

Developmental Doubts

Mary Midgley

1 Development and the Dream of Progress

On the face of things, the idea of sustainable development has something paradoxical about it, yet I think it has been very useful.

It is paradoxical because of the way in which we have habitually thought of development. If development meant simply spreading the equipment of Western civilization everywhere – if it meant providing all humans with tin cans, motorways, frozen meals and flush toilets – then it certainly couldn't be made sustainable. Even if it was a desirable aim, we couldn't do it. There aren't the resources for it.

All the same, the idea that some elements of this civilization can be used to spread lasting benefits has been really helpful. When the Brundtland Report first used this language, it managed to dispel a certain mist of unreality which had surrounded earlier efforts to draw attention to the state of the planet. Till then, practical administrators had often seen talk of environmental danger as unrealistic sentiment, something not necessarily wrong but like religion, best kept for Sundays. This whole topic called for such a long perspective that these people often couldn't see it as practical at all. Talk about it seemed to them just to express a mindless general objection to technology. By contrast, the language of sustainable development allowed them to keep their general ideal of development – the value of technology and the need to share it with less mechanised parts of the world. It only asked them to distinguish between more and less destructive ways of doing this. It made them start to ask questions, for the first time, about the long-term biological effects of colonial and foreign policies. Thus it cracked the shell of total denial.

But it by no means cleared denial out of our lives. All of us – even the most enlightened – are still mired in it to some extent today and we need to understand it better so as to grasp where it gets its strength. The trouble is that our beliefs are

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never just straight representations of immediate facts. What shapes them is the background visions that inspire us, the colourful, sweeping world-views that we are used to and that we take for granted.

Those simple views tend to have more power over us than the detailed, fiddly facts. And what powers our denial today is the splendid vision of Progress which has been growing more central in our culture for the last 300 years. All through the Enlightenment, the bold hope of future improvements on earth has been steadily replacing the religious belief in Heaven, as the influence of Christianity grew gradually weaker. People started to see the impressive March of technology, which distinguishes our civilization, not just as something useful but as a dominant symbol of enlightened living. It gave them a sense of control, an impression of reining in any forces that might threaten us.

2 Can the Sleeper Wake?

This deep confidence in technology naturally brought with it a poor opinion of less-mechanized cultures. Belief in progress seemed to mean that a fixed course of life was set before all peoples, a necessary journey away from a primitive state, a single racecourse on which all were travelling, some much faster than others, towards increased use of machines. It is perhaps strange that we still use this imagery today when we talk of developing and developed nations. The word develop, like evolve, originally describes the unrolling of a scroll or the opening of a bud – the revealing of something latent that was already fixed and predestined. Talk of development implies a pre-set course of life, like that by which tadpoles become frogs and caterpillars become butterflies. So our current use of it means that we're all going the same way, only some nations are ahead of others.

This thought has often been expressed by describing less mechanized people as essentially children – beings who are doubtless worthy but are behind us in the journey of life. Thus Auguste Comte described religion as a phase belonging to the childhood of our species – something that adult humans, who could use science instead, had outgrown. And colonisers clearly often did see those they colonised as childish in this way. Kipling expressed that vision somewhat alarmingly when he wrote of their mission-

To wait in heavy harness
On fluttered folk and wild –
Your new-caught sullen peoples,
Half-devil and half child -
(‘The White Man’s Burden’)...

Western colonisers are, of course, not the only group in the world who have used offensive language to describe cultures that they don’t understand. This is actually quite a widespread habit. The reason why it matters so much now is because of what it reveals about our deeper attitudes. Kipling did not mean to be offensive; he was

just thinking as the people around him thought – and indeed as those who administer empires usually have thought, even when their subjects were not foreigners. And today's current talk of developed and developing nations is certainly not meant to be offensive either. It has actually been devised as a euphemism, a polite substitute for cruder words like primitive, backward or uncivilized. It just expresses our underlying myth – our quite genuine faith in the power of technology to provide all humans with a future that is steadily improving, perhaps indefinitely and for ever.

