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## The Role of Reason in Science and Christianity

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### Introduction

One of the most deeply ingrained ideas about science and Christianity is that they are fundamentally in conflict.<sup>1</sup> The fact that this view was carefully cultivated by such prominent Victorian agnostics as T. H. Huxley, and propagated in works such as Andrew White's 'History of the Warfare of Science with Theology' (1896), now regarded as of little or no scholarly value within the circles of professional science historians, is beyond dispute.<sup>1,2</sup>

Unfortunately, this view has not yet escaped from the confines of expert opinion to become a commonplace amongst the wider population. As a result, there still appears to be an axiomatic assumption in the post-Christian western world that, at root, science and Christianity are antagonistic, with irreconcilable differences in the respective patterns of thought of their practitioners. Science is seen to be a splendidly rational activity, a little cold, perhaps, but none the worse for that, prosecuted by hard-headed souls (usually male), who have no room for extraneous inessentials, like emotion. Christianity, by contrast, is considered to be the last refuge of the poorly educated, the emotionally unbalanced, and the plainly irrational; indeed of all who (to quote from the apocryphal schoolboy definition of 'faith') are capable of believing those things that they know to be untrue. This is, of course, a caricature. Even secular historians<sup>3</sup> concede that in the development of the various creeds, as well as in the management of its material possessions, the Church has long had a powerful tradition of rational thought.

Nevertheless, science is seen as 'more rational' than Christianity. It is the purpose of this paper to examine what lies behind this

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1. C. A. Russell, *Cross-currents: Interactions between science and faith*, p. 193, Inter-Varsity Press, Leicester (1985).

2. For discussion on this work, see R. E. D. Clark, *Faith and Thought*, 98, 43:53 (reproduced in *ibid*, 112(2), [1986], 167-75).

3. See for example David S. Landes *The Unbound Prometheus*, Cambridge University Press, (1969).

perception, and to explore in detail the role of rationality in both spheres of human activity. To do this, I shall first consider the abstractions that we conventionally label respectively 'science' and 'Christianity', and, for each in turn, shall describe the role that reason has to play.

### The nature of science

Discussion continues about the exact nature of science, and the way it may be distinguished from other fields of intellectual endeavour. In the past, philosophers have seen science as so logically flawed that they have ceased to trust in it at all. David Hume, the eighteenth century philosopher, certainly followed this line: setting out to cast doubt on the rationality of orthodox Christian 'natural theology', he ended up declaring science itself to be irrational.<sup>4</sup> Hume's theological scepticism led him into scientific scepticism, a fact which acts a '... stern reminder of the close harmony between science and belief...'<sup>5</sup> at least amongst those who are both scientists and Christians. On the other hand, philosophical reflection has been denigrated by scientists, who see little relevance to their own work. Indeed, the organic chemist, Dr. A. R. Butler, has remarked, '... the philosophy of science (is) *properly* ignored by those who practise the subject.'<sup>6</sup> (my emphasis).

Nevertheless, there are useful models of the scientific process. The one that I propose to use as my guide was set out by Professor W. I. B. Beveridge.<sup>7</sup> He is a practising scientist with some feel for the philosophical problems involved, and he sums up the process of science as follows:

- (a) recognition and formulation of the problem,
- (b) collection of relevant data,
- (c) arriving at a hypothesis by induction, indicating causal relations or significant patterns in the data,
- (d) making deductions from the hypothesis and testing the correctness of these by experimentation or collection of more data,

4. C. A. Russell, *Cross-currents*, p. 119.

5. J. H. Brooke, *Natural Theology in Britain from Boyle to Paley*, Units 9–10 of Open University Course AMST 283 'Science and Belief: from Copernicus to Darwin', Open University Press, Milton Keynes, p. 45 (1974).

6. A. R. Butler reviewing P. B. Medawar's 'Advice to a Young Scientist', *Chemistry in Britain*, 16 (1980), 571.

7. W. I. B. Beveridge, *Seeds of Discovery*, Heinemann Educational Books, London (1980).

(e) reasoning that if the results are consistent with the deduction, the hypothesis is strengthened, but not proved.

