sophia

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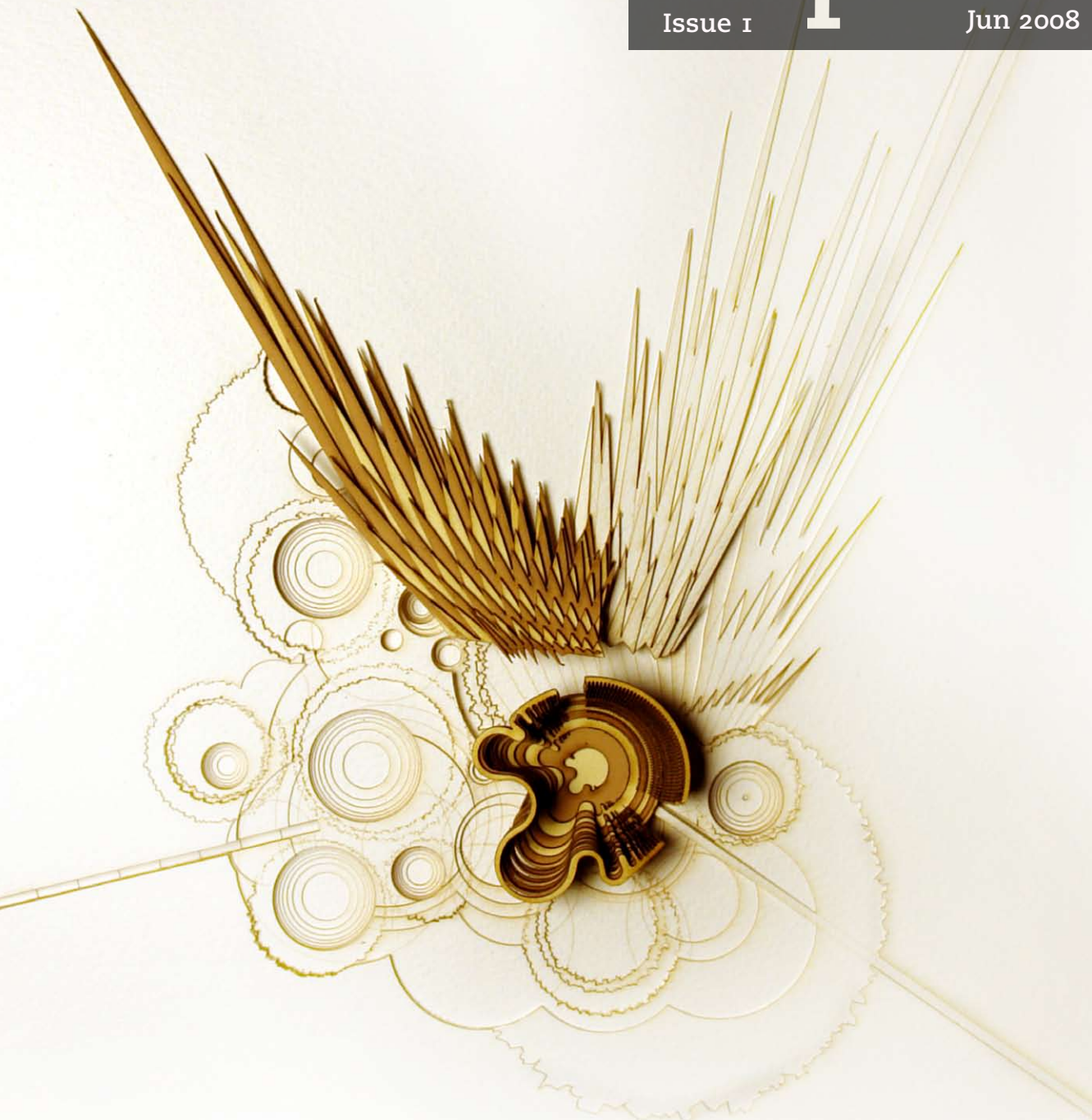

Greek myth in cinema
The science behind cubism
Cultural barriers to translation
Biomedical science in Africa

Sophia Issue 1

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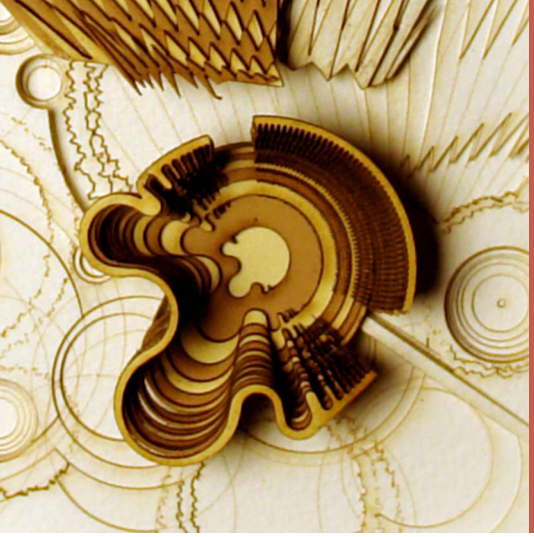


cover image

Ben Cowd, UCL Architecture graduate.

