

Buddhist Cosmology

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Edited version of talk given at Dhammaloka
Buddhist Centre on 27th November 2015

Introduction

One of the rarely discussed yet astonishing facts about the *suttas* is that they contain very modern ideas of cosmology. These are not vague teachings that might be interpreted in a number of different ways, but specific and direct descriptions of the universe. Much of what the Buddha has to say about this has been borne out by modern research. This is rather incredible and really demands an explanation, something I will attempt in the course of this essay. Some of the things mentioned by the Buddha go beyond even our current cosmological models, such as whether the universe started with a Big Bang and how it is going to end. Considering what the Buddha had to say about cosmology, I believe it is justified to conclude that the Buddha had a direct understanding of the evolution of the universe.

Before I go any further, I wish to put in place a couple of caveats. The purpose of this essay is not to “prove” that early Buddhism is true because some of its claims happen to overlap with those of modern science. Even if all the cosmological details in the *suttas* can be explained in purely conventional terms, this does not affect the Buddha’s message on suffering and its ending. The latter is the essence of the Buddha’s message, whereas the former is entirely incidental. My purpose, rather, is only to investigate certain aspects of the *suttas* that appear extraordinary, and to discuss how they may have originated. I believe this is valuable in its own right.

In what follows I have simplified what is really quite a complex subject. I have done this to avoid burdening the text with too many details that distract from the flow of the main topic. For more details on some of the complexities involved, please see the appendix at the end.

Cosmic Cycles

Early Buddhist ideas about the universe are encapsulated in the core *sutta* passage on the recollection of past lives. Here is an extract from that passage:

I recollected my manifold past lives, that is, one birth, two births ... a thousand births, a hundred thousand births, many aeons of world-contraction, many aeons of world-expansion, many aeons of world-contraction and expansion. (MN 4)

The idea of a cycling cosmos is part of the fundamental Buddhist outlook that things don't have absolute beginnings. Here is another passage that describes this typically Buddhist view of the world:

Monks, this *samsāra* is without discoverable beginning. A first point is not discerned of beings roaming and wandering on hindered by ignorance and fettered by craving. (SN 15.1)

According to Buddhism, nothing arises without causes and conditions. There is no such thing as a first cause. Given this outlook, a cyclic model of the universe makes sense.

Yet is it really reasonable to think that the Buddha had a conception of the cosmos as something vast, in the way we do now? It does seem that the Buddha saw the cosmos as something far more than what can be observed from Earth. In the following passage he speaks of an "impenetrable darkness" beyond the reach of the light of the sun:

Monks, there are world intervals, vacant and boundless, regions of gloom and impenetrable darkness

where the light of the sun and moon, so powerful and mighty, does not reach. (SN 56.46)

Prediction 1

Basing myself on the early Buddhist texts, I am going to be bold and make two specific predictions about the future development of cosmology. My first prediction, which draws on the *sutta* passages quoted above, is that modern cosmology eventually will settle on a model of the universe where Big Bangs are followed by Big Crunches, a universe that alternates between expansion and contraction.

At present most scientists do not subscribe to such a model of the universe; they believe it all just started with the Big Bang. If the Buddhist model holds up, it will be contrary to the expectation of the vast majority of scientists. This in itself would be rather remarkable.

The Buddha on Solar Systems

A second aspect of cosmology mentioned by the Buddha is the “world system”, the *loka-dhātu*. A world system, according to the *suttas*, consists of the planet Earth, the moon, the sun, and all the beings that exist in dependence on it:

A thousand times the world in which the sun and moon revolve and light up the quarters with their brightness is called a thousandfold minor world system. In that thousandfold world system there are a thousand

moons, a thousand suns, a thousand Sinerus king of mountains, a thousand Jambudīpas, a thousand Aparagoyānas, a thousand Uttarakurus, a thousand Pubbavidehas, and a thousand four great oceans; a thousand four great kings, a thousand heavens of devas ruled by the four great kings ... (AN 10.29/AN 3.80)

The Earth is here represented by Jambudīpa, Aparagoyāna, Uttarakuru, Pubbavideha, and the four great oceans. The ancient Indian ideas of the Earth were quite limited. They did speak of those parts of the planet that were known to them, including Jambudīpa, their own country, as well as four great oceans, presumably the oceans surrounding the Indian sub-continent. They had some knowledge of the Greeks (MN 93) and presumably the Persians, but most of their knowledge of the lands outside of India was semi-mythical, as can be seen from the names Aparagoyāna (“the western Goyāna”), Uttarakuru (“the northern Kuru”), and Pubbavideha (“the eastern Videha”). These names are clearly not names of actual countries, but rather designations of recognized geographical areas about which very little was known. Although their conception of the Earth does not fully overlap with our modern ideas, it is nevertheless clear that they had an idea of the Earth as a separate entity in a larger universe.