As he points out, there are difficulties with this attractively simple framework; in particular with item (b). In reality, it may be extremely hard to know exactly what data are relevant. Consider the following artificially bland hypothesis: 'All swans are white.' The discovery of a black boot would not readily be admitted as additional data relevant to the testing of the original hypothesis. Yet, as Medawar has pointed out,<sup>8</sup> such a discovery does have some bearing on the hypothesis, since the boot is both non-white and non-swan. It can therefore be held to make a small contribution to strengthening the original hypothesis. I shall consider the question of what exactly constitutes relevant data, especially within Christianity, later on.

Another feature of this framework is that it is not wholly in accord with the philosophy of Karl Popper, which is so widely held to be the best description of the procedures of science. Indeed Popper has been described by Medawar, a Nobel Prize-winning scientist, as 'incomparably the greatest philosopher of science that there has ever been.' Yet, despite this, the central concept of Popperism, that of falsification as the key to scientific progress,<sup>9</sup> has been disputed by practitioners.<sup>2</sup> Firstly, it is often difficult to design the crucial experiment that will give an unambiguous yes or no to a question, and thereby consign a given hypothesis to the dustbin. Secondly, as item (e) in the list states, there is an intuitive feeling in the heart of every scientist (indeed of every human being) that repeated non-falsifications actually do lead to a strengthening of the hypothesis. If every swan that I see in my life is white, I am likely to find myself believing with increasing confidence that indeed all swans are white. The fact that I would be wrong only underlines the problems with this approach. Nonetheless, it is the one that appears to be adopted by working scientists. For example, Alfred Werner (1866–1919), the great inorganic chemist, consciously or unconsciously subscribed to this viewpoint, in writing '... I have experienced the purest pleasures in the laboratory, when on the basis of reflections I arrived at new

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8. P. B. Medawar, 'The Limits of Science', Oxford University Press (1985).

9. This idea, which is well known among scientists, can be summed up as follows: only concepts which are, in principle, capable of being proved false are scientific. The role of experiments is to try to falsify particular hypotheses. If they do not succeed, that simply gives the hypothesis a temporary reprieve. Non-falsification does not and cannot 'strengthen' the hypothesis. This means that most of what we claim to know about the world is will o'the wisp, not actually 'true', but merely convenient hypothesis. In reality, most practising scientists do not behave as though they believe this, however much they may claim to be 'Popperists'.

conclusions *which could be confirmed experimentally*<sup>10</sup> (my emphasis). Notice this phrase: contrary to Popper, Werner at least (and many others of lesser stature after him) believed that experiments were capable in principle of confirming hypotheses ('conclusions') and not merely of falsifying them. And this approach is widely adopted in practice by scientists: if a theory makes a prediction that is capable of experimental verification, that verification is viewed as strengthening the hypothesis. The outstanding example of this reasoning is the often quoted example of Einstein's special theory of relativity. Although it gives a view of the world that appears bizarre to our senses, conditioned as they are by everyday experience, it has been held to be 'verified' on the strength of predictions made about perturbations in the orbit of the planet Mercury around the sun, predictions which have subsequently been observed.<sup>7</sup>

Even if the approach lacks logical rigour, it has to be pointed out that science as an enterprise has been remarkably successful. It has given us an understanding of the way the physical world works, as well as an unprecedented control over that world. It is therefore hard to escape Polkinghorne's conclusion that '... the natural convincing explanation of the success of science is that it is gaining a tightening grip of an actual reality'.<sup>12</sup> So where does this leave us in our search for a model of science? In fact we are left with a cyclic process in which data collection, including experimentation, is followed by hypothesis formulation, and hypothesis formulation in turn is followed by further data collection. Modification of the hypothesis is made if the data demand it; otherwise it is left unchanged. In the latter circumstance, *contra* Popper, the hypothesis would also be regarded as stronger, more secure and more likely to be 'true' than before the second set of data collection.

