experiences'?

At any rate, a rather more basic objection may be raised against the Smartian kind of thesis. It may be argued that to find out a specific physiological basis as a contingently necessary condition of some specific state of consciousness, would fail to encompass the subject's *enjoying* or *suffering* the state; that is, the subject's *being aware of* the state, which is an integral part of any such state,[21] would be left out. It is this awareness, the sceptic may point out, which it is difficult to liquidate into the specific brain state of the organism. As one famous neurologist of our time — Wilder Penfield — observes in a different context : '....although the content of consciousness depends in large measure on neuronal activity, awareness itself does not.'[22] It might be useful here to note some basic difference between *awareness* and *brain state*. There is admittedly a feature common to every awareness, which does not seem to belong to any brain state. Any awareness is necessarily intentional in the sense that it is of necessity an awareness *of* something. One could not have an awareness unless it were an awareness *of* something, although he might sometimes be unable to pinpoint or articulate what exactly is the object he is aware of; e.g. one might feel something thwarting or perplexing, but might not be able to specify it and give a name to it; but this, it is clear, does not amount to the total absence of object with regard to the awareness. Awareness is thus necessarily *referential*—it refers

to some 'object' (whatever kind the 'object' might be of) which gives the awareness its character in that situation. But, one would wonder, in what sense could a process in the brain be said to *refer* to something else — to *intend* an object? Whereas, thus, awareness could not simply exist without being an awareness of something else, it seems even to make no sense to say that a process in someone's brain could 'have an object' or be 'referential'. No such reference seems to be explicable solely in terms of the process in the brain, for which we need and hence must acknowledge *awareness*.

In any case, there should be no doubt about Smart's *denial* that mental phenomena and brain processes are separate; they, according to Smart, are 'strictly identical', i.e., in fact refer to one and the same thing. A somewhat similar kind of thesis is held also by Professor Feigl. According to Feigl,[23] there is no logical or definitional identity between mental and cerebral concepts; that is, no pair of terms from the two groups *means* the same. Feigl maintains that there is rather an empirical identity between the 'raw feels' of direct acquaintance (e.g. sensations like pain, visual, auditory and similar sensations, etc.) and neural processes. True, Feigl admits, we do not know our neural processes by direct acquaintance. But, he argues, that does not imply that *what we know* in the two cases must be different. U. T. Place is another thinker who defends a similar kind of identity thesis.[24] Place takes the identity of a state of consciousness and a brain process to mean that the state of consciousness is *empirically* identical with the brain process in the same way lightning is identical with a motion of electrical charges. He considers the identity-statement 'consciousness is a process in the brain' to be a 'reasonable scientific hypothesis' which, he admits, is contingent and has to be 'verified by observation'. Place reaffirms this thesis in a later paper in which he writes that 'materialism can and should be treated as a straightforward scientific hypothesis.'[25]

To be frank, I find it really difficult to make out what this 'empirical identity' of mental phenomena and brain processes exactly amounts to. One implication might be that it is a scientific hypothesis that would be established by further advancement in science a position which, as is already noted, draws heavily upon future theory. Again, Smart's 'strict identity' of mental pheno-

mena and brain processes could be true only if they occur in the same place at the same time — a possibility which, too, we have already seen to be a rather questionable one. Anyway it must be admitted that identity of empirical sort is to be ensured upon empirical investigation. But empirical grounds, as they stand, appear inconclusive on this count. Neither the agent nor the experimenter could have any conclusive evidence in defence of such identity. The agent, it is clear, could at no time observe his own brain process, and consequently *he* cannot hold that his awareness is identical with his brain process. The experimenter, too, would not be in position to make this claim. For, when the experimenter E would go to examine the brain process of his subject S in order to determine whether S's awareness could be identified with some state(s) in S's brain, S himself would indeed be not able to express 'I am aware', because during surgery he would have to be made unconscious. If so, E could not be sure that, at the time of examination of S's brain process, S is really aware, and hence would not have the relevant ground to conclude that the brain process he finds in S *is* in fact S's awareness. The identity theorist might argue that it is possible that during surgery S would remain conscious and be able to express that he is then aware, because only local anesthetic could leave S very well conscious. But in such a case surely a *part* of S's brain would be examined; if so, would it not be unwarranted to declare that S's awareness is identical with the states and processes of this part of his brain, other parts being left unexamined? But when *all* the parts of S's brain would be examined, he would not, as is already noted, be able to report that he then is aware. The intent here is *not* to suggest that mental states can be exemplified without *any* bodily correlates, that conscious experience can exist apart from the brain; *may be, that* is an impossibility.[26] What our argument, if correct, shows is that we cannot claim *identity* of a certain mental state with *any* specific bodily state, since there is no *unique* state in the 'nerve-cell jungle' with which the mental state could possibly be identified.[27]

