IN-CLASS EXERCISES

READING EXERCISE 1

WHAT DESTROYED THE CIVILISATION OF EASTER ISLAND?

A. Easter Island, or Rapu Nui as it is known locally, is home to several hundred ancient human statues - the moai. After this remote Pacific island was settled by the Polynesians, it remained isolated for centuries. All the energy and resources that went into the moai - some of which are ten metres tall and weigh over 7,000 kilos - came from the island itself. Yet when Dutch explorers landed in 1722, they met a Stone Age culture. The moai were carved with stone tools, then transported for many kilometres, without the use of animals or wheels, to massive stone platforms. The identity of the moai builders was in doubt until well into the twentieth century. Thor Heyerdahl, the Norwegian ethnographer and adventurer, thought the statues had been created by pre-Inca peoples from Peru. Bestselling Swiss author Erich von Daniken believed they were built by stranded extraterrestrials. Modern science - linguistic, archaeological and genetic evidence - has definitively proved the moai builders were Polynesians, but not how they moved their creations. Local folklore maintains that the statues walked, while researchers have tended to assume the ancestors dragged the statues somehow, using ropes and logs.

B. When the Europeans arrived, Rapa Nui was grassland, with only a few scrawny trees. In the 1970s and 1980s, though, researchers found pollen preserved in lake sediments, which proved the island had been covered in lush palm forests for thousands of years. Only after the Polynesians arrived did those forests disappear. US scientist Jared Diamond believes that the Rapanui people - descendants of Polynesian settlers - wrecked their own environment. They had unfortunately settled on an extremely fragile island - dry, cool, and too remote to be properly fertilised by windblown volcanic ash. When the islanders cleared the forests for firewood and farming, the forests didn't grow back. As trees became scarce and they could no longer construct wooden canoes for fishing, they ate birds. Soil erosion decreased their crop yields. Before Europeans arrived, the Rapanui had descended into civil war and cannibalism, he maintains. The collapse of their isolated civilisation, Diamond writes, is a 'worst-case scenario for what may lie ahead of us in our own future'.

C. The moai, he thinks, accelerated the self-destruction. Diamond interprets them as power displays by rival chieftains who, trapped on a remote little island, lacked other ways of asserting their dominance. They competed by building ever bigger figures. Diamond thinks they laid the moai on wooden sledges, hauled over log rails, but that required both a lot of wood and a lot of people. To feed the people, even more land had to be cleared. When the wood was gone and civil war began, the islanders began toppling the moai. By the nineteenth century none were standing.

D. Archaeologists Terry Hunt of the University of Hawaii and Carl Lipo of California State University agree that Easter Island lost its lush forests and that it was an 'ecological catastrophe' - but they believe the islanders themselves weren't to blame. And the moai certainly weren't. Archaeological excavations indicate that the Rapanui went to heroic efforts to protect the resources of their wind-lashed, infertile fields. They built thousands of circular stone windbreaks and gardened inside them, and used broken volcanic rocks to keep the soil moist. In short, Hunt and Lipo argue, the prehistoric Rapanui were pioneers of sustainable farming.

LIVEWORKSHEETS

E. Hunt and Lipo contend that moai-building was an activity that helped keep the peace between islanders. They also believe that moving the moai required few people and no wood, because they were walked upright. On that issue, Hunt and Lipo say, archaeological evidence backs up Rapanui folklore. Recent experiments indicate that as few as 18 people could, with three strong ropes and a bit of practice, easily manoeuvre a 1,000 kg moai replica a few hundred metres. The figures' fat bellies tilted them forward, and a D-shaped base allowed handlers to roll and rock them side to side.

F. Moreover, Hunt and Lipo are convinced that the settlers were not wholly responsible for the loss of the island's trees. Archaeological finds of nuts from the extinct Easter Island palm show tiny grooves, made by the teeth of Polynesian rats. The rats arrived along with the settlers, and in just a few years, Hunt and Lipo calculate, they would have overrun the island. They would have prevented the reseeding of the slow-growing palm trees and thereby doomed Rapa Nui's forest, even without the settlers' campaign of deforestation. No doubt the rats ate birds' eggs too. Hunt and Lipo also see no evidence that Rapanui civilisation collapsed when the palm forest did. They think its population grew rapidly and then remained more or less stable until the arrival of the Europeans, who introduced deadly diseases to which islanders had no immunity. Then in the nineteenth century slave traders decimated the population, which shrivelled to 111 people by 1877.