Such faiths are often harmless. But the unlucky thing about this one is that, just when we have communicated it to many of the cultures around us – just when we have converted them to technophilia and persuaded them to change their ways of life to suit it – we find that the world's climate is changing in a way that puts this possibility right out of date. This calls for a really enormous reversal of background thinking. Perhaps it is the biggest change required in human thought since the invention of agriculture. That is a change that would be hard to navigate at any time. But there is something in our own recent intellectual history which makes it specially hard for us even to consider.

3 Euphoric Humanism

The trouble here is the quite recent narrowing of our world-picture. Since the Enlightenment, we have steadily and deliberately refocused our vision to show humanity, on its own, as completely self-sufficient. We have played down all fear of God and of non-human natural forces which might limit our range. We have cultivated a kind of humanism which easily becomes species-conceit, – even extending sometimes to the idea that selected human activities constitute the aim of the whole cosmic process. In these scenarios humans appear as isolated from all other organisms, these being mere subordinates or opponents to be subdued. Thus the cosmologists John D. Barrow and Frank J. Tipler sketch a vision of the cosmic future in which our culture will send out intelligent machines that will gradually colonise the whole universe, finally reaching an Omega Point at which, as they put it, 'life will have gained control of all matter and forces, not only in a single universe but in all universe whose existence is logically possible, ... and will have stored an infinite amount of information. ... And this is the end'.¹ A footnote comments, 'A modern-day theologian might wish to say that the totality of life at the Omega Point is omnipotent, omnipresent and omniscient!' – i.e. it is God. It is interesting to note that, at this point, the 'totality of life' is supposed to consist solely of a batch of computers. Thus in this dream, progress, embodying simply the human academic's typical desire for power and information, is seen as supplying the meaning of the whole universe.

¹Barrow, John D and Tipler, Frank L, The Anthropic Cosmological Principle, Oxford University Press 1986, pp. 677 and 682.

Barrow and Tipler are of course somewhat extreme. But the general force of such humanolatrous ideas is hard to exaggerate. For instance, as late as the 1900s quite enlightened sages such as William James and Freud preached the idea of a 'war against nature', a war which the human race was called on to wage and win. James wrote an essay called 'The Moral Equivalent of War', in which he noted the extraordinary enthusiasm that ordinary wars tend to arouse, and asked whether that fervour could somehow be redirected to less destructive channels. He wanted a displacement activity, a punch-ball, something like the ways in which baboons hit harmless passers-by and humans break china when they can't reach the real object of their wrath. He suggested campaigns which seemed to him quite harmless, for instance mining work. It clearly had not struck him that mining itself might be destructive. And, more generally, the idea that 'nature' might not actually be a punch-ball but a vulnerable system on which humans were totally dependent clearly never occurred to him. Freud argued similarly in Civilization And Its Discontents.²

Besides this difficulty about making a punch-ball of nature, however, there was also a problem about identifying what the interest of the whole human race actually involves. At first, during the age of colonization, human interests were identified quite simply with the interests of the colonizing elite. Thus Carlyle complained indignantly about the 'laziness' of black slaves in Jamaica because they didn't want to work as hard as the Europeans tried to make them. More lately, of course, this attitude has officially been dropped along with the rest of colonial thinking. Development is now supposed to mean that each region follows the course that best suits it, making the changes that are needed by its own people. But laissez-faire economics, which has become closely linked to the idea of progress, has given this system a somewhat peculiar twist. Thus, if an African country can make money by growing cut flowers for the European market, it may be urged to do that, even if this uses up land and water which its people need to grow their own food, or which is essential for its natural vegetation.

4 What Is It That Develops?

This kind of approach throws an interesting and unexpected light on the meaning of the term 'develop'. Is the organism which we now think of as 'developing' perhaps not so much a particular country as the economy of that country, or indeed the global economy, a strange, vast animal whose life-blood is the profits that flow in it, an animal which – like a cancer – always grows and can never contract? Indeed the meaning of 'development' here perhaps comes close to that of growth – another biological metaphor where an abstract entity is supposed to prosper in a way that has little relation to the fortunes of the people involved. Within that deliberately

²Published with The Future of an Illusion in 1927.

narrowed world-picture, with the strong economic twist that has marked it for the last century, this way of thinking can seem perfectly natural.