A rather logical kind of argument, developed by Raziel Abelson[28], may be put forward against the identity theory. This argument is based upon two assumptions : (i) that it is always possible that there does emerge a radically new expression of a man's thinking; that there cannot be put any final limit to the

number of the possible expressions of a man's thought; that, in brief, the number of possible mental states of a man is *infinite;* and (ii) that the chain of the man's brain states, on the other hand, being physical, must be closed somewhere; that there should be a final limit to the number of the possible brain states of the man; that, in brief, the number of possible brain states of the man is necessarily *finite.* These two assumptions, if true, imply the following : there should be thoughts which would use brain states that had already been used for previous thoughts (since the other alternative that thoughts occur without any brain state occurring seems highly unlikely). Therefore the relation between thoughts and brain states can be neither one-one nor one-many, but would be many-many. Consequently it would be highly dubious to hold that a certain thought *is* a certain brain process.

B. F. Skinner is another thinker who does not like the idea that man is a *conscious* being having an autonomy of his own.[29] Skinner derides the notion of autonomous man as 'the inner man, the homunculus, the possessing demon....'[30]. The Skinnerian man is nothing more than a particular kind of natural phenomenon who, like any other part of the material world, is to be investigated and explained only empirically. He writes : 'A person is not an originating agent : he is a locus, a point at which many genetic and environmental conditions come together in a joint effect.'[31] He remarks : As a science of behaviour adopts the strategy of physics and biology, the autonomous agent to which behaviour has traditionally been attributed is replaced by the environment—the environment in which the species evolved and in which the behaviour of the individual is shaped and maintained.'[32] And he holds that it is only by dispossessing man of his so-called autonomy and creativity can we discover the real causes of human behaviour and manipulate man. Skinner rejects the claim that anyone could have ever effected anything. He repudiates this claim as unscientific, for 'a scientific analysis shifts both the responsibility and the achievement to the environment',[33] and by environment, Skinner means the world described by the causalism of natural science. A human person, thus, for Skinner, is not a 'subject' endowed with the distinctive ability to reason by himself, but is a mere object produced by the impact of a particular environment on his genetic endowment. And Skinner takes this to be all that we need to know about man.[34] In brief, man, according to Skinner, *is* a complex of

behaviour, generated by environmental conditions which are fully open to scientific investigation.

One important aspect of the Skinnerian model of man is the place it provides for the manipulation of human nature, in that it holds that if only the right environmental conditions are made to prevail, a better breed of man will be born. But the question may immediately be raised, if the social engineers themselves cannot get out of their genetic or environmental inheritance, how could the ideal and right sort of environment be at all produced by them? Skinner accepts this difficulty, but takes it to be merely a practical handicap. But we may intervene and argue, if determinism in its full import is taken to be true, then *all* men's judgement and behaviour should be *totally* controlled by predispositions given them by their genetic and environmental conditions, and social engineers cannot be exceptions. We are not denying that the environmental conditions in which a man is born and brought up do shape his being *to a large extent*, and it is certainly possible to investigate environmental influences on man. But does this imply that the *whole* of a man's judgement and behaviour is to be traced back to his environmental conditions? One must not lose sight of the other side : namely that man's *knowledge* of his social conditions gives him a point of distance and this makes room for him to become *critical* of the same. Any view of man as exactly like a physical phenomenon, governed exclusively by physical conditions, appears to miss this distinctive dimension of man *as subject* having himself a role not only in understanding but also in determining himself as a social creature. This is an immensely important point in as much as the study of man needs to be rescued from the embrance of the purely physicalistic approach. Precisely this point is emphasised in the suggestion that social studies cannot provide laws in the strict sense and are not thus genuine science.