G. Hunt and Lipo's vision, therefore, is one of an island populated by peaceful and ingenious moai builders and careful stewards of the land, rather than by reckless destroyers ruining their own environment and society. 'Rather than a case of abject failure, Rapu Nui is an unlikely story of success', they claim. Whichever is the case, there are surely some valuable lessons which the world at large can learn from the story of Rapa Nui.

Question 1-4

Complete the summary below.

*Choose **ONE WORD ONLY** from the passage for each answer.*

*Write your answers in boxes **1-4** on your answer sheet.*

Jared Diamond's View

Diamond believes that the Polynesian settlers on Rapa Nui destroyed its forests, cutting down its trees for fuel and clearing land for **8** ..... Twentieth-century discoveries of pollen prove that Rapu Nui had once been covered in palm forests, which had turned into grassland by the time the Europeans arrived on the island. When the islanders were no longer able to build the **9** ..... they needed to go fishing, they began using the island's **10** ..... as a food source, according to Diamond. Diamond also claims that the moai were built to show the power of the island's chieftains, and that the methods of transporting the statues needed not only a great number of people, but also a great deal of **11** .....

LIVEWORKSHEETS

READING EXERCISE 2

THE STORY OF SILK

The history of the world's most luxurious fabric, from ancient China to the present day

A. Silk is a fine, smooth material produced from the cocoons - soft protective shells - that are made by mulberry silkworms (insect larvae). Legend has it that it was Lei Tzu, wife of the Yellow Emperor, ruler of China in about 3000 BC, who discovered silkworms. One account of the story goes that as she was taking a walk in her husband's gardens, she discovered that silkworms were responsible for the destruction of several mulberry trees. She collected a number of cocoons and sat down to have a rest. It just so happened that while she was sipping some tea, one of the cocoons that she had collected landed in the hot tea and started to unravel into a fine thread. Lei Tzu found that she could wind this thread around her fingers. Subsequently, she persuaded her husband to allow her to rear silkworms on a grove of mulberry trees. She also devised a special reel to draw the fibres from the cocoon into a single thread so that they would be strong enough to be woven into fabric. While it is unknown just how much of this is true, it is certainly known that silk cultivation has existed in China for several millennia.

B. Originally, silkworm farming was solely restricted to women, and it was they who were responsible for the growing, harvesting and weaving. Silk quickly grew into a symbol of status, and originally, only royalty were entitled to have clothes made of silk. The rules were gradually relaxed over the years until finally during the Qing Dynasty (1644—1911 AD), even peasants, the lowest caste, were also entitled to wear silk. Sometime during the Han Dynasty (206 BC-220 AD), silk was so prized that it was also used as a unit of currency. Government officials were paid their salary in silk, and farmers paid their taxes in grain and silk. Silk was also used as diplomatic gifts by the emperor. Fishing lines, bowstrings, musical instruments and paper were all made using silk. The earliest indication of silk paper being used was discovered in the tomb of a noble who is estimated to have died around 168 AD.

C. Demand for this exotic fabric eventually created the lucrative trade route now known as the Silk Road, taking silk westward and bringing gold, silver and wool to the East. It was named the Silk Road after its most precious commodity, which was considered to be worth more than gold. The Silk Road stretched over 6,000 kilometres from Eastern China to the Mediterranean Sea, following the Great Wall of China, climbing the Pamir mountain range, crossing modern-day Afghanistan and going on to the Middle East, with a major trading market in Damascus. From there, the merchandise was shipped across the Mediterranean Sea. Few merchants travelled the entire route; goods were handled mostly by a series of middlemen.

D. With the mulberry silkworm being native to China, the country was the world's sole producer of silk for many hundreds of years. The secret of silk-making eventually reached the rest of the world via the Byzantine Empire, which ruled over the Mediterranean region of southern Europe, North Africa and the Middle East during the period 330—1453 AD. According to another legend, monks working for the Byzantine emperor Justinian smuggle silkworm eggs to Constantinople (Istanbul in modern-day Turkey) in 550 AD, concealed inside hollow bamboo walking canes. The Byzantines were as secretive as the Chinese, however, and for many centuries the weaving and trading of silk fabric was a strict imperial monopoly. Then in the seventh century, the Arabs conquered Persia, capturing their magnificent silks in the process.