And what is the role of reason in all this? Well, it is manifestly clear that the development of a hypothesis requires 'reason', at least to frame the next question and plan the collection of the next set of data. In terms of Beveridge's model of the scientific process, reason enters no earlier than item (c), and possibly not even then, since many a hypothesis is known to have been hit upon 'intuitively' in such a way that even the originator has been unable to account for the idea. At best, we cannot guarantee that 'scientific' reasoning will be exercised

10. G. B. Kauffman, *Inorganic Coordination Compounds*, Heyden & Son Ltd, London (1981).

11. J. Thewlis (Editor-in-chief), *Encyclopaedic Dictionary of Physics*, vol 6, p. 264., Pergamon Press, Oxford (1962).

12. J. Polkinghorne, *One World: The Interaction of Science and Theology*, SPCK, London (1986).

before item (d) in the list. And when it does so, its role is simply that of working upon the initial set of data obtained. As scientists, we are led, not by reason but by data, and we must not reject the data that do not fit the theory; that is not only against the rules, but actually militates against scientific progress. We include it all, and try to reason from it.

We should note in passing that for this scientific enterprise to be effective, in principle it is necessary for the observers to be entirely free from prejudice in their search for data. However as a study of the history of science will reveal, the idea of disinterested observers gathering facts, followed by dispassionate formulating of hypotheses, is a myth.<sup>13</sup> Nevertheless, the process takes place in some sense as described, even if the scientists involved in it are not truly disinterested, but are actually motivated by some unscientific desire, such as for personal glory or malice for an opponent, and are in practice trying to strengthen their own hypothesis or discredit that of a rival.

To sum at this point, then, it is data that are pre-eminent in science. The role of reason is to act upon them, and in that sense, reason is subservient.

### **Authority and Reason in Christianity**

Essentially, the deepest divisions within Christianity come at the point of authority. Whilst churchmen of all persuasions (Catholic, Biblical Protestant and Liberal Protestant<sup>14</sup>) would agree that their ultimate authority is God, there are practical difficulties with this, in particular in knowing by which means He communicates most clearly. Traditionally the three groups have answered differently, with claims that in the Church, in the Bible or in human reason respectively, is to be found the most reliable 'secondary standard'<sup>15</sup> of God's purposes and demands.

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13. D. M. Knight, in C. A. Russell, *Recent Developments in the History of Chemistry*, Royal Society of Chemistry, London (1985).

14. These divisions are somewhat arbitrary and oversimplified. Very often, theological liberals say essentially the same thing, regardless of whether they are formally Protestants or Catholics. On this point, see Francis M. Schaffer, *The Church at the End of the Twentieth Century*, p. 153, The Norfolk Press, London (1975).

15. By 'secondary standard', I am alluding to the practice in metrology of maintaining working standards that are convenient to use, but which are 'secondary' to primary standards, the latter being superbly accurate, but of little practical utility. Thus the metre is defined as the length of the path travelled by light in vacuum during a time interval of  $1/299792458$  of a second. Nevertheless it remains easier to use a carefully calibrated piece of metal for work in the real world.

This question of authority is of particular interest to the present discussion, because one branch of the institutional church, Liberal Protestantism, has hoisted 'reason' into the second highest place in its thinking and used it to decide which data are acceptable. Moreover, it has done so claiming that such an approach is justified in terms of science and the scientific method. Marxsen, for example, has written 'Modern scholars' views are controlled by the principles that came out of the Enlightenment',<sup>16</sup> that is, in summary, that human reason is the ultimate arbiter in matters of reality. Rudolf Bultmann, too, adopts this kind of rationale to defend his theological position.<sup>17</sup> It is appropriate to consider whether or not this argument is valid.

Quite clearly, in the light of the model of science advanced earlier, it is not. In the world of science, as we have seen, reason is not king; it takes a subservient role to data. As Russell has pointed out,<sup>18</sup> reason alone is inadequate to deduce how things are in the natural world. This was precisely what was wrong with so much of the 'science' of the ancient Greeks; proceeding forwards from axioms, even in a purely logical manner, proved to be of no use in determining how many teeth has a horse. There are more recent examples of the inadequacy of a 'science' that puts reason first, above data. For example, in 1903, Professor Simon Newcomb published an article that 'proved' that heavier-than-air machines could never fly.<sup>17</sup> Since he was professor of mathematics and astronomy at Johns Hopkins University, and vice president of the US National Academy of Sciences, his views carried a lot of weight. However, this example is interesting not just because it is one more instance of poor predictions by eminent experts, but because Newcomb went on maintaining the impossibility of flight for years after Orville Wright first flew 'Flyer 1' in December 1903. As late as 1906, Newcomb wrote that the impossibility was proved as completely '... as it is possible for the demonstration of any physical fact to be.' In other words, here was a scientist rejecting data because it did not fit a preconceived theory. And what foolishness it all was. Yet, it has to be said, Liberal Protestants, by exalting reason above its station, are open to exactly the same mistake.

