HOME

education

A FILM BY YANN ARTHUS-BERTRAND

A TEACHING TOOL TO ENHANCE UNDERSTANDING

CONTENTS

AUTHORS' NOTE

This teaching dossier is a tool for teachers and presenters wishing to lead in-depth study of the film.

The teaching files have been designed as a set of tactics for leading the viewer through a gradual approach to the work. It is for the teacher or presenter to make use of these tools according to his or her experience, habits and practices and to adapt the approach to the situation (knowledge, audience interest level, time available, etc.)

The files refer to sequences in the film corresponding to the sequential breakdown of the dossier (not the chaptering of the film), which can be accessed by clicking on the links. The film *Home*, in its short version, can be viewed in its entirely in the "start" area.

The files can be used with pupils/students of 9-10 years of age and upwards. The content of the files should be adapted to the levelof the audience, according to the receptivity of each age.

Users can communicate their remarks and experiences on the Ligue de l'enseignement website*: www.laligue.org (in French).*

SUGGESTED GENERAL APPROACH

The first step is to watch the film in its entirety, on a cinema screen, in a specialized hall. It is advisable to introduce the film, to arouse the viewers' curiosity – but without emphasising any particular meaning. After the screening, work can be broken down into the following 4 phases.

1. Spontaneous expression by the viewers of what they feel about it
You could request a short written piece of a few words – or even a drawing – about "what you want to say, what you feel about the film or specific parts of it". This is an aid to memorization, done before collective memorization (see phase 2), thus avoiding the phenomenon of mimicking what others have just said.

2. Communication to the group
a/ Each viewer reads what they have written, freed from the worry of having to remember what they wanted to say.
b/ The teacher or lecturer writes briefly on a board or flipchart the meanings suggested and the feelings expressed.

3. Group comparison of the various perceptions
This is the moment of discussion in the group, leading to observations coincerning areas of agreement, differences and oppositions and the need to justify the assertions and meanings put forward by the visual and aural aspects of the film.

4. Using the "Teaching support proposals" and "Resources files" part of the teaching files
This is done according to the needs emerging from the comparison phase. Depending on the specific case, they will help to:

- enrich everyone's specific memory (recall of the film);
- identify techniques of cinematographic expression, on the basis of meanings put forward, feelings expressed (more detailed study of sequences).

In this way it should be possible to reach a deeper and more complete perception of the film, without necessarily being led to agree on one single meaning. Several meanings may remain – all of them consistent with what has been seen and heard.

The film's complexity, its richness and its unresolved ambiguities make possible several responses. The teacher or presenter's job is to bring together the interpretations proposed by the viewers, relate them to the extracts viewed and, in certain cases, compare them to the intentions of the director and his team.

NB: the sequences mentioned relate to a division by sequences and not to the chaptering of the film.

HOME
A film by Yann Arthus-Bertrand
Short version: 92'
2009, France, digital
Film company: Elzevir Films – EuropaCorp
Distributor in France: EuropaCorp Distribution

SYNOPSIS

The appearance of life on Earth was the result of a balance between elements that took billions of years to stabilize. Humans have profited from the lavish resources of the Earth, but have changed the face of the world by the use they have made of it. The harnessing of petroleum and its subsequent over-exploitation are having dramatic consequences for our planet. Human beings must chage their behavior and their way of life before it is too late for them, their descendants and life on Earth.

SEQUENTIAL BREAKDOWN

NB: the sequences mentioned in the teaching support proposals relate to a division by sequences and not to the chaptering of the film.

Sequence 1 Black. Crescent Earth, then full image of Earth. The commentary begins: (“Listen to me, please.”) the “extraordinary” story of Earth and Humanity.

Sequence 2: (“These are the traces of our origins…”) Traces of origins: clouds, volcanoes, smoke, rushing water, etc.

Sequence 3: (“Where do we come from?”) Life appears on Earth: bacteria, carbon, plants, oxygen and water; “everything is linked…sharing is everything”). Life hinges on a delicate balance.

Sequence 4: (“The Earth counts time …”) Earth counts time in billions of years. Trees appear, then soils, micro-organisms then animals, in a logical sequence in which everything has its place.

Sequence 5: (“And that’s where you…”) The appearance of humans, the conquest of land, the enduring nature of an age-old way of life for a quarter of humanity. The invention of agriculture and the mark that human beings make on the landscape. The search for energy to make food.

Sequence 6: (“But after relying on muscle-power…”) The harnessing of petroleum. Change of shot and soundtrack on the words “energy buried deep in the Earth”. Cross fade.

Sequence 7: (“Faster and faster.”) The exponential growth of the world population, megalopolis conurbations: Shenzhen in China, Shanghai, New York. Oil-powered agriculture and its by-products: the depletion of water reserves, single crop farming, pesticides and fertilizer. The greenhouses of Almeria, in Spain. The consumption of meat. The standardization of products.

Sequence 8: (“This is the new measure of time”) Time is measured by the pace of the extraction of oil and humankind’s insatiable appetite. Los Angeles and its profusion of lights. Beijing. The car is king. Inequalities have never been so flagrant. Dubai is the symbol of this frantic race. Continuity cut between the two sequences: shot of the Bay of Dubai, followed by the sea.

Sequence 9: (“Since 1950…”) Water: the disappearance of fish, the overconsumption of water. The results of a disastrous policy in Saudi Arabia, Israel and India. The Las Vegas scandal. Marshlands – an unrecognized and destroyed source of life.

Sequence 10: (“All living matter is linked”) Forest: vital for climatic balance, it is being destroyed by deforestation in the Amazon region, Borneo, Haiti and Madagascar. The damage wrought by single-crop farming.

Sequence 11: (“Here’s one theory of the story of the Rapanui…”) The story of Easter Island.

Sequence 12: (“Since 1950, the world’s population…”) Changes brought by humankind and human migration: the example of the city of Lagos, in Nigeria. Famine and poverty push human beings to seek for subsistence in refuse bins.

Sequence 13 (“We’re not changing our model”) Not changing their model, human beings are pursuing their frantic search for oil. The consequences of this over-exploitation are disastrous for the planet: the Polar ice sheets and the Greenland ice cap are melting, causing the level of the oceans to rise. The imbalance of the ecosystem is already noticeable in the disappearance of coral and the changing trajectories of the great winds. Climate geography is changing. Populations are already threatened.

Sequence 14: (“If sea levels continue to rise…?”) The threat of the disappearance of coastal cities (Tokyo). Risk of the disappearance of drinking water: the snow is melting on Kilimanjaro and the Himalayan glaciers. The consequence on the flux of Asia’s great rivers – an effect already noticeable in Bangladesh. Populations are migrating. Elsewhere (in Australia) drought and fires are on the increase. Intercut to black.

Sequence 15: (“The clock of climate change”) The anticipated disappearance of the Siberian permafrost: the release of methane into the atmosphere triggering an acceleration of the greenhouse effect.

Sequence 16 (“We have created phenomena…”) Man alone is responsible for phenomena he can no longer control. INSERT CARDS. The refugees are beset by inequalities and injustice, whereas solidarity is vital. “…a single human can knock down any wall.”

Sequence 17 (“It’s too late to be a pessimist.”) Everywhere, actions are being taken to improve situations: in Lesotho, in Qatar with education, in Bangladesh with financial aid for the most destitute. The Antarctic is an internationally protected area. The governments of the United States, South Korea, Costa Rica and Gabon have become aware of the urgency of protecting waters and forests. Some ways of doing things have changed, in the areas of agriculture, fishing and housing (Fribourg, Bombay, New Zealand, Iceland, Austria and Sweden) and energy (Denmark, Iceland, the US, China, India, Germany and Spain). We must learn to use solar energy. “We all have the power to change.” An appeal to the conscience of each one of us to save our Earth. INSERT CARDS “It’s up to us to write what happens next… together.” Closing credits. Photos of places.

GLOSSARY OF FILM TERMS USED IN THE TEACHING FILES

Continuity cut: an editing operation between two shots, called “connecting” or “suturing”, according to a specific pace or timing which gives a film its stylistic and aesthetic unity.
Cross fade: a transition technique involving superimposing two shots for a period of time, diminishing the brightness of the first while increasing the brightness of the second.
Dolly shot: Camera which moves on a platform (dolly), moving laterally, forward or backward or revolving (rotating dolly shot).
Editing: assembling shots end-to-end (with the possibility of shortening continuity cuts).
Fade out: a transition technique between two shots, two images consisting of a gradual darkening of the first until it reaches total blackness (the duration of the black varies according to need).
Field: visual area covered.
Frame: the extent of the image field.
High-angle shot: shot with the camera angled downwards.
Insert card: static image inserted between two shots or animated sequences, which convey information to the viewer. The insert cards in *Home* contribute to the narrative flux, provide spatiotemporal flagging and introduce a didactic or education aspect. Insert cards focus attention.
Low-angle shot: shot with the camera angled upwards.
Off camera: area outside the camera field (off). Off-screen sound: sound coming from the area not shown in the field.
Panning: the movement of the camera, which, fixed on its tripod rotates horizontally, vertically or diagonally.
Parallel editing: An editing technique involving cutting back and forth between two or more simultaneous sets of action.
Quick cut: passing from one shot to another without transition, the shots following each other without effects.
Reverse shot: the opposite visual area to that of the field. It reveals the viewpoint from which the field was seen.
Scene: a sub-group of shots, in the construction of a film, relating to one place or one unit of action.
Sequence: a series of related scenes forming a coherent whole, even if they do not occur in the same set. A sequence is made up of shots.
Shot: a slice of film from a single take – the basic unit of an edited film.
Shot length: a way of framing a character or set (from long shot to close up).
Still frame: isolated image from a shot (there are 24 still frames in one second of film).
Zoom (in or out): shrinking (zoom in) or enlarging (zoom out) of the field of vision, the camera being in a fixed position. The shooting angle and the apparent size of the image’s elements change but not the perspective of the objects filmed.

1 - THE GENRE AND CATEGORY OF THE FILM

Outline

Is *Home* an unclassifiable film?

Home is a film that seems to resist to any attempt at classification: neither fiction nor documentary nor ecology lesson, it is nonetheless packed with characteristics that make it veer between various film genres, to the point of being a propaganda film with a decidedly militant message.

Corresponding files

File 2: Viewpoints – images of the world
File 6: Man on Earth – symbolic representations
File 7: Figures of speech
Resources File 8: The film's locations

Aims

- Explain the characteristics of some film genres.
- Clarify the difference between documentary and reportage.

Possible stages

1 – On the basis of the definitions, find in *Home* characteristics of the following genres:

1.1 Documentary

Definition: the goal of a documentary is to represent reality, without intervening in it. The documentary is a work of creation and cannot lay claim to objectivity.

- In what sense is *Home* a documentary?

(The landscapes are filmed as they are, in a personal way, because of the director's choices. The author's point of view is identifiable and personal. He does not conduct interviews, people do not act a role and his camera films what happens. It is the work of an artist – a personal work.)

1.2 Reportage

Definition: Reportage is an account of events witnessed by the journalist, on the spot. The journalist reports the facts and the questions raised and brings an enquiring and critical viewpoint to what he films. The filmed reportage differs from the documentary through the adopting of an "angle", which serves as a thread.

- In what sense is *Home* reportage?

(Yann Arthus-Bertrand gives an account of events taking place on Earth. He reports and describes the facts. His angle is clear: the Earth is suffering and humans can do something about it.)

1.3 Fiction

Definition: Fiction relies on a narrative to produce an illusion of reality. It is constructed on the basis of a story, a script and directing. Actors play a role that differs from what and who they are in real life.

- In what sense is *Home* fiction?
(The film is constructed around a narrative and tells a story. It gives a certain vision of reality, highly reworked by the eye of an artist-photographer. The aesthetic quality is very strong, the colours and shapes of which certain images are composed lean towards abstraction – we neither know where we are nor what is actually being shown. In a way, it gives the illusion of reality because what is filmed does not resemble what we see in daily life.)

1.4 The ecology lesson – educative cinema
Definition: Developments in education have given rise to the concept of educative cinema and led to the growth of "movie clubs" that treat the film as a creative work, but also as a means of education.

A lesson is a support tool for teaching. Films can be used for education, as a learning support.

- In what sense is Home an ecology lesson (educative cinema)?
The film gives much information about ecology, geology, biology, geography, history, etc. It tries to explain some of the mechanisms behind the formation of the Earth and the deterioration of our environment and to get us to take on board essential ideas and key figures.)

2 – Find what makes *Home* hard to categorize
2.1 Why is *Home* not really a documentary?
(The camera spends little time dwelling on people, as such. It does not accompany them in their daily life, observing them.)

2.2 Why is *Home* not really reportage?
(The film has not been commissioned by the press. It does not deal with a news item. Its subject is universal and covers no particular event.)

2.3 Why is *Home* not really fiction?
(Any directing is limited to distant camera placement. The story is not supposed to be different from reality.)

2.4 Why is *Home* not really an ecology lesson?
(The information is partial, provided to illustrate an idea and serve an argument, rather than allow us to learn about the stages in the history of our planet or the actions that can save it.)

3 – *Home*: propaganda film or manifesto film?
Home is difficult to characterize. It is the work of a commited fine-art photographer who has decided to create a cinematic work with a specific aim – to save the planet. It uses propaganda-film techniques in order to put across its message as efficiently as possible.

3.1 The propaganda film is a cinematic genre, used to serve a political power and indoctrinate people.
- List the aspects of *Home* that would come under the heading of propaganda film.
(Yann Arthus-Bertrand imposes his way of thought and does not let us think alone. The film tries to convince us and lead us to take action.)

3.2 A manifesto is a written and public declaration by which a government, a man or a political party outlines a decision, a programme or a position – usually political or aesthetic.
- Why is it more of a manifesto? (*The subject is handled by a commited artist, not by a politician. His cause is just and universal. We never see Yann Arthus-Bertrand on screen – unlike politicians in propaganda films.)*
- Try to sum up.
(Home is a film whose form is dedicated to a specific subject. Yann Arthus-Bertrand is well-known for his aerial photographs and this film is an extension of his work, undertaken to express his commitment.)

Anne LIDOVE (Ligue de l'enseignement)

2 - VIEWPOINTS – IMAGES OF THE WORLD

Outline

Disruption, distance and anthropomorphism

I am watching a film in which a man (me/us) is speaking and showing (me/us) Man (me/him/us) in Earth's time and space, without ever setting foot on the ground! To get one's bearings in the methods and effects of disrupting the classical codes of cinema, an initial decoding is necessary, to help bypass emotions and get into analysis.

The director, Yann Arthus Bertrand, films Earth from the sky. This viewpoint is both a perspective on the world and an artistic bias. It allows us to question the place of the camera and the spectator, while allowing us to contemplate the Earth – a magnificent planet (ill-treated by Man) the beauty of which is celebrated by an anthropomorphic aesthetic bias.

Corresponding files

File 1: The genre and category of the film
File 3: The subject and content of the film
File 4: Time – a dramatic element of the film
File 6: Man on Earth – symbolic representations
File 7: Figures of speech
File resources 8: The film's locations
File resources 10: Measurements of time and duration

Aims

- Analyze the effects created by the camera position.
- Analyze the director's viewpoint.
- Analyze the viewer's position.

Possible stages

1 – Camera position

1.1 The position of the camera gives a certain view of the world.

- Describe the position of Yann Arthus Bertrand's camera.
- Where is he filming from? *(a helicopter – sometimes satellite images, digitally reworked to give movement to a static shot)*
- *What do we see? (Earth viewed from the sky, several hundred metres from the ground – our planet as it is rarely seen)*
- *How is the Earth filmed? (high-angle shots, dolly shots, zooms, etc.)*

- What impressions does the camera position give? What do we feel faced with awesome landscapes, including massive features such as mountains and waterfalls? *(Man is only a tiny part of the living world and cannot even be seen from the helicopter – we rarely see faces. All men are the same.)*
- Images of great beauty: What is the director trying to make us feel through the colours, richness and diversity of these landscapes? *(Love of our planet. Moved by so much beauty, we must be convinced to preserve this beauty and not damage our planet.)*
- The impression of an identical disance throughout the film: the camera never gets closer or observes at ground level – which is Man's usual viewpoint. What does this distance produce? (*A slight tedium, an impression of floating, even slight vertigo, travel sickness… we're available to listen to the text and let ourselves be carried away and cradled.)*

1.2. The distancing effect

The distancing effect was coined and used by the playwright Bertolt Brecht. He wanted to break with the theatrical illusion and make the viewer reflect. Using explanatory placards and asides to the audience to comment on the play, he forced the audience to take a critical view. In his style of theatre, the actor must rather recount than embody and stimulate thought and judgement rather than identification.

- Describe what provides distancing in the film. *(The camera position distances us from our usual view of the Earth – that of a fragmented view, seen from the ground, limited to our daily environment. The camera position produces a distancing effect. The film's sound is not that of life on Earth: the sound of the helicopter is absent, direct sounds are selected and toned down, illustrating the image and the subject but without real involvement. The text is rational and not fictional.)*
- Describe the effects of such distancing. *(The viewer is taken to task, takes on board what the film is saying and feels responsible – see File 7, Figures of speech.)*

2 – Man's position

2.1 Man's place in the picture

- How does Man appear in the image and how is he represented? *(tiny, peasant farmer, poor and black, rather than white and living in cities)*
- How is man represented visually in **Sequence 7**? *(curved and straight lines, equipment, mankind in the machine, etc.)*

2.2 The position of the director

- What is the director's position? Why? What effect does he have? *(The director's position is always distant from the world of human beings. It is as though the director is protected from the vissicitudes of life on earth by his helicopter, which serves as a protective shell and allows him to remain above the level of other men. This choice is linked to Yann Arthus Bertrand's work as a photographer and to the artistic dimension that he gives to the Earth as seen from the sky.)*
- Describe the limits of this position and viewpoint. Is it easy to identify with other men? *(A distanced and even disembodied view of real life; does the director put himself above humanity, so he can tell the story and save the planet?)*

- Describe the effect of the helicopter on the animals/ How are the animals represented in **Sequences 13 and 16**? (after the inserts cards referring to the disappearance of mammals) *(In groups by species, in flight, assaulted by the noise of the helicopter, which comes close and frightens them: for example, the elephant, the white bear and its young, the herd of buffaloes, the giraffe and the vulture. These scenes echo the main theme of the film – Man hurting his environment, nature and the Earth. Yann Arthus-Bertrand did not want to disturb them during filming and the effects created are contrary to his wish. The director's presence is felt on screen.)*

2.3 The director's viewpoint

Yann Arthus-Bertrand is a photographer as well as the director of the film.

- Imagine the narrator's profession. *(Is he a professor of biology, geology or environment sciences, a politician, an ecological militant? In fact, the narrator is a man who, as a human being, is conscious of the dangers to his planet and the importance of saving it. His intention is to popularize scientific knowledge in order to convince his peers.)*

- Guess who the narrator is addressing. All people on Earth or a certain category of human being? Children, adults, politicians? People in rich or poor countries? *(Through a distinctly political message – which must eventually reach those in power who could put incentive-based policies in place for the development of renewable energy and investment in favor of ecology – he wants to convince all men, whatever their age. The text can be understood by children and adults alike. The argument is more destined for the inhabitants of rich countries and Europeans living in poor countries: Yann Arthus-Bertrand is addressing his contemporaries.)*
- Try to define the director's ideological viewpoint and give explanations (naïve, idealistic, catastrophist, etc.).