So the Earth, the moon, and the sun, with all the beings that exist in connection with them, form a unit known as a “world system”. Since the *suttas* do not seem to have any conception of planets, a world system is essentially what we would now call a solar system. But here is the truly interesting point: the *suttas*, as we have seen above, do not say there is just one such solar system, but vast numbers of them. The Buddha speaks of a thousand-fold world system, a thousand-fold to the second power world system, and a thousand-fold to the third power world system:

A world that is a thousand times a thousandfold minor world system is called a thousand-to-the-second-power middling world system. A world that is a thousand times a thousand-to-the-second-power middling world system is called a thousand-to-the-third-power great world system. (AN 3.80)

The last of these, of course, is a billion-fold world system. With the discovery in the past couple of decades of planets around distant stars, we are now starting to see that all this is indeed true. But the Buddha anticipated modern astronomy by almost 2,500 years.

It's not long ago that the idea of planets around distant stars would have seemed preposterous to much of humanity. If we go back to the Europe of the middle ages, to the time before the modern astronomical revolution, they had an idea known as the firmament. The firmament was envisioned as a semi-sphere arched over a flat Earth, or whatever territory they regarded as the Earth. The night-sky was no more than this semi-sphere, an arch over the planet, a few hundred metres or a few kilometres up. Stuck in that semi-sphere were little lights, which was how they conceived of the stars. This worked because the stars are essentially in fixed positions relative to each other, and they move in the sky according to regular and predictable patterns. It was a very primitive outlook, with almost no conception of space or a universe. The Europeans of the middle ages had absolutely no idea of what was going on.

It can be hard to fathom that 2,000 years prior to the end of the European middle ages there was a man in India – we don't know all that much about him, but he is now known as the Buddha – who said that there are solar systems out there. Not only one or two, but billions of solar systems – all these suns with planets going around them, and with moons revolving around the planets. It's astonishing that all that is right there in these ancient texts.

But the Buddha went even further: he said there are beings living in dependence on these solar systems. The Buddha knew about aliens! There is no Buddhist word for alien or extraterrestrial, nor is there any description of them in the *suttas*. So what exactly did the Buddha see? Did he see little green people with antennas, the staple of cheap science fiction? Actually, I believe we can answer this question using Buddhist principles.

From the modern scientific point of view it seems quite likely that there is life elsewhere in the universe. We have found the planets, some of them at the right distance from their host star, the so-called “habitable zone”. The argument goes that if life was able to evolve on Earth, why wouldn’t it also evolve on these other planets? And if this is correct, what sort of life would it be?

From a Buddhist point of view, I think it is fairly clear that these beings are going to be very much like us. Why? Because we are all connected in so many ways. For instance, sometimes we might get reborn on another planet, and the beings there might get reborn here. Because we presumably move around the cosmos in this way and because we tend to be attached to our appearance, it seems natural to think that beings everywhere will look approximately the same. Even if you have no memory of your previous life, it would be psychologically uncomfortable to be reborn among a bunch of green creatures that have little in common with humans, because your habits and comfort zone would be challenged at a deep level. Moreover, we are connected in the way we think about, perceive, and view the world. Our desires and attachments are going to be similar, and our egos and sense of self will be looking for the same sort of gratification. And because we think in the same way, we tend to evolve in the same way and to look roughly the same. Generally speaking, beings with similar *kamma* are likely to look similar.

Prediction 2

This, then, is my second prediction. When cosmologists eventually discover life on other planets, assuming they will, it is not going to be like the movies. In the late 1970s there was a movie called “Close Encounter of the Third Kind”, which told a story of humans meeting aliens. The aliens were weird, with thin legs and arms, and big heads, and that sort of stuff. I suppose if it weren’t for the special effects, if the beings had looked pretty much like us, the movie would have been boring and unpopular. The reality from a Buddhist point of view, however – perhaps the boring reality – is that the so-called aliens are going to be similar to us. The term “alien” may in fact be quite inappropriate; “cousins from outer space” might be better. Giving them a suitable label might also stop us from killing each other.