There seems to be another serious flow that mars any formulation of the *complete* determinism thesis like Skinner's. If everyone is considered to *be* a combination of genetic endowment and environment, none would be free to search for and communicate a view having truth-claim. Skinner notes this difficulty, but shruggs this point off by saying that one might just in this way ask an author of a book on respiration : 'If that is respiration, why do you go on breathing?'[35] But is there any contradiction, one

might just ask, in analysing breathing and going on breathing ? On the other hand, if anyone upholds a complete determinism thesis as *consistent and true*, then his thesis must apply to himself as well, and in that case all he says, is, just like of anyone else, merely a consequence of what he has been conditioned to say; consequently *he* cannot *put forward* a theory, or for that matter place his theory to others, who too are thoroughly determined for their consideration and judgement.[36] The complete determinism thesis thus may be described, in the words of Schopenhauer, as 'the philosophy of the subject who forgot to take account of himself.'[37] How, after all, could one put forward or propose a theory—his own beliefs and arguments—if he is in every detail of his thoughts and reflections nothing but a product of certain genetic-cum-environmental factors ? How, after all, could anyone, in a purely deterministic world, be *persuaded* or *requested* to *consider* or *judge* a theory ?

Modern biology draws our attention to genes and it is urged that a man is what his genetic make-up would make him to be. This theory is known as biological determinism. It is clear that anyone espousing the extreme version of biological determinism would put himself under the difficulty just spoken of above. There is, however, a sense in which DNA may be said to carry hereditary information, namely that the chemical structure of the DNA, carried in sparm and egg, determines the *direction* in which the growing organism would develop. But it must quickly be noted that this does in no way mean, as Jonathan Howard points out[38], that DNA represents 'a condensed version' of the developed character of that organism.

Anyway it appears too much to trace *whatever* a man is to his genetic make-up *alone*. Were that so, all the differences of man could well be traced back to genetic difference. But this appears not to be the case. As Lewontin, a noted biologist, observes : 'Only 100 generations have passed since the Roman Republic and this time span is far too short for there to have been any major change in gene frequencies. Yet human social institutions have undergone an extraordinary change in these few generations.'[39] Men do differ, even if they share a common genetic make-up, and any view tracing *everything* of us to our genes must settle issue with this.

The difficulty of tracing every kind of human endeavour to his genetic make-up is heightened, if and once attention is focussed on human behaviour other than purely instinctive reactions. The ability of man to be aware of what he is doing and why he is doing it can hardly be denied and can hardly come under the category of 'genes prescribing behaviour'. Furthermore, man has the ability to assess the worth of his natural tendencies, and can often resist what might be an initial impulse. This betokens his ability to consider what he *ought* to do and thus indicates that he does not blindly behave according to natural tendencies. With men, thus, there is a distinction between the existence of a predisposition and the *decision* to act on it — a fact which makes the connection of genes and behaviour much less direct and comprehensive.

III

Having dealt with the first premise of our argument, let us now advert to and consider the second premise that raises the question whether machines could be regarded as conscious. This question is often put by asking whether machines like computers can 'do' things men do. This is a rather misleading way to put the question, for it might suggest that we are asking merely a question of empirical enquiry. But we are here supposed to be asking *primarily* a conceptual question. The crucial question is not whether machines can solve problems or process information, but whether mechanical bodies *per se* could be regarded, without any conceptual absurdity, as both machines *and* capable of modes of consciousness; that is, whether the adjective 'conscious' is at all a proper one for the noun 'machine'. In other words, even *if* it is possible to create conditions, usually taken to imply consciousness, within the structure of an entity claimed to be a machine, one might still wonder whether the result would be a 'conscious machine', because those conditions which would justify it to be regarded as conscious, would not possibly justify it to be called a *machine* as well. As Watanabe puts the point : 'If a machine is made out of protein, then it may have consciousness, but a machine made out of vacuum tubes, diodes, and transistors cannot be expected to have consciousness.. A "conscious" machine made out of protein is no longer a *machine*, it is a man-made animal.'[40] Following this line of thought, one might simply dismiss the whole issue of ascribing consciousness to a machine upon the absence of this