It's becoming clear, however, even to people who are very surprised about it, that this world-picture is rather like a dream in which the dreamer is disturbed by a faint recurrent tap – tap – tap – which eventually forces him to wake, and which turns out to be the noise of rain coming through the roof. On two fronts reality is breaking in. On one side, the people who are supposed to be being developed have begun to raise questions, refusing to accept the economic goals that others prescribe for them. And on the other – what is even more threatening – the physical state of the world is refusing to co-operate with our prescribed pattern of continuous improvement. It turns out that natural resources are limited and that climate change – ignoring the predicted economic and political pattern – is moving the other way, and doing it too fast to be ignored. In fact, both the two kinds of background support which were expected to fuel the endless March of Western progress – the social and the ecological basis – are fading away. The question is, can we find a way of thinking that enables us to do without that prospect?

5 Noticing the Planet

There are two big psychological and philosophical difficulties here. One of them concerns the unit of change. We have been accustomed to thinking of the human race in isolation – indeed for many of us in the West this has meant thinking of our own culture in isolation. The image of Man with which we grew up has represented him (repeat him) as a user standing over against a heap of natural resources that he uses. The independence of this character was always emphasized because the point of the picture was to show that he could manage without God. Typically it showed him as working a machine – driving a combine-harvester perhaps – with the crop that he cultivates and the landscape around it merely forming convenient extensions of its mechanism. Some of us, like the cosmologists whom I quoted earlier, have included other planets, as well as our present one, among these usable resources – handy spaces for our enterprise, or refuges that we can move to if things go badly with us here. (I think we need to take the myths of science-fiction as well as those of cosmologists, seriously because they shape people's imagination in a way that overflows into their lives). Instead of this dream, we need to learn somehow to see our species, and our culture, in their real situation as tiny dependent parts of an enormous whole, a vulnerable organic whole whose parts stand or fall together.

It's easy to say these things but the psychological journey involved – the shift that's still needed in our mental habits – is enormous. I will come back to this point about the unit of change later. But I think it's best first to say something about the other psychological obstacle, which is also large but in a way is simpler. This is the question of incentive. Can we live without that familiar prospect of future reward? Can we live in the present, no longer anticipating steady, continued improvements? Indeed – more alarmingly still – can we live without the prospect of always having

at least our present level of comfort, convenience and medical care? Though we grumble about that current level it is, of course, something which, until the last century or so, virtually no human being ever enjoyed. Yet we have become so used to it that the idea of doing without it now is, to many of us, almost unthinkable.

Clearly the great strength of the Progress myth has lain in its offer of a safe and splendid future. This is something that we all hanker for when we have to do something difficult. Even in quite discouraging circumstances we usually do manage to find that hope somehow. But a widely-shared belief in a fixed salvation ahead is a great help to us. We need something we can trust. As William James pointed out, these confident hopes can often be self-validating. If two people have to leap across a gulf, one of whom believes he will be able to do it and the other believes he won't, they may both prove to be right.³ I have suggested that the expectation of heaven used to served that purpose, and I think it's clear that, during the last two centuries, predictions of a mechanised heaven on earth have largely replaced it. Are we addicted to these long-term prospects? Can we find a way to live without them?

Steven Weinberg made a very interesting suggestion here. At the end of his book The First Three Minutes he raised questions about the purpose of life. He pointed out that current theories of physics predict for the universe 'a future extinction of endless cold or intolerable heat' and he concluded that this means the cosmos has no meaning. As he put it, 'the more the universe seems comprehensible, the more it also seems pointless'. This raises an intriguing question – Are we sure that the remote future is really so crucial? Supposing that, after the next major discovery, physicists changed their theories and told us that the universe may, after all, very well go on for ever, what would follow? Would that discovery prove that it does have a meaning after all, thus entirely changing our situation?

Something has surely gone wrong here about the notion of point or meaning. Weinberg is operating with the pay-off pattern whereby the point of anything is simply the reward that will follow it. This is appropriate when we are turning a handle to grind coffee, but not when we are playing a game or singing a song. The first part of the song is not a means to its last notes, nor is it a means to the drink that we may get after singing it or the fee that may follow. Fees and drinks are extras, not the central point of the activity. Nor is the whole process of the game merely a means to winning it, even though some people sometimes mistakenly treat it that way. Basically, we play or sing because we want to do so. These activities are ends in themselves. This does not, of course, mean that they are isolated. The point or meaning or value of a song lies in its place in a larger whole – its connections with the rest of life. We value it because it enriches our wider sense of the pattern which connects everything.