At present there is no consensus among scientists what they will find if and when they discover life on other planets. I believe Buddhist principles and foresight can be used as a guide.

The Fate of the Earth

There is another discourse that is fascinating in the context of cosmology, “The Seven Suns Sutta”. This is one of those discourses that really caught my eye when I first read it. In this *sutta* the Buddha discusses the future relationship between the sun and the Earth. He says that in the future the Earth will warm up as the sun becomes hotter and hotter. Being unable to cope with the heat, the plants will start to die. And since the plants are at the bottom of the food chain, all animal life will also cease to exist. There is a

Wikipedia article on the topic of the fate of the Earth as the sun expands, and it too starts with all plant life dying. The *sutta* then goes on to describe various stages as the sun heats up, with the water of the oceans gradually evaporating until it is all gone. Eventually, the *sutta* says, the Earth becomes so hot that the whole planet starts to smoulder, smoke, and burn. Mountain peaks come crashing down, everything disintegrates and is burnt up, nothing remains:

There comes a time when, after a long time, a seventh [stage of the] sun appears. With the appearance of the seventh [stage of the] sun, this great earth and Sineru, the king of mountains, burst into flames, blaze up brightly, and become one mass of flame. As the great earth and Sineru are blazing and burning, the flame, cast up by the wind, rises even to the *brahmā* world. As Sineru is blazing and burning, as it is undergoing destruction and being overcome by a great mass of heat, mountain peaks of a hundred *yojanas* disintegrate; mountain peaks of two hundred *yojanas* ... three hundred *yojanas* ... four hundred *yojanas* ... five hundred *yojanas* disintegrate. When this great earth and Sineru, the king of mountains, are blazing and burning, neither ashes nor soot are seen. (AN 7.66)

Some of the ideas expressed here, especially the mention of Sineru, are decidedly foreign from a modern perspective. But we should really expect this. The Buddha's audience was used to a certain way of looking at the world and the Buddha would have had to meet his audience half way to get his message across. What is remarkable, rather, are the strong parallels to our modern outlook.

How is it possible that these modern ideas are found in the *suttas*? From the point of view of modern cosmology and astrophysics, we

know that this is exactly what will happen. We know the sun will expand, eventually burning up our planet – nothing will be left. We know this and it makes sense to us. But how could this be known to a man who lived two and a half thousand years ago? At the end of the same *sutta* the Buddha asks rhetorically who can possibly believe this, except someone who has seen the truth. In other words, the Buddha realised that this would be inconceivable for most people at that time. Apart from confidence in the Buddha, there would be no basis for believing in this. So far as I am aware there is nothing quite like it in any other ancient literature. And there is no evidence that these insights into the nature of the universe existed in pre-Buddhist Indian culture in any form similar to what we find in the *suttas*. Are we then compelled to believe that the Buddha arrived at this understanding through his own mental powers?

These are some of the things that stand out when you read what the *suttas* have to say about cosmology. By now you probably think I am some kind of religious zealot. It is often the case that religious people say all sorts of unsubstantiated things, things that have no basis in fact. So having briefly discussed these remarkable *sutta* passages, even having made a few predictions about what will happen in the future, I want to discuss whether there are any conventional ways this may have made its way into these ancient scriptures. What alternatives do we have in explaining this? Do we really need to conclude that the Buddha had some extraordinary mental powers, or are there other explanations?

Possible Explanations

Pre-existing Ideas

Is it possible that reliable ideas about the universe already existed in India and that the Buddha simply accepted them as true? So far as I am aware, none of the above ideas is found in any recognisable form in pre-Buddhist texts. Moreover, even if some or all of these ideas did pre-exist the Buddha, we would still be faced with the problem of explaining how they arose. The interesting question here is not so much *who* discovered such facts about the universe, but *that* they were discovered. Thus we can set this explanation aside as being irrelevant to finding out how the knowledge was attained.

Even if we admit the possibility that these things may have been discovered by someone prior to the Buddha, as unlikely as this may seem, we know from the Buddha's character in the *suttas* that he was not the sort of person who would accept things simply on trust. He was revolutionary in rejecting so much of the contemporary philosophy and world-view. Unless his experiences happened to coincide with those of others, he quite consistently went his own way. He only taught based on his own insights (SN 56.31). Assuming that the *suttas* give us a realistic picture of the Buddha's personality at least in this regard, it would be out of character if he had spoken these things merely based on trust in someone else or another tradition.

