

ARGONAUTS TO ASTRONAUTS

Since the word "History" has its origins in the domain of inquiry, I call myself an historian to the extent to which I have tried to study voyages of discovery in a manner as personal as possible, and I have presented the results of my work in a number of books and articles. The short study which follows is not an attempt to recapitulate what has already been published. Rather, I have tried here to present a brief synthesis of my reflections on one of the themes which I have undertaken to outline.

In a sense, man gradually fashions his world out of the whole cloth of infinity, and creates his universe by discovering it. Now to discover is not just to bump into something and perhaps forget it. To discover is to rend the veil, to give form to what is discovered, to communicate it and to pass it on. Consequently, discovery requires navigation; some form of cartography; and, perhaps most important, poetry, in order to pass on its heritage in an unforgettable way. And discovery, since the time of Homer, has three dimensions: the earth, the known sea, and, surrounding this little island of land and sea, the infinite ocean, origin and tomb of the Gods.

So, to explore is simply to fill in the physiognomy of the land and the sea; but to discover is to change the scale, to push back the infinite, and I think this had been done in our World only three times. Three quantum jumps have been made in man's

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cosmology, in man's conquest of the Infinite: the first by the Homeric heroes, the second by the captains of the Renaissance and the third by the Astronauts of today.

I have given some years to the study of these three jumps: first of all, of course, in archives and libraries, and then by following the actual voyages and using all modern means, and all I could learn of modern scientific disciplines, to try to understand them, and to try to get close to the heroes and to their worlds. I must underline that I do not consider valid the method of trying to reproduce the actual conditions of the original voyage, for what has changed most is not the ship or the food, but what we know, and this we cannot disguise; but I do consider it valid to use modern techniques to try to see, feel and understand where and how these voyages took place. And, while becoming familiar with these jumps in man's appreciation of his universe, I have tried to clear up the many doubts which remain in the accounts of the voyages. All this has been a marvelous excuse to bum around the pleasant seas of the world, often with the great Samuel Eliot Morison, which is to sail under the best of all Captains, and also with your own archive and your own library on board.

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As I see it, our cosmological heritage begins three thousand years ago, and I emphasize the world heritage because obviously much goes on in the Orient and in other parts of the world which does not come into the main stream of western knowledge, at least not directly: the Chinese, the Sumerians, and the Egyptians explore coasts and rivers, but as far as we are concerned the infinite does not begin to retreat until Jason and his Argonauts pierce the Bosphorus, follow the South Coast of the Black Sea, and find that it has an end; and until in the next generation Odysseus pushes the infinite beyond the Mediterranean and out to the roaring Atlantic where it will remain for the next two thousand years.

These first discoveries are passed on to us by the most unforgettable of all poets: Homer. Nevertheless, particularly in the case of the Argonauts, the mists lift slowly: in the eighth century B.C. Homer and Hesiod make mention of them; in the fifth

Pindar first sketches the whole story, and the dramatists embellish it; and finally, in the third, Apollonius Rhodius gives us the complete account. The Ancients never doubted the truth of these voyages: they believed with Frazer that science is an accumulation of reasonable myths and that history is an accumulation of memorable legends. And even though we are more sceptic, Schlieman, Evans, Ventris, Chadwick and Blegen have proved to us that Homer told the truth.

So, what is the shape of this world in which man takes his first step towards inventing his own universe? First of all the world is a green ring of earth enclosing a known sea, the clear and windy Aegean; around it, as I said before, is an unknown and infinite ocean which is audible through the Rivers of Ocean, one to the West and one to the East. In this little island there is room to spare, and men have enough imagination to fill it with a hierarchy uninterrupted from God to the very last slave. Gods communicate with men by omens, or through apparitions if they want to be more emphatic; and men communicate with gods by means of sacrifices which are always festive. Women in this world are subordinate but by no means tame; and justice is always bilateral, a simple matter between those affected, and usually without intervention from the State.