3 – The viewer's position

- How can one describe the feelings the film gives rise to? (*Make a list of words, pin them up, discuss and explain, etc.)* At the end of the fim I wanted to… *(Everyone finishes the sentence individually and the collective results are pinned up and discussed.)*
- Can you describe the film's first and last image? Ditto with the first and last sentences? How do this introduction and this conclusion work? *(Earth viewed from space in its entirety, summary of the argument/message)*
- Can the film be summed up one sentence? *(to be written individually, then pinned up collectively and discussed, etc.)*
- What could be said about the film's title? *(Home: one's house, being at home, the known, the domestic, the predictable, etc.)* If Man is "at home" on Earth, how does he look after his home? Is this home unique, shared, irreplaceable or reparable?
- Who is the film's central character? *(Earth? Man? Time?)*
- What is the film's subject? *(Man on Earth? The relationship between Man and Nature? Living things?)*
- Look at how the Earth is filmed. *(gentle angles, camera movements, etc.)*
- What adjectives describe author's feelings about his subject? *(an almost amorous relationship, aesthetic, dramatic, etc)*

- If the central character were a person, what would that person be like? *(Man or woman? Young or old? The extended metaphor of the Earth's body, its life, ageing, its rebirths, etc.)*
- Recall the moments in the film where the image of the Earth makes us think of something else. Find these images and listen to the text. *(the device of personification, the constant anthropomorphic parallels between the image and the discourse: forests – rivers – seas – permafrost / horses – lungs – eyes – mouth – vessels, etc.)*

Anne LIDOVE and Cyril SEASSAU (Ligue de l'enseignement)

3 - THE SUBJECT AND CONTENT OF THE FILM

Outline
Several of the problematic situations brought out in *Home* are dealt with in school education. The film sequences relating to this are examples that can be used to enrich teaching of the subject.

Corresponding files
File 2: Viewpoints – images of the world
Resources File 8: The film's locations
Resources File 9: Key words and glossary of terms used in the film

Aims
- Working on educational curricula using the film or sequences from the film to illustrate the lesson.

Possible stages

1 – Defining the subject of the film

Themes	***Sequences***
Fossil energy	*No. 6*
Pesticides	*No. 7*
Fertilizers	*No. 7*
Overfishing	*No. 9*
Deforestation	*No. 10*
Single-crop agriculture	*No. 10*
Soil erosion	*No. 10*
Global warming	*No. 13*
Natural parks	*No. 17*
Reforestation	*No. 17*
Renewable energy sources	*No. 17*

- As a group, think of another title for the film.
- Suggest a summary of the sequences found, according to the following instructions: What is it about? How is it described (image and commentary)? What analysis does the film propose? What conclusion do you draw from it?

2 – Defining the film's content
- Using the sequences previously found, analyze Man's responsibility for the changes occuring on our planet.
- With the help of Resource file 8 (the film's locations), pinpoint the countries and cities referred to on the planisphere.
- Describe the landscapes changed by Man *(deforestation, construction of immense cities, shanty towns, intensive agriculture, etc.)*

- Describe the dangers of the excesses resulting from Man's over-exploitation of natural resources *(melting polar ice sheets, pollution, famine, human migration, etc.).*
- How does the film end? *(by describing technological inventions that have a less harmful effect on the environment: solar cells, etc.)*
- List the alternative solutions and fill in, if appropriate, with other information.
- Guess what conclusion Yann Arthus-Bertrand wants us to reach. *(Man is also the inventor of solutions that can save the planet. We can be part of this – we can convince others to change their attitude. We are not merely at fault. We can find new hope.)*
- Why does Yann Arthus-Bertrand finish his film in this way? *(He wants us to become aware of the ecological risks and he wants us to become players in planetary change, rather than become depressed or discouraged.)*

Anne-Marie MICHAUD and Anne LIDOVE (Ligue de l'enseignement)

4 - TIME: A DRAMATIC ELEMENT OF THE FILM

Outline

This section deals with timescales and length, chronology and techniques of acceleration and dramatization. We will try to understand how, on the basis of scientific data in the film, a veritable mythical saga of the origins of humanity is constructed. In the course of this saga, the Earth and Man seem to clash with each other over the control of time. At first, time is subject to the gentle rhythm of the natural elements. Then, with the harnessing of oil, Man takes control of it and accelerates the unfolding of the great natural cycles, while threatening to exhaust the Earth's resources. Control of time finally evades him and now it is global warming that dictates the rhythm of changes to the surface of the Earth.

Corresponding files

File 1 The genre and category of the film
File 3 The The subject and content of the film
File 7 Figures of speech
Resources File 10: Measurement of time and duration
Resources File 11: Geological history

Aims

- Finding the characteristics of the story of the formation of the Earth that resemble a cosmogony.
- Finding techniques of distortion, slowing down and speeding up of time used by the director for dramatic effect.

Definition of time from the Petit Robert (French) dictionary:
An indefinite milieu in which lives appear to unfold and change and events and phenomena to succeed each other, irreversibly.
Time can be looked at:

- *in terms of duration (chronometry)*
- *in terms of the succession of events (timescale)*
- *as an entity representing the continual changing of the universe*

Possible stages

1 – The history of life on Earth or the myth of our origins?

1.1 The major stages in the formation of the Earth

- Find in **Sequence 2** the events described and date them using the content of the "geological history" file. Does the sequence of events given here correspond to the actual chronological sequence? *(The chronological sequence of events is respected. This sequence will serve as a framework for the legendary story of the origins of Man.)*

1.2 The characteristic elements of a cosmogony

- Using the myth examples suggested in Resources File 13 (Founding myths, cosmogony and creation legends) find the four constituent elements of a cosmogony. *(primordial chaos, struggles and sacrifices, water and the tree)*
- Do we find these four elements in the story of the formation of the Earth? *(At the beginning of the film, Earth appears in darkness, representing the universe – primordial chaos. The volcanoes represent the struggle of the elements. The seas are formed following torrential rains. The tree appears as a source of life – it performs photosynthesis.)*

1.3 Mythical time: an eternally renewed cycle

The time of the myth is a time not subject to any historical sequence. The mythical events follow one another in an endless cycle.

- Find what illustrates cyclical time in the two following extracts:

The cycle of water: **Sequence 3**

The cycle of organic matter: **Sequence 4**

(Present-day images can be used to show events in the past, since nothing really changes. Life is an eternal cycle of new beginnings. The natural elements are part of a cycle in which nothing is created and nothing is lost.)

2 – Earth and Man compete for control of time

2.1 The pace of the natural evolution of the Earth

- Describe the pace at which events linked to the appearance of life and its development on Earth follow each other. (*At the beginning of the film, events unfold slowly. The appearance of life and its development also takes place slowly. Man himself is subject to the pace dictated by the natural elements.)*
- Find in Resources File 11 (geological history) the length of time necessary for life to appear. How is this duration suggested in the film? (*4 minutes of film corresponds to about 1 billion years. Sequence composed of long-duration shots, accompanied by a slow-moving commentary, punctuated with silences and slow music. The different constituent elements of the Earth – rock, water, air – form slowly.)*

2.2 The appearance of Life on Earth

- How long was it before trees appeared on Earth? How old is Earth?
- Watch **Sequence 4**. The appearance of trees: who created the tree and how long did it take? (*"It took more than 4 billion years for it to make trees."*)

- What is the place of the human species in this time-scale – in the world of living things? *(The human species is the final link in a long evolutionary chain of living beings, going from bacteria to animals. It is a new character whose existence is subject to the pace imposed by the Earth.)*
- What is the place of nature in the pace of human life? **Watch Sequences 4 and 5**. *(The appearance and migration of the human species on the surface of the Earth and the invention of agriculture. Our ancestors followed the rhythm of the seasons. And some people today still do: "a sacrificial ritual performed over and over").*

3 – A new era begins: that of "humanity liberating itself from time"

3.1 Oil

- What consequences has the discovery of oil had on the life of mankind? *(Thanks to oil, mankind freed himself from his dependence on nature's rhythms – but he has taken advantage of this freedom to squander Earth's natural resources.)*
- What is the inevitable consequence of this frenzied use of oil? *(Humans will very rapidly consume fossil fuels that were millions of years in the making.)*
- Watch **Sequence 6**: What symbolism do the images suggest? (*The flames instantly burn what has taken billions of years to form: the image of the "big spender" who spends carelessly? The flames suggest the squandering of "pockets of sunlight".)*
- Watch **Sequence 7**: How is the fact that that humankind has changed the world more in the last 50 years than in the previous 200,000 suggested? *(the concentration of data, the repetition of "faster and faster".)*

3.2 Earth consumed by the burning of oil

- Watch **Sequence 7**: How is the new rhythm of agriculture suggested? *(The speed of agricultural machines. The pace of machines driven by petroleum energy is compared to the pace of living beings and to that of human beings who do not have access to oil.)*
- Watch **Sequences 8 and 9**: How is the change in the measurement of time underlined? *("Our world's clock" is suggested by the implacable rhythm of oil-extracting machines. The speeding up is underlined by reminding us of nature's gentle pace.)*

3.3 Time's clock goes out of sync

- What disturbances do we experience today? *(The natural cycles are upset. Fossil energies dictate the pace of production. Natural points of reference are lost.)*
- Watch **Sequences 7 and 8** and note the disturbances. *(The alternation of day and night seems to be disappearing and cycles of production no longer follow the logical sequence: "manufacturing meat faster than the animal", the norms of distance defined thousands of years ago are replaced by a new norm – that of Time. Distances are no longer counted in miles but in minutes).*

4 – Time cannot be controlled

4.1 The changes

- What are the catastrophic consequences for Earth of the exponential growth in the use of oil? What does this mean for humankind? *(The use of oil ends up by exhausting natural resourses and altering the Earth's great natural cycles. Greenhouse gases emitted during the combustion of oil are accelerating global warming. Humans cannot control this acceleration and are now facing an uncertain future. Natural resources can no longer replenish themselves.)*
- Watch **Sequences 10 and 13** on the Amazonian deforestation and the melting of the ice floes. How are these changes suggested? *(To underline the speed of these changes, the procedure of morphing satellite images reinforces the sense of acceleration by making events that have taken several years to happen go by very quickly.)*

4.2 The threats.

- What new threat to humankind is rearing its ugly head? *(the threat of methane, the new climatic "bomb")* Watch **Sequence 15** and draw conclusions. *(If humans do not change their behaviour, they will no longer be able to control time and the changes will be unimaginably serious. The new climatic clock is methane.)*

Anne-Marie Miichaud (Ligue de l'enseignement)

5 - THE SOUNDTRACK

Outline

A soundtrack is everything that makes up the audible aspect of a film. It can be dialogue, voice-over, silence, sound effects, natural sounds, music, etc. It is built-up from choices made by the director, the composer, the sound engineers, etc. and is therefore not necessarily the audible reflection of any "reality" described by the images. It is an important element of the film.

Music is generally a major part of the elements making up a soundtrack. Throughout its history, music has been closely allied to description, illustration and imitation. Its use in conjunction with images and a commentary can enhance the effect of these aspects.

Corresponding files

File 2: Viewpoints and images of the world
File 3: The subject and content of the film
File 4: Time – a dramatic element of the film
File 7: Figures of speech
Resources File 8: The film's locations
Resources File 15: The music

Aims

- Using a sensitive approach, based on listening and the expression of feelings, identify the various constituent elements of the soundtrack and try to pick out the significances of each of them, comparing them with the images and the general discourse of the film.
- Study the music more closely, comparing it with other forms of music (see Resources File 15, on music) to try to define its role. Is it to illustrate a commentary, comment on it, amplify it…? Does the music constitute a commentary in itself?

Possible stages

1 – Observation

Aim: Making an exhaustive list of all the constituent elements of the soundtrack.
Discuss feelings after the screening:
- What do you remember?
- Did some elements strike you more than others? The music, words/commentary/narrator, silence, sounds… (*In the soundtrack we hear: music, words/commentary, narrator, silence, natural sounds, industrial sounds, breathing, a rumbling sound, a heartbeat at the beginning…)*
- Do we hear all these elements at once? (*No. We hear music and commentary/music and sounds/music and sounds and commentary/commentary without music, etc.)*

2 – The film's music

Aim: Spot the various instruments and link them to various types of music, to go to the next stage – analysis of the relationship between the soundtrack, images and commentary.
- List the instruments in the musical passages. *(Percussion, voice [male and female], string instruments [the string quartet], symphony orchestra [woodwinds and strings], piano, traditional instruments: sanza [thumb piano], lute [generic term], traditional flutes, traditional reed instruments, etc. [incomplete list])*
- What types of music can we spot? ("*ethnic" music, traditional music, and "western" symphonic music, often of a repetitive nature)*

- What instruments are associated with what types of music? (*"Ethnic" music is played by traditional instruments and voices. "Western" music is played by the symphony orchestra, the piano and the classic formation of the string quartet. BUT, there are mixed passages where a piece of "ethnic" music is reinforced by a string quartet, for example, or transitions with virtually no gap between a piece of "ethnic" music and a piece of "western" music.)*

3 – Analysis of Sequences

Aim: Understanding the connection between images, a commentary and a soundtrack.

3.1 Watch **Sequence 5**.

What do we see?	*What is the theme?*	*What do we hear?*
Landscapes where, little by littlle, humans appear: villages, women crushing vegetables, boats…	*Taking stock of humankind and its dependence on Nature*	*"African" percussion, a lute, a traditional flute, then strings come in.*
	"How can you conquer the world on an empty stomach?"	*Silence*
Agricultural activities in developing countries	*The invention of agriculture. Dealing with nature's vagaries, in a painful existence where by sweat, graft and toil prevail.*	
	"…humans found a way to tap into the energy buried deep in the Earth."	
Flare stacks	*Coal, gas and especially oil have allowed human beings to free themselves from the shackles of time and live in unprecedented comfort.*	
Cities and skyscrapers	*With oil, everything is going faster and faster.*	*Sounds of sirens, rapid and repetitive music, rapid violin arpeggios*

3.2 Questions and interpretations:

- Describe the musical accompaniment to the transition between humankind dependant on nature and humans starting to take control of their destiny with the invention of agriculture? *(The film goes from traditional music to symphonic music with a pastoral flavour.)*
- How is the appearance of oil accompanied musically? (*A long shot of flame stacks accompanied by a dull, intense rumbling sound – disturbing and evocative of a huge force [the same rumbling sound accompanied the shots of volcanoes at the start of the film])*

- Does this rumbling sound represent a real sound? *(No, it is different from reality but reinforces the dramatic effect.)*
- The narrator repeats "everything is speeding up" three times, starting from the appearance of the flame stacks. (He will also repeat it several times afterwards.) How is this acceleration translated in music? *(Percussion is very present, very sonically intense and very rapid. The strings play very rapid rhythmic patterns at a very fast tempo. The music takes on a choppy, broken-up character, contrasting with the flowing, pastoral music heard previously.)*
- How is the transition between the two sequences handled? *(There is a sudden change in image, from agriculture to flamestacks, and a few seconds of silence, before the rumbling sound starts.)*
- How are the dramatic effects reinforced at this moment? *(There's a silence, which, by contrast, makes the rumbling sound seem louder, and the rumbling sound starts exactly on the words "from the depths of the earth".)*
- The first shot of a city symbolizes western civilization's most extreme development. What is the accompanying sound? *(Police or ambulance sirens. The same sounds occur a little further on, accompanying shots of Los Angeles.)*
- Does this sound reflect all the audible noises of a city? *(No. We might have heard the clattering heels of the crowd on a pavement, motor horns on a crowded street, the passing of trams, buses or trains, etc. Here the effect is to reinforce the dramatic quality.)*

3.3 Watch **Sequence 8**.

What do we see?	*What is the theme?*	*What do we hear?*
Open-cast mines, lorries, building sites, containers, etc.	*Faster and faster. This excessive exploitation will exhaust almost all the planet's reserves by the end of the century. Human activity is excessive.*	*No music.* *The sound of lorries, building sites, containers knocking against each other…*
Dubai's artificial islands of Dubai, shown with time-lapse images. *A seemingly unending tower being built.* *Shots of Dubai's skyscrapers.*	*Dubai is the symbol of humankind liberated from the constraints of nature and the soil. Nothing seems farther removed from nature than Dubai. We haven't understood that we're depleting what nature provides.*	*Percussion*
A whale frolicking in the sea. *An industrial fishing ship hauling in a trawling net.*	*The fishing industry has seen exponential growth. Fish are disappearing. Here too, we are exhausting the planet's resources.*	*A woman's voice, "ethnic" music. A traditional reed instrument.*
Without transition, a shot of a desert.		*No music*

3.4 Questions and interprétations:
- How is the theme of industrial exploitation accompanied sonically? *(There are only industrial sounds – of machines, lorries, rubble being dumped, containers knocking against each other, etc.)*
- How can we interpret the absence of music at this moment? *(It might reflect the depleting of reserves – nothing will be left.)*
- How is the whole Dubai sequence accompanied? *(with percussion alone)*
- What does this use of percussion alone evoke? *(It might evoke the frenzy of industrial activity, devoid of poetry – no melodic line.)*
- How is the sequence of panning up the tower under construction accompanied? *(by an increase in the strength of the percussion, a crescendo which seems never to end, like the tower, which goes on and on, up into the sky)*
- What images does this crescendo finish on? *(on very sharp-pointed tower blocks, before a high-angle shot of the sea)*
- How is the break between the shot of the skyscrapersand the appearance of the whale accompanied? *(We're aware of notice a stark contrast between the crescendo of the percussion and the introduction of a female voice, singing a slow melody.)*
- How is the whale's slow and majestic frolicking emphasized? *(by those same characteristics transposed into music: a broad, slow melody, sung by a woman)*
- Does the discourse change in the shot that follows the whale (i.e. the fishing vessel)? *(In fact, no. The theme – that of the depletion of reserves – is the same.)*
- How can we describe the piece of music that accompanies this whole sequence (whale and fishing vessel)? *(We might say that it is broad and majestic, matching the movements of the whale, while at the same time being sad and desolate – expressing the depletion of the reserves of fish.)*
- How can we interpret the progression in the soundtrack over this entire sequence of building sites, Dubai, whale and fishing vessel (other than the commentary)? *(We could suggest the following pattern: No music, with industrial sounds = human industrial activity, and illustration by analogy of the depletion of resources. Percussion = frantic human activity. Percussion crescendo = excessive human activity. Slow melody sung by a female voice = desolation, illustrating a sense of depletion of resources.)*

4 – The sounds
Aim: Pick out the "sounds" and differentiate them from the music. Differentiate sounds that exist from the added sound effects. Spot what is non-natural in the use of sounds.