Another feature of theological liberalism is its outdated reliance on the concept of cause and effect. Thus, if we turn again to Bultmann, we find him expressing the view that '... individual events are

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16. Marxsen, W., *The Significance of the Message of the Resurrection for Faith in Jesus Christ*, SCM, London (1968).

17. See for example R. Bultmann, *Kerygma and Myth*, SPCK, London (1953).

18. C. A. Russell, *Cross-currents*, p. 26.

connected by a succession of cause and effect'.<sup>19</sup> Yet scientists, led by the physicists, have long rejected the closed, direct cause-effect approach to phenomena. As Maxwell demonstrated, with the aid of his famous 'intelligence' over a century ago, much of what we observe in nature, including the Second Law of Thermodynamics, is statistical.<sup>20</sup> As Eddington's summary had it, '... great laws hitherto accepted as causal appear on minuter examination to be of statistical character'.<sup>21</sup> It is true that for certain statistical phenomena, for example, radioactive decay, discrete cause may precede individual event, but even here it is not possible to demonstrate this unambiguously by experiment. Unlike Bultmann, then, scientists do not affirm that *individual* events require their own unique cause.

If theological liberalism is wrong, in that it has got reason in the wrong place, is there a branch of Christianity which fares any better?

It has to be said, in fact, that both Catholicism and Biblical Protestantism do fare better. Both use reasoning processes that are much more closely akin to the process of genuine 'science', in that reason is used to act upon information that is essentially given, and not decided on *a priori* grounds which information may or may not be included. Because of this, it is not wholly necessary to distinguish between these two branches of institutional Christianity for the purposes of the present discussion, and indeed at many of the key points (e.g. the understanding of the Incarnation, belief in the historicity of the Resurrection, and the doctrine of the Holy Trinity) there is no difference between them. However, on a number of other issues, in particular, at the level of the authority of the Bible, there are still serious and significant differences between the two.<sup>22</sup> Accordingly, from now on I shall be defining and defending a model of Christian thought that is essentially of the Biblical Protestant variety, though much of what is said will be relevant, as well, to traditional Catholic thought.

### **A model of Christian thought**

Having established that, in science, reason does not control knowledge, but acts upon it, we are in a position to construct a similar

19. R. Bultmann, 'Existence and Faith', edited by Schubert M. Ogden, Meridian Books, New York (1960).

20. C. A. Russell, *Cross-currents*, p. 202.

21. A. S. Eddington, *The Nature of the Physical World*, Cambridge University Press (1929).

22. See for example J. I. Packer, *God's Words*, Chapter 10, Inter-Varsity Press, Leicester (1981).



model of Christian thinking. What emerges accords both with the approach of science and with the accumulated experience of believers down the ages. To do so, we turn to the Beveridge model, which with suitable paraphrasing becomes:

- (a) recognition and formulation of the problem (i.e., define the matter of faith or practice that is under consideration),
- (b) collection of relevant data (i.e., what does the Bible reveal about it?),
- (c) arriving at a conclusion by careful reasoning from the data,
- (d) making deductions in terms of logical consequences from the conclusion, and testing these by further reference to the Bible, or by discussion with the local church (here meaning the local body of believers, rather than the 'ordained' ministry),
- (e) reasoning that if the deductions do, indeed, accord with the results of further Bible study or with the experience of other believers, the deduction is sound.

It is necessary to add that, for a number of issues of church life, no clear conclusions will emerge from this process. Thus, it is not absolutely clear whether or not the church ought to be governed by episcopal or presbyterian means,<sup>23</sup> nor whether or not baptism may be administered to children of believers.<sup>24</sup> These are the areas in which different ideas exist, even amongst those believers who accept the Scriptures as authoritative, and where the Lord calls for the exercise of a loving forbearance towards those with different opinions.