E. Silk production thus spread through Africa, Sicily and Spain as the Arabs swept, through these lands. Andalusia in southern Spain was Europe's main silk-producing centre in the tenth century. By the thirteenth century, however, Italy had become Europe's leader in silk production and

LIVEWORKSHEETS

export. Venetian merchants traded extensively in silk and encouraged silk growers to settle in Italy. Even now, silk processed in the province of Como in northern Italy enjoys an esteemed reputation.

F. The nineteenth century and industrialisation saw the downfall of the European silk industry. Cheaper Japanese silk, trade in which was greatly facilitated by the opening of the Suez Canal, was one of the many factors driving the trend. Then in the twentieth century, new manmade fibres, such as nylon, started to be used in what had traditionally been silk products, such as stockings and parachutes. The two world wars, which interrupted the supply of raw material from Japan, also stifled the European silk industry. After the Second World War, Japan's silk production was restored, with improved production and quality of raw silk. Japan was to remain the world's biggest producer of raw silk, and practically the only major exporter of raw silk, until the 1970s. However, in more recent decades, China has gradually recaptured its position as the world's biggest producer and exporter of raw silk and silk yarn. Today, around 125,000 metric tons of silk are produced in the world, and almost two thirds of that production takes place in China.

Questions 1-9

Complete the notes below.

*Choose **ONE WORD ONLY** from the passage for each answer.*

*Write your answers in boxes **1-9** on your answer sheet.*

The story of silk

Early silk production in China

• Around 3000 BC, according to legend:

- silkworm cocoon fell into emperor's wife's **1** .....

- emperor's wife invented a **2** ..... to pull out silk fibres

- Only **3** ..... were allowed to produce silk
- Only **4** ..... were allowed to wear silk
- Silk used as a form of **5** .....
  - e.g. farmers' taxes consisted partly of silk
- Silk used for many purposes

- e.g. evidence found of **6** ..... made from silk around 168 AD

Silk reaches rest of world

- Merchants use Silk Road to take silk westward and bring back **7** ..... and precious metals
- 550 AD: **8** ..... hide silkworm eggs in canes and take them to Constantinople
- Silk production spreads across Middle East and Europe
- 20th century: **9** ..... and other manmade fibres cause decline in silk production

LIVEWORKSHEETS

READING EXERCISE 3

NEUROAESTHETICS

A. An emerging discipline called neuroaesthetics is seeking to bring scientific objectivity to the study of art, and has already given us a better understanding of many masterpieces. The blurred imagery of Impressionist paintings seems to stimulate the brain's amygdala, for instance. Since the amygdala plays a crucial role in our feelings, that finding might explain why many people find these pieces so moving.

B. Could the same approach also shed light on abstract twentieth-century pieces, from Mondrian's geometrical blocks of colour, to Pollock's seemingly haphazard arrangements of splashed paint on canvas? Sceptics believe that people claim to like such works simply because they are famous. We certainly do have an inclination to follow the crowd. When asked to make simple perceptual decisions such as matching a shape to its rotated image, for example, people often choose a definitively wrong answer if they see others doing the same. It is easy to imagine that this mentality would have even more impact on a fuzzy concept like art appreciation, where there is no right or wrong answer.

C. Angelina Hawley-Dolan, of Boston College, Massachusetts, responded to this debate by asking volunteers to view pairs of paintings - either the creations of famous abstract artists or the doodles of infants, chimps and elephants. They then had to judge which they preferred. A third of the paintings were given no captions, while many were labelled incorrectly -volunteers might think they were viewing a chimp's messy brushstrokes when they were actually seeing an acclaimed masterpiece. In each set of trials, volunteers generally preferred the work of renowned artists, even when they believed it was by an animal or a child. It seems that the viewer can sense the artist's vision in paintings, even if they can't explain why.

D. Robert Pepperell, an artist based at Cardiff University, creates ambiguous works that are neither entirely abstract nor clearly representational. In one study, Pepperell and his collaborators asked volunteers to decide how'powerful'they considered an artwork to be, and whether they saw anything familiar in the piece. The longer they took to answer these questions, the more highly they rated the piece under scrutiny, and the greater their neural activity. It would seem that the brain sees these images as puzzles, and the harder it is to decipher the meaning, the more rewarding is the moment of recognition.