4.1 Pick out the various sounds. *(Nature sounds: waterfalls, animal cries [elephants, birds], splashing sounds, the rumbling of a passing herd. Non-natural sounds: machines, lorries, oil pumps, sirens, rubble, etc.)*

4.2 The non-fabricated sounds:
- Is there a sound we cannot hear? *(Yes. All scenes are shot from the sky, so the director is in a helicopter or an aircraft – but we never hear either.)*
- Have the non-fabricated sounds we hear been added? *(Yes. They cannot have been recorded from the place where the images were shot – if they had, we would hear the extraneous sound of the aircraft or helicopter.)*

- What is their purpose? *(One could say that they serve to reinforce the dramatic effect, create an artificial impression of closeness to the action and make it feel more real.)*
- Are there other sounds? *(Yes. There is the sound of a heartbeat at the start of the film and a background noise that goes from a breathing sound to a rumbling sound.)*

4.3 The heartbeat: when do we hear it? *(At the start of the film, while the Earth makes its appearance on the screen. It seems as though it is not a recording of a real heartbeat but a very low percussion instrument played in the ryhthm of a heartbeat.)*

- What is its meaning? *(It could be because the film is going to talk about a living planet and/or recount a story of vital importance.)*

4.4 Background noise: Is the background noise of breathing or rumbling sound permanent? *(No, but it is very present.)*
- Pick out scenes where we hear the breathing. *(deserts, waterfalls, etc.)*
- What feelings does this sound bring up? *(a sense of majesty, grandeur, distance, remoteness, wind, enormity, a wild quality, etc.)*
- Find the scenes in which we hear the rumbling sound. *(volcanoes, huge waterfalls, flare stacks, etc.)*
- What feelings does the rumbling sound bring up? *(a sense of majesty, grandeur, our insignificance in in the face of what we are being shown… but it can also bring up a sense of anxiety, danger, threat, etc.)*
- Is this sound "real"? *(No. It is an added sound. This is clear, for example, when we hear it in the first sequence, where Earth is seen from space. In space there is no sound or noise.)*
- What is the role of this background noise? *(It reinforces the sense of drama. This is why we do not hear it all the time – although it is very often present. It would lose its meaning if we heard it continuously, throughout the film.)*

5 – Summary

The suggestions that follow are in no way exhaustive:

5.1 The role of the sounds is to reinforce dramatic effect, make things seem more real, give a sense of proximity, create meaning (the heartbeat, etc.)

5.2 The role of the music is to strengthen and illustrate a feeling, reinforce a point, increase a dramatic effect, situate an image *(in a developing or an industrialized country, for example),* illustrate an action, activity, strengthen build up a pace (image, narative, etc.)

5.3 The role of silence is to illustrate, strengthen or create a feeling *(of emptiness, for example)*, to reinforce through contrast the preceding or following sequence, etc.

Everyone can then make their choice, according to what they feel but also according to the various moments in the film, and other films, in deciding when the soundtrack illustrates, when it imitates or when it amplifies the images and the discourse of the film.

Philippe AUZET (Ligue de l'enseignement)

Outline
Humans on Earth – symbolic representations
We all have a culture – in other words a system for representing the world in which we live. The creators of the film use many cultural referents, either in an objective or more implicit fashion. Regarding the relationship between humankind and Earth, the film's narrative is not just scientific – it uses philosophical, religious and mythological expressions and representations.

To help everyone understand this aspect, we propose examining some of these references.

Corresponding files
File 2: Viewpoints and images of the world
File 7: Figures of speech
Resource File 13: Founding myths, cosmogony and creation legends
Resource File 14: Myths of knowledge

Aims
- Finding the textual and iconic elements of this message in the film and stimulate analysis and commenting through discussion.

Possible Stages

1 – Messages important to the structure of the film
1.1 Pick out the sentences and images that make up the structure and dramatic thread of the film. Identify the key messages and the authors' "slogans". Analyse the cultural implications.
1.2 General approach:
- Note the phrases that are remembered.
- Note the images that can be precisely described and drawn in sketch form (individual writing, collective posting, discussion then verification of the accuracy of the text).
- Do the same thing with a musical extract. Can it be sung or described?
- Put in a chart: one key sentence, one image and one adjective describing the music or the sounds.
- Analyse these sound/image correspondences. Does a third meaning sometimes appear?
- Can we reorganize the chart and group the phrases so as to see the major messages of the film?
- Can we summarize each message by a collectively invented slogan?
- Can we represent the main themes of the film and the structure of the commentary with a panel? (see sequential breakdown).

2 - Message A: Life is a miracle
2.1 Quotes:
"Life, a miracle in the Universe, appeared around 4 billion years ago and we humans only 200,000 years ago." (Sequence 1)
"…a cloud of agglutinated dust particles, similar to so many similar clusters in the universe. Yet this is where the miracle of life occurred. Today, life, our life, is just a link in a chain of innumerable living beings that have succeeded one another on Earth over nearly 4 billion years." (Sequence 2)

"What do we know about life on Earth? How any species are we aware of? A tenth of them? A hundredth? What do we know about the bonds that link them? The Earth is a miracle, life remains a mystery." (Sequence 4, etc.)

2.2 Deepening our understanding
- What do these sentences make you think of? What do you feel at this moment of the film? When does the film's story begin? *(It begins at the forming of the Earth. The forming of the universe is not addressed.)*
- What do you think of the use of the words "miracle" and "mystery"? *(That which cannot be explained by reason, that which relates to a super-human explanation [particularly from a Judeo-Christian religious vocabulary], the reconciling of scientific thought and mystic referents, sometimes in the same sentence; the opposition of Creationism and Darwinism, etc.)*
- Do the boundaries of current understanding necessarily imply the hypothesis of a Creation? *(the current state of scientific knowledge, the "first cause", the diversity of cosmogonies, etc.)*

3 - Message B: Life is a whole
3.1 Quotes:
"Today, life, our life, is just a link in a chain of innumerable living beings that have succeeded one another on Earth over nearly 4 billion years." (Sequence 2)
"The engine of life is linkage. Everything is linked. Nothing is self-sufficient. Water and air are inseparable, united in life and for our life on Earth. Sharing is everything." (Sequence 3)
"The Earth counts time in billions of years. It took more than 4 billion years for it to make trees. In the chain of species, trees are a pinnacle, a perfect living sculpture. Trees defy gravity. They are the only natural element in perpetual movement towards the sky. They grow unhurriedly towards the sun that nourishes their foliage. They have inherited from those miniscule cyanobacteria the power to capture light's energy. They store it and feed off it, turning it into wood and leaves, which then decompose into a mixture of water, mineral, vegetable and living matter. And so, gradually, soils are formed." (Sequence 4)

"Families of animals form, united by customs and rituals handed down through the generations. Some adapt to the nature of their pasture and their pasture adapts to them. And both gain. The animal sates its hunger and the tree can blossom again." (Sequence 4)
"In the great adventure of life on Earth, every species has its role to play; every species has its place. Not one is useless or harmful. They all balance out." (Sequence 4)

3.2 Deepening our understanding
- What do these sentences make you think of? How does the idea of unity between all living things exist? At what moment does the first living creature appear on the screen? *(Sequence 3: the passage of a bird – a classic symbol of connection and the Annunciation, cf. text)*
- Watch **Sequence 4** (the part about trees). How can this passage be described? Why choose the tree? *(It is a highly symbolic element. The tree of life is present in numerous creation legends, as a link between the elements and humankind.)*
- Several times, the film goes beyond the traditional scientific classification of animal, vegetable and mineral. Why? *(a scientific and symbolic demonstration of interdependence, on a planet that represents a complete and non-renewable whole.)*

- What place are humans given amongst living things? *(one of integration, but with the key role of thought and self-awareness. cf. the repetition of Homo sapiens.)*
- How can we describe the relationship of the human species to the rest of life on Earth? *(Although personification and anthropomorphism are used to describe the Earth poetically, only humankind thinks. The distinction between evolution and action, the idea of responsibility, etc.)*
- What do you know about the reference to the "chain of species"? *(the Theory of Evolution)*
- What do you know about unity philosophies? *(possible extention to Buddhist and Taoist thought on unity and eternal interdependence, etc.)*

4 - Message C: With humans, everything gets faster and faster

4.1: Quotes:

"And that's where you, *Homo sapiens* ("wise human"), enter the story. You benefit from an amazing, 4 billion-year-old legacy bequeathed by the Earth. You are only 200,000 years old, but you have changed the face of the world. Despite your vulnerability, you have taken possession of every habitat and conquered swathes of territory like no other species before you." (Sequence 5)

"Humanity's genius is to have always has a sense of its weakness. The physical energy and strength with which nature insufficiently endowed humans is found in animals that help them to discover new territories." (Sequence 5)

"The invention of agriculture turned our history upside down. It was less than 10,000 years ago. Agriculture was our first great revolution." (Sequence 5)

"Agriculture is like a tradition handed down from generation to generation in sweat, graft and toil, because for humanity it is a prerequisite of survival. But after relying on muscle power for, so long, humankind found a way to tap into the energy buried deep in the Earth." (Sequence 5)
"With oil began the era of humans who break free from the shackles of time. With oil some of us acquired unprecedented comforts. And in 50 years, in a single lifetime, the Earth has been more radically changed than by all previous generations of humanity." (Sequence 6)

"Here's one theory of the story of the Rapanui, the inhabitants of Easter Island that could give us pause for thought. Living on the most isolated island in the world, the Rapanui exploited their resources until there was nothing left. Their civilization did not survive. On these lands stood the highest palm trees in the world. They have disappeared. The Rapanui chopped them all down for lumber. They then had to face widespread soil erosion. The Rapanui could no longer go fishing – they had no trees to build canoes…" (Sequence 11)

"We have created phenomena we cannot control. Since our origins, water, air and forms of life are intimately linked. But, recently, we have broken those links." (Sequence 16)
"Let's face facts. We must believe what we know. All that we have just seen is a reflection of human behavior. We have shaped Earth in our image." (Sequence 16)

4.2 Deepening our understanding

- What do these sentences make you think of, in a philosophical sense?
- How is humankind described at various points in the film?
- What place, what function and what responsibilities are attributed to him?
- How does the development of the central part of the film make use of passing from historical data to present-day economic data?
- How does the shift from balanced relationship to dangerous confrontation reflect the relationship of to his environment?
- What place does humanity occupy amongst living beings? *(One of integration, but the key role of thought and self-awareness [cf. the repetition of Homo sapiens]. Note at which point in the film the references to humankind and its activities appear on the screen.)*
- How can we describe the relationship of humans to other living beings and to the mineral world? *(Although personification and anthropomorphism are used to describe the Earth poetically, only Man thinks. The distinction between evolution and action. The idea of responsibility.)*
- How is humankind's relationship to his environment presented, at the stage of traditional agricultural societies and the beginning of the populating of the world? *(benevolence, generous and nourishing Earth, figures of speech symbolizing harmony)*. What myths and stories does this bring to mind? *(The Golden Age of Hesiod, Cybele, the Mother Goddess of fertility, the Earthly Paradise, etc.)*
- At what moment in the film does "everything shift"? (Sequences 5 and 6) What effects are used to dramatize the argument? *(Music, image: flames rising up behind a curtain of trees)*
- From this point on, what is Man responsible for? *(the breakdown of balances, excess, the desire to control instead of being content with carefully controlling his actions, etc.)*
- What mythological or religious figures does this episode make you think of? *(the Greek Goddess Hybris, Icarus (suggested by the bird in this shot), Prometheus stealing fire, Pandora's Box, Adam and Eve banished from Paradise, etc.)*
- How does the Easter Island "parable" work (Sequence 11)? *(a pause in the long list of excesses, a dramatizing of the narrative "we know what this leads to", symbolic reference to eschatological myths, Atlantis, etc.)*
- In the second part of the film, the tone and the place of the author, represented by the voice-over, change radically: How can we tell? *(Notice the alternation of "we" and "you", until "I" is used in the last part. Analyze the functions of the music, the change of pace in the editing of the images, the greater use of rotating dolly shots.)*
- Comment on this sentence: "Let's face facts. We must believe what we know. All that we have just seen is a reflection of human behavior. We have shaped Earth in our image." (Sequence 16) Define the author's tone. How can we describe his role? *(Prophetic figure and almost direct Biblical quotes: "Truly, truly I say unto you, we speak of what we know and bear witness to what we have seen, but you do not receive our testimony." [John 3.11])*

5 - Message D: "It's too late to be a pessimist."

5.1 Quotes: "We have very little time to change. How can this century carry the burden of 9 billion human beings if we refuse to be called to account for everything we alone have done? Sequence 16)

"The cost of our actions is high. Others pay the price without having been actively involved. I have seen refugee camps as big as cities sprawling in the desert. How many men, women and children will be left by the wayside tomorrow? (Sequence 16)

"Must we always build walls to break the chain of human solidarity, separate peoples and protect the happiness of some from the misery of others? It's too late to be a pessimist. I know that a single human can knock down any wall." (Sequence 17)

"It's time to come together. What's important is not what's gone but what remains. We still have half the world's forests, thousands of rivers, lakes and glaciers and thousands of thriving species. We know that the solutions are there today. We all have the power to change. So what are we waiting for? (Sequence 17)

"It's up to us to write what happens next." (end insert card)

5.2 Deepening our understanding

- What do these sentences make you think of?
- What stylistic effects are employed, in the final phase of the film, that speak directly to the audience?
- How does this movement – the most political, in the standard sense of the term – succeed in affecting us without opposing us?
- Pick out the use of the words "you", "I", "us". (The use of "you" and the extensive use of "I" create a more intimate rapport with the viewer, to better convince and involve him, until the use of "us" at the end.)
- What is the use of the leitmotif "I have seen…" mean and what is its effect? *(The creator of the film takes on and embodies the positive figure of the witness – the warning messenger.)*
- Ditto for "It's too late to be a pessimist."
- What slogans do these sentences make you think of? *(Martin Luther King's "I have a dream", Barack Obama's "Yes we can", "We need you", etc.)*
- Note everything that, in the film's final ten minutes, indicates the desire to convince us and encourage us to action *(The text, the tone of the voice-over, the speeding up, the music, the way the images drive home the message. Find the qualities that make this communication positive.)*
- What is the last image of the film? *(the same as the first?)* Why this choice? *(The representation of the entire Earth supports the film's introductory and concluding message: the effect of separation and distance, of being an observer both as regards what we think and what we see.)*
- How can we describe the position in which the film puts us? *(a player in and the subject of the argument, responsible but never alone, a link in a chain… "I know that a single human can…")*

Cyril SEASSAU (Ligue de l'enseignement)

7 - FIGURES OF SPEECH

Outline
The use of rhetoric to achieve an aim.
Home tells a story using images and words. The art of eloquence (rhetoric) goes back to Antiquity (Aristotle in Greece, then Ciciero and Quintilianus in Rome) and was originally a matter of oral communication.

By examining the structure, the type of discourse, the way it is organized in *Home* and the message it tries to put across, we can examine the figures of speech used, understand what they consist of and learn to recognize them in the most ancient texts and in modern thinking.

Ask the following questions: What effect does *Home* try to have on the viewer? What is it saying? How is this structured, in images and in words?

The first thing we notice is that *Home* tries to persuade the viewer (the audience). To achieve this, the argument is organized in an inseparable relationship of images and commentary, by the form and choice of stylisitic devices, according to classical rules based on Latin rhetoric, used by the 17th century French theologian and orator Bossuet* for his sermons.

We do not discuss all the film's figures of speech here, but present some ways of spotting and analysing them.

Corresponding files
File 2: Viewpoints and images of the world
File 3: The content and subject of the fillm
File 5: The soundtrack
File 6: Man on Earth – symbolic representations
Resources File 13: Founding myths, cosmogony and creation legends
Resources File 14: Knowledge myths
Resources File 15:The music

Aims
- Understanding the organization and aim of the discourse (commentary and images)
- Spot the rhetorical tools (commentary and images)

Tools to aid understanding
Rhetoric is the art of speaking – of presenting ideas in the most persuasive way possible, in oratorical fashion and with declamatory eloquence. In *Home*, the correspondence between the images and the commentary links the film to the art of oratory in a logical relationship expressed in the classical rules of rhetoric.

Rhetoric is divided into five main parts:
*Invention: refers to choosing the subject matter (the topic you are to speak about) and procedures for developing your discourse (places, arguments, proof, means of persuasion, logic and amplification techniques).

*Arrangement: the structure or composition of the discourse (where you place the things you want to say), the arrangement of the discourse (putting the various parts in the best place and sequence), putting the means of persuasion in order and arranging and distributing the arguments. Arrangement traditionally falls into four parts: Introduction, Statement of Fact, Confirmation and Conclusion (see definitions below).
*Delivery: the interpretation, by which the orator expresses his individuality and uniqueness through pronunciation (the voice) and gesture (looks, etc.).
*Memory: memorizing the discourse – which allows improvisation (the orator's mastery of his subject).
*Style: putting the discourse into words (which makes it a literary text) by judicious choice and arrangement of words in the sentences, effects of rhythm, the specific level of language, stylistic effects, etc.

Demonstrative rhetoric: one of the three main kinds of rhetoric (the others are "deliberative" and "forensic"). It is defined by its subject matter – good or evil – and is devoted to praise or blame. It is intended for a public audience. Demonstrative rhetoric does not dictate a particular choice but guides future choices and can be used for educational ends. Amplification is often used in this type of rhetoric.
*Transition: a partial conclusion at the end of each part of the discourse, it introduces the next thesis and helps establish a link between the parts.

Bossuet (Jacques-Bénigne, 1627-1704): a French cleric and a great preacher, who preached brilliantly both in the city and at Court. He delivered numerous sermons and funeral orations for high and mighty people. Concerned to be persuasive, Bossuet was accomplished in the art of rhetoric, which he analysed to gain more strength. His "Sermons", which are like long lectures, take biblical quotations as their starting point. There follow a first Introduction (the subject and spirit of the sermon), a second Introduction (comments on the quotation, the presentation of two or three ideas, the "points" of the sermon), discussion of each point according to a dynamic scheme (antithesis, progression), leading to the final Conclusion. He often improvised, depending on the reactions of the audience and his own inspiration.

Definitions of the parts of the organisation (arrangement/composition) of a discourse
Introduction: This first part of the discourse sets out clearly and succinctly the subject matter to be dealt with. It may open with a presentation by the speaker (the **opening** of the discourse).
Statement of Fact: This sets out the facts concerning the matter under consideration, in an objective fashion (lucid, brief and plausible).
Confirmation (or discussion): The argument is presented and proven. This is traditionally followed by the "Refutation" (in which opposing arguments are demolished).
Conclusion: This is the crowning moment of the discourse and should make a decisive impression, leaving the audience convinced. It ends the discourse and can be long and divided into parts: amplification (insisting on the seriousness of the conclusion), pathos (to excite passion or indignation) and recapitulation (where the argument is summed up). It can be a summary, a mystery or a call to pity (Cicero).

Some figures of speech used in *Home* (source: Les figures de style, Patrick Bacry, Belin, 2000)

Comparison: "the relating, using a comparative, of two realities (the compared and its counterpart) which belong to two different semantic fields and which, in a certain sense, resemble each other." "The comparison may serve to clarify an idea or illustrate an argument." "It enables the author, by the play of associations and correspondances, to immediately convey his personal vision of the world."

Metaphor: the substitution of one word for another or the linking of one word to another in a sentence" in a relationship of similarity. Metaphors "contain no comparatives". "The presence of a compared and a counterpart in the utterance is no longer obligatory." "The context in which a metaphorical term appears plays a fundamental role in the identifying of this device."