biological analogy between men and machines. One might thus argue that, since the very notion of machine does not make room of endowing a machine with *life*, the question whether it is *conscious* is essentially ruled out, and hence any enquiry as to whether a *machine* could be conscious is out of place. Clearly it is *only* in the case of a *living organism* that the question of its being conscious can meaningfully be raised. So if it is agreed that a machine cannot be taken to be *alive*, it simply follows as a corollary that it cannot be regarded as a *conscious* entity too.

Another initial difficulty of ascribing consciousness implying predicates (C-predicates), such as, intending, believing, imagining, etc., to machines is connected with the very semanties of these predicates. This is because the meaning of such a predicate derives basically from *human* discourse; and there appears till now no way in which it would coherently be claimed that such concepts may be defined first for machines and then applied to humans. Consequently, if such predicates begin to be applied consistently, i. e. non-metaphorically, to machines, that would in all likelihood bring about, by dislodging these predicates of their distinctive semantic roles, a severe incoherence in our whole conceptual scheme, amounting ultimately to the surrender of the very *rationale* in virtue of which the use of our conceptual apparatus is plausible or effective at all. The rationale of the difference between a machine that simulates human conduct (if it at all can simulate it to perfection) and a human being may thus be found in the semantical inappropriateness of C-predicates to machines, and their appropriateness to human beings.

Ascription of C-predicates to machines, it would probably be agreed, is to be made mainly, if not only, upon behavioural criteria. But it is doubtful whether behavioural analogues could be taken to provide *sufficient* grounds for treating machines as *subjects of consciousness*. The theoretical danger which such a move incurs is that we may begin to overlook the basic distinction between *being aware of* something and the associated *outward expressions*. The presence of the latter does not, as is noted above, entail the former.[41] If we are correct on this point, then no degree of 'demonstrative simulation' (to use a phrase of Martin Ringle[42]) could be taken to guarantee that the alleged machine *is* conscious, that is, that the machine can *be* 'aware of'. Turing, in his famous

essay 'Computing Machinery and Intelligence,'[43] appears to claim that it is in principle always possible to build a computer that would refute *any* belief allegedly held by man, if the way in which the belief is held be specified. This may be true. But what is important to note is that Turing's challenge, as Popper aptly points out[44], is about 'behaviour' rather than about 'subjective experience'. It might be useful to quote a few lines here from Peter Geach : 'Between what is certainly inanimate and ourselves there is far too little similarity for us to be able to pick out anything in its behaviour corresponding to the context in which we judge that human beings are in pain, or hungry, or afraid; we know that any particular movement which might even remotely suggest similarity is performed because the designer of the automaton intended such an imitation, and we ought to be no more inclined to ascribe feelings to the automaton than, after childhood, we think that a doll is in pain because it has been so constructed as to cry when it is smacked.'[45].

If it is true that there is a barrier in the simulation of human conduct by an automaton, then it would be advisable to admit that the simulation-barrier may arise not just from our ignorance of the mechanics of human conduct but from the possibility that human beings are not machines in the first place. The difficulty of ascribing C-predicates to purely mechanical bodies is indicative of such simulation-barrier. This difficulty may be variously exemplified. Thus one might ask, what would be the possible signs, in the case of a machine, that could be taken as the signs of, say, *pretence*? Man has a potential capacity to pretend in that even when he expresses himself in the most authentic manner, it remains true that he *could* have expressed himself in the way which he is really not. But how to identify conditions the expression of which should be taken as affirming (or denying) that the machine is *pretending*? Can, it may for that matter be asked, a machine *conceal* its calculation? Is it possible that a machine calculates but does not declare the result of its calculation? A man can decide in a certain way and refrain himself from expressing it altogether. Man's ability to pretend and conceal gives him a third allied capacity — that of *deceiving*? Would it be sensible to say that a machine has *deceived* someone? Can it *lie*? An erascible person often gets angry with the machine he works with. But could he meaningfully *rebuke* the machine? Can the machine be said to *lack authenti-*