This architectural drawing was part of a design for an observatory and uses assemblies of laser-cut paper to form 2½-dimensional drawings. The lines burned by the laser are soft, sensuous and baroque yet have the precision and accuracy of the high-tech.

See www.saraben-studio.com for more.

contents

Stubs

Articles

Features

editorial

When asked how I found the academic 'atmosphere' at UCL I often struggled to find an answer. In larger institutions, it can feel hard to engage with the community at large as you dig yourself into your own lab or office, oblivious of the research going on in other departments. And so what began for me as a curiosity about the world 'out there' in the rest of Bloomsbury – a Christmas holiday daydream – started gathering momentum. Thanks to the hard work of a swiftly-assembled editorial team, support and advice from the *Opticon1826* editor Gesche Ipsen and contributions and encouragement from various members of UCL's research community, this pilot issue finally materialised.

I originally envisaged *Sophia* as a cross-disciplinary, rather than interdisciplinary, magazine. Perhaps due to current academic trends, or perhaps because interdisciplinary researchers are inherently attracted to this kind of writing, in the event material submitted for this issue overwhelmingly favoured topics that straddled boundaries of academic discipline and of culture: the relationship of science and art; the manner in which cultural differences either hinder translation or enrich aesthetics and the universality of certain cultural elements – at least in the western world – in cinema. Coming from an interdisciplinary department myself, this was especially interesting for me.

I very much hope you enjoy this issue of *Sophia* which, as the name hints, intends to celebrate the pursuit of knowledge in general and not just in our own increasingly specific fields. Letters, articles, images and opinions are warmly welcomed for the next issue.

team

"*Guernica* cries out loud an unspeakable truth about primitive feelings of fear and pain that the destructive power of war brings about in the most genuine and crude manner. But what really makes Picasso's canvas so unique?"

Chiara Ambrosio
p. 16

Sophia is a new volunteer-run magazine aiming to showcase talent in research, writing and art from current UCL staff and graduate students.

By publishing academic content written for a general readership, Sophia hopes to encourage the sharing of ideas and an appreciation of the advances being made in areas of research other than our own; and to act as a forum for the discussion of academic issues and current affairs.

In creating Sophia we hope to provide opportunities for graduate students to begin writing about their work and for established researchers to write more creatively and for a broader audience than in a specialist journal. We believe that providing this platform will help contributors to develop as writers as well as giving readers an insight into the diverse spectrum of research taking place at the university.

If you are interested in submitting content then please contact the editor or relevant section editor. Submission guidelines are listed on our website:

www.sophiamagazine.co.uk

Robin Clark – Bakerian Lecture, Royal Society

A treasure lies hidden, unbeknownst to many, just beneath the great pyramid of the Louvre. For fans of Dan Brown I'm afraid I may disappoint you: I'm not talking about the Holy Grail but about an enormous state-of-the-art chemistry lab.

This was one of the surprising revelations of UCL Professor Robin Clark's enjoyable and broad-ranging address for the Royal Society's Bakerian Prize Lecture 2008: *Raman Microscopy, Pigments and the Arts/Science Interface.* Raman microscopy is one of a wide range of techniques which uses properties of light reflection and absorption to identify the chemical makeup of a particular sample. While two pigments may appear to be the same shade of blue, those with different chemical structures will have clearly distinct Raman spectra, helping us to distinguish, say, indigo from lazurite. Clark's team showed in 2003 that the Lindisfarne gospels did not use lazurite in their blue pigments, which added fuel to the debate over the existence of contemporary trade routes between England and Afghanistan, from where lazurite was obtained.

The lecture was well attended by a mix of chemists and art historians, collectors and restorers and also featured a live video link to the University of Wellington in honour of Clark's New Zealand origins.

Once word of Clark's work on publicly-displayed art and artefacts got out, it is unsurprising that he was quickly approached by a number of private owners, keen to establish the authenticity of their collection. Clark described how an Egyptian collector turned up in Gower Street in a black limousine with six bodyguards and papyri he claimed were worth millions of pounds each. An analysis of the Raman spectra revealed modern paints only seen in the 19th century. A second papyrus collector's prize item did not even make it as far as the microscope stage: under a magnifying glass could be seen the characteristic three-colour dots of an inkjet printer.