Extended metaphor: "To extend a metaphor is to continue, after the initial appearance of a metaphorical term, to use the vocabulary belonging to the semantic field of this figurative word, while still speaking of the initial reality." "Although it may seem to be based on a connection between a compared and a counterpart, a metaphor actually involves replacing one by the other." "Thus, the sense of two words is conveyed with a single word, enriching the content of the utterance."

Synecdoche: "the replacement in a sentence of one substantive by another substantive", "the literal term and the figurative term being in an inclusive relationship (substitution of part for whole, species for genus, etc.)." Synecdoche (closely related to metonymy) is a fundamental and frequently used stylistic device.

Personification: "the metaphorical likening of an inanimate objet and a living being (human or animal)." "What counts is the strength and consistency of the semantic merging employed."

Allusion: "an implicit but clear reference to a previous work or well-known cultural elements".

Circumlocution: "the use of extended phrasing to describe something without using its name but indicating some of its characteristics". "Sometimes necessary for describing something new, circumlocution is a way to use a new approach to describing a person or thing. "Its aim is to amplify" and it can be amusing, but above all it "introduces connotations that form an essential part of the effect produced."

Repetition: "repetition of the same word or group of words within a given sentence." Depending on the diversity of contexts, repetition is used to vary effects (painful, evocative, melancholy, intensive and dynamic, etc)

Amplification: "Serious hyperbole (expression that is exaggerated in relation to what is being referred to) is a characteristic of the epic style – with its accumulation of superlatives, comparisons, etc. "Hyperbolic expression can be said to overstep – sometimes by a long way – the reality of what it is meant to be describing."

Possible Stages

NB. The terms followed by an asterisk are explained in the section "Tools to aid understanding".

1 – The rhetorical structure of the film

1.1 Collective memorization

- Which are the film's various parts (images and commentary)? *(The formation of the Earth, the role of Homo sapiens and the harmful consequences of humanity's actions, the solutions)*
- What is the subject of the film? *(Earth, humankind)* What is the purpose of YAB's film? *(To deplore the dangers of overexploitation, convince humanity to protect the planet before it is too late, make people in wealthy countries more aware of the human problems posed by the destruction of the planet)*

1.2 Rhetoric*

- Identify the composition of the discourse* in the film as a whole. *(The Introduction*, Sequences 1 to 4: the formation of the Earth, the appearance of life; the Statement of Fact*, Sequences 5 and 6: the role of humankind, the harnessing of oil; the Confirmation*, Sequences 7 to 15: the consequences for water, the forests and the climate of the exploitation of oil; the Conclusion*, Sequences 16 and 17: Humans are responsible. They can react and there are solutions.)*
- Note the continuity cuts which, on the screen, correspond to changes in the rhetorical period. *(Cut between the Introduction and the Statement of Fact*: high-angle shot of herds then forward travelling shot of a habitat. Notice that the music continues and that there is a brief pause in the commentary [Sequence 5]. Cross fade between the Statement of Fact and the Confirmation*: the close shot of the oil in flames gives way to a high-angle travelling shot of skyscrapers [Sequence 7], this is an example of Transition*, concluding then introducing what follows. There is a more complex composition between the Confirmation* and the Conclusion* [Sequence 15]: the transition is achieved both by images (a sequence of travelling shots of Siberian forests then a change of shot, pushing in on clouds on the word "frontier", then the final fade-out), by narration ["Humanity has no more than ten years to reverse the trend and avoid crossing into this territory – life on Earth as we have never known it."] and by two pauses in the narration [14" before the transition phrase and 19" after].)*
- Why these choices? *(The Introduction* is the exposition of the subject. In a way, it is "autonomous" and should be clearly distinguished on the screen. The relationship between Statement of Fact* and Confirmation* is that of cause to effect and justifies the cross fade from flames to the city – a symbolic composition, in fact. Finally, the declaration of an argument that leans towards dramatization in the last part is accompanied by a complex composition on the screen.)*

2 - The composition of the discourse*, the rhetoric of the images and words and the correspondance between images and commentary

2.1 An example: the start of the film.

- Watch **Sequences 1 and 2**.
- What do the first seconds of the film correspond to? *(It's an opening*, which introduces the subject. The only image is that of a part of the globe seen from a data-relay satellite. The globe is also the "speaker" – the Earth talking to us.)*
- What role is played by the images at the start of the film? *(Here, the images are illustrative and almost static, adding nothing to the discourse.)* In what way does the choice of that particular image strengthen the argument? *(The satellite image establishes the subject of the discourse: Earth. The title of the film "Home", situated in the lower part of the screen, works as a synecdoche* – replacing the Earth by the idea of a "house" or "home" brings humankind and the planet together, in an appropriation of the latter by the former which could turn out to be tragic. It also refers to the Universe and the idea of adventure mentioned in the commentary.)*
- How is the discourse organized in termsof the music and the images at the start of the film? *(The rhythm is slow – gently paced travelling shots following the convolutions of the clouds, the geological strata, the valleys, etc., with high-angle shots and cross fades. The narrative is interrupted six times.)*
- Making a chart, pick out exactly which images correspond to certain words. *(The vision of a smoking crater accompanying the reference to chaos and the agglutination of dust particles; the travelling shot of the chain of extinct volcanos at the moment of describing human life as a link in a chain; the change of shot and the close-up on a smoking crater over the adjective "dense"; the first cross fade on a close shot of running-water patterns at mention of "torrential downpours"; the second cross fade on other running-water patterns, that the camera follows vertically, illustrating the "branches" and "veins" of the commentary, etc.)*
- What can we say about the editing choices in terms of their relation to the commentary? *(The choice of images corresponds perfectly to certain words, the repeated use of travelling shots and cross fades highlights the description of the origins of the Earth; the narration "explains" the images, ,some of which are hard to interpret.)*
- How can we interpret the viewpoint? What impression does the prologue leave? *(The narration leads to the interpretation of the images: the viewer "turns" with the elements after coming in close to the Earth. His point of view remains, however, omniscient, since his feet are never on the ground; it gives a sense of elation and aesthetic pleasure.)*

IMAGE	MUSIC	COMMENTARY (key words)
Static shot of crescent Earth, satellite photo Title. Black	Rumbling	17'' without commentary
Shot of sun lighting the Earth	Rumbling Pulsation	« Homo sapiens », Universe, life, extraordinary story
Slow, slightly angled forward travelling shot of dense clouds and volcanos	Music	10'' no commentary
Continued forward travelling shot of dense clouds, volcanos, high-angle shot of crater with swirling smoke	Music	chaos, the Sun, agglutination of dust, life
High-angle forward travelling shot of crater with swirling smoke	Music	15'' no commentary
Continued slow forward travelling shot of chain of extinct volcanos and solidified rock	Music	chain, volcanos, molten rock, crust
Continued slow forward travelling shot of the chain of extinct volcanos and solidified rock – Change of shot: high-angle forward travelling shot of smoking crater with distorted perspective	Music	12'' no commentary
Continued high-angle shot of smoking crater with distorted perspective – Change of shot: close-up high-angle forward travelling shot and revolving around crater and smoke	Music	Dense atmosphere, furnace
Continued close-up high-angle forward travelling shot and revolving around crater and smoke – Change of shot: forward travelling shot of running-water patterns	Music	11'' no commentary
Continued forward travelling shot of running-water patterns – 1st forward travelling cross fade to greater close-up of running-water patterns – 2nd forward travelling cross fade to another shot of running-water patterns	Music	torrential rains, water, veins, branches, vessels, sap
Continuation of forward travelling shot of running- water patterns	Music	12'' no commentary
Continued forward travelling shot of running-water patterns – Slightly angled forward travelling cross fade of a mixture of land and waters	Music	Rivers, minerals, oceans
Contunued slightly angled forward travelling cross fade of a mixture of land and waters – Cross fade and ackward travelling shot of dense clouds	Music	14'' no commentary

2.2 Watch **Sequence 5**. What is the theme? *(Humans must feed themselves.)* How is it illustrated? *(Arguments: Humankind's intelligence, agriculture, the extraction of oil. Examples: images of humans cultivating the soil, of paddy fields, of terrace farming, of irrigation systems, etc.)*
- What sort of discourse is it? *(one that argues a case)* Find other sequences that present this type of discourse.
- Note the terms that describe humankind's relationship to agriculture in this sequence. *("patience" and "devotion", "sacrifice", "tradition", "sweat", "graft" and "toil")* What is the author referring to? What is his purpose in using these terms? *(Allusions* to the Biblical sentence "By the sweat of the brow shall you get bread to eat". The author is establishing the argument as a part and parcel of unchanging and acknowledged truths, which cannot be challenged.*

3 – The use of rhetorical tools: Of the image and the commentary, which is in the service of the other (superfluous, complementary)? What stylistic devices are used (commentary and images)?
3.1 The figures of speech
- Watch **Sequences 1 and 2**.
- Who is the commentary talking to?
- Note the comparisons* and the metaphors*. *(Life: miracle [occurs twice], link in a chain. Earth: planet, chaos of fire, agglutinated dust particles, molten rock. Running water [extended metaphor]: channels, the veins of a body, the branches of a tree, the vessels of the sap.)*
- What do the words used to evoke water suggest? What are the images on the screen? *Water is personified* as part of a human body or a suggested tree: the images show watercourses filmed in such a way as to suggest veins or branches)*
- What is the aim? *(To involve the viewer, make him become aware that he is no different from other human beings, that the Earth is alive like us, etc.)*
- Find other metaphors and comparisons in the film. *(Forests – rivers – oceans – permafrost/hair – lungs – eyes – mouth – vessels, etc.)*
- How is oil described? *("Pocket of sun" is a circumlocution* [Sequence 6].* Why is it described in this way? *(Double function of circumlocution: a scientific use and a stylistic device that makes it possible to describe a new reality – and becomes almost a cliché.)*

3.2 A look at the final sequence.
- Watch the end of the film (Sequences 16 and 17, from the insert cards onwards).
- What role do the insert cards and the images following each of them play? (The insert cards have an informative value, with text set against a black background for greater legibility. The images are redundant in relation to the insert-card texts – they provide no extra information, but they temper the abstract aspect of the cards and, above all, contribute significantly to the dramatization, especially since in this sequence there is a pause in the verbal narration and the music looms large.)
- Note the repetitions* in the discourse *("I have seen" – "It's too late to be pessimistic")* and the lists *(the various countries, the figures)*. What types of images correspond to the discourse in this whole final section? *(Redundant images accompanying the expressions "I have seen" and "It"s too late"; illustrative images from [Sequence 17] "What's important is not what's gone, but what remains", up to the end.)*

- What has the director sought to create with this amplification*? *(The aim of the film being to awaken our consciences to environmental issues, the rhetoric of the images and the text are used to convince us to "put ecology at the heart of people's conscience" [Yann Arthus-Bertrand])*

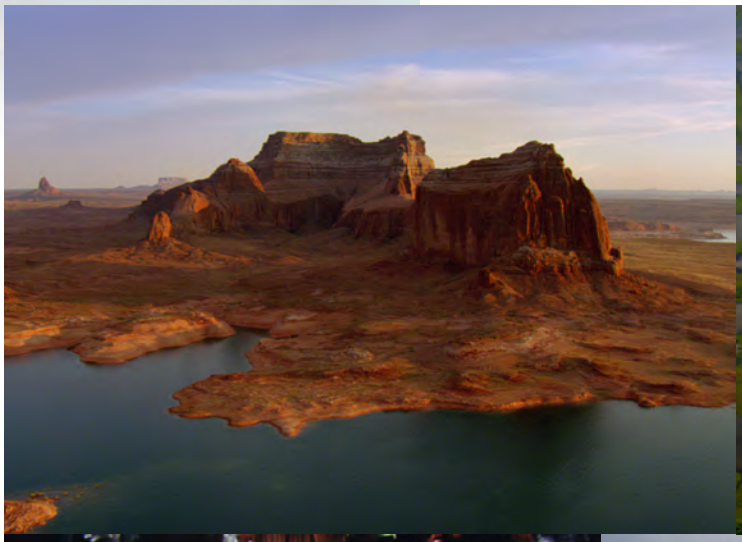
Marion BLANCHAUD (Ligue de l'enseignement)

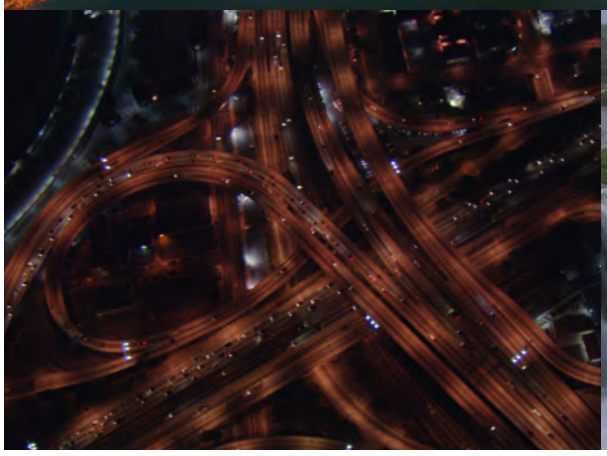
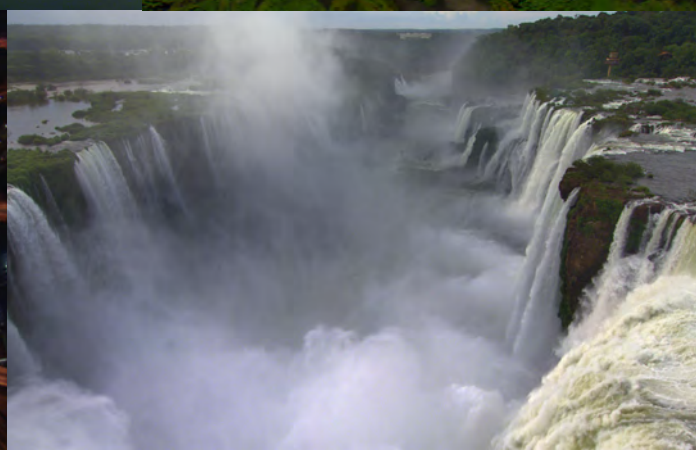
The film's locations

FILE Resources for further study

Visit the film's locations at

http://maps.google.co.uk/maps/mpl?moduleurl=http://www.home-mapplet.com/home/



9 - KEY WORDS AND GLOSSARY OF TERMS USED IN THE FILM

Adaptation (Sequence 4): Adaptation is the ability of a living being to fulfill his role in an environment according to the external conditions it encounters. The entire organism seeks to be in balance with its living environment.

Agrofuels (Sequence 7): These are fuels derived from the fermentation of organic material such as vegetable matter. In the face of climate change and the depletion of fossil fuels, agrofuels are expected to be a sustainable alternative energy, since they help us to avoid adding to greenhouse-gas emissions and can be produced by agriculture. However, some of the production of agrofuels involves deforestation and competes with the provision of food. Today, to determine whether there is a true gain in terms of CO^2 emissions it is necessary to calculate the energetic and environmental effects of the production of agrofuels.

Archaebacteria (Sequence 2): Today, archaebacteria mostly live in extreme-habitat environments (salt seas, deep hydrothermal springs). These organisms are unicellular and have no nucleus. Their structure therefore means they are like bacteria. Archaebacteria have long been considered the oldest life form but this idea has now been brought into question.

Biodiversity (Sequence 13): The word biodiversity is a contraction of biological diversity. Biodiversity reflects the number, variety and variability of living beings. It includes diversity within a species (genetic diversity), between species (specific diversity) and between ecosystems. Human activity is upsetting ecosystems and causing the disappearance of many species that can no longer find what they need to survive in their environment.

Carbon cycle (Sequence 13): Carbon is the basic chemical element of life on Earth. It is the fabric of the organic molecules of which living beings are made. Carbon is stored in different forms in the sea (carbonic acid), the atmosphere (carbon dioxide) and carbonate rocks (limestone). The carbon cycle is the transfer of carbon between these different reservoirs. This cycle can be divided into two: a geological cycle that unfolds over long periods of time (millions of years) and a faster biological cycle (from days to hundreds of years). In the geological cycle, the carbon passes between the atmosphere, the ocean and the carbonate rocks. In the biological cycle, carbon exchanges take place essentially between the atmosphere and living beings. The latter capture carbon dioxide during photosynthesis and release it through breath. In the decomposition of organic matter, micro-organisms release carbon dioxide through fermentation. The geological and biological cycles are linked: During growth, plankton species use carbon dissolved in the seas to make their limestone shell. After their death, some of these shells accumulate on the seabed to form carbonate rocks. Carbonate rocks (oil and carbon) are formed from the decomposition of living creatures. Industrial and agricultural activities and transportation using fossil fuels are altering the carbon cycle and releasing carbon, which has been stored in the soil for millennia, into the atmosphere very rapidly. The consequence of this release is an increase of carbon dioxide – one of the gases responsible for the greenhouse effect – in the atmosphere. This increase is one of the causes of climate change.

Cereals (Sequence 5): Cereals like barley, oats, millet, rye, etc. were among the first plants to be cultivated mainly for their seeds, used to feed Man and domestic animals. Over time, the most productive varieties have been selected. Today, three main cereals (rice, wheat and corn), represent in themselves the dietary staple for over 4 billion people. To resist disease or drought, they need the genetic reservoir of their wild parents, which serves to protect them and also ensures our food safety, but 75% of the genetic diversity of plants used in agriculture has been lost.

Climate change (Sequence13 [TC 02 :00 :27]): Climate change is defined by the United Nations Framework Convention on Climatic Changes (CCNUCC), Article 1, as "…a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods." The only way to slow down the part of global warming that is due to human activity is to reduce the amount of industry-generated greenhouse gases in the atmosphere. Some 160 countries are involved in doing this, within the framework of the Kyoto Protocol, signed in December 1997. On average, these countries must reduce their emissions by 5.2% compared with the 1990 level. This must be achieved between 2008 and 2012.

Cyanobacteria (Sequence 3): Cyanobacteria are bacteria capable of photosynthesis. Having appeared very early in the Earth's history (about 3.8 billion years ago), they use water molecules, carbon dioxide and solar energy to produce chemical energy, which they store in the form of organic matter in their tissues. In the course of this production, dioxygen is released into the atmosphere. Green plants, which followed cyanobacteria, are also capable of photosynthesis.

Dioxygen (Sequence 3): The air we breathe is composed of a mixture of gases. One of these gases is essential to life: dioxygen. Laymen often confuse dioxygen with oxygen. Scientists distinguish the dioxygen molecule – consisting of two chemically bonded oxygen atoms – from the chemical element oxygen. Dioxygen is a vital ingredient in the breathing process of most living cells. In our environment, green plants release dioxygen during photosynthesis, while the breathing of living beings consumes it to produce the energy necessary for cellular functioning.

Fair trade (Sequence 17): This is a commercial system that is an exception to global commercial organization. Producers are paid a fair price, established in such a way that they can sustain their production and live decently from their work. The principle can even concern the entire supply chain. In this case, all the players who have played a role in processing the product benefit.

Fossil water (Sequence 9): This refers to stretches of groundwater fed by rainwater for several millions of years in different geological conditions than those currently obtaining. These stretches of ground water can no longer be fed by surface waters, because of their great depth, and fossil water drawn upon cannot replenished in the span of a human lifetime.