city, to be *insincere*? Can it be *penalised*? In fact, a machine is programmed with a set of instructions and it works in accordance with these *systematically*. Could a machine be said to *forget* to take note of any instruction that were necessary for carrying out its job? Each of us, not infrequently, becomes unmindful and inadevertently fails to take note of what may be crucially relevant and necessary at that moment. But is there any evidence to conclude that a machine while working on a problem did *forget* in the sense we often do? Can a machine be said to *regret, lament*? Can it be spoken of as being *ashamed* or *proud*? — One might wonder how queries of these sorts should be answered.

Another point of distinction between man and a machine is provided by the former's ability to entertain *simultaneously* two opposite alternatives — both of choosing to do and not to do the *same* thing. When a man eventually chooses to do X, he remains theoretically open not to choose X. This kind of ability to entertain two 'opposites' at the same time appears absent from machines. As Rotenstriech once observes : 'The machine performs its operations automatically; .... automation is not a human feature, since human operations presuppose the possibility of performing the otherwise.'[46]

The plausibility of man's being just a machine is weakened, once his *individual-aspect* is acknowledged in its true meaning. Each machine is ultimately reducible to a *type* and hence it is possible to produce an exact replica of a machine. No man, on the other hand, is completely typal. Each man owns an *individuality of his own* and hence is not replaceable. As Popper says : 'Human beings are irreplaceable; and in being irreplaceable they are clearly very different from machines'.[47] Maybe, certain isolated human processes can be explained in behavioural and hence mechanistic terms. But anyone who wishes to understand himself as a *full person* living with other persons — and not as a mere catalogue of bits of behaviour — should find the picture of himself as a mere determined sequence of cause and effect a rather truncated or distorted representation of him. Such a representation of man would obviously presuppose him to be a 'mere total of certain parts' and hence would result in a crucial *loss of identity* on his part. This 'loss of identity' one would fail to grasp on objective terms. But a man, reflective of himself,

may feel that something very important of his being is being systematically omitted or thwarted in the purely behavioural or mechanistic representation of him. Seldom if ever is any validity granted, in the mechanistic model of man, to man's this mind of *personal* experience of himself — the only experience in which any one can do any observing. Such a self-experiencing person would not feel satisfied with the reply that he is 'really' a machine. He might feel, not without reasons, that he as a human being cannot possibly be treated just like a material object in which case one may convincingly argue that it (the material object) appears solid even though this is not true at the atomic level. Any such approach, he might argue, would *detotalise* a human being and consequently be an inadequate model of man.

The true recognition of the individual-aspect of man removes another wrong-headed approach to man. It is often urged that human life *as a whole* is explainable purely in mechanistic terms. This kind of approach takes man in the form of a neat and closed complex, each part of which is susceptible to an isolated investigation. Obviously this approach theorises about man by taking him in *abstraction*, and thus makes itself open to the charge of neglecting the *concrete living individual*. Furthermore, it is extremely doubtful whether from the 'fact' that *man in abstraction* is explainable solely in mechanistic terms, it could in any way be concluded that *each of* us is also explainable in the same manner. An analogy may help us. It may be true that the behaviour of a crowd as a whole is explainable in a mechanistic or deterministic model; but from this it does not follow that each individual member of the crowd will also behave mechanically. Truly speaking, we acknowledge the falsity of the mechanistic view not always in the large extent of our life, but often in those private areas which, because of their small impact, slip from the eye of the mechanist.