As mentioned above, after the Buddha has spoken about the sun becoming warmer and eventually burning up the Earth, he asks rhetorically who could possibly believe this unless they had seen it for themselves. In acknowledging that the whole idea must have

seemed quite outrageous to most people, he seems to confirm that this idea was unknown in ancient India.

Later Insertion

A typical explanation for extraordinary passages in the *suttas* is that they are not authentic, but late insertions. But in the present case this is really a non-starter. The things we have discussed above are very modern ideas of the cosmos, mostly discovered in the second half of the 20th century, perhaps slightly earlier. At the same time we know for a fact that these scriptures, these particular *suttas* we are discussing here, go a back a long way. It can be shown through comparative study that these *suttas* are likely to go back at least to the time of Emperor Ashoka, almost 2,300 years ago. They have been handed down in different traditions that have existed separately since then. The fact that these *suttas* exist across these traditions to the present day can only really be explained if we assume that they stem from a time before the various traditions went their separate ways. These are genuinely ancient texts.

In any case, there are physical manuscripts of these *suttas* that predate the findings of modern cosmology by several centuries. That these *suttas* were added to the Buddhist scriptures in modern times is simply impossible.

Wrong Interpretation

When you read these texts, how do you know that you have interpreted them correctly? How do you know that you have properly understood what the Buddha was trying to convey?

In truth, one of the things that stands out about the Buddha's teachings, something that makes them different from the vast majority of comparable literature, is their directness and the ease

with which they can normally be understood. Most of the time the *suttas* are just straightforward declarative prose, composed in a style that is largely independent of time, place, and culture. They normally speak directly to universal aspects of the human condition. They were composed to be understood, not to serve as mystical religious texts. There are, of course, metaphors, similes, and occasional parables, but the meaning is normally clear since they generally serve the purpose of highlighting points made in the declarative prose. And the texts are largely free of mythology. It follows that the problems of interpretation are relatively minor, especially when compared to other texts of similar antiquity. For this reason, when you read about the sun heating up and eventually burning up the whole Earth, there is little doubt about the overall meaning. There are no reasonable alternative interpretations.

I would like to add one thing, because I think this is a very important point. Many people are scared of reading the *suttas* because they think they are too difficult to understand. They think it will be difficult to understand something that was written in such a different culture, so long ago. But in my experience – and this may seem astonishing – it is far easier to understand the word of the Buddha in these ancient texts than to understand most contemporary Buddhist teachings. When I read books about Buddhism by contemporary teachers, they are often superficially easy to read. The style may be polished and fluent, and the content may be appealing and even entertaining. But the deeper questions are often left unanswered. And if they are answered, I am often left wondering what exactly is being said. There is a lot of ambiguity.

So if you want clarity about Buddhism, if you want to understand the Dhamma, go to the Buddha. The *suttas* are usually clear, concise, and well-structured, with beautiful similes illustrating important points. Once you get past the unusual style, which is largely a result of oral transmission, they are not hard to understand. On

top of this, they are deep and powerful. The common belief that contemporary teachers are easier to understand is the exact reverse of the truth. For a real understanding of the Dhamma you can't do better than the word of the Buddha.

So, comparatively little interpretation is required for understanding these *suttas*. Misinterpretation of the Pali is unlikely to be an explanation for what we are reading in translation.

Coincidence

A fourth potential explanation is that the cosmological ideas found in the *suttas* just happen to coincide with how the universe works. The idea is that the Buddha had a philosophy about the universe, which by some remarkable coincidence happens to match our modern scientific outlook. Such coincidences, of course, can never be completely discounted. But the more information you have, the more scriptural statements there are that fit our modern outlook, the less likely it is to be a coincidence.

To test the likelihood of coincidence we can compare our ancient Buddhist texts with ideas from other comparable ancient cultures. I am no expert, but I am not aware of any other ancient ideas that conform to the modern cosmological outlook in quite in the way that some of the Buddhist ideas do. You do find things about cosmology in other ancient texts, for instance in ancient Greek philosophy and in the Brahmanical tradition, but the meaning is rarely as clear and easy to interpret as that of the *suttas*. Often expert knowledge is required to draw out what is thought to be the implied meaning. Even then a lot of uncertainty remains.