Ed Long

Professor Horace Engdahl: The Hunger for Tears and The Nobel Experience

Every year the world waits with trepidation for Professor Horace Engdahl, the permanent secretary of the Swedish Academy, to announce the recipient of the Nobel Prize in Literature. When he came to UCL this February he had no announcement to make, but he was listened to by students, researchers and professors with no less interest and curiosity. Part of the Scandinavian Studies visiting professor scheme, the two events organised on occasion of his visit attracted the attention of many members of the UCL community and even of the Swedish press.

In the intimate surroundings of a lecture room in the SSEES building, Professor Engdahl warmed up as keynote speaker at a research seminar organised by the UCL Mellon programme. In his lecture he discussed how tears, often considered the expression of sorrow in real life, can become an essential part of the act of reading. Particularly from the 18th century, the image of the imperturbable reader has in fact been gradually dismantled in favour of that of the emotional reader, able to manifest humanity and involvement through the act of crying. By the end of the seminar, the atmosphere was relaxed and familiar and most members of the audience confessed which books had the power to make them cry.

Two days later, Professor Engdahl was ready for the big event: a full-house public lecture entitled Canonization and World Literature. He explained how, since its institution in 1901, the Nobel Prize has been awarded every year to the author of "the most outstanding work in an ideal direction", as indicated in Alfred Nobel's will. The interpretations of this expression have been diverse. For this reason, the prize should be seen not as an attempt to establish a 'canon' but to raise public attention on the work of an author, who – for different reasons at different times – is guaranteed a presence in the memory of literature.

Professor Engdahl also referred to the controversy often caused by the announcement of the prize. The audience seemed particularly curious to know more about those authors that never were awarded the prize. Due to the strict secrecy imposed on data about the Nobel Prize nomina-

tions – which cannot be disclosed before 50 years have passed – some questions had to remain unanswered. But it is only a matter of time...

Elettra Carbone

Interculturality, Politics and Society: Lessons from the Nordic Countries

In one of UCL's medical lecture theatres, a panel of 'witnesses' and academics was gathered to study the intercultural status of four 'patients': the Nordic Countries. Denmark, Finland, Norway and Sweden seemed to be taking turns in sitting – ready to be examined – on what appeared to be a dentist's chair, which was part of the furnishing of the lecture theatre. The result of the thorough check-up was a complex diagnosis. Its aim was to look at the effects of these countries' integration policies that, despite being in some cases prescribed on a political level, are in practice still far from being fully enacted.

Most speakers emphasised the paradoxes of their countries' attitudes towards pluralism. Yildiz Akdogan, member of the Danish Parliament, started off outlining the dynamics of what the media referred to as the 2005 "cartoon crisis", one of the issues that also prompted the organisers of the conference to arrange this event. Besides considering the elements of tension in a multicultural environment, she also acknowledged more positive developments: TV programmes are currently starting to mirror social changes by, for instance, featuring minorities as well-integrated members of the society. The Swedish Alaa Idris, member of the Social Democratic Youth Federation, followed, talking about her everyday engagement in "updating Swedishness". Gerd Fleischer spoke about Norway's controversial treatment of its minority groups. Gerd, who with her Saami heritage and German father has herself experienced prejudice and discrimination from Norwegian society, now spends her time offering support to immigrants and minority groups in Norway. The Finnish representative, Patsy Nakell, spoke about the very low rate of immigration to Finland (second only to Albania in Europe), but said that this will change over coming years as Finland requires foreign workers. Issues that have cropped up in other Nordic societies will soon come to Finland and Nakell asked that the other Scandinavian countries might lead by example.

The conference was organised as a 'witness seminar'. The fifteen-minute presentations given by the four above-mentioned 'witnesses' constituted the base for the debate and were followed by comments from an academic panel and from the audience. The format of the conference succeeded in its aim: to dissect and re-define the concept of interculturality from different empirical and theoretical perspectives, letting the discussion develop according to an orderly, yet lively and varied plan.

"United in diversity": the EU motto, which was mentioned by the first speaker, became the red line throughout the conference. This appeared to be not only the criterion behind the conference's format, but also its main message. It is certainly thanks to this kind of event, raising awareness on multifaceted and delicate aspects concerning interculturality, that unity in diversity might also turn into a representative definition of contemporary societies.

Elettra Carbone & John Mitchinson

Don't mention Virginia Woolf: Reform in Bloomsbury

Mention Bloomsbury to most people, especially students of literature, and they think immediately of Virginia Woolf, but Rosemary Ashton has plans to change all that. The Leverhulme Trust has awarded UCL a Large Research Project Grant for a multidisciplinary study of Reform in Bloomsbury in the nineteenth century. The three-year project will be led by Professor Ashton and co-investigator Anne Hardy of the Wellcome Trust Centre for the History of Medicine at UCL, and will investigate the area's rapid and surprising transition from late eighteenth-century cesspool to modern-day centre of excellence.