E. And what about artists such as Mondrian, whose paintings consist exclusively of horizontal and vertical lines encasing blocks of colour? Mondrian's works are deceptively simple, but eye-tracking studies confirm that they are meticulously composed, and that simpiy rotating a piece radically changes the way we view it. With the originals, volunteers'eyes tended to stay longer on certain places in the image, but with the altered versions they would flit across a piece more rapidly. As a result, the volunteers considered the altered versions less pleasurable when they later rated the work.

F. In a similar study, Oshin Vartanian of Toronto University asked volunteers to compare original paintings with ones which he had altered by moving objects around within the frame. He found that almost everyone preferred the original, whether it was a Van Gogh still life or an abstract by Miro. Vartanian also found that changing the composition of the paintings reduced activation in those brain areas linked with meaning and interpretation.

LIVEWORKSHEETS

G. In another experiment, Alex Forsythe of the University of Liverpool analysed the visual intricacy of different pieces of art, and her results suggest that many artists use a key level of detail to please the brain. Too little and the work is boring, but too much results in a kind of 'perceptual overload', according to Forsythe. What's more, appealing pieces both abstract and representational, show signs of 'fractals' - repeated motifs recurring in different scales, fractals are common throughout nature, for example in the shapes of mountain peaks or the branches of trees. It is possible that our visual system, which evolved in the great outdoors, finds it easier to process such patterns.

H. It is also intriguing that the brain appears to process movement when we see a handwritten letter, as if we are replaying the writer's moment of creation. This has led some to wonder whether Pollock's works feel so dynamic because the brain reconstructs the energetic actions the artist used as he painted. This may be down to our brain's 'mirror neurons', which are known to mimic others' actions. The hypothesis will need to be thoroughly tested, however. It might even be the case that we could use neuroaesthetic studies to understand the longevity of some pieces of artwork. While the fashions of the time might shape what is currently popular, works that are best adapted to our visual system may be the most likely to linger once the trends of previous generations have been forgotten.

I. It's still early days for the field of neuroaesthetics - and these studies are probably only a taste of what is to come. It would, however, be foolish to reduce art appreciation to a set of scientific laws. We shouldn't underestimate the importance of the style of a particular artist, their place in history and the artistic environment of their time. Abstract art offers both a challenge and the freedom to play with different interpretations. In some ways, it's not so different to science, where we are constantly looking for systems and decoding meaning so that we can view and appreciate the world in a new way.

Questions 1-3

*Complete the summary using the list of words, **A-H**, below.*

*Write the correct letters, **A-H**, in boxes **1-3** on your answer sheet.*

Art and the Brain

The discipline of neuroaesthetics aims to bring scientific objectivity to the study of art. Neurological studies of the brain, for example, demonstrate the impact which Impressionist paintings have on our **1** ..... Alex Forsythe of the University of Liverpool believes many artists give their works the precise degree of **2** ..... which most appeals to the viewer's brain. She also observes that pleasing works of art often contain certain repeated **3** ..... which occur frequently in the natural world.

A. interpretation	**B.** complexity	**C.** emotions	**D.** movements
E. skill	**F.** layout	**G.** concern	**H.** images

LIVEWORKSHEETS

READING EXERCISE 4

UNLIKELY BOOMTOWNS: THE WORLD'S HOTTEST CITIES

A. Megacities like London, New York and Tokyo loom large in our imaginations. They are still associated with fortune, fame and the future. They can dominate national economies and politics. The last fifty years has been their era, as the number of cities with more than ten million people grew from two to twenty. But with all respect to the science fiction novelists who have envisioned a future of urban giants, their day is over. The typical growth rate of the population within a mega city has slowed from more than eight percent in the 1980s to less than half that over the last five years, and numbers are expected to be static in the next quarter century. Instead, the coming years will belong to a smaller, more humbler relation – the Second City.