So coincidence is not really a viable explanation either.

How the Buddha Acquired His Knowledge of the Cosmos

We have racked our brains to find a standard explanation for how these realistic passages about the universe have come to be included in the early Buddhist *suttas*. Since none of them is satisfactory, we have to go further afield. If the *suttas* say accurate things about the cosmos, perhaps we should listen to what they have to say about *how* this knowledge was obtained. The Buddha does actually speak about this. His explanation is a bit more challenging than the above suggestions, but we should really expect this. Other than the cosmological ideas discussed here, most of the Buddha's message on the nature of life is quite different from the prevailing modern ideas. Indeed, this is an important aspect of what makes him worth listening to.

So how does the Buddha explain his cosmological knowledge? The Buddha says, or implies, that much of this is accessible through recollecting one's past lives (MN 4). If you go far enough back in time – thousands of lives, hundreds of thousands of lives, aeons – eventually you start to see how the universe functions, because you see the whole thing unfold before your eyes.

Even if you accept the idea of past lives, you may wonder how this ties in with understanding cosmology: after all, we are just little human beings and the cosmos is so vast by comparison. Big Bangs and Big Crunches, sometimes called Big Bounces by cosmologists, would surely be impossible for humans to observe directly, not least because of the violence of the event. But from a Buddhist point of view there are different kinds of rebirth, different vantage points from which you can observe the workings of the world. Having observed the whole thing from different points of view,

especially from high realms where you are not touched by the actual violence of these events, after a while you understand what's going on. You see the cyclical nature of the universe.

When the Buddha says that the sun in future will incinerate the Earth, this knowledge would have been acquired in a similar way. It is not so much a vision of the future as a prediction of the future based on seeing the past. Because of his knowledge of the universe in the past, the Buddha is able to make inferences about the cosmological future. He is able to grasp some of the natural laws that govern the stars and the cosmos as a whole. By recalling the deep past, he is able to infer about the distant future.

Why Does the Buddha Speak about the Cosmos?

But why does the Buddha even mention these things? What on earth (!) do they have to do with our practice of the Buddhist path in the here and now? It may all seem very interesting, but does it have any practical consequences?

The first thing that occurs to me when I read these passages is that they are evidence for rebirth. We need to account for the fact that these passages exist. Having looked at the alternatives, it seems to me that the recollection of past lives is the most plausible explanation. The Buddha lived in a technologically and scientifically simple society. Two and a half thousand years ago in India there were no telescopes, and the possibilities of observing the universe were very limited. Cosmology was more about speculation and mythology than rigorous study. The Buddha had very little to aid

him. The reality is that he gained all his knowledge while sitting at the foot of a tree.

Imagine going into the jungle. You see this man sitting at the foot of a tree. He is an exceptional person – very peaceful, very kind – and you get this feeling of enormous wisdom and understanding. When you ask him a question, his answers are simple but profound. You get a feeling of being in the presence of someone very special, yet it is impossible for you to grasp what a Buddha is truly about. Only when you listen to his teachings do you start to realise who the Buddha is. It becomes clear that his mind has essentially encompassed the whole universe. He has fully understood the nature of existence.

Not only is this evidence for the recollection of past lives, but it says something about the Buddha as a person. This man sitting at the foot of a tree has a realistic view of the cosmos: solar systems, Big Bounces, “extraterrestrial cousins”. Here is someone who has a very different outlook and overview of the world compared to the vast majority of us. For the most part people are trapped in their own little universe, “my world”, while missing the big picture. This difference is one of the things that makes the Buddha so extraordinary. This seemingly simple man at the foot of a tree had some extraordinary and profound insights, some of which we can only verify through modern science. In fact it seems he may have known more about cosmology, at least in some respects, than we know even in the present day. This then provides an additional angle from which to recall the qualities of the Buddha, which is one of the fundamental ways of giving rise to joy in Buddhist meditation.

But we still haven’t properly answered our question: what was the Buddha’s purpose in speaking about cosmology? I recall mentioning to someone that I thought some of the cosmology found in the

suttas was quite astonishing. They asked why I was interested in this – would it not be better to focus on the core teachings of the Buddha? This is a valid point. In the *suttas* we have been discussing, the Buddha does not present his ideas about the universe as core aspects of his teachings, but rather as incidental to the essence of the Dhamma. He teaches cosmology as part of a broader outlook, generally just to illustrate aspects of his teachings. This is quite remarkable. The cosmological issues that the Buddha brings up are matters we take very seriously in the modern world. Few things are regarded as more important in science and popular culture than understanding our universe. Yet for the Buddha this is all secondary, just illustrations of something much more important, the real Dhamma.