This becomes clear even in the way in which Weinberg himself takes his gloomy pronouncement. He evidently doesn't mind much personally about the unfortunate mortality of the universe. He explains that he finds consolation for this cosmic futility in the work of astrophysics itself. He is content to know that, as he puts it,

³William James, essay on 'The Will To Believe' in volume with the same title, Dover, New York, 1956.

scientists ‘build telescopes and satellites and accelerators, and sit at their desks for endless hours working out the meaning of the data they gather’. So it seems there is a meaning after all. Like the rest of us, Weinberg finds the point of his own life in his current occupations, not in an unimaginably distant future. But his words also imply that those data do have a point and a meaning, even if the universe as a whole does not. That point or meaning clearly doesn’t lie in something that follows after them. It lies in the pattern of connections that makes sense of them.

There is a real paradox here that affects the current exclusive glorification of science. Can this occupation itself be so valuable if the subjects that it studies are themselves valueless? If the universe is not – as earlier scientists supposed – a glorious creation, testifying to the splendours of its creator, but a chance, meaningless muddle, why is it worth while to analyse it?

I stress this example of Weinberg’s because I think the pay-off pattern that he uses has been over-emphasized in recent times in a way that is seriously misleading. The economic attention to means distracts us from ends – from all the things that really make life worth living right away. We are so focussed on certain future consequences – on the profits expected from particular actions – that we forget to ask crucial questions about what is happening now.

6 Faith, Values and Economism

We might ask here how people really thought about the prospect of Heaven (or Hell) in the past. Sometimes they ignored it. Sometimes they treated it as a practical issue about what they could get away with – perhaps by paying for almshouses or masses for their souls. But, besides this prudential angle, they plainly often thought of these prospects just as one aspect among many of their relation with God and their response to the ideals that went with it. Their notion of the future expressed the values that mattered most to them in the present. For many of them, the love of God was not so much an insurance policy as a general attitude to life, one which made a real difference to how they behaved. In this way people’s expectations for the future are often an expression of what they most deeply believe in rather than a conclusion from factual evidence. And this influence of faith on conduct is not something obsolete which now gone away. For instance, economic policy in the last few decades has evidently been affected by many influential people’s deep, heartfelt belief in the markets. That belief has produced a whole range of actions which less devout, more rational thinking would probably never even have considered.

These people have seen the market as an enclosing system that was taking them the right way, a ship to which they were rightly committed. It is quite close to the sense in which people believe in democracy, or the sense in which they used to believe in the British Empire. And until lately they certainly did not believe in this way in the planet, or in any of its ecosystems. These were simply resources which they took for granted. Thus, when tropical countries can make money from logging

which destroys the rain-forest, international authorities have tended to see this as a quite proper form of development. If we then ask which organism is supposed to be developing here, it seems again to be that grand abstraction, the economy of the country. It certainly isn't the local ecosystem, nor the humans that form part of it.

The interesting thing here is how economic facts are treated as somehow more real than other kinds of fact. This priority is often expressed by phrases such as 'the bottom line', 'hard facts', 'at the end of the day', 'when you get right down to it' and indeed by a special use of the word realism itself. In this way economics, which is actually a rather abstract social science, is seen as a more reliable source of knowledge than enquiry about physical details such as the state of the soil or the health of the people who live there. This is what happens (as I suggest) when people believe in the economy in a sense which is much stronger than just thinking that it exists. No doubt they know that the rainforest exists as well. But the rainforest is less real to them than the balance of payments because it isn't a part of the guiding pattern by which they judge possible policies. They can't take it quite seriously. In predicting the future they are guided much more by that habitual pattern than by any more objective standards,

7 Myth and Reality

I have described these guiding patterns as Myths, which does not, of course, mean that they are lies. They are strong imaginative visions of a kind that we must have to shape our thought, to pull together its endless details into some necessary coherence. We need to use them, but they are always provisional. They have to be corrected by further insights, often arising from further facts.