Greenhouse effect (Sequence 13): This is a natural process by which the Earth's atmosphere can retain a part of the radiation of the sun, in the same way as glass panes retain heat in a greenhouse. It is thanks to the greenhouse effect that our planet is warm enough to support life. Some of these gases – water vapour, methane and carbon dioxide – are particularly effective as regards retaining solar heat. In fact, human activity has greatly increased the amount of methane and carbon dioxide and today its impact therefore considered to be responsible for the increase in the greenhouse effect.

Energy (Sequence 5): Energy is the capacity for doing work. After using his own strength and that of animals, Man learned how to exploit the energies contained in nature (the sun, the wind, waterfalls, etc.). He then invented machines, driven by various energy sources, which were capable of producing an increasing quantity of work. Today, the store of fossil energy (oil, coal and gas) contained in the ground, highly concentrated and easy to use, is inexorably dwindling – unlike the renewable energies provided by the sun, wind and water. The latter, however, are diffuse and harder to exploit. Research on improving our ability to use them is intensifying.

Geothermal power (Sequence 17): Geothermal power describes the exploitation of heat provided by the interior of the Earth, transmited by conduction through the Earth's crust. This heat, pumped deeply from the ground or hot waters is currently being exploited increasingly for domestic heating.

Groundwater (Sequence14): This is a stretch of underground water confined by a layer of impermeable rock and fed by rainwater. Drilling makes it possible to draw on this water. Two billion people in the world and 40% of the world's agriculture depend on these stretches of groundwater. The lowering of their level – which is increasingly occuring – is determined by rainfall and the amount of water removed.

Irrigation (Sequence 9): Irrigation means bringing water artificially to cultivated plants to increase production and make it possible for them to grow normally even in the case of insufficient rain. In some regions, this practice can run counter to the need to conserve water. Irrigation can also affect eco-systems, the landscape and agriculture along the water courses, because of the volumes of water diverted.

Marsh (Sequence 9): In these wetlands, plants and microorganism filter and purify water. Marshes function like sponges – they absorb water in the wet season and release it in the dry season.

Methane (Sequence 15): Methane is a gas which forms when an organic compound decomposes in the absence of the dioxygen in the air by fermentation or putrefaction – for example, underwater or underground. The reserves of natural gas currently being exploited therefore come from the decomposition, long ago, of plants and animals. Today, methane continues to form, in the same way, in all sorts of wetland areas. Human activity also encourages the production of methane by, for example, the growth of rice, the rearing of ruminants (the food ferments in their stomach and gives off methane), by the storing of manure, by domestic rubbish rotting without contact with the air, and by the exploitation of natural gas (of which methane is the principle constituent). Methane, however, contributes to the greenhouse effect, which is why we try to recover it and use it in the form of biogas. Held in considerable quantities in solid form within methane hydrates in the ocean depths and the layers of permafrost, it could be an important source of energy. However, it will increase the greenhouse effect. In the case of global warming in the permafrost zones, the decomposition of methane hydrates would release great quantities of methane.

NGO (Sequence 17): Non-governmental organizations are public-interest organizations, non-profit-making and financially and politically independant, which have international aims such as human rights, the protection of children, education, economy, the environment, etc.

Northwest Passage (Sequence 13): Going across the North Pole, the Northwest Passage links America, Europe and Asia. In the summer of 2008, following melting of the ice, it was impossible, for the first time, to sail from the Atlantic Ocean to the Pacific Ocean via the Arctic using this legendary route.

Oil (Sequence 6): Oil, gas and coal are all fossil fuels. Hydrocarbons, gas and oil are produced by slow degradation of organic matter buried in the sediments, in specific pressure and temperature conditions. Coal comes from the accumulation of terrestrial plants in huge marshes. These plants are buried in sediments, where they gradually transform into coal. Most of the oil on the planet seems to have been formed during very short periods of exteme warming, 90 and 150 million years ago. Most of the coal reserves were formed 365 million years ago. Since antiquity the oil discovered on the level of outcrops or by boring wells was used for limited purposes (lighting, medicine, cosmetics, etc.), its true industrial exploitation began at the start of the 19th century. Taking in account the time and specific conditions necessary for it to form and the extent of current exploitation, this resource is destined to disappear in the same way as the other fossil fuels.

Permafrost (Sequence15): This refers to ground which is permanently frozen. Permafrost represents about 20% of the surface of the Earth or a quarter of the land of the Northern Hemisphere. At its southern end, the permafrost has a temperature close to zero in summer and could rapidly melt in the case of global warming. Its condition (thickness, extent) is closely monitored, since it could be an indicator of climatic change.

Pesticides (Sequence 7): Produced by the chemical industry, pesticides are used to destroy insects, fungi and all undesireables that attack crops. These products, however, which spread in air, water and soil, can be dangerous for human health.

Primary forest (Sequence 10): A primary forest is a forest that has never been either exploited or modified by Man. Two thirds of the remaining primary forests on the planet are in the Amazon, the Congo and Indonesia. They are home to three-quarters of the planet's bio-diversity and are the principle sources of new active principles for medicine, new molecules for chemistry and new genes for the improvement of useful plants. In Europe, the great majority of forests are the results of forestry and only traces of primary forest remain.

Single-crop farming (Sequence 7): Single-crop farming means agricultural or forestry practices in which only one species or a very restricted number of species is planted over a very extensive area. Selecting one single plant causes numerous disturbances to the eco-system concerned. These include the disappearance of a part of the fauna, some species of which could, by their action, protect the crops. They also include the proliferation of pests, erosion due to wind and runoff water due to the disappearance of hedges, the increased risk of flooding, the risk of diseases developing, etc.

Soil (Sequence 4): Miniscule living beings, the micro-organisms, make humus from organic waste (plant debris, animal corpses). Soil, "the fertile coat" on which plants can grow, is formed thanks to their activity and the degradation of subsoil rock. The soil is also home to numerous living beings, which live from it and change it. When it deteriorates, due to agricultural practices, various pollutants, climatic events, etc. the soil only replenishes itself very slowly. This heritage is therefore in quantitative regression. Essentially a milieu for eco-systems and agriculture, before industrial development, today it is increasingly being destroyed by urban development – cities, homes, industrial estates, parking lots, etc.

Species (Sequence 4): This refers to groups of living beings possessing a common set of morphological, anatomical, physiological, biochemical and genetic characteristics, which can reproduce and whose offspring are fertile. Some 99.9% of recorded species are fossils. Currently, scientists have identified 1.8 million different species. Many of them are thus still unknown – above all among the insects and plants – and new species are constantly being discovered. The total number of species on Earth is somewhere between 10 and 100 million, according to estimates. Today, they are disappearing at a pace one thousand times faster than the natural rate of extinction.

Water cycle (Sequence 3): Heated by solar energy, the water of the oceans evaporates into the atmoshphere. This warm vapour cools as it rises and condenses in fine droplets, creating clouds, which the wind moves over the land. The drops of water end up falling back to earth in the form of rain, snow or hail. Water not absorbed by the soil and which does not evaporate on the spot runs down slopes feeding rivers and lakes. It is carried back to the oceans and the cycle begins again. It is always the same water that circulates, in perpetual transformation. During its cycle, it can be tapped for use by humans, animals or plants, but it always goes back to nature. Since the emergence of industrial civilization, uses of water have multiplied and have caused pollution and disruption of the cycle. Resources of drinking water are therefore diminishing.

Denise JOUVRAY

The measurement of time makes possible the organising of various aspects of life in society (agricultural work, dates of religious ceremonies, speaking time in meetings). It can also be used to classify events in relation to each other and thus build the basis of history.

1 – How do we measure the passage of time?

1.1 Calendars

To measure the passage of time, Man was first helped by the periodic nature of astronomical phenomena: day and night, the lunar cycle, the cycle of the seasons. These astronomical observations allowed the first calendars to be established. These divided time into years, months, weeks and days. This division is based on the speed of the rotation of the Earth around the Sun and its own rotation. This speed assumed to be constant.

A calendar is lunar or solar depending on whether it is based on months or years. In a lunar calendar, the average length of a month must be close to that of a lunar month: 29.530589 days. In a solar calendar, the length of the year must be about 365.242190 days. Over the centuries, various calendars have been developed.

A year corresponds to the length of time necessary for the Earth to complete its full orbit around the Sun. A day corresponds to the length of time necessary for the Earth to turn completely on its own axis or, more exactly, the time necessary for the Sun to return to its midday position, on the meridian.

1.2 The various calendar systems

The calendar of ancient Egypt (also called the Nilotic Calendar) was based on the annual changes in water level of the Nile. Its first purpose was to regulate agricultural work over the year. In fact, the Egyptians defined a year as “the time necessary for a harvest”. In the year of the creation of this calendar, the first day of the Akhet season corresponded approximately to the start of the annual flooding of the Nile. For the Egyptians, the water level rising was a major event, for more than one reason. On the one hand, it brought the dry season to a close and on the other hand the extent of the flooding determined the quality of the harvests. If the water rose too little, it could lead to a famine and if it rose too high the floods could be devastating. The rise in water level occured shortly after the rising of the star Sirius in the Egyptian sky. The appearance of this star was a vital sign to the Egyptian peasant farmer, who could not trust the civil calendar because of an increasingly wide gap between the civil year of 365 days and the solar year of approximately 365 days and 6 hours. This discrepancy amounted to about a day every four years.

The Muslim or Hegirian *(Hijri)* calendar is lunar – one of the rare examples in today’s world still widely used. This calendar is characterized by years composed of 12 lunar months of 29 to 30 days. A Hegirian year is thus shorter than a Gregorian year by about 11 days. The current year in the Muslim calendar is 1430 of the Hegira, approximately from the evening of the 28 December 2008 to the evening of 17 December 2009. Year 1 of this calendar began on the first day of the Hegira (15th or 16th July 622 of the Christian era), according to the theologian authors. This calendar was adopted ten years after this event. The Hegira is the day on which some of Mohammed’s first companions left Mecca to go to the Oasis of Yathrib (the former name for Medina).

The Gregorian calendar

While various calendar systems have been used in past centuries, the system used today in most of the Western world is the Gregorian calendar. Year 1 of this calendar (year 0 does not exist) corresponds to the year Christ was born. The years before year one are preceded by the acronym B.C. (before Christ), while the years following year 1 are described as A.D. (Anno Domini – Medieval Latin for "Year of Our Lord"). One year corresponds to the time the Earth takes to make a complete orbit around the Sun. A day corresponds to the amount of time necessary for the Earth to turn completely on its axis or, more precisely, the time necessary for the Sun to return to its midday position on the meridian.

The subdivisions of the Gregorian calendar

One last lasts 7 days, and one month 30 days.
A century corresponds to 100 years and a millennium to 1,000 years.
Hours, minutes and seconds are subdivisions of the time in a day.
A hour is one twenty-fourth of a day.
A minute is one sixtieth of an hour.
A second is a sixtieth of a minute.

A new measurement of the second

The speed of the rotation of the Earth is not constant and the measurement of time which depends on this is imprecise. To resolve this problem, a second is now defined according to the radiation frequency of the cesium-133 atom.

Instruments for measuring the passage of time.

Ancient instruments: The measurement of time corresponded to the time necessary for water to drip (clepsydra) or sand to fall (hourglass).

Present-day instruments: The measurement of time corresponds to the oscillation frequency of a mechanical system (pendulum) or quartz crystals (e.g. quartz watches or computers).

2 – How are events situated in time?

Chronology is the science of locating events in time. It is represented by timescales.

- Geological timescales

Geological timescales represent the succession of geological phenomena and the succession of species of living beings from Earth's formation to the present day. There are two main methods of geological dating:

1. The absolute dating method – using radioactivity. The quantity of radioactive elements contained in a rock diminishes at a regular rate over time. The age of a rock can therefore be determined by the quantity of radioactive elements it contains.
2. The relative dating method – the study of the order of deposition of sedimentary rock gives the order of the formation of these rocks. Sedimentary rock situated at the deepest level is the oldest rock.

- Historical timescale

Historical timescale is often represented in the form of a timeline. This represents the succession of the principle events in the history of humanity.

Anne-Marie MICHAUD

The main events in the Earth's history

The age of events is given in millions of years (m.y.).

0. 4,550 m.y. (Sequence 1): the formation of the solar system from a cloud of gas and dust, which condensed to form the Sun (in the centre) and the planets (in orbit around the Sun).

1. 4,500 m.y. (Sequence 2): the formation of the Earth by the accretion of dust and pieces of rock. The temperature of the Earth was then high (about 2,000°C). A sea of magma covered the Earth's entire surface. The convection currents flowing through the magma sent out water and gases into the atmosphere (carbon dioxide and nitrogen)

2. 4000 m.y. (Sequence 2): the slow cooling of the Earth.

3. The atmosphere is rich in carbon dioxide, but lacks oxygen. The carbon dioxide provokes a major greenhouse effect – the temperature of the seas must have been high (60-90°C).

4. (Sequence 2) Water vapour in the atmoshere condenses into liquid form and the first oceans form. The water is acidic because it contains much dissolved carbon dioxide.

5. The continents begin to form.

6. 3,800 m.y.: the first known traces of life

7. 3,400 m.y. (Sequence 3): the first traces of cyanobacteria capable of photosynthesis

8. 2,800 m.y. (Sequence 3): the accumulation of dioxygen in the atmosphere. This dioxygen was the product of photosynthesis. Dissolved carbon dioxide was trapped in the carbonate rocks and, as a result, the seas become less acidic.

9. 2,000 m.y.: the appearance of the first organisms comprising a cell with a nucleus

10 700 m.y.: the first multicellular organisms

11 570 m.y.: the first organisms with shells

12 505 m.y.: the appearance of the first verterbrates in the sea

13 418 m.y. (Sequence 4): the first terrestrial plants

14 385 m.y.: the first terrestrial animals

15 360 m.y.: coal-forming forests develop on the coastal plains and continental marshy depressions. The fossilization of these forests produced coal.

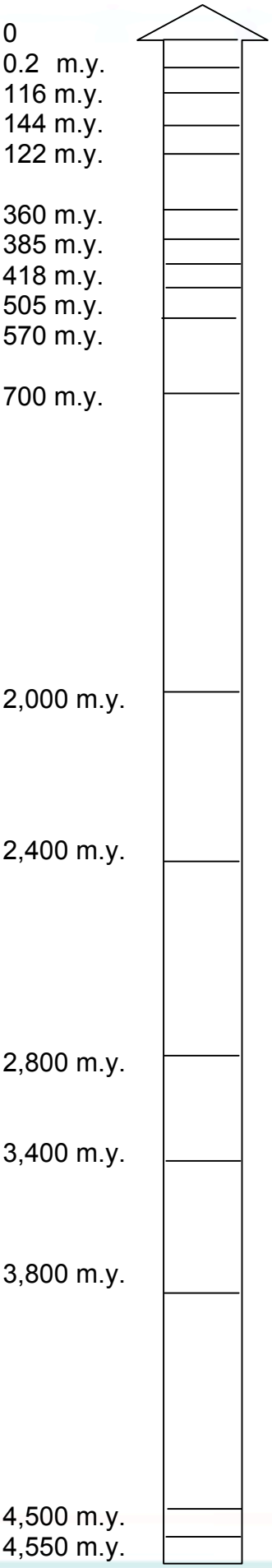
16 22 m.y.: the appearance of mammals

17 44 m.y.: the appearance of birds

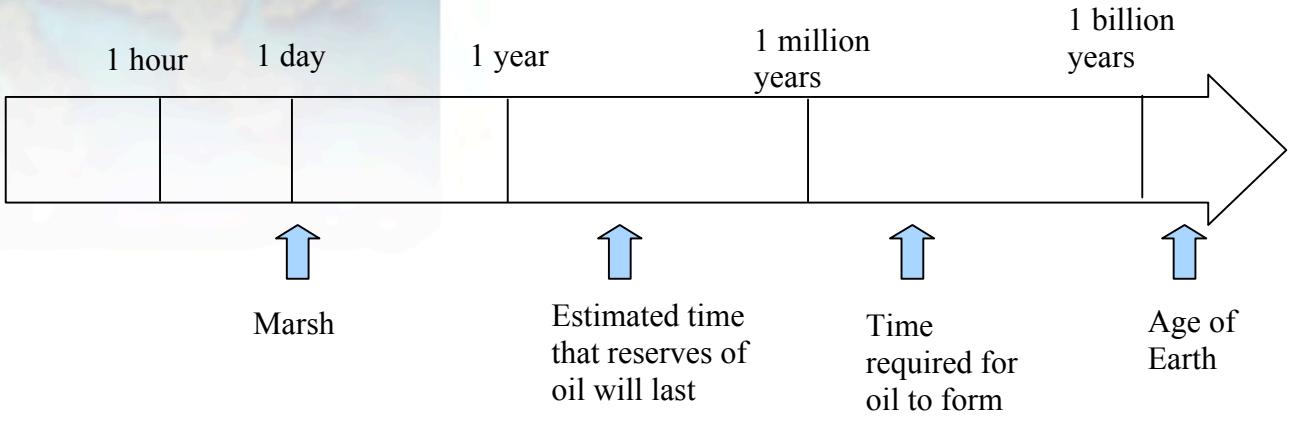
18 116 m.y.: the appearance of floral plants

19 0,2 m.y. (Sequence 5): the appearance of *Homo sapiens*

Blank timeline



The duration of some geological processes



Anne-Marie MICHAUD

Resources and Internet sites (*many of the following sources are French*)
http://www.ciemi.org (CIEMI: Centre d'Information et d'Etudes sur les Migrations Internationales)
http://portal.unesco.org , http://www.histoire-immigration.fr (CNHI: Cité Nationale de l'Histoire de l'Immigration)
http://www.remisis.org (REMISIS: documentary network on international migration)
http://radegonde.mshs.univ-poitiers.fr (CNRS Migrinter resource centre)
http://wwwrefugiesclimatiques.com
http://www.collectifargos.com (Collectif Argos, composed of journalists and photographers working on the human consequences of global warming)
Exhibition: "Six milliards d'autres" (six billion others) http://www6milliardsdautres.org

Magazines:
Revue européenne des migrations internationales (http://www.remi.revues.org)
Migrations Société (Editions du CIEMI) (no. 102, Nov-Dec 2005)
Hommes et Migrations, no.1251, Sept-Oct 2004 – no. 253, Jan-Feb 2005 – no.1271, Jan-Feb 2008 – no. 1272, Mar-Apr 2008 (http://www.hommes-et-migrations.fr)
L'atlas des migrations, Hors-série Le Monde/La Vie, 2008-2009
Catalogue of the exhibition"Terre Natale, Ailleurs commence ici" (previously unpublished texts by Paul Virilio and photographs by Raymond Depardon, Fondation Cartier, Nov 2008 - Mar 2009)

Some figures:
6.5 billion human beings
200 million migrants the world over (3% of the global population)
10% are inhabitants of the EU (13% of the US)
70% of money transfers sent by immigrants go to developing countries
13,000 UFM (Unaccompanied Foreign Minors) in the EU in 2000
25% or more are inhabitants of cities in rapid urban expansion

"The migrant planet" (the phrase of Claire Blandin, Editorial, L'Atlas des migrations, *Le Monde*): Description – causes – consequences.