What is that much more important point? To understand this we need to go back to the beginning, back to what motivated the Buddha to leave the home life and go forth into homelessness. He was searching for an end to suffering – happiness, if you like – an end to this round of birth and death. To fully understand happiness and suffering, you have to understand the big picture – you can't just look at this one life and think that will be enough. Only when you understand all potential rebirths and whether any of them might provide lasting and complete happiness, can you make a fully informed decision on where freedom from suffering is to be found. And understanding all possible forms of rebirth is in many ways similar to understanding the universe – at least if we consider the universe in its broadest possible sense, including any realms that may not be immediately accessible to us.

There is another even more direct relationship between cosmology and the deeper aspects of the Dhamma. Let us take another look at the *sutta* that describes the fate of the Earth. The sun becomes hotter and hotter, the Earth eventually burning up and disintegrating. Everything is unstable and unreliable, even the

universe on the very largest of scales. There is nothing to hold on to. When we realise this, we understand why it all needs to be abandoned. When we see the impermanent nature of all phenomena, we are repelled by them, and this leads to dispassion, the ending of craving, and eventually to liberation from all of it. The cosmological details are just there to exemplify the all-encompassing nature of impermanence. The point is to drive home the message of impermanence.

For most of us these large cosmological questions may seem important and certainly interesting. But from the Buddha's point of view they are just a sideshow. The real issue is impermanence. So forget the cosmology – it is impermanence we should get excited about!

Impermanence

Let us briefly consider impermanence in a bit more detail. The Pali word behind impermanence is *anicca*. I recommend people to look at core doctrinal concepts from different angles, because this usually helps you appreciate their full meaning. Impermanence is an acceptable translation for *anicca*, but it is perhaps a bit wishy-washy: you know what it means, but it may not bring up much of an emotional response. At least that's the case for some people. Another way of rendering *anicca* is "unreliable". Anything that is *anicca* may not be there when you need it. If you have an unreliable friend, you never know whether they will be there for you. The world is the same. If you ask something from the world – as Ajahn Brahm likes to say – you never know if it will deliver. Yet we keep on asking for things from the world. This is what attachment is all

about. When you are attached to someone or something, you are asking for reliability. But this is asking for the impossible, says the Buddha. The world is inherently unreliable.

When we think of impermanence, we often regard it as something we are aware of in meditation. You sit down and watch the impermanence of phenomena: you watch your body, you watch your mind, and you see how things arise and pass away. This is one of the standard ways of talking about impermanence in Buddhism.

There is nothing necessarily wrong with this, but it is interesting that the Buddha often speaks about impermanence in quite a different way. The Buddha often speaks of the big picture. He reminds us that all the things around us, all the things in our lives, are unreliable and unstable. If you attach to them, you are going to suffer. Your possessions, your friendships, your family members, your partner in life, your physical body – all of these things will eventually have to go, often before you die but at the very latest when you pass away.

Even your sense of identity is to a large extent tied up with this world. You identify with the networks of social relations you belong to: your position in your family, your broader social status, your education, your occupation, the religion you belong to, and so on and so forth. For instance, I am a Buddhist monk. If I cling too much to that, I will be disappointed when I die, because at that point I won't be a monk anymore. (I can't imagine my disembodied spirit wearing monastic robes!) So while you are still alive, you hold on to those robes, because you know they will give you a lot of happiness if you live the monastic life well. But no matter how good the monk's or the nun's life is, at the point of death you can't attach anymore. Your status as a monk has to go. The same is true of much of our sense of identity. If you hold on too much, no matter where that holding is, you will suffer as a consequence.

The *sutta* about the sun becoming hotter and hotter is about big-picture impermanence. When the Buddha speaks of the whole Earth disintegrating, it means our entire civilisation will be gone forever – our cities, our culture, our scientific achievements – all the things we have worked so hard to build up and look after. History itself will be wiped out. No-one will be remembered. The idea of having a legacy, a sense of identity that connects us to the past, will seem ridiculous. In the big picture everything is impermanent, everything is unreliable. There is nothing to hold on to.