The heroes of this world are independent but never alone, for they always surrounded by nymphs, by the titular deities of rivers, by spirits of all kinds. The means they use for discovery are simple: they have long narrow ships (broad ones are for trade) of about 40 oars plus a steering oar, origin, I think, of the word starboard; a square sail which, there being no cotton, is probably made of wool and has to be supported by a net, just like the sails of the Vikings so many years later; a mast which can be stopped in its box and taken down, and which is held up by leather thongs such as are still used in my country for cattle (you cut a spiral in the leather, you stretch it out in the sun, you let it dry, and it becomes as strong as steel); the ships have anchors of pierced stone, which archaeologists have found wherever the Myceneans went; they carry concentrated wine (it still exists, the Rhinelanders call it *Trockenbeerenauslese*) and it is resinated, which makes your nose pucker, though once you get used to it it is very good; they carry grain in sacks and, when they can be caught, they carry goats

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and other animals. The Myceneans are prudent sailors: they prefer to sail during the day, in summer, and along the coasts, beaching their boats at night like all good Mediterraneans to this day. Consequently they make about eight knots with the best of god-sent winds, most often four knots along coasts, and two knots when rowing against a light wind: speeds which jibe exactly with the sections of voyages between known points of Jason, of Nestor and of Telemakos. It is odd that there are few reproductions left of these ships, but fortunately a whole Mycenean ship has now been found off Cape Gelydonia in Turkey, so once again we can prove to ourselves that Homer's descriptions were exact.

How do these ships navigate? First of all by the sun and the stars, and especially, I think, by what we call latitude navigation, something that the Polynesians used for many years: they know that certain stars pass directly over their home or destination, so they simply get under them, knowing of course whether to sail East or West. More important, they follow winds, which in this world are not simply movements of air; they have a personality, a taste, and a smell which makes them unmistakable. There is Boreas in the North, which is the Tramontana of the Mediterranean, and the Meltemi that blew Odysseus away from the known world. I know the Tramontana well and it is like a playful tiger; with its paw it pushes out a lenticular cloud, and if you don't act quickly, it flips you into the water. There is Euros in the East, the wind of the rotation of the earth, the constant trade wind, the wind of the discoverers, for discovery almost always goes his way. In the south there is Notos, the Wind of the passions; it is the Italian's Scirocco, the Arab's Khasmin, and the Foehn of the Swiss, all of whom prefer to commit their crimes under his influence. Finally there is Zephyros which is contrary to the rotation of the earth and therefore very uncertain. Into this world strides Jason, a tall and handsome prince dressed in a leopardskin, but I am afraid, "amekanos," more prudent than astute or brave, until Medea transforms him for a while into a great hero—Medea, who like any woman worth the name is half girl and half witch. Hera is Jason's patron, the goddess of life and of survival, and the Argonautica is not his story, it is the story of Argo, the ship which even speaks for itself. But Jason has one great quality: he knows how to pick collaborators

who will do the jobs he needs done. He picks the engineer who understands physical things, but he balances him with Orpheus the magician. He picks Idmon the Seer, who knows his omens, but he also picks Herakles, the noble giant, and therefore a crashing bore. Pelias the usurper sends Jason and his Argonauts to the infinite ocean to fetch the golden fleece, a good way to get rid of a possible pretender. I have checked their outward route quite carefully, and have found it identifiable by the landmarks, at least from my point of view, which is that of a reasonably well-read navigator. Let me give you just one example: the chroniclers mention Cape Carambis where the North wind "divides," and all modern sailing directions tell us that off the Cape of Kerempe on the Coast of Anatolia one must be very careful, because it splits the north wind. The Argonauts' return is more legendary, and in fact, as the story is told and retold, it seems to grow with the routes of amber; but I will note that it is not altogether impossible to sail up the Danube, to carry a longboat into Lake Constance, to navigate the Rhine and the Aare down to the lakes of Neuchâtel and of Geneva, and then the Rhone down to the Mediterranean, so that there may be some truth even in Apollonius' final embroidery.

But the important thing is the outward route with which the Argonauts prove that the Pontos Euxinos is not infinite, for it ends at Colochis, the land of the Golden Fleece. Consequently, the infinite must lie beyond the Caucasus, and has been pushed away towards India.

Only one generation later, Odysseus, a stocky, red-bearded, often naked hero, does the same in the other direction. Odysseus is a wily hero, his patron is Athena the goddess of intelligence, and the Odyssey is his story and no-one else's. Women always help him: Circe the sorceress, Calipso the Nymph, and Nausicaa the girl, the only one who steals a piece of his heart and also of mine; but of course the one who is most real is Penelope, for she has the human defects, and it is to her that he returns. In the Odyssey Homer gives us very detailed information of winds and of stars, and I have used these to do two things: first to check the voyage from the point of view of the possibilities of a real navigator, and second to try to answer an ancient riddle on which, of course, no one will ever say the last word: where did Homer compose his poem? I can't go into my reasoning here

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of course, but if you have the patience to eye through my last book,¹ you will find the conclusion that the stars which Homer describes, the way he describes which ones dip into the ocean and which do not; this crossed with archaeology and linguistics, places Homer in Cyprus. As to Odysseus' voyage I have tried to show that it must be enlarged all the way to the Balearics and Gibraltar in the West, down to the bottom of the Gulf of Sirte in the South, and to Cyprus in the East.