For demographers, a person is called a "migrant" when they change their country of residence, an "immigrant" (by the welcoming country) when they live in a country in which they were not born and an "emigrant" (by the country of origin) when they have left their country of origin. A "refugee" is someone who has "fled a situation that was becoming intolerable for their physical and mental wellbeing. They may also have fled either an outburst of political passion in their country or a natural disaster, while exiles have decided to continue their political action elsewhere, where they are safe." (*Hommes et Migrations* no. 1253 Jan-Feb 2005 – article by Philippe Dewitte "Les multiples aspects de l'exil"). A "displaced person" is a migrant compelled to move elsewhere in his own country.

Migratory movements are not just linked to historic migrations and are difficult to define. Causes include economic, political, climate change, family, ethnic, religious, individual and collective factors. The 21st century will see accelerated migratory flux, because of climatic change.

Not all migration is towards the OECD countries (only 2 migrants out of 5). Many go to the newly prosperous countries and 47% of poor-country migration is towards other poor countries.

New centres of poverty are appearing in the most developed countries, far from the North/South divide. In 2007, the world had more city-dwellers than country-dwellers, with consequent social segregation.

Extracts from *Hommes et Migrations* no. 1272, March-April 2008 ("Mondialisation et migrations internationales"):
"Globalization is creating new forms of international migration. […] [which] are benefiting countries experiencing acute labour shortages in certain sectors of their economy, without those countries guaranteeing migrants acceptable living or working conditions, however." States tend to react differently to migrants. Either they encourage the arrival of a workforce, according to demands from employers, or they apply restrictions. "Ideas of national sovereignty, borders and citizenship are called into question by migrants […]. On the planetary scale, a new international division of labour dimension is emerging […]." Today, migratory flux is more due to the consequences of natural disasters than to economic motives.

Immigration has positive consequences for the economy, the culture and the demography of the receiving country. For the country of origin, it constitutes a "brain drain", but it brings in money, thanks to the monetary transfers sent by emigrants – which can often represent a significant contribution to amount to national revenues.

The rights of migrants:
Extracts from the magazine *Migrations Société* no. 102, Nov-Dec 2005, pp. 52-56 (Article: De l'émigration à l'immigration en Europe et ailleurs. La migration du XXIe siècle comme défi à la sociologie"):
The rights of migrants are affected by the policy that puts the status of nationals before that of migrants, despite the unanimously recognized economic benefit represented by the latter and the question of respect for certain ethical values. We should also look at the issue of immigration in another way: "If we want to restrict immigration by invoking ethical arguments, we would have to clarify what freedom or freedoms we want to protect, which of those are threatened, why such and such a threat is real and how a restriction would help protect a particular freedom."

Extract from the magazine *Hommes et Migrations* no. 1271, Jan-Feb 2008 ("La Convention des Nations Unies sur les droits des travailleurs migrants. Enjeux et perspectives"):
The UN Convention on migrant workers, only ratified by the countries of origin of migrants, includes some information that remains confidential, because of restraints brought by the receiving countries. Today, asylum seekers depend on quotas, regardless of the humanist tradition of our societies. Also, refugee camps are often lawless enclaves, whereas the destitute situation of refugees requires help and protection. "It is legitimate and necessary that a part of civilian society should rally to the cause of a population in danger." (Mariette Grange, in an interview: "Droits de l'homme et migrations : l'émergence d'un enjeu international", pp. 120-129).

Child migrants:
Extracts from the magazine *Hommes et Migrations* no. 1251, Sept-Oct 2004 ("Enfants sans frontières", editorial by Philippe Dewitte "Des migrants comme les autres?" and articles):
Unaccompanied Foreign Minors (UFM) are people under 18, living in a country not their own and not accompanied by legal representatives. In France, several ways have been found to protect these unaccompanied minors. The "foreign minor" is on foreign territory, illegally or not, and comes under the authority of the immigration services, just as an adult would. Minors come under two status categories, hovering between the two rationales of immigration-control and child-protection.

The variety of migratory trajectories, reasons to emigrate, ways of getting onto French territory (legally or illegally), even of integrating, is almost as great as with adults. Because, if we except migrations for professional reasons – the only "adult-only" migrations – we can see that minors can be runaways, illegal immigrants, young people rejoining all or a part of their family by immigrating, minors "assigned" to work abroad and send money to the family back home, asylum seekers or victims of trafficking.

Migrant children, however, whether they are unaccompanied foreign minors, minors rejoining family members, strays, exploited runaways or whatever, are far from being migrants just like others. Little children, adolescents, young majors, boys or girls…represent a great variety of social "profiles", motivations and situations and often exploitation by adults – whether they remain in their home country, accompany their recruit or await him or her in the country of destination. […]. Migrants of this rather specific type need systems and treatment specially intended for them, from border police to schooling, via juvenile justice, hostel accommodation, etc. Unfortunately, they do not always get this and all too often unaccompanied foreign minors are mainly seen as "ordinary" delinquents – despite the work of the *"Défenseur des enfants"* ("Juvenile Defender") […], an institution created in 2000, empowered to take action in any dangerous situation encountered by minors in France.

The new fields of sociology: thoughts for the future.
Extracts from the magazine *Migrations, Société* no.102, Nov-Dec 2005, pp. 24-49 (Report: "De l'émigration à l'immigration en Europe et ailleurs. La migration du XXIe siècle comme défi à la sociologie"):

Sociology has long operated along national lines, taking as its subject the Western nation-states of the 19th century. The complex questions posed by migrations in the era of globalization, however, are such that this nationalist model has to change – the crossing of borders requires a universal vision.

In fact, since the current framework of sociology takes Western societies as its norm, immigrants can only exist by assimilation. The national specificity includes religious, philosophical and ideological traditions and results in a narrow and stereotyped vision of migrant populations that is all too obvious in prevailing political and cultural opinion. Today, it is essential to "look at the migratory movements and networks as transnational processes", in relation to the "economic globalization" that regulates whether or not a social group belongs to the global capitalist market. The consequence is a disruption of societies, which, to be controlled, are subjected to ever more elaborate surveillance policies, in the name of "security" – the "nation-states remain suspicious with regard to (the movement of peoples). Differentiating migration systems have been put in place to encourage the elites […] to be mobile, while unqualified workers and people fleeing persecution have been excluded".

These different levels of migration are the new face of racism: violence and cultural opposition are considered the natural condition of the most impoverished. These attitudes became reinforced after 9/11, justifying the measures taken by the nation-states to reject the Other. But it is the globalization conveyed by the media that encourages the underprivileged of the world to migrate.

Extracts from the speech of the Secretary General of the United Nations, Mr. Ban Ki-Moon, at the inauguration of the World Forum on Migration and Development in July 2007:
"[…] We see that migrations continue to increase – encouraged by the desire to seek a better life, as well as phenomena that we are beginning to understand better, such as climate change. People migrate when they are attracted by the hope of a better life, to flee danger or despair, as a reaction to market forces, or in response to a call of the heart. […] We are living in a new era – an era of mobility during which more and more humans move more frequently across the planet. More countries than ever participate in migrations and migrants move from one end of the world to the other. It is a global phenomenon that defies past categorizations and clear modes of definition, such as by countries of origin or destination. […] For decades, the hard labour of individual migrants has contributed to saving entire families and communities from poverty. […] Their earnings have built homes, provided healthcare, equipped schools, created new businesses. […] They have created global networks and passed the ideas and knowledge of one country to another, creating a dynamic human link that links cultures, societies and economies."

It is time "to begin to transform that which is perceived as a threat into a possibility. […] We must understand the implications of the migration phenomenon, to learn from one another and and to learn to build partnerships that will make migration a factor aiding development. […] It is our duty to fight against the marginalization, abuses and discrimination that certain groups of migrants continue to fall victim to. How can we do this? […] Today, we must realize that we are all involved. Due to revolutions in transport and communications and the globalization of our economies, humanity is experiencing migrations in a manner that is new in its history. We cannot stem this force of human nature. But there is much we can do to improve the lives of migrants. […] We can ensure they can move about safely and legally and that their rights are protected. We can work to reinforce the positive effects of migration on development in the immigrants' country of origin – both when they return there, or simply as members of a global diaspora. […] This is why we must advocate measures that are profitable for all players in the system of migrations, but especially for the migrants, their families and their communities. However, we have only recently begun to understand not only how crucial international migration is to development, but also the degree to which intelligent political policies can amplify these positive effects.

Here is but one example: it is only in recent years that governments have begun to gauge the importance of the repatriation of earned salaries to development and many have introduced measures to encourage competition between banks and companies handling the transfer of funds. This has considerably reduced transfer fees in several economies. Thus, literally billions of extra dollars have made their way into the hands of the residents of economically developing countries each year. […] But money is not the only measure of the wealth of migrants. […] How can their native countries profit from the abundant skills and knowledge accumulated by their migrants? […] What strategies should countries adopt to encourage their scientists and entrepreneurs to return? How can we encourage co-development and how, for example, can more economically developed countries that recruit highly qualified personnel transfer aid, in return, to native countries, to support education?

The economic, social and cultural contributions of migrants to the progress and well-being of more economically developed countries (MEDC) is clearly evident. Their cultures, their values and traditions not only enrich our societies, but provide us with tools to adapt to a rapidly evolving world. They have created countless businesses, such as eBay, Mittal, Google and Intel – names familiar the world over. They have been at the forefront of research and innovation. In the United Kingdom alone, at least 20 Nobel Prize winners have arrived in the country as immigrants or refugees.

Less qualified migrants also play a crucial role in the success of our economies. During each hour of every day, they care for our sick, our aged and our children. They clean our homes, harvest our cropsa and work in our industries. They perform a large amount of the tasks most basic to our quality of life. Nevertheless, they work in sectors of the economy where they are routinely subjected to exploitation, discrimination or worse. Even as we learn to put migration at the service of development, we must also strive to protect the rights of those migrants.

Let us remember that, when we speak of migration it is not merely a question of wealth and poverty. It is also about the type of society in which we wish to live. A unique opportunity has been granted to you to shape it in a manner that will benefit future generations." (UNESCO – http://portal.unesco.org)

Marion BLANCHAUD

13- FOUNDING MYTHS, COSMOGONY AND CREATION LEGENDS

FILE Resources for further study

We have assembled some information and references related to the film. They are far from exhaustive but will enable you to get a basic grasp of the subject. For more information, please consult the bibliography and webography.

Cosmogony (from the Greek, *kosmogonia, kosmos,* meaning 'order' or 'world' and *gonia* meaning 'begetting') comprises all the sciences and theories existing regarding the origins of the universe.

There are constants that are found in many of the theories and myths conceived of by humans:
Primordial Chaos: the birth of a world (sometimes harmonious, even a sort of paradise) is often the result of the coming together of opposing forces, such as order and disorder, light and darkness, etc. However, as in Hesiod's *Theogony*, sometimes the primordial chaos that existed before the universe was created is presented not as a void or a mass in conflict with order but as an entity containing the totality of all that is to be created, in a great mélange.
Struggles and sacrifice: Jung states that notions of sacrifice and combat are often associated with creation myths. Many cosmogonies describe battles (battles between gods, primordial ancestors, heroes or giants).
Water: This is often evoked as a primordial element as well as a rejuvenating one, and myths of a great flood are common to several cosmogonies.
Trees: In several myths, a tree (the tree of life) or a plant that is divine, magical or sacred are significant (for example the tree in the Garden of Eden, which bore forbidden fruit, according to the Bible). Rainbows are often associated with trees, as well as being bridges or passages between heaven and earth, or between two points of the Amazonian rainforest.

Creation myths according to various belief systems:
For the Australian Aborigines, the earth, men, animals and plants are merely parts of one whole. Men, therefore, cannot own land or animals. This belief brought them into obvious conflict with colonizers, whose society was founded on the idea of strictly delineated private property and who raised livestock.

According to Abrahamic religions such as Judaism, Christianity and Islam, as well as philosophies such as scholasticism, God is seen as being the "primary cause" in terms of so-called causal or cosmological reasoning. The proof proposed by Aristotle and later taken up by Thomas Aquinas can be summed up as follows: if the universe is comprehensible, then everything has a cause, the cause itself has a cause, and so on. If this reasoning is extended infinitely, the universe is no longer comprehensible. On the contrary, there is an ultimate cause which itself has no cause and that can be called God.

According to the first account of Genesis, Adam was created by God in his own image, on the sixth day of Creation. According to the second account, Adam was formed from the soil of the Earth and God blew the breath of life into his nostrils – and Eve was formed either from Adam's "side", or from his rib.

Adam and Eve were created by God to enjoy the paradise that was Earth, particularly the Garden of Eden. They were unique in that they alone in the whole of Creation, animate and inanimate, were made in his image. As such, they had the right to the World and to the use of its resources.

Buddhism generally ignores questions of creation, in particular that of the creation of life. Upon this subject, the Buddha would say that “conjecturing about the origins of the world is bound to bring madness and vexation”.

Buddha also evoked the parable of the poisoned arrow when referring to the origins of life, as well as to many other metaphysical questions. A man is shot with a poisoned arrow but before the doctor extracts it he wants to know who shot it (the existence of God), where it came from (the provenance of God and the Universe), why the arrow was shot (why God created the Universe), etc. The idea is that, if the man continues to ponder those questions before the arrow is removed, he will die before ever knowing the answers.

Thus, Buddhism is less concerned with the question of cosmogony. The aim is to deliver oneself and others from suffering by attaining enlightenment, or Nirvana.

The cosmogony of the Greeks and Romans is rooted in the Olympian myths that inspired Hesiod's *Theogony*. In the beginning there was Chaos, a boundless whole in the heart of which matter was all mixed up. Then, five distinct entities came into being: Gaia (the Earth), Eros (desire/love as a primordial creative force), Tartarus, and Nyx (Night). Gaia gave birth to Ouranos, the first male principle. Ouranos coupled with Gaia with rain as his seed. From their union, the Titans were born. Cronos (Time), the youngest and wildest of Gaia's sons, castrated his father Ouranos. Cronos then married Rhea who gave birth to Hestia, Demeter, Hera, Hades, Poseidon and Zeus. Zeus in turn deposed his father and the other Titans and the Universe was shared out among the younger generation: Zeus had dominion of the heavens, Poseidon the waters, Hades the underworld. The Earth is at the heart of all power struggles, as it is under no particular dominion.

In basic Hinduism, the universe is created by the god Brahma, preserved and maintained by Vishnu and eventually destroyed by Shiva. The ten avatars of Vishnu can be compared to Darwin's theory of evolution, the first avatar being born of the primordial waters. The Hindus see no conflict between creation and evolution. One reason for this is cyclical concept of time particular to the Hinduism – expressed in Yugas or days of Brahma, in cycles of 4.3 billion years – different from the linear time of other religions. Time is conceived of as the *Kalachakra*, or "wheel of time".

In Hinduism, nature and all God’s creations are His manifestations. He is inside and outside His creation, impregnating the totality of the Universe while observing it from outside. All creatures are believed to possess a divine spark of consciousness which is enveloped in a lack of awareness of the illusory nature of material, earthly existence.

According to Jain beliefs, the universe was never created and will never cease to exist. It is eternal and constant and goes through an infinite series of cycles. Each of these ascending and descending cycles is divided into six yugas, or ages. The current cycle is the fifth in the descending cycle. These eras are called *Aaro*. The first age is called "Pela Aara", le second "Doosra Aara", the last "Chhatha Aara" or Sixth Age. These periods are of a specifically defined duration of several thousands of years. It is said that when a descending cycle reaches its lowest point, even Jainism will be lost. Nevertheless, as the ascending cycle begins anew, it will be found again and reintroduced by the *Tirthankaras.*

The Masai of Kenya creation legends tell of humanity being created from a single tree. The Creator gave the first Father of the Masai a staff, to the Father of the Kikuyu he gave a ploughshare and to the Father of the Kamba he gave a bow and arrow. Each had to survive in the wilderness. The Father of the Masai used his staff to bring together herds. The Father of the Kikuyu used his ploughshare to farm the land and the Father of the Kamba used his bow and arrow to hunt.

According to Maori cosmogony, Heaven and Earth were once joined, since Ranginui, the Sky-Father, and Papatuanuku, the Earth Mother, were very closely intertwined. They had many children, who lived in darkness amongst themselves. The children wanted to live in the light, so they forcibly separated their parents, who to this day have an eternal longing to intertwine again. Ranginui's tears fall on Papatuanuku, to show his love. The mist in the forests is Papatuanuku sighing. The heat of her body, rising to rejoin Ranginui, continues to nourish humanity.

The Native American Seminoles recount that when the Creator, the Great Grandfather, created the Earth, he made all the birds and animals and placed them in a large shell. When the Earth was ready, he placed the shell along the Earth's spine, the mountains. He told the animals "When the moment comes, the shell will crack open and you will all be released. Someone or something will crack the shell and you call all take your respective places on the Earth." The Creator then closed the shell and left, hoping that the Panther, his favourite animal, would be the first to emerge.

There was a great tree next to the shell. With time, its roots began to encircle the shell. Finally, a root pierced it. The Wind blew into the crack and enlarged it, helping the Panther to emerge and take his rightful place on the Earth. The next creature to emerge was the Bird, who had pecked and pecked at the shell. It flew off immediately. Then other animals came out, one by one: Bear, Deer, Serpent, Frog, Otter. Then there were thousands of others, so many that none but the Creator himself could begin to count them. They all emerged and sought out their allotted place on Earth.

In Taoism, Tao is the nameless void, the mother of the Ten Thousand Things. Lao-Tsu considers it as that which gives eternally without being depleted and receives eternally without ever being filled. That which does not exist for itself can endure.

In Zen thought, All and Nothing are totally interconnected, inseparable and one and the same. Zen rejects the idea that a person could be a primary cause. In terms of origins, the Absolute is the true primary cause.

Sources: Wikipedia / Geneva Bible / Jean-Pierre Vernant / Gaston Bachelard / Mircéa Eliade
Cyril SEASSAU

We have assembled some information and references related to the film. They are far from exhaustive but will enable you to get a basic grasp of the subject. For more information, please consult the bibliography and webography.

Symbols of the Balance of Nature: from Cybele to Ecumene

Cybele (in Ancient Greek, *Kybele*) is a divinity of Phrygian origin whose worship spread to Greece and thence to Rome. She is the personification of the wild aspects of nature. She is presented as the Great Goddess, Great Mother or Mother of the Gods. Cybele is undoubtedly one of the major goddesses of Antiquity in the Near East.

She was born of the father of the Gods, abandoned at birth and adopted by a leopard or a lion, who initiated her into the mysteries which would enable her to provide the Sibylline prophecies. She possesses the keys to the earth and its riches and her throne is guarded by a pair of leopards or lions.

According to Greek mythology, she initiated Dionysus into her mysteries. The Romans adopted her in their turn and assimilated her cult into that of Ceres. In her honour, they would organise games in the spring, which were very popular during the Imperial era.

Cybele was worshipped throughout the ancient world. Principally associated with fertility, she also incarnated the wilder aspects of nature. She was honoured in Greece as early as the 5th century BC and her cult was also syncretised with that of the mother of the gods (Rhea) and Demeter.