The Buddha says that when you see this, when you understand the absoluteness of this unreliability, you stop desiring anything. You become repelled by it all, for you see it all as suffering. Enough! When you are repelled, craving for all these things stops. This is how liberation happens, and this is what it is all about. Joy at last! Yes, we can make some interesting points about Buddhist cosmology, but this is the real purpose of the Buddha's message. This is the context in which everything else needs to be seen.

Appendix: A Word of Caution

Here I wish to briefly set out a number of caveats to what I have written above. The first thing I wish to point out is that large parts of Buddhist cosmology was inherited from the pre-existing Indian culture, especially from Brahmanical sources. This is clear from the significant areas of overlap, for instance in the names of deities. We should hardly be surprised at this borrowing of ideas. Early Buddhism existed in a certain context, by which it would have been shaped, at least in part. Some of this probably entered the *suttas*

after the passing away of the Buddha, but parts of it may stem from the Buddha himself. There seems to be no reason why he would not have used contemporary cosmological ideas to facilitate communication with his audience, especially if these ideas were innocuous and only tangentially related to his teachings. The Buddha presumably did not take these ideas as absolute truths, and whatever his audience made of them would not affect their ability to grasp the Dhamma.

It is also possible that some of the ideas found in the early Buddhist texts originated outside India, for instance in Babylonia or ancient Greece. Some research has been done in this area, especially by Thomas McEvilley in “The Shape of Ancient Thought”, but much of it is inconclusive. The direction in which the ideas flowed is often uncertain, as is the degree of influence. The lack of clarity has forced me to largely ignore this interesting phenomenon. But there is great potential for further research in this area. The outcome of such research could potentially affect some of the arguments made in this essay.

The above means that the cosmological ideas found in the *suttas* have at least two different sources: pre-existing ideas and new ideas stemming from the Buddha. Often it is impossible to reliably differentiate between the two. My approach, therefore, has been to largely disregard this distinction. Instead, I have simply focussed on those ideas that fit with our modern perspective, while leaving out any ideas that are difficult to square with the results of modern research. This may seem biased, but it is sufficient to find a single instance where the *sutta* view matches modern ideas to ask how this could possibly have come about. It is the exception that demands explanation, as is the case in all scientific enquiry.

Another important aspect of Buddhist cosmology as found in the *suttas* is that it is not a systematic or complete exposition. The

Buddha's purpose was never to understand the natural world, but to find a solution to the problem of suffering. Whatever insights he acquired into the workings of the physical world would have been a by-product of this deeper search. We should therefore expect no more than occasional glimpses of a true understanding of physical reality. Yet, depending on the quality and detail of these glimpses, we may still be persuaded that the Buddha saw things 2,500 years ago that are only now being discovered by scientists.

Then there is the problem of interpretation. The *suttas* use language that was current in a very different and in some ways much more primitive society. As a consequence, it is often not obvious how terms used by the Buddha should be understood. Take the Pali word *loka*, which is almost universally rendered as "world". This, I believe, is actually a very suitable translation, yet it is impossible to know with any precision how well the meanings of the two words overlap. For instance, in English "world" can refer to the cosmos, but the extent to which *loka* is used in the same way in the *suttas* is open to debate. In other words, it seems unlikely that the ancient Indians had an idea of the cosmos that exactly matches our own.

Even trickier are Pali words such as *vivaṭṭati* and *saṃvaṭṭati*, which are crucial to a correct interpretation of one of the passages I have discussed above. These words mean something very close to "rolling apart" and "rolling together", or "evolution" and "devolution/involution". The context in which they are used makes it clear that they concern very long periods of time. Apart from this we have to rely on later Buddhism for a more precise definition. So although it seems quite plausible that this is about the expansion and contraction of the universe, it is impossible to pin this down with certainty based on the *suttas* alone. The suggestions made in this essay therefore need to be viewed with appropriate caution.

Finally, the point of this essay is not to make any special claims for the Buddha, such as suggesting that he was superhuman or even omniscient, something he himself denies in the *suttas*. The Buddha was special in only one important respect: he discovered the truth of suffering and the path to its end. Apart from being the first to make this discovery, any other special attributes or powers the Buddha may have had are in principle equally available to any human being whose mind is sufficiently developed. Sometimes we possess latent abilities that we are not even aware of!