The myth of Progress itself has been one of these visions. It was originally drawn from real facts about the rise of science and the successes of the Industrial Revolution. But as part of that general myth, there gradually grew also a subsidiary idea that the true measure of this development was money – that only economic arguments are truly realistic. This idea was, of course, important to Marx – which is why, in recent times, Marxists have so often turned into monetarists. But Marx himself included in economic facts the physical facts about the world which determine what can be traded. It is his more recent followers who have made the still more startling discovery that money itself is what really determines everything.

This, I am suggesting, is the dream from which the world's rulers are now, very gradually, beginning to be woken by that monotonous tap – tap – tap of environmental bad news. Plenty of them indeed are still locked in denial. But an increasing number have started to notice that climate change has turned out not to be just a glitch which scientists will shortly fix but a crucial, lasting fact. This change is deeply disturbing because it shows that this whole map is out of date. The habit of treating that very odd entity, money, as more solid than the things that we buy with it has had great attractions, but it clearly is no longer rational. The difficulty then is,

how are people to think instead? What pattern can they now use? What vision should they now put their trust in?

Questions like these are often answered by experience. If the rain which is coming through the roof actually lands with a plop on the dreamer's shoulder this fact sharply alters his sense of priorities. In fact it alters his ontology, his whole sense of what is real. He suddenly loses interest in continuing his dream and responds instead to the immediate emergency. In the same way if we, or the world's rulers, were living on a small Pacific atoll, or in a country that is fast turning into desert, we probably wouldn't need to be told that the climate emergency is real. It is because we don't live there that we tend to react like the first-class passengers on an ocean liner who are visited by some ambassadors from steerage. The ambassadors report that the ship is sinking, but we tell them 'Not at our end', and go back to our cross-word puzzles. No doubt when this news is brought repeatedly we do gradually start to believe it, but we still can't see how to find a place for it in our background vision of life. We simply don't expect distant parts of the earth to form part of the business of our lives at all, still less distant parts of the earth's atmosphere. All this still sounds like somebody else's business.

8 The Need for Gaian Realism

If we are ever to get this right we shall probably need to make proper use of the concept of Gaia. Forty years ago, when James Lovelock first launched that concept, much of the learned world denounced it as unrealistic, fluffy and misty, in short, New Age, and not part of science. Since that time the concept's scientific merits have become clear and people now do see it that it's perfectly usable. But they still find a difficulty in actually using it.

The initial rejection flowed from a number of sources, but one powerful one was an affronted sense that this perspective was offensive to human dignity. The idea of seeing ourselves as just one tiny, dependent part of a vast organic body, rather than the sole agents present, the powerful owners of a great mass of resources, grated on the humanolatrous tendency which had been central to Enlightenment thinking. Very much the same thing happened to Darwin and indeed Lovelock's vision is a direct development of Darwin's. As the cartoons of the day show, public opposition to Darwin's ideas sprang much more from offence at the idea that humans were descended from apes than it did from any offence about God. The doctrine of primate descent threatened to remove humans from their position of dominance and put them right back inside the wider natural community which they both despised and feared. They are still resisting this sense of demotion. Many people, even people who reject religion, still want to claim a kind of extra-terrestrial status.

Thus this isolation of humans from the rest of life – this insistence on our total uniqueness which modern humanists feel is so crucial to our dignity – is linked to the general narrowing of our world-picture which I mentioned earlier. Because religious thinking had often proved tyrannous, we of the Enlightenment have, ever

since the Renaissance, tried to assert a kind of human independence which was primarily aimed at providing freedom from God, but which also turned out to distance us from the natural world as well. We have felt that we are pure minds, alien to the material systems which we use and organize. Nor has our belief in evolution really shifted this stance because we have seen evolution itself as a pyramid from whose summit we can take off – not as a workplace in which we have a part to play,. Herbert Spencer's dream of evolution as a form of Progress – a race towards excellence, which we humans are winning – has had much more influence with us than Darwin's quieter notion of it as a radiating bush, producing life of every kind. Its past developments have seemed to be primarily a preparation for our successes.