Other issues, though, do become clear when subjected to scrutiny by this process. Divorce is seen to be against the will of God, as is the practice of homosexuality. Marriage and family relationships are closely defined, as are the relationships between Christians and society as a whole. Forgiveness and meekness are advocated, as is love towards all, friend and foe alike. The ideas may not be fashionable, but that does not necessarily prove them wrong. And believing them, on the basis that they have been 'revealed' rather than emerged as the result of pure unaided thought, is completely consistent with an essentially rational and scientific world view.

There are, however, points of the proposed model which need to

23. It is clear, though, that the Catholic (including Anglo-Catholic) insistence on the validity of the episcopal structure of government *alone* has no foundation (see F. F. Bruce, *The Spreading Flame*, 6th impression, Paternoster Press, Exeter (1976). It is arguably a method of church government; it is certainly not *the* method.

24. The other possibility, that baptism is for any child who may be brought along, surely cannot be defended rationally. Such practice, both in theory and practice, removes anything distinctively Christian from the act.

be considered further, and they can be broken down into a series of questions.

(1) *Is it Scriptural?* This is important, since the Bible is seen within the framework of the model to be the key source of 'data'. The question actually breaks down into two subsidiary questions: (i) Do the Scriptures teach that man cannot know God through the use of rational thought alone, and (ii) if they do, is there allowance for reason to have *any* role in the relationship of man with God?

To answer the first part is difficult. Scripture does not address itself specifically to refuting the modern idea that reason alone is enough. It does, though, deal in depth with the nature of man, including the intellect, and the result is not flattering. Jeremiah, for example, tells us that 'the heart is deceitful above all things' (Jer. 17:9), and that 'everyone is senseless and without knowledge' (Jer. 10:14). Agur, in Proverbs chapter 30, and Job at the end of his testing both confess utter ignorance of what really matters (i.e. God), and imply strongly that this follows from their status as mere men. It therefore does seem that Scripture teaches that man needs help in order to know God, and that he cannot acquire such knowledge on his own.

In which case, does Scripture have any use at all for reason? Here we turn to the words of Jesus himself, and find him telling us that the first and the greatest commandment is this: 'Love the Lord your God with all your heart, with all your soul and with all your mind.' (Matt. 22:37 NIV). The word translated here as 'mind' is the Greek *διανοια* (*dianoia*), which may alternatively be rendered as 'intellect'. In other words, Jesus is telling us that once we have received the revelation that God is really there, it becomes our duty to love him, in part, via the intellect. Thus we answer the second aspect of our original question: it is Scriptural to assign a role to reason, and one moreover that really is subservient to revelation.

(2) *Can revelation be considered data?* Related to this is the broader question, answered in the negative by Medawar,<sup>8</sup> of whether revelation is itself a source of knowledge. Clearly, the assumption is made in the proposed model of Christian thought that it is, and while such an assumption is axiomatic, rather than logically proven, it is actually defensible. For what is revealed in the Scriptures are those vital things about God, which would have remained hidden unless He had chosen to disclose them, concerning His character, His ultimate purposes and His desires for the people He has created. The Scriptural revelation is personal and propositional, and is focused on the Lord Jesus Christ, who spoke the words of God, revealed the Father and carried out His will. That much is basic.<sup>25</sup> But is it

25. For a proper discussion of these ideas, see J. I. Packer, ref 22, Chapter 1.

acceptable within the framework proposed, to treat all this as 'data'? I think it is, since revelation as a mode of knowledge is actually not so very far from our everyday experience. We do not generally get to know a person by carrying out controlled experiments. Neither do we get very far in a relationship simply by observing a person's habits. We actually get to know someone by talking to them at such a level that we begin to understand what they are like, what their desires are and what pleases them; such information comes only by a process analogous to God's revelation, i.e. by the person talking to us and imparting information about himself which we could not otherwise know.