An important corollary of the self-experiencing feature of man is that there are certain things, true of man, which in order to be vouched for need no outward expression whatsoever. Thus in order to make valid judgements of myself in certain areas, e.g. about my *own* intentions, it is not necessary that any set of publicly determinable conditions should obtain. I can well make valid judgements about my own intentions, regardless of whether or not a given physical state of affairs obtains. In the case of a

machine, on the other hand, in order to make valid judgements of *anything* about it, certain publicly determinable conditions must be satisfied. But, the mechanist here might ask, could not a machine make valid judgements about itself *by itself* ? The line of argument adopted throughout this paper suggests a negative answer. Let me explain this point.

'Man's ability to reflect upon himself *by himself* seems an essential feature of his being. Man not only is aware of something but also can become further aware of his primary awareness. If one presses the series, there would involve an infinity, but only in the sense that the concept of the self-conscious being contains within itself the idea of being able to go on thus indefinitely. But it is important to note that a self-conscious being is *not* regarded on this ground as consisting of an indefinite sequence of self and super-self and super-super-self and so on. He is rather regarded as a unity. In other words, as a self-conscious being man can make himself the object of his *own* reflection and can answer questions *about himself by himself, without thereby losing his original identity;* without, that is, requiring anything extra in addition to what he already is. *In this sense* each man may be said to be self-complete. Now this sort of ability appears inapplicable to machines. Given usual connotation, a machine, however complex, is understood to be an apparatus capable of carrying out a set of operations according to a definite set of rules or instructions fed into it. In this sense machines are said to be programmed. If this is what we mean by a machine, then clearly it would be incongruous to say that a machine can consider *by itself* how it itself has been programmed — i.e., can 'probe into' the manner of its own operations or structure *unless it is further programmed.* i.e., not without becoming a *different* machine. A machine, thus, in contrast to man, is essentially incomplete. And this shows a sort of 'in principal' impossibility of having an adequate mechanical model of man. This immediately reveals another allied point : man can do things that are *never* possible for machines. And this clearly makes the mechanistic model of man break down at a *theoretical* level. This has been shown by Kurt Gödel quite convincingly. Gödel's argument is well-known. I shall briefly outline the main contention of it.

According to Gödel, any machine is, in the last analysis,

a concrete instantiation of a formal system. Now *every* consistent formal system *must* contain certain formulae which cannot be proved in *that* system, but which however can be apprehended by us (human beings) as being true. Consider the formula 'This formula is unprovable-in-the-system'. If this formula were provable in the system, it would not be unprovable-in-the system; hence the formula itself would be *false*. Again if the formula were provable-in the-system, it would be *true*, since in any consistent formal system only truths can be proved. Thus the provability of the alleged formula in any consistent formal system would make the formula *simultaneously* true and false. Therefore the alleged kind of formula is to be regarded as unprovable *in any consistent formal system*. In other words, *every* machine must be incapable of producing something as being true, namely, that which is not provable in the consistent formal system of which the alleged machine is an instantiation. But we — human beings — standing outside the system, would still be able to recognise this as being true. This shows that it is theoretically impossible to have an adequate mechanical model of the human mind. For, *every* machine must have a Gödelian formula all of its own constructed by the application of Gödel's procedure to the (consistent) formal system to which the alleged machine would correspond; and the machine would not be able to produce *that* Gödelien formula as being true, although a mind then would be able to see its truth. Thus the human mind will ever remain one jump ahead of machines.[48]

III

This, then, is our thesis : man *is* not a purely mechanical complex. True, certain things of man may be explained in mechanistic terms. Maybe, again, certain machines would be fit to carry out some activities men do. 'Turing machines' may thus give a great incentive to some mechanists.[49] But neither may be taken to imply that man is *reducible* to a purely mechanical whole. For, in the first place, as indicated above, there are activities that men are, while machines are not, capable of. To argue in this context that machines can do many things human beings cannot would be beside the point, because this obviously would not show that the two are the *same*. Secondly, as we have also tried to show above, there are certain things that are true of man, but which it is hard

to attribute to a machine. Finally, the element of 'being aware of' constitutes the most crucial difference between man and machines the latter being essentially empty of this. All this is not to claim, as some thinkers take it to mean,[50] any 'superiority' of man in relation to purely physical complexes. The point at issue is not, as J. R. Lucas points out,[51] whether men or machines are superior, but whether they are the *same*. And we hope that we have been able to find out some good reasons in fvour of this latter contention.