Lovelock has startled us by a quite different vision. He has pointed to an activity of the earth in which we need to play our part – a drama where we have an active role. This drama has always surrounded us but we have managed to ignore it. It is interesting that Lovelock's insight into it emerged in the course of a particularly ambitious human enterprise – the investigation of Mars. Lovelock was working for NASA and was trying to find what would be the best indication of life on that planet. He reasoned that, rather than scooping up bits of Martian soil, it might help to find out about the planet's atmosphere. Earth, which does contain life, has an extraordinary atmosphere – a complex mix of many gases which are constantly interacting and being renewed. Yet, through all this activity, these interchanges remain so balanced that the conditions that make life possible have been maintained through three-and-a-half eons, ever since the first living things appeared. They have persisted even in the face of drastic changes, such as a great increase in the heat sent out by the sun. As Lovelock says, 'for this to have happened by chance is as unlikely as to survive unscathed a drive blindfold through rush-hour traffic'. What could possibly be keeping the planet in this life-friendly state? As he explains –

Our results convinced us that the only feasible explanation of the Earth's highly improbable atmosphere was that it was being manipulated on a day-to-day basis from the surface, and that the manipulator was life itself. The significant decrease in entropy – or, as a chemist would put it, the persistent disequilibrium among the atmospheric gases – was on its own clear proof of life's activity.

That is, living things, as they breathe and transpire and excrete, apparently form part of a single tremendous mechanism, a living fountain which continually renews itself.

Somehow, then, the planet as a whole was doing this. Does this mean that it must itself in some sense be alive? Is this compatible with a proper definition of life? As Lovelock considered this possibility he looked at the literature and consulted with colleagues, but everywhere he found only vagueness and a general lack of interest about this concept and its possible limits -

Take the concept of life. Everyone knows what it is but few if any can define it. It is not even listed in the [standard] Dictionary of Biology. . . . If my scientific colleagues are unable even to agree upon a definition of life, their objections to Gaia can hardly be rigorously scientific. . . . To a geophysicologist, a living organism is a bounded system open to a flux of

matter and energy, which is able to keep its internal medium constant in composition and its physical state intact in a changing environment; it is able to keep it in homeostasis. ... Gaia would be a living organism under the physicist's or the biochemist's definitions.⁴

He does not want to extend this thought anthropomorphically as some of his followers have done. As he says, 'When I talk of a living planet. I am not thinking in an animistic way of a planet with sentience. ... I think of anything the earth may do, such as regulating the climate, as automatic, not through an act of will, and all of it within the strict bounds of science'.⁵ Yet he sees clearly that so dramatic a new conception must change our attitudes at a deep level. He writes, 'For me, Gaia is a religious as well as a scientific concept, and in both spheres it is manageable. ... God and Gaia, theology and science, even physics and biology are not separate but a single way of thought'.⁶

These remarkable conclusions followed once he saw the significance of the contrast between Earth's atmosphere and that of other comparable planets. Mars and Venus have been found to have stable monolithic atmospheres, consisting mainly of carbon dioxide – conditions likely to make any sort of change impossible, and certainly to prevent the development of life. And at the time of his discovery the orthodox science of the day assumed that this was true on earth as well. The Earth's atmosphere was thought to have been originally produced by planetary outgassing and not altered afterwards except by abiological processes. In fact, atmosphere was viewed as just one part of the fixed, alien environment to which organisms were forced to adapt during evolution. The idea that organisms themselves might influence it – that they might help to provide the conditions for their own life – was quite alien to the science of the day. And any suspicion that these organisms, along with the atmosphere, formed part of one tremendous interactive process, so that the Earth could act as a whole, was, of course, still more alien to it.

Accordingly, when Gaian thinking first appeared scientists widely ignored it. Many non-scientists found it attractive, but this only made the scientific establishment more adverse. NASA lost interest in it once Gaian suggestions about Mars turned out to be unhelpful, so the new idea was left to make headway as it could against a scientific atmosphere where any reference to wholes in general tended to be looked at with suspicion. The success of atomistic thinking, both in physics and in biology, had accustomed many scientists to prefer explaining things atomistically, in terms of small particles, rather than by looking outwards to a wider context. And to think of the earth, with its atmosphere and all who inhabit it, as a whole required a quite different imaginative approach.