However, God does not present us with information and expect it to be taken on board without any thought. He invites us to test it, if not by experiment, then at least by experience. Thus the Psalmist urges us to 'taste and see that the LORD is good' (Psalm 34:8). Elsewhere, we are told to 'Test me in this', says the LORD Almighty, (Malachi 3:10, NIV) and to 'Test everything (and) hold on to the good' (1 Thess. 5:21, NIV). So we see that knowledge of God comes in a way similar to knowledge of any person, and that having been presented with it, we are free to subject it to empirical testing. Hence, we conclude that revelation is acceptable as a source of data about God.

(3) *What happens when science disagrees with Scripture?* This question begs two others, namely 'Does Scripture disagree with science?' and 'If it does, is it significant?'

It is a characteristic of liberal theologians to assume not only that there are extensive disagreements, but they are sufficiently significant that we must ignore the Scriptures except as documents of historical interest only. This view was summed up in 1929 by Canon C. E. Raven, in his book 'A Wanderer's Way', when he remarked of the evangelical Cambridge Inter-Collegiate Christian Union '... it seemed incredible that anyone with sufficient education to pass Little-go should still believe in the talking serpent, or Jonah's whale, or Balaam's ass, or Joshua's sun ...'.<sup>26</sup> It is, of course, worth commenting here that liberal theologians do not make their mark by failing to believe in these few minor points. They generally refuse completely to accept the objective reality of the resurrection of Jesus,<sup>27</sup> a doctrine that even the CICCUC of the 1920's would have considered of far greater importance than Balaam's ass.

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26. C. E. Raven, quoted in R. E. D. Clark, *Faith and Thought*, 112(2) (1986), 177.

27. See G. E. Ladd, *I believe in the Resurrection*, Hodder and Stoughton, London (1975), especially Chapter 10, for a careful outline (and refutation) of the various liberal arguments. See also M. J. Harris, *Easter in Durham*, Paternoster Press, Exeter (1985), for a critique of the views of Dr. David Jenkins, the present Bishop of Durham.

It is true, of course, that the Scriptures can be read in such a way that they contradict much *known* science. But then, by similar means, we could consider anyone who uses such words as 'sunrise' or 'heartache' to be an illiterate backwoodsman. The key question here is one of hermeneutics: what were (and are) the Biblical writers trying to convey? Their picture language may be formally inadequate, but then so is ours today, and such inadequacy is not usually held to invalidate communication.

It is not, of course, sufficient to argue picture language at every point. In the case of the Resurrection of Christ, and of His miracles, we need to insist on their historicity. The authors of the New Testament were concerned to convey a message, it is true, but one that, by its very nature, could not possibly benefit from untruths. If Jesus did not rise from the dead, two things follow: Firstly, the New Testament Church was built on a lie by people who knew themselves to be lying. Secondly, either God has not, after all, vindicated Jesus, contrary to Peter's claim in Acts 2:36, or God is of strictly limited power, and incapable of raising the dead. Either view has profound consequences for any understanding of the nature and character of God.

The reality of the situation is this: whether or not one believes in the literal truth of the Resurrection depends entirely on one's philosophical presuppositions. Those presuppositions are not, in themselves, capable of scientific verification. To say that Jesus did not rise from the dead because no-one rises from the dead is circular reasoning,<sup>28</sup> since one cannot make the specific deduction about Jesus without accepting the larger generalization, and the larger generalization cannot be valid unless one is *certain* about the case of Jesus. Such reasoning is simply not amenable to scientific examination. Hence, belief in the Resurrection has to remain a matter of faith. There can be no doubt, however, that the theological liberals are mistaken on this crucial assertion; unbelief does not follow *logically* from a genuinely 'scientific' viewpoint, and it is therefore possible to believe in the historicity of the Resurrection *and* maintain a scientific world view.

## Conclusion

A model of scientific thought has been presented in which it is argued that 'reason' does not control input, but merely acts in a way subservient to the observed data. From this starting point, a parallel model of Christian thought is presented, in which 'reason' occupies a

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28. See P. B. Medawar, *loc. cit.* on the 'Law of Conservation of Information'.

similar place. Such an approach is found to correspond closely with the conservative theology of Biblical Protestantism, or Roman Catholicism, rather than to that of theological Liberalism, despite the latter's claim to be more 'scientific'. Overall, it is concluded that orthodox Christian belief is more compatible with the scientific method than is theological Liberalism.