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NOTES

1. Cf. Castell (1968), p. 80.
2. I owe this story to C. A. Mace. See his 'Editorial Forward' in Sluckin (1960), p. 9.
3. Eccles (1966). Quoted in Sperry (1983), p. 80.
4. Smart (1962), p. 161.
5. Ryle (1949), p. 76.
6. This distinction I owe to McGinn. See his (1982), p 107.
7. Reference here may be made to Carnap who once expressed the view that my statement 'I am excited' obtains its 'rational support' from my observation of the facts that my hands are trembling, that my voice is quavering, etc. See Carnap (1959). For some good criticism of Carnap's thesis, see Malcolm (1977), pp. 96-98.
8. Paulsen (1895), pp. 82-83.
9. Nagel (1953), p. 549.
10. See Smart (1963), p. 99; and Armstrong (1968), pp. 107-8.
11. See Rorty (1965), pp. 24-54.
12. Wittgenstein (1953), p. 244.
13. Smart (1962), p. 168.
14. Malcolm (1972), p. 70.
15. Smart (1963), p. 98. A rather peculiar version of the identity theory, formulated and defended by Smart (1963a), p. 651, runs as follows : it is *the brain* which is the subject of experience; that is, the body is irrelevant and dispensable for holding I. T., since it could be shown through experiments that *the brain taken by itself* has thoughts and experiences. For a critical discussion of this thesis, see Malcolm (1972), pp. 73-77.

16. Smart (1963), pp. 93-94.
17. Ibid. p. 93.
18. The same hope is also expressed by Williams. See Williams (1970).
19. Popper and Eccles (1977), p. 85 (foot note).
20. Smart (1962), pp. 171-72.
21. My 'being aware' of any experience that I undergo is an integral part of the experience in the sense that unless I am aware of the experience it could not be regarded as my experience at all. 'I am ashamed but I am not aware of my being ashamed' appears self-contradictory.
22. Penfield (1975), p. 55.
23. Feigl (1958), pp. 370-497.
24. Place (1962).
25. Place (1960), p. 104.
26. But note what Wittgenstein once remarks : 'No supposition seems to me more natural than that there is no process in the brain correlated with.. thinking; so that it would be impossible to read off thought-processes from brain-processes.' Wittgenstein (1967). p. 106e.
27. For a more detailed discussion of Smart's view, see Malcolm (1972), pp. 61-66; see also Shaffer (1968), p. 46. A rather peculiar kind of identity theory called 'non-reductive monism' or 'token-identity' discussed by McGinn is as follows : every mental event is identical with some physical event, though the properties in virtue of which an event is mental are not themselves physical properties. Truly speaking, it is not quite clear to me what this version really means. McGinn, however, appears against this view. See McGinn (1982), Ch. 2.
28. See Abelson (1977), pp. 67-73.
29. As regards Skinner, I owe much to Trigg (1982), pp. 20-30.
30. Skinner (1974) p. 200.
31. Skinner (1974a), p. 168.
32. Skinner (1974), p. 184.
33. Ibid. p. 25.
34. Skinner (1974a), p. 226.
35. Ibid, p. 248.
36. Cf. Lewis (1960), Ch. 3. For some further interesting observations about Skinner's thesis, see Flew (1978), pp. 140-50.
37. Quoted in Popper and Eccles (1977), p. 207.
38. Howard (1982), p. 60.
39. Lewontin (1976) Quoted in Trigg (1982), p. 104.
40. Watanabe (1961), p. 136. Italic mine.
41. This position, we are aware, might lead to the famous problem of 'other minds.' Truly speaking, despite various attempts have been made to find out 'logically adequate behavioural criteria' for ascribing psychological

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