Consequently the result of Odysseus' voyage is that the infinite now lies beyond the pillars of Hercules, and that the whole Mediterranean is included in the known sea, surrounded by land from the Caucasus to Gibraltar.

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This world is explored during many centuries by Phoenicians, by Romans, by Vikings, and by Muslims, who even peer into the Atlantic and into the Indian Ocean; but in fact the scale of man's cosmology does not change until almost two thousand years later, when Henry the Navigator creates the first NASA (the first organization for exploration) and until building on Henry's results, Columbus and Da Gama open the Atlantic and the Indian Ocean.

Columbus is certainly the greatest instinctive navigator of all time, but he has two complexes: he wishes to be known as a scientist which he is not, and he wishes to be classed as an aristocrat which he is not for he is the son of a Genoese wool-carder, in the service of Spain. But if one has no complexes one has no angels either, and Columbus is, among many other things, his own poet, for of America he says things like "era grande placer el gusto de las mañanas... y los pájaros cantaban como en la primavera Sevillana." How many navigators speak like this? In reality he is trying to circumnavigate the Globe, for he knows how Marco Polo has reached the far East, and thinks he will reach the same destination the other way. But in his way lies a continent whose presence has been felt since ancient times; the new Atlantis, America. And in his fourth voyage we see him sailing down the coast of the Isthmus (and incidentally I believe I have proved that he went much further along this part of the Continent than was thought) and he seems to hear the roar of the

¹ *Ulysses Airborne*, New York, Harper and Row, 1971.

ocean on the other side; but he finds no Strait, so circumnavigation must wait. Da Gama, on the other hand, is a great and rigid Commander, heir to the navigational science of the Portuguese. He knows his winds, and he plans his great voyage to India so that he almost crosses the Atlantic first, in order to catch the proper wind to round the African Cape; and his sailing directions, by the way, will bring Cabral to Brazil.

After these men, the infinite lies beyond America and beyond India, but one third of the Globe is still dark, and it is to be lighted one generation later, in the high Renaissance.

The world of the high Renaissance is a world full of races; it is a world that man begins to measure, to possess, to mold passionately into forms, words, colour, and logical constructions. It is the world of Michelangelo and of Titian; of Charles the Fifth, François Premier, and Suleiman the Magnificent; of Luther and Erasmus (and of More and Loyola). The aim of life in this world is to produce a work of art, and the method is to impose one's destiny, like Don Quixote. Justice is no longer bilateral, for the State is beginning to intervene, but communication is much broader than before, for the new chroniclers are great journalists like Pigafetta and Vespucci, and the printing press broadcasts their words.

Means have also changed a great deal since the Greeks: now we have Caravelles, thanks to the Portuguese, and Naos of up to more than one hundred tons which can carry supplies for many months; we have the lateen sail which can get relatively close to the wind and which, like much of civilization, has reached us from the East through the Muslims; we have the compass with its gnomon, the shadow of which will tell us the correction, and we have instruments to measure the sun and the stars which are still basic, the quadrant, the astrolabe and the cross-staff, so we know our latitude quite accurately. Incidentally we also have the lead with which we can measure depth, and which, with tallow on it, can sample the bottom, both of which can tell us a good deal of our whereabouts along a coast; but oddly enough we have no log to measure speed, so we must go to the prow and spit into the water, then walk down the ship counting the seconds (do not laugh, I have tried it, and it works). Latitude as I say is very good, but longitude is poor, for the mechanical clock which already exists won't be used on board until the end of the

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eighteenth century—nowadays somebody invents nylon and immediately all the ladies are wearing nylon stockings, but in those days it took two hundred years for an invention to be put to full use. So time is measured with an hourglass, and the ship's boy must turn it over every half hour, so if he's seasick, lazy, or forgets, enormous errors creep in. And this lack of exact longitude is what really makes possible the mystery that still remains.

