

SPACE TRAVEL

One day - it may be in this century, or it may be a thousand years from now - we will discover a really efficient means of propelling our space-vehicles. The ultimate speed for spaceships is the velocity of light. They will never reach that goal, but they will get very close to it. And then the nearest star will be less than five years' voyaging from Earth.

Our exploring ships will spread outwards from their home over an ever-expanding sphere of space. It is a sphere which will grow at almost the speed of light. So, looking far into the future we must picture a slow (little more than half a billion miles an hour!) expansion of human activities outwards from the Solar System, among the suns in the region of the galaxy where we now find ourselves. These suns are on the average five light-years apart; in other words, we can never get from one to the next in less than five years.

At this point we will deal with an obvious objection. Can we be *sure* that the velocity of light is a limiting factor? So many 'impassable' barriers have been broken in the past; perhaps this may go the way of all the others.

Scientists believe that light can never be outraced* by any form of radiation of any material object. Let us assume the contrary and see where it gets us. We will even take the most optimistic case, and imagine that the speed of transportation may eventually become infinite.

Picture a time when, by the development of techniques as far beyond our present engineering as a transistor is beyond a stone axe**, we can reach anywhere we please *instantaneously*, with no more effort than dialling a number. This would indeed cut the Universe down, and reduce its physical immensity to nothingness. What would be left?

Everything that really matters. For the Universe has two aspects -its scale, and its breathtaking complexity. Having abolished the first, we are now face-to-face with the second.

What we must now try to visualize is not size, but quantity. The directories for such cities as London and New York are already getting somewhat out of hand, but they list only about a million - 10^6 - numbers- The Cosmic Directory would be 10^{14} times bigger to hold its 10^{20} numbers.

To continue our fantasy a little further, here is another consequence of 20-digit telephone number. Think of the possibility of cosmic chaos if dialling just a wrong digit in 27945015423811986385 could put you at the wrong end of the universe. And it is still possible that this is not enough and we may need bigger numbers to keep score of the stars, and even more to number their planets.

Before such numbers, even spirits brave enough to face the challenge of the light-years must quail***. The detailed examination of all the grains of sand on all the beaches of the world is a far smaller task than the exploration of the universe.

(From *Profiles of the Future* by Arthur C. Clarke. Adapted)

* *outraced*: sobrepassar, avançar / aventajar, adelantar

** *axe*: destreal / hacha

*** *quail*: espantar-se, retrocedir / espantarse, retroceder

PART ONE: READING COMPREHENSION

Answer the following questions according to the information in the text Space Travel.
[1 point each correct answer]

1. What are the main space-travelling problems?
2. Does Arthur Clarke consider the speed of light impossible to overcome?
Copy a sentence that expresses his point of view.
3. What could lead to chaos?
4. Which of the following sentences summarises the text best?
 - a) Space conquest will go through stages. First, we will create a powerful means of driving spaceships to break all speed barriers. Then, we will bring order into the chaos in the Universe -some kind of numerical system to be able to calculate distances and communicate by phone.
 - b) In time, efficient spaceship engines will allow us to travel from our Solar System towards the limits of our galaxy. Then, some unthinkable things may start to happen. These go from instant transportation in the Universe, no matter its scale, to dealing with its vast complexity.
 - c) The future will bring an efficient means of propelling our spaceships and breaking the speed of light without radiation of space objects. Then, our engineers will create transistors for instant transportation beyond our galaxy and order to communicate with distant stars.

PART TWO: WRITING

Choose ONE topic. Write about either 1 or 2. Write between 75 and 100 words.
[Grammatical accuracy: 3 points. Writing fluency: 3 points]

1. Write a short essay. Imagine you are in the future -in the year 3000. Describe lifestyle and technological advances –for example: Where and how do people live? How do they travel through space? How do they communicate? What other things do they do differently from today?
2. Write a dialogue between two or more people. They are discussing the importance of space discovery and its cost. They express reasons for and against it.