B. Within a few years, more people will live in cities than in the countryside for the first time in human history. But increasingly, the urban core itself is downsizing. Already, half the city dwellers in the world live in metropolises with fewer than half-a-million residents. Second Cities – from exurbs, residential areas outside the suburbs of a town, to regional centres are booming. Between 2000 and 2015, the world's smallest cities (with under 500,000 people) will grow by 23 percent, while the next smallest (One million to five million people) will grow by 27 percent. This trend is the result of dramatic shifts including the global real estate bubble; increasing international migration; cheaper transport; new technologies, and the fact that the baby-boom generation is reaching retirement age.

C. The emergence of Second Cities has flowed naturally (if unexpectedly) from the earlier success of the megacities. In the 1990s, megacities boomed as global markets did. This was particularly true in areas with high tech or 'knowledge-based' industries like finance. Bonuses got bigger, bankers got richer and real estate prices in the world's most sought-after cities soared. The result has been the creation of what demographer William Frey of Washington based Brookings Institute calls 'gated regions' in which both the city and many of the surrounding suburbs have become unaffordable for all but the very wealthy. Economically, after a city reaches a certain size its productivity starts to fall,' notes Mario Pezzini, head of the regional competitiveness division of the OECD. He puts the tipping point at about six million people, after which costs, travel times and the occasional chaos create in which the centre of the city may be a great place, but only for the rich, and the outlying areas become harder to live and work in.

D. One reaction to this phenomenon is further sprawl – high prices in the urban core and traditional suburbs drive people to distant exurbs with extreme commutes into big cities. As Frey notes, in the major US metropolitan areas, average commuting times have doubled over the last fifteen years.

E. Why does one town become a booming Second City, while another fails? The answer hinges on whether a community has the wherewithal to exploit the forces pushing people and businesses out of the megacities. One key is excellent transport links, especially to the biggest commercial centres. Though barely a decade old, Goyang is South Koreas fastest-growing city in part because it is 30 minutes by subway from Seoul.

F. Another growth driver for Second Cities is the decentralisation of work, driven in large part by new technologies. While more financial deals are done now in big capitals like New York and London than ever before, it is also clear that plenty of booming services industries

LIVEWORKSHEETS

are leaving for 'Rising Urban stars' like Dubai, Montpellier and Cape Town. These places have not only improved their Internet backbones but often have technical institutes and universities that turn out the kinds of talent that populate growth industries.

G. Consider Montpellier, France, a case study in urban decentralisation. Until the 1980s, it was like a big Mediterranean village. Once the high-speed train lines were built, Parisians began pouring in for weekend breaks. Some bought houses, creating a critical mass of middle-class professionals who began taking advantage of flexible working systems to do three days in Paris, and two down South, where things seemed less pressured. Soon big companies began looking at the area, a number of medical technology and electronic firms came to town, and IBM put more investment into service businesses there. To cater to the incoming professionals, the city began building amenities: an opera house, a tram line to discourage cars in the city centre. The result, says French urban-planning expert Nacima Baron, is that the city is now full of cosmopolitan business people. It's a new society'.

H. All this means that Second Cities won't stay small. Indeed countries are actively promoting their growth. Italy, for example, is trying to create tourist hubs of towns close to each other with distinctive buildings and offering different yet complementary cultural activities. Devolution of policy-making power is leaving many lesser cities freer than ever to shape their destinies. To them all: This is your era. Don't blow it.

Questions 1 – 7

*Complete the summary by using the list **A-R** below.*

Urban Decentralisation

It is becoming increasingly obvious that large numbers of **1** ..... are giving up their expensive premises in the megacities and relocating to smaller cities like Montpellier. One of the attractions of Montpellier is the presence of a good **2** ..... that can provide them with the necessary skilled workforce.

Another Important factor for Montpellier was the arrival of visitors from the **3** ..... The introduction of the **4** ..... meant that increasing numbers were able to come for short stays. Of these, a significant proportion decided to get a base in the city. The city council soon realised that they needed to provide appropriate **5** ..... for their new inhabitants. In fact, the **6** ..... among them liked the more relaxed lifestyle so much that they took advantage of any **7** ..... arrangements offered by their firms to spend more of the week in Montpellier.

A urban centres	**B** finance companies	**C** flexible
D tram line	**E** cosmopolitan	**F** service industries
G capital	**H** high-speed train	**I** infrastructure
J unskilled workers	**K** jobs	**L** medical technology
M professionals	**N** European Union	**O** amenities
P middle age	**Q** overtime	**R** university

LIVEWORKSHEETS