Into this world walks Magellan, a short, black-bearded, pop-eyed Portuguese from *Tras-os-Montes*, a man of the mountains and therefore of very few words, who will prove that he knows how to act alone in *San Julián de Patagonia*, where with one ship he will put down the three who rebel against him. He is of the small nobility, and soon moves to *Oporto* where he learns to know the sea; then he goes to the *Spice Islands* for *Don Manuel* of Portugal, which is important because Europe is already addicted not only to gold, but also to the spices which conserve food, which make it palatable, which cure all ills and which are even supposed to be an aphrodisiac. Magellan returns from the *Moluccas* with an idea; why not go to these all-important islands the other way? *Don Manuel* won't have it, so Magellan goes to *Don Carlos* the First of Spain, soon to become the fifth Emperor. His argument is that since longitude is inexact, the line of *Tordesillas* (which divides the Portuguese hemisphere from the Spanish) projected onto the other side of the world, will give the spice islands to the Spaniards. And he is not far wrong, only two or three degrees off. *Don Carlos* immediately buys the idea and names Magellan "*Capitán General de la Flota del Moluco.*" After surviving the mutiny and the Patagonian winter, Magellan discovers his Straits, so that America is no longer a barrier. Then he crosses the immense Pacific and some of his men finally circumnavigate the world. But Magellan's pride kills him in *Mactan* in the Philippines; pride which so often seems to be the Achilles heel for great men. He wants to prove that with a few Spaniards he can dominate a thousand Indians, and so loses his life. *Juan Sebastian de El Cano*, although Basque, completes the voyage, which takes three years. Only one of five ships returns to Spain, and only eighteen out of almost three hundred men, but *El Cano* earns his device: "*Primus circumdedisti me.*" All the seas are now one, and there is no infinite ocean. Renaissance man is the centre of the universe, even if the globe

itself will soon be displaced; and in this world the Church is splendid even though Savonarola rumbles, and God and his Court are real but distant, because God is perfect, whereas the gods of the Greeks were close because they were as imperfect as men.

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This is the world that we inherit, but we inherit it practically exhausted. Fortunately the air is also a sea, and at the end of the Eighteenth Century the Montgolfiers begin to explore it; then in the Twentieth the Wrights, Lindbergh and Post fly all over it; and in our own time, though it is already almost a generation ago, Gagarin makes the first orbit. This completes the exploration of a globe which is now teeming and so noisy that one can no longer hear either men or Gods, for communication is excessive and cold, as cold as a television tube. In a way it is a lonely world because it is no longer possible to be alone. Justice among us has become a social problem so that there are no heroes and no villains, and the young seem to have a strong sense of injustice but no driving sense of justice.

Fortunately we have marvellous tools; archaeology, linguistics, and history give us new perspectives, and our means of navigation are superb. Instead of ships, balloons and airplanes, we have space capsules which, by the way, I have heard the Russian astronauts call by a beautiful name, "caravela." We have harnessed energy so that we can count on almost unlimited propulsion, and we navigate by the inertial platform which, combined with a computer, simply calculates how much we have moved in any direction, and tells us exactly where we are at any time. But I who have followed these space flights from Cape Kennedy and from the Control Center at Houston know that the sun and the stars are still basic, and I have heard the Astronauts use them. The deep space voyages are now in the hands not of a hero but of an organization, and they seem to many people automatic, and perhaps even useless, so I want to say here that they are neither. I have lived through very serious emergencies and have heard men working in space as alone as Odysseus in *Telepylos* when he had to abandon his fleet, or as alone as Magellan at San Julian de Patagonia. Nor in my view,

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are these voyages useless: first of all they have many important side products, and thanks to space exploration we now have ways of measuring the performance of our bodies at a distance (medically most important), and we are learning to use the sun's energy just about when other sources are running dry; but perhaps most important, spaceships which are now in the air cover the whole world asking no one's permission, studying vegetation and geology, and photographing at will, so that we do finally have one world, without meaningful frontiers. The men who carry out this new discovery seem perhaps on television like cowboys, but I want to tell you that they are not. Both the Russian and the United States Astronauts that I know are serious and insatiably curious technical men who speak a new kind of poetry, the terse language of science.

But to me the most significant contribution of the Space Age is one single photograph, the photograph that you have all seen: the little green earth, floating alone, in the deepest, in the blackest infinite man has ever faced. This photograph tells us that we are back where we started: on a small island of land and sea, which we must love and conserve. Fortunately we have the means, for we can study it from the outside.

But Space poses a problem, which is as new as it is old and on this note I wish to end. Many of us face an Infinite infinitely empty, and reality without God loses its stuff, just as speed far from the earth loses its thrill. So I think we have reached a stage where we must repeople our universe with reasonable myths and with memorable legends, so that science and history can keep their continuity. And in order to pass on so much knowledge we have to make out of the language of science a real poetry that our children will not forget. I do not know whether to do this we will have to return to the clarity of the windy Aegean, or to the noble madness of La Mancha. But if we are to remain civilized in the face of the new Infinite, we may well have to reach again for the fire that Prometheus stole from the gods; and despite the noisy confusion of our world, I think our youth is reaching for it now.