Ecumene is a geographical notion to designate the inhabited world. In fact, the ecumene means more than just the group of inhabited lands, but also the relationship of humans with the place they live. The word shares its etymology with the word ecology and economy.

Figures of Excess and Transgression

Hubris (from Ancient Greek) is a Greek notion that can be translated by "excess". It's a violent feeling inspired by passion and, more precisely, by pride. The Greeks considered its opposites to be temperance, or moderation. In Ancient Greece, hubris was considered a crime.

The notion of sin, as conceived by the Christians, was foreign to them but hubris was a fundamental vice in their civilisation. A man who commits hubris is guilty of wanting to take more than the portion destiny allots him. The punishment for hubris is nemesis ("destruction"), the punishment of the Gods which acts to restore balance by forcing the individual back within the limits transgressed. If hubris can be seen as the wrongful transgression of divine limits, nemesis is the vengeful reversal of the act.

The morality of the Greeks was based upon moderation and sobriety, as illustrated by the adage *pan métrôn Ariston*, which means literally "moderation in all things", or better still “never too much” or “always enough”. Humans must always recognise their place in the universe.

In Greek mythology, Icarus was the son of the architect Daedalus, who was mainly known for dying after flying too close to the sun. The Icarus myth is about the desire of Man to go ever further, at risk of coming face to face with the limits of his human condition.

According to Hesiod's *Theogony*, it was Prometheus who created humans from a clod of clay and who, despite the opposition of Zeus, taught them how to work metal and other arts. After the victory of the new order of gods, headed by Zeus, over the Titans, Prometheus decided to give man fire, which he stole from the gods, thus defying Zeus. In order to punish him for his transgression, Zeus had him chained to a rock on Mount Caucasus and had an eagle devour his liver (which renewed itself each night) day after day. One of the twelve labours of Hercules was to liberate Prometheus from his torment.

In philosophy, the Prometheus myth is seen as a metaphor for the human acquisition of knowledge. The example is cited by the philosopher Hans Jonas in *The Imperative of Responsibility* to allude to the unconsidered risks inherent in certain human comportments and their consequences, as well as technologocal choices which are made without consideration for the planet’s social, ecological and economic balance.

The Promethian myth also contains some elements which were later incorporated into Christianity. From that angle, Prometheus is seen as a divine figure that came down from the heavens and suffered as a saviour of humanity.

According to certain Greek or Latin versions, he was chained to a rock, but according to others version, he was crucified on it. This myth can also be compared to the Biblical story of Adam and Eve, chased from Paradise for having tasted the fruit of the Tree of Knowledge of Good and Evil. These myths also evoke the concept of hubris – of Man's temptation to measure himself against the Gods or go beyond the limits of the human condition.

In Greek mythology, Pandora (which is Greek means "all gifts") was the first woman. She is associated with the myth of Pandora's box (which was, in fact, a jar). Pandora was created at the order of Zeus, who wanted to take revenge on men for the theft of fire by Prometheus. He offered Pandora to Epimetheus, Prometheus' brother. Pandora brought along a mysterious jar (or box) containing all the ills that plague humanity: Ageing, Illness, War, Famine, Misery, Madness, Vice, Deceit and Lust. The jar also contained Hope. It was forbidden to her to open the jar. Soon after her marriage, she gave in to temptation and opened it, thus liberating the ills contained inside. She closed the jar too late and only Hope, slower to react, remained inside. This explains why “hope springs eternal” even though humans may be beset by many afflictions.

Another symbolic interpretation of this myth could be ventured. The jar is not merely a simple amphora but a very large container, which serves to store grain. It is filled with grain through effort, working the fields – its content thus being symbolic of the human condition. In the end, it is a woman who opens it to feed her family.

This myth can be compared to the fall from grace of Adam and Eve in Genesis. In these two myths, it is a woman who, in spite of being cautioned (by God in the Bible, and by Prometheus and Zeus in the Pandora myth), commits an irremediable error (by eating the forbidden fruit, or opening the container), thereby plunging humanity into evil and suffering. The Biblical version is somewhat easier on the woman, who is coaxed by the serpent of temptation and who shares the blame with Adam, who did also consent to eat the fruit. Her “original sin” is supposedly punished by making childbirth painful.

Sources: Wikipedia / Geneva Bible / Jean-Pierre Vernant / Gaston Bachelard / Mircéa Eliade

Cyril SEASSAU

Armand Amar

Composer Armand Amar was born in 1953, in Jerusalem (Israel) and now lives in Paris, France. He spent his childhood in Morocco and, therefore, found himself dealing with several cultures – North African, Eastern and European – at an early stage.

In May 1968, he chose to devote himself to percussion music – in this case, the congas. With passionate commitment, working with Afro-Caribbean or Latin American percussionists, he set off on a musical quest symbolised, for him, by the sleeve of an album by the group Oregon illustrated by a forest of instruments. He went in search of that "world apart" promised by ethnic music, with instruments then seen as "exotic". During the ensuing years of total commitment he learned to play tabla, discovered the zarb and forged friendships with many prominent Latin American musicians, such as Patato Valdes.

In 1976, he discovered dance, at the invitation of the South African choreographer Peter Goss – a remarkable teacher, trained in anthropology. Suddenly, what he had been seeking was right there in front of him: a direct relationship with music, the power to improvise freely, the magic of authentic, on-the-spot exchanges. He has since worked with many choreographers, in all areas of contemporary dance. Two new, parallel ventures have further broadened his scope: his involvement with Patrice Chéreau's acting school and teaching at the *Conservatoire National Supérieur* (Higher National Music School) focused on the relationship between music and dance. The musical and spiritual influences at play are evident in in his film scores.

His works are particularly centred on Eastern music. He has written several ballets and original film scores, such as *"Lève-toi et marche"*, "The trail", "Days of Glory", "Live and become", *"Le premier cri"* and "Earth from above". Armand Amar has collaborated twice with the Greek director Costa-Gavras, on his films "Eyewitness" and "The Axe", with particularly dark and subtle scores for strings.

He also founded the record label Long Distance, in partnership with Alain Weber and with the help of Peter Gabriel. Today, the label boasts over 60 titles, in the area of traditional and world music.

While his scores for Costa-Gavras are dark and tortured, featuring deep, repetitive orchestral layers, as though the music is sounding-out the inner life of the characters (the inner rage of Mathieu Kassovitz in "Eyewitness" or the homicidal impules of José Garcia in "The Axe"), his music blending traditional instruments and symphony orchestra, follows in the direct tradition of this broad, luminous, highly atmospheric style, which blends strings and woodwind with rare and original instruments and voices from the crossroads of North Africa and the Middle East, where Amar spent his youth.

Bringing together the two cultures that shaped him, between symphonic (sometimes for small ensemble) and ethnic music, Arman Amar has developed his own special musical world. His approach is always more emotional and physical than intellectual.

Source: Wikipedia

World music

The expression “world music” is a generic term covering music that does not belong to the main Western trends (pop-rock, classical, jazz, rap, techno, etc.) and which contains ethnic or traditional components.

Since the 1960s, both English-speaking and French-speaking ethnomusicologists have used the term to describe:

• the traditional music of each country, be it “classical” “art music” or “folk music”;

• the popular music of each country, sometimes close to “light music” but incorporating string traditional elements.

Since the 198s the term has also come to describe:

• new styles of music resulting from a blending of varied musical heritages (style, type, origin etc.) partly from traditional cultures and partly from contemporary (often Western) trends, such as jazz, rock, etc. In fact, tese styles go back much further, having started to appear in the 1960s, sometimes under the name of ethno-jazz, “ethnic music” or folk-rock.

As this term has also been used for marketing and categorizing by record shops and record companies, there can be a resultant confusion: traditional artists, the artistic heirs of many generations of their country’s classical musicians, are put side by side with other artists – themselves heirs to globalization – who seek a new path by blending various types of music. These genres are nonetheless not mutually exclusive but are complementary, since often the same artists will play traditional music one day and modern, “hybrid” music the next.

Source: Wikipedia

Influences, sources and inspiration in Western music

The evolution of music is affected by issues of rupture and continuity. The development of Western classical music could be said to have continued smoothly from the Middle Ages until the dramatic rupture of the Second Viennese School (Berg, Schoenberg, Webern), which abolished the tonal system* (the asterisk refers to the glossary at the end of the file) – the basis of all musical composition up to that point.

Previously, styles evolved, and composition itself, from classicism to romanticism, then post-romaticism, etc. But neither the scale of notes nor the way of combining and structuring them (harmony) changed.

In a context of continuity – in this case, an organized scale of notes based around a tonic and a dominant* – how can you create something new? All composers have worked on ways to depart from the original tonality* of a piece, going further and further with greater and greater audacity, until Wagner, whose music does not assert one tonality but is in continual modulation*.

Throughout the history of music, another solution has been to integrate into a piece musical elements from other cultures – folk, traditional, exotic or oriental (or at least perceived as such).

From the 16th to the 18th centuries, an Orientalist fashion, known as “Turquerie”, prevailed. Composers would suggest Turkey, by their own individual represention of Eastern music, in a spirit of evocation. Their approach was far from ethnomusicological: the instrumentation, harmony, writing and the scale used remaining perfectly and strictly Western. A good example is Mozart’s opera *Die Entführung aus dem Serail*.

This phenomenon has existed throughout the history of music. Closer to our own time, Claude Debussy worked with “defective” scales* (the pentatonic scale*, suggesting the Far East) and was inspired by the East – which even extends to his titles: *“Estampes”, “Pagodes”, “Pour la danseuse aux croatales”, “Pour l’Egyptienne”, “Syrinx”,* etc.

In the same way, Ravel drew inspiration from Eastern and Spanish music. Examples include his “*Rhapsodie espagnole, “Shéhérazade”, “Don Quichotte à Dulcinée”, “Boléro”, “Habanera”, “Chansons populaires grecques”, “Tzigane*, etc.

Composers such as Béla Bartók or Zoltán Kodály occupy another position, combining composition with musicological research into the folk-music repertoire. Their research led them to collect and arrange popular and traditional songs, which then influenced their own compositions, both in terms of form and harmonic writing.

It remains to mention one last approach – that of the ethnomusicologists who study the music of different cultures and record the musicians *in situ*, whether the music is traditional, folk, classical or “art music”.

Many of today's musicians, including Armand Amar, draw inspiration from other cultures, just as did their predecessors, by integrating ethnic or traditional elements into their compositions, either in the instruments, vocal techniques and even the scales used. It is therefore important, when talking about "world music", to distinguish whether you are referring to works by Western composers integrating elements from other cultures or to the classical, "art", traditional or folk music specific to each country.

Repetitive music

Repetitive music is a trend within a broader genre known as minimalist music – itself a branch of contemporary music that appeared in the 1960s in the U.S. Its main exponents are Steve Reich, Philip Glass, La Monte Young, John Adams, Terry Riley, Michael Gordon and, later, Michael Nyman. British composer Michael Nyman coined the term "minimalist", in 1974.

Although any classification is bound to be limiting, it is generally agreed that the aesthetic of minimalist music is based on three characteristics:

- a return to consonant harmony (a return to the harmonies of "classical" music);
- the repetition of musical phrases, figures or cells, with or without small, gradual variations;
- a steady pulse.

The trend of repetitive music is also a return to tonal music, with the profuse repetition of melodic micro-cells, sometimes intermingled with and playing with micro-intervals (such as quarter-tones* or even eighth-tones*).

The principles of minimalist music can be traced back to certain works by Eric Satie ("*Vexations*" of 1892-3) and Marcel Duchamp ("Readimades", "Erratum musical") and even Schoenberg ("*Farben*" op. 16 no. 3).

Although minimalist music was born mainly in the U.S., its strongest influences come from the Indian, Indonesian and Ghanaian cultures. The composer Steve Reich, for example, studied the bases of Indonesian gamelan music and African percussion.

The music of La Monte Young comes from his study of classical Indian musical theory and Indian music was also the inspiration for Terry Riley for "In C" (1964) and Philip Glass for his operas. In the 1970s, Reich went to Africa to study Ghanaian drumming and included the basic elements in his music for "Drumming" (1970). Finally, a major influence on a part of the music of Reich and Glass in particular is Indonesian gamelan music and, more broadly, Balinese music, which they have both studied.

Source: Wikipedia

Illustrative music, descriptive music, programme music

Well before composers worked with film makers to illustrate, enrich or strengthen a visual image, a dramatic development or a story, other composers tried to evoke ideas, natural phenomena, feelings or living beings by their music.

The earliest of these procedures was called madrigalism, after the madrigals of the 15th century, in which the composers added effects to accompany the text they were setting to music. These effects could be spatial, such as a high note for anything high, angels, Heaven, noble feelings, joy, etc. Low notes were used to anything low, Hell, the Devil, deceit, sadness, death, etc. Musical movement leading down into the bass or up to the notes thus became laden with meaning.

In instrumental music (i.e. music without words), musicians have also sought to imitate Nature, describing birds, storms and tempests by the use of rhythm, orchestration and timbre and the specific instruments. The most famous example of this must be Vivaldi's "Four Seasons", but the tradition runs throughout the history of music.

The last "evoking" procedure to consider is so-called programme music, much used in the 19th century. This is a genre in which the music usually follows, for example, a text, a poem, an action, a legend, etc., with the aim of describing, amplifying, prolonging or commenting on it.

In the following list of composers and works, we have not attempted to be exhaustive, of course, but have tried to illustrate the ideas mentioned above, with relatively well-known and accessible examples

World music – in the sense of the traditional, classical, "art music", folk and popular music specific to each country:

- Collection OCORA – Radio France, aux éditions Harmonia Mundi http://www.radiofrance.fr/radiofrance/kiosque/liste.php?support=11
- CDs on the Long Distance label http://www.longdistance.fr/

Influences and quotations in Western classical music:

- W. A. Mozart: "Die Entführung aus dem Serail"
- Claude Debussy: "Deux Arabesques", "Marche écossaise", "Estampes", "Children's corner", "Six épigraphes antiques", "Images pour orchestre", "Syrinx", etc.
- Maurice Ravel: "Alborada del gracioso", "Ma Mère l'Oye", "Rhapsodie espagnole", "Tzigane", "Habanera", "Boléro", "Shéhérazade", "Chansons populaires grecques", "Mélodies hébraïques", "Don Quichotte à Dulcinée", "L'Heure espagnole", etc.

Musicologist composers:

- Béla Bartók: works for piano: “Six Romanian Folk Dances”, “Ten Romanian Christmas Carols”, “Three Hungarian Folksongs from the Csík District”, “Fifteen Hungarian Peasant Songs and Dances”. Works for orchestra: « Romanian Folk Dances ». Works for choir: “Hungarian Folk Songs” and “Slovac Folk Songs”, etc.
- Zoltán Kodály: “Two folksongs from the Zobor region”, Énekszó – 16 songs to folksong texts”, “Hungarian Rondo”, Two choruses for children after Hungarian folksongs, “Dances of Marosszék”, 57 folk ballads and folksongs in 10 volumes, etc.
- Joseph Canteloube gathered, arranged and published numerous French traditional songs. His “Songs of the Auvergne” are available on CD.

Repetitive music, minimalist music:

- John C. Adams: “Shaker Loops” for orchestra, (1978), “Nixon in China”, opera (1985-1987), “The Death of Klinghoffer”, opera (1990-1991)
- Philip Glass: “Glassworks” (1981), “Einstein on the Beach” (1976), “Satyagraha” (1980), “Akhnaten” (1983), “The Hours” (2002, film music)
- Steve Reich: “Music for 18 Musicians” (1976), “Music for a Large Ensemble” (1978), “Tehillim” (1981), “The Desert Music” (1984), “Different Trains” (1988), “The Cave” (finished in 1993), “City Life” (1995)
- Michael Nyman: “The Man Who Mistook His Wife for a Hat” (opera, 1987). Film music: “The Draughtsman's Contract” (1982), “A Zed and Two Noughts” (1985), “Drowning by Numbers” (1988), “The Cook, the Thief, His Wife and Her Lover” (1989), “The Piano” (1993), “Gattaca” (1997)

Descriptive music:

- Antonio Vivaldi: “The Four Seasons”
- Clément Janequin: *“La Chasse”, “Le Chant des oiseaux”*
- Camille Saint-Saëns: “The Carnival of the Animals”
- Franz Schubert: “Erlkönig” (*lied*)

Programme music: “The Sorcerer’s Apprentice”, to the poem of that title by Goethe (Der Zauberlehrling)

- Hector Berlioz: “Symphonie fantastique” (original title: “Episode in the life of an artist, fantastic symphony in five parts”)
- Camille Saint-Saëns: “Danse macabre”, after the poem of that title by Henri Cazalis
- Ludwig van Beethoven: Symphony no 6 in F major, the “Pastoral”. (NB. The film Soylent Green, by Richard Fleischer uses this symphony to describe nature that has disappeared.)
- Modest Mussorgsky: “Night on a Bare Mountain”, inspired by a short story by Nicolai Gogol, “St. John’s Eve”.

Glossary:
The définitions given below are intended purely to aid comprehension of the foregoing texts and should not be considered as thorough and complete definitions of the concepts in question.

Tonal system: This refers to a system built upon an ordered and structured set of notes (a tonality). In the simplest scenario, a piece of tonal music starts from a chord built from the note that defines its key (the tonic), to proceed, in the course of the piece, towards a chord based on the fifth note (the dominant) of the key, before returning to a final chord based on the tonic. The reality of musical composition is, of course, much more complex and the routes taken much more intricate!

Scale: This refers to the whole series of different notes used to compose. In Western classical music, the degrees of the scale are separated in tones and semitones – very fixed intervals. In other scales, the degrees may be separated by intervals that are just as fixed, but they might be greater or smaller that the basic intervals of Western music, which may makes the music sound strange to Western ears.

Continual modulation: Before Wagner, a piece was constructed on the basis of a main key, from which it temporarily departed as the piece progressed, going into another key, before returning to the home key at the end. This changing of key is called modulation. As the history of music advanced, composers strayed further and further into into keys that were remote from the piece's home key, until Wagner came along. His music is a particularly good example of the continual changing of key – continual modulation.

Defective scale: This is a scale which lacks certain notes of the "traditional" scale of Western music – for example, the pentatonic scale, used by Debussy, that can be expressed as Do, Re, Mi, Sol, La, in stead of the complete scale of Do, Re, Mi, Fa, Sol, La, Ti.

Quarter-tones and eighth-tones: Western classical music is based on notes separated by intervals, the basic intervals being the tone (C – D, for example) and the semitone (E – F, D – E flat, G – G flat, for example). Contemporary music explores the use of smaller intervals, which were not used until recently, such as quarter-tones or eigth-tones, but which can be found in the music of other cultures.

Philippe AUZET

- Aim: Creating awareness of the timescale (Sequences 1 to 5)
Construct a timeline of life on earth:
- from the data provided in the film regarding the earth's evolution, such as the dates of the most important events.

- Aim: Understanding the water cycle, showing where water use by humans occurs in the cycle. (Sequence 3)
Experiments that demonstrate the water cycle:
Heat water in a pot then place a cold lid over the steam to condense and wait until the "rain" falls back into the pot. Compare with the schematics which represent the water cycle in nature, for example with the animation on the website of the *Cité des Sciences et de l'Industrie*:
http://www.cite-sciences.fr/english/ala_cite/expositions/eau_pour_tous/planete_bleue.php?rub=planete_bleue
Complete the schematic of the natural cycle by adding the derived artificial networks created by humans to facilitate water use (home, garden, hydroelectricity, leisure activities, etc.).