Since that time, many of Lovelock's detailed scientific suggestions have been investigated and many have proved convincing. Today, the notion that the living things of the earth do act together in this way is accepted as part of Earth Science – a new branch of learning which has been developed to bring together studies which

⁴Gaia; *The Practical Science of Planetary Medicine*, London, Gaia Books Ltd, 1991, p.29.

⁵*The Ages Of Gaia*; Oxford University Press 1988, p.

⁶GPSPM, pp. 206 and 212.

previously often knew little of each other's work. Yet in those quarters the name Gaia – which is that of the ancient Greek earth-goddess, mother of gods and men – is often avoided. Its symbolism may make perfectly good sense to the rest of us, but it causes alarm in the lab. Lovelock has therefore developed a less frightening form of imagery – the Medical Model. Earth, he suggests, is a sick planet – is, in fact, a patient who needs treatment – only unfortunately the experienced planetary physician who ought to attend her cannot be found. We shall therefore have to take on this case ourselves, even though we are inexperienced in such cases and indeed are ourselves a partial cause of the disease. We shall have to work out our diagnosis and treatment as best we can from what we discover, as physicians are often forced to do in new situations –

We need this pragmatic approach now if we are to solve our planetary ills in time. We need planetary medicine. Its approach may be empirical, even at times unscientific, but it is all that we have. I am not proposing some kind of alternative science, the equivalent in medicine to acupuncture and homoeopathy My aim is merely to deflate the tumescence of big science and calm it down. . . . If scientists are to recognise the value of empiricism in the troubled times to come, they must first acknowledge the extent of their ignorance about the earth. . . . Modern medicine recognises the mind and body as part of a single system where the state of each can affect the health of the other. It may be true also in planetary medicine that our collective attitude towards the earth affects and is affected by the health of the planet.⁷

This picture, which shows the earth as a submissive patient lying in bed awaiting the doctor's opinion, certainly proved less threatening to scientists than the Goddess. Yet they still avoid the name, and often avoid the further thinking that is called for by any serious recognition of this entity as a whole.

Quite possibly, much of their difficulty here flows simply from the clash between modern specialization and the many-sided thinking that is needed to deal with so rich a concept. Today's scholars tend to acquire a sense that it is unprofessional to think about matters outside their own province, so they leave large topics alone. Thus John Ziman, wondering why scientists find Gaia so disconcerting, asks –

Is this because it can't be squeezed into any of their established pigeon-holes? It mixes together concepts from the chemical, biological and physical sciences. . . .

I argue that this intrinsic pluralism is one of its glories and fascinations. Think historically. The planet Earth assembled, imbricated and remodelled itself by purely physico-chemical processes. For a billion years or so, everything that happened could be described in the language of gravitational forces, thermodynamic phases, chemical; compounds etc.

Then, life emerged. Novel entities, with unprecedented properties – i.e. distinct organisms – appeared on the scene. To describe their phenomenology required a whole new conceptual vocabulary. Thus, the further history of Gaia had to be written, in part, in the language of biology. This had to include a great many absolutely basic terms such as organism, function, behaviour, metabolism [etc]. . . . In due course, a million or so years ago, another conceptual fulguration occurred. The emergence of consciousness enabled hominids to engage in another completely unprecedented phenomenology. . . . with terms for social concepts. . . . This, again, is strongly influencing the career of Gaia So yet another new language is required. . . . So now we have to make sense of a world containing entities of

⁷GPSPM pp.14 and 71.

these three different kinds, each governed by a different 'logic' and defined in a different conceptual language. . . And, because the successive events of their emergence were entirely unpredictable, as was what emerged at each stage, these phenomenologies, logics, languages and sciences are irreducibly distinct and cannot be unified into a single formal system. The pluralism of the sciences is not just a weakness of the human intellect; it is a product of the physico-biopsychic history of our Gaian abode.⁸

And this is indeed the challenge which this remarkable concept poses. We badly need scientists today who are prepared to deal with it.

⁸'The Challenging, Irreducible Pluralism of Gaia'. In Earthy Realism; The Meaning of Gaia, ed. Mary Midgley, Societas, Imprint Academic, Exeter 2007.

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