Aim: Understanding photosynthesis: "trees that feed on sunlight" (Sequence 4).
Create a strip cartoon representing the successive stages of the process. Look at this animated depiction of the principle of photosynthesis:
http://www.cite-sciences.fr/francais/ala_cite/expo/tempo/planete/portail/labo/carbone/photosyntese.html
Create a strip cartoon which would enable the reader to the role sunlight plays in enabling a plant to generate its own organic material from CO^2 and water.

- Aim: Understanding the function of decomposers in the recycling of organic materials (Sequence 4).
Observation of the litter and soil fauna which contribute to the breakdown of leaf litter and the creation of fertile soil: Create a Berlese Funnel to collect the fauna and observe with a magnifying glass their activity and role in the creation of soil. You can see a model of a Berlese Funnel on, for example:
http://www.clubsjrd.ird.fr/clubactu/jrdlemarin/sol4.htm
http://www.cals.ncsu.edu/course/ent591k/berlese.html
Then survey and identify the harvested litter fauna and determine the specific role they play in creating soil and breaking down matter to be recycled into soil.

- Aim: Gaining awareness of the impact of various means of transport on the environment.
Compare the energy consumption of various means of transport (Sequence 6). Make a list of all the possible ways you could go from your house to school – the more original the better! In each case, determine the source of the energy that enables you to cover the distance. Calculate the energy consumption and compare its relative impact upon the environment.

- Aim: Measuring the impact of our diet on the greenhouse effect (Sequence 7).
Compare various menus and their levels of impact upon sustainable development. Meat is a major source of greenhouse gases. Before making it to our plates, the animals have to be fed and the production of their food entails the use of nitrogen-based fertilizers, which are responsible for nitrogen protoxide emissions – which contribute to the greenhouse effect. You need 7 kg of feed to produce 1 kg of beef and 2 kg of grain to produce 1 kg of chicken.

Considering that a person needs to consume around 2,000 calories per day, determine the amount of calories a kilo of beef contains then ascertain how many people one could feed with 7 kg of grains as opposed to 1 kg of beef, and 2 kg of grains versus 1 kg of chicken. Also, ruminants (cows, goats and sheep) emit methane gas: 15 to 20% of global methane emissions come from livestock.

Not all meats have the same impact on greenhouse gases: for example the production of 200g of chicken creates ten times less greenhouse gases than the same amount of beef.

- Aim: Learning about the basics of renewable energy (Sequence 7).
– An exchange with elderly people about the uses of energy in the past as compared to today.
– A visit to an HEQ (High Environmental Quality) worksite.
– Create models (mini greenhouses, solar ovens, solar roundabouts). You can find plans at:
http://www.raee.org/administration/publis/upload_doc/20060308051439.pdf

- Aims: Measure the stress each one of us puts on the planet in terms of our lifestyle and patterns of consumption. Establish the overexploitation of the Earth's resources (Sequence 12).

Calculate your carbon footprint on specific websites.
Look for ways to reduce it.
(A carbon footprint measures the stress that humans put on nature. It is a tool for evaluating the productive surface necessary for a population in terms of their consumption of resources and the need to manage their waste.)

Aim: Making sustainable development a value that determines decisions and the habits of all the members of an educational establishment. Adopt the policies of an ecologically responsible educational establishment (Sequence 17): observe daily practices in the educational establishment and get together to think about new strategies for evolving towards eco-responsibility using approaches similar to those outlined in Agenda 21.

Aim: Heightening the student's awareness of water resource management, think about the uses of water and methods of conserving it (Sequence 9).
Measure daily water consumption:
Over the course of a day, shut off your water and just use water you've reserved and the contents of buckets for your daily needs. Count the number of buckets each person uses and calculate the amount of water used. On the following day, check the consumption of water on your meter and compare it.

- Aim: Raising awareness of the crucial importance of biodiversity in the creation of medicines (Sequence 10).
Use medicinal plants:
Go on a hunt for medicinal plants (accompanied, of course, by an expert!) and create a variety of preparations from recipes (infusions, balms, etc.). If you get stung by nettles, you can crush a plantain leaf in your hands and rub it over the irritated area. Thyme and mother-of-thyme in an infusion are powerful antiseptics that help combat the flu, sinusitis, coughs, and colds. Willow bark was used as a precursor to aspirin and is recommended for fevers accompanied by flu symptoms. Arnica flowers make an excellent preparation to treat bruises. One of the major painkillers, morphine, is an extract of poppy. Research how many medications in our pharmacies are of natural origin or inspiration.

- Aims: Measuring the risks linked to the rising sea levels. Gaining understanding about “climate refugees” (Sequence 14).
Depict the rising sea levels:
Use a map with a scale of 1/25,000 of a coastal region with contour lines. Colour in the area of land that would be covered if the sea level rose five metres. Imagine what happens to the populations that are affected.

- Aims: Relating the messages of the film to your personal life and derive lessons from them. Learning to express these ideas in a debate, while respecting the rules of the debate.
Once the debate is concluded:
Get a group together to organize debates relative to the major questions the film poses: How are we to satisfy the growing demands of the world's population? Will the world be a global village? Why have we persisted in ignoring the lessons of our past? Must we construct walls to separate humans? Or any other questions raised by the students themselves after seeing the film.

- Aim: Explaining the organization of our landscapes and the management of our natural heritage according to regions (Sequence 17).
Reading the landscape:
From a high hill, create a landscape according to “landscape units” (for example fields, forests, prairies, developed sites and human infrastructures), choosing different colours for each unit (for example red for prairies, blue for forests). Going over the landscape underlines the organizational choices made and the management and degree of awareness of the original natural heritage of a given area. Use the images of the film to gain awareness of the impact of human use and management of natural areas.

Denise JOUVRAY

17 - REFERENCES AND ANNOTATED WEBOGRAPHY

FILE Resources for further study

Additional research resources relating to the themes discussed in the film.

1- Institutional Websites

The link to the National Education website that supports the Education on Sustainable Development Project:
http://eduscol.education.fr/

2- The Pedagogical Partners of *Home*

GoodPlanet is a non-profit association according to the Association Laws of 1901. It was created on 1st July 2005 and is presided over by Yann Arthus-Bertrand. Its aim is to heighten public awareness of issues pertaining to environmental protection and to provide concrete responses to the ecological crisis. GoodPlanet Junior attempts to incorporate projects of discovery and ecological experimentation into daily life. Projects include holidays arranged in exceptional spots in the heart of nature, to encourage the development of eco-citizenship in future generations. It is intended for children of all social and regional origins and provides holidays for children who would not otherwise have access to them.
http://www.goodplanet.org/

GoodPlanet has also set up a French/English website of reference, aimed at extending awareness raising activities by informing the public of the sustainability issues at stake and providing a large collection of environmental data worldwide. GoodPlanet info intends to portray the environmental and social state of the world, and also compiles a series of sustainability indicators (35 in total) and maps. Best practices from across the world are also described so as to give examples of what others do to protect the environment.
www.goodplanet.info

A movement promoting education for people from all walks of life, the Ligue de l'Enseignement (Educational League) invites citizens to unite in the struggle against inequality, to make their voices heard in solidarity and be actors in disadvantaged areas, in order to create a more just and free society based on solidarity.

The educational programme "Citizenship, Environment and Sustainable Development" is an environmental education project created to promote sustainable development. In order to permanently fix the idea of sustainable development into "hearts and minds", as well as in practice and within structures, the Ligue de l'Enseignement has created the CED label, particularly with regard to its centres holding Discovery Courses.
http://www.laligue.org

Denise JOUVRAY and Anne-Marie MICHAUD

Aims
- Discovering the forest
- Understanding its place and its role on our planet
- Defending the forest

I- Discovering the forest
The film *Home* shows us some extraordinary landscapes. The aim of the film is to make us love our planet and to show that it is a treasure common to all of humanity and that we must act to protect it since it's in danger – which puts all humanity in danger too. To reflect more about it, we will examine forests in more detail: the one that covers our planet like a green belt, the highest, the oldest, the most unusual and the richest in biodiversity.

- The forest that encircles the planet
At the edge of the Arctic, the taiga forms a veritable belt around the earth. These forests contain a third of all the trees on the planet.

You can discover more about it on this hypermedia page:

http://en.wikipedia.org/wiki/Taiga

In the "vegetation" and "fauna" chapters you can find the species of trees that grow there and the animals that need the taiga as their habitat. The taiga zones are very fragile and the degradations caused by humans will leave their mark for a very long time. It takes several centuries for these trees to grow to their adult height.

- The tallest and oldest trees – in the U.S.
In California, in the United States, the giant sequoias, over 100 metres high, are the largest living organisms on the planet. Here are some photos for your collection:

http://images.google.com/images?hl=fr&client=safari&rls=fr&um=1&q=séquoia&sa=N&start=18&ndsp=18

The most ancient living organisms are Bristlecone pines, which grow in the Rocky Mountains. Here is some basic information:

http://en.wikipedia.org/wiki/Bristlecone_pine

- The strangest and most unique forest in the world
The baobabs on the island of Madagascar are a type of vegetation unique on the planet.

- The forest with the richest biodiversity

The Amazonian rainforest is in South America. It holds many secrets, including the ability to increase our understanding of life on earth and provides many medicinal plants of great value. The largest rainforest on the planet, it stretches across 5.5 million square kilometres. Some 60% of it is in Brazil, but eight other South American countries contain a portion of it: French Guiana, Bolivia, Colombia, Ecuador, Guiana, Peru, Suriname and Venezuela. It is the greatest cradle of biodiversity on the planet and contains a tenth of the entire world's fauna and over 40,000 different known plant species:

http://en.wikipedia.org/wiki/Amazon_rainforest

II- Understanding the importance of forests and their role on our planet

The forest is an ancient treasure that predates humans and belongs to all life on the planet and all generations. It is steadily decreasing throughout the world, but growing in Europe, and covers approximately 30% of the earth's landmass. Reservoirs for terrestrial biodiversity, the earth's forests are also a major force for decreasing climate change. We must protect them.

The NGO Greenpeace has a dossier on ancient forests:

http://www.greenpeace.org/international/campaigns/forests

This 9-page document can help you prepare classroom materials.

The ancient forests are the remaining forests on the planet that have been naturally formed and have been less impacted by human activity. They have taken thousands, even millions of years to form and are an integral part of the correct functioning of ecological and climatic processes.

III- Defending the forests

Human exploitation of forests

Agriculture

The major cause of deforestation in Africa and other tropical countries is conversion to land for agriculture. As the need for arable land increases exponentially due to the need to feed humanity, millions of acres of tropical forests are going up in flames throughout Africa, Asia and Latin America. But trees are made partly of carbon. When wood is burned, the carbon is expelled and trapped in our atmosphere. According to UNEP (the United Nations Environment Programme), 20 to 25% of annual emissions of carbon dioxide are from the burning of forests for agricultural purposes.

Trees are the largest and most efficient living reservoirs of carbon monoxide, the "greenhouse gas" that contributes to global warming. They are estimated to contain around 1,000 billion tonnes of it, which is to say around 166 years worth of the world's carbon monoxide emissions, at current levels.

The Amazonian rainforest is in great danger.

The importation of wood

Considering that the European Union is the largest importer of wood in the world, Europe has a particular responsibility to help put an end to deforestation and illegal exploitation of forests and their negative impact on climate and biodiversity. Around 80% of the exploitation of forests in Indonesia is illegal. Between 60% and 80% of Amazonian exploitations in Brazil are illegal. In Cameroon, the figure is 50%. Some 20% of wood harvesting in Russia is illegal.

There are solutions for every challenge. It's just a question of collective will. We must all be convinced that we must act for the same goals. That is why the film *Home* was produced and why several associations and NGOs are working diligently to come up with solutions. For example, the challenges as well as solutions to the problem of world timber exploitation are well explained on this website:
http://assets.panda.org/downloads/illegal_wood_for_the_european_market_july_2008.pdf

Concerning the products we consume today and in the future, humans will have to find, or have already found solutions to save the planet. The most pessimistic estimate is that we have 20 years to do so.

19 - THE BEAUTY OF NATURE [Milan Presse files]

Humans observe nature's beauty and seek to protect it
Aims:
Gaining awareness of the beauty of nature.
Gaining awareness of the responsibility of humans to safeguard them.

I- The splendours of nature
"Atlantis"© Gaumont

Luc Besson is the author of *Atlantis*, an extraordinary documentary on the wonders of the ocean depths and the animals who live there. He is fascinated by our planet, which is why he has helped Yann Arthus-Bertrand produce the film *Home*. Yann Arthus-Bertrand also loves nature and puts all his energy into protecting it. He has donated hundreds of his photos, which can be seen on the following site:

http://www.yannarthusbertrand2.org/

Each photo, like the one below, is accompanied by a commentary to enable us to understand what is happening on our planet and alert us to what could happen to it.

"Floating Prairie" of *Victoria amazonica* water lilies, Pantanal, Mato Grosso do Sul, Brazil (19°14' S - 57°02' O).

The giant water lily, with leaf diameters that can reach nearly 10 ft**,** grows in the tropical fresh waters of South America. The Pantanal region is dry for six months of the year and flooded the other six. During the dry season, aquatic species find refuge in swamps and perennial lakes. Stretching across Brazil, Bolivia and Paraguay, Pantanal is the largest freshwater wetland zone in the world, occupying 72,490 square miles. A unique network of natural ecosystems contains abundant flora and fauna but only 1.3% of its total surface is protected within reserves and national parks. Registered on UNESCO's world heritage list since 2000 and protected from human incursions by regular flooding, the region's biodiversity is nevertheless threatened. The film *Home* focuses on the beauties of the planet, shown as a treasure that we must share. It also shows the presence of humans and their positive and negative contributions. The planet is in danger but some people are trying to save it. One example is UNESCO's world heritage list, which Yann Arthus-Bertrand discusses.

II- The place of humans
The UNESCO World Heritage List
Our heritage is the legacy of the past we still enjoy today and that we are responsible for preserving for generations to come. The World Heritage Sites belong to all the peoples of the world, no matter where they are located. The United Nations Educational, Scientific and Cultural Organization (UNESCO) works to identify, protect and preserve the world's cultural and natural heritage considered of exceptional value to humanity. This is part of an international treaty ratified in 1972.

UNESCO's world heritage mission consists of encouraging countries to sign the World Heritage Convention and ensure the protection of their cultural and natural heritage. It assists these countries to safeguard world heritage sites by providing technical assistance and professional training; participating in activities undertaken by these countries to raise awareness among the public of the importance of the preservation of their cultural and natural heritage and encouraging international cooperation regarding all aspect of the preservation of the natural and cultural heritage of the world.

The magic key that opens the doors onto all these sites that humanity has decided to protect through UNESCO exists! Each country appears in alphabetical order and a little card on the right of the page gives its location:

http://whc.unesco.org/en/list

Understanding and joining forces to help Earth
Each one of us must make an effort to understand what is going on and take action in our daily lives. That is the essential message of the film *Home*. We must recognize our responsibility. "There are over six billion of us on the earth and there can be no sustainable development if we cannot manage to live together," says Yann Arthus-Bertrand.

The film *Home* portrays the wonders of human achievement but also the massive damage humans wreak through selfishness. The film deals with protecting nature. One must also understand what is happening. For example, Wikipedia has created three portals which enable one to research in three different but complementary areas:

– First area: ***Ecology as Science***, which deals with facts about ecosystems, ecological niches and relationships between living species, the study of populations and their variations, etc.

http://en.wikipedia.org/wiki/Portal:Ecology

- Second area: ***Sustainable Development***, which deals with political aspects of ecology, ecological movement, pollution and the fight against it, energy and its uses, etc.

http://en.wikipedia.org/wiki/Portal:Environment

- Third area: ***Nature Conservation***, which deals with animals and plants threatened with extinction, etc.

http://en.wikipedia.org/wiki/Nature_conservation

You can use this portal to begin to learn about species and natural areas in Europe that are threatened.

Home nevertheless has a message of hope. Yann Arthus-Bertrand indicates a very human path we can follow, one of love and action, offering us this image of the mangrove forest, part aquatic, part terrestrial. This forest, photographed in New Caledonia is a French territory.

FILE 20 - OUR CARBON FOOTPRINT [Milan Presse files]

What does your carbon footprint look like?
Home shows us the amazing beauties of our planet...and its fragility. In the last fifty years, humans have modified the Earth more than during the entire history of humanity. Each little bit we can do counts. Discover why and how, through reducing your carbon footprint.

What you will learn:
1-Discover what a carbon footprint is.
2-Calculate your carbon footprint.
3-What you can do.

1-What is it exactly?
The portion of the planet you consume to live. Each day, as we eat, sleep, move about, or dress, we use up the Earth's resources. Each of our actions has an impact on the environment. That is what we call a carbon footprint. As long as we remain reasonable, all is well. But when we begin to consume more than the Earth can provide, we'd better watch out. For example, if everyone lived like an American, we would need five planets to meet all our needs! What is the solution? Calculate your carbon footprint...and change your habits if necessary.

Some figures...
– For 10 years, forest equivalent to 19 soccer fields is destroyed every minute. And yet forests are home to more living organisms than any other place on the planet.
– Only 3% of the Earth's water is fresh. Out of 100 drops, you can only drink three. Another good reason to turn off the tap carefully!
– Some 75% of carbon dioxide emissions, the main substance responsible for global warming, comes from human activity (automobile traffic, heating, etc.). Wouldn't it be better to take the train to see your grandparents?

2 – Calculate your carbon footprint
There are many sites on the Internet that propose ways to do this test. Just pick one! (You might do this with your parents, since many questions are a bit difficult.)

Quiz
According to you, what action has the least impact on the planet? Test your knowledge!
1/ To cool off in the summer time, you:
a- close the shutters exposed to the sun
b- turn on the air conditioning
c- use a fan

2/ When you brush your teeth, you:
a- keep the tap running
b- fill a glass
c- turn off the tap

3/ Your school is 800m away. You go there:
a- by car
b- by bus
c- on foot.

Answers: 1-a, 2-c, 3-c.

Did you know that?
We currently need 1.3 planets, on average, to meet the needs of the world's population. (Source: 2005 figures Globalfootprint)

3 - What you can do
Reducing your impact on the environment is easy! Here are some examples:

- When snacking, avoid individually wrapped products. Select fruits that are easy to transport (apples, tangerines, bananas, apricots, etc.). Carry your cakes or sandwiches in a plastic container. You can even personalize this by decorating it!
- In your bedroom, lower the heat to 18ºC. This is enough to sleep well. If you're cold, put on an extra sweater! And don't forget to turn out the lights when you leave a room.
- At school, use both sides of your paper. If one of your notebooks isn't finished at the end of the year, keep it for scrap paper or turn it into a drawing pad.

Did you know that...?
Locavores are people that only eat products cultivated near them and who prefer seasonal products. In the United States, these new consumers are in the news. In France, we are just beginning to get familiar with this way of eating. On average, a fruit or a vegetable produced locally consumes 10 to 20 times less than a fruit or vegetable imported from a distant country.

LEGAL NOTICES

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