Between 1800 and 1904, the area bounded by Euston Road, Tottenham Court Road, New Oxford Street and High Holborn, and Gray's Inn Road grew rapidly, but what began as an aristocratic building spree across marsh and farmland soon turned into a disconcertingly concerted colonisation of the same area by innovative and reformist institutions of all kind. One of the first was of course UCL (as the "University of London") but many other progressive educational establishments followed: the Ladies' College, the Working Men's College and Working Women's College, University Hall, the Humanistic Schools run on Froebelian principles, the College of Preceptors for teachers, and, by the end of the century,

Mary Ward's Passmore Edwards Settlement, which offered an innovative combination of informal adult education and social activities with a children's play centre, and the first school for physically disabled children.

The area also became a focus for new and progressive medical institutions: the Hospital for Sick Children in Great Ormond Street, two homoeopathic hospitals, hospitals for women and institutions to train women doctors as well as nurses; in total more than twenty-five new specialised hospitals dealing with every kind of disease and disability, as well as dispensaries bringing inoculation and new medicines to the local poor. Meanwhile the area's original 'hospital', the Foundling Hospital orphanage, and its original educational institution, the British Museum, found themselves forced to adapt their policies and attitudes to contend with the progressive institutions springing up around them.

The Project will discover, describe, and where possible digitise archives of the reforming institutions in question, many of which have never previously been investigated systematically. The interplay between these institutions, along with local dissenting churches, campaigning societies, charities, and special interest groups of all kinds, and of course, the strong-minded individuals who organised them all, will be investigated with a uniquely localised focus. The area's pre-Bloomsbury Group literary associations and reputation will also be investigated in depth and detail; Dickens and Thackeray both lived in Bloomsbury and used its locations in their fiction, as did Bulwer Lytton, a novelist with perhaps less literary finesse but with a very acute awareness of the relative social cachet of different streets within the area. Bloomsbury-born Anthony Trollope staged a pivotal kidnap in a "narrow, dark street" in the obscure regions south of Gower Street in his novel *He Knew He Was Right*. Mary Ward used the new social housing near Tavistock Place as the model for "Brown's Buildings" in her novel *Marcella*.

The Project is also networking with local history associations and Bloomsbury websites, as well as getting involved in events such as the London Festival of Architecture with its ambitious plans to turn much of Bloomsbury into a living exhibition of how and where past meets present. And the Project will be holding its first conference on June 26 2008; inquiries and expressions of interest should be directed to the Project's research coordinator, Deborah Colville, at d.colville@ucl.ac.uk. Just don't mention Virginia Woolf.

Dr Deborah Colville

Lovers in Lab Coats – Professor Joe Cain, Lunchtime Lecture

In Dr Joe Cain's lunchtime lecture, 'Lovers in Lab Coats', we were transported into the wilds of Venezuela, following the story of husband and wife researchers George Gaylord Simpson and Anne Roe. Simpson was a palaeontologist and Roe a psychologist who travelled together to South America on a hugely successful expedition which included studies of fossils, indigenous species and peoples, and incredible landscapes: the couple were among only a handful of people at the time to have viewed the almost kilometre-high Angel Falls. Sharing an intellectual, physical and spiritual attraction, Simpson and Roe collaborated in many ways even taking turns to write chapters of a poorly-regarded murder mystery novel in order to pass the time during a six-week period when heavy rains made fieldwork impossible.

Cain took a generalist (and once or twice innuendo-loaded) interpretation of 'collaboration' to debunk the tired and frequently-peddled myth that scientific progress marches on the back of gifted, lonely, antisocial males. He proposed that the selective blindness of the scientific historian regarding the significance of the partners and families of scientists is part of a wider trend of overlooking 'invisibles' – characters in history which are played down because of their gender, religion, sexuality, race, class or social status. Indeed, collaboration – in a purely intellectual sense or otherwise – is often an important strand of scientific discovery which society shuts its eyes to in place of the more comfortable fairytale of the bearded sage's flash of inspiration in his ivory tower.

At the end, Cain returned to the story of the Drs Simpson. He noted how, in addition to the partnership leading to more successful research (Roe's expertise in statistical methods added a more solid, quantitative aspect to Simpson's palaeontological study), the status Roe gained as a scientific collaborator added legitimacy to their relationship. Simpson was recently divorced and the Venezuelan trip, in the weeks immediately after their marriage, allowed him to escape the aftermath of a bitter custody battle with his previous wife. Roe's prominent position in the study as an intellectual partner gained her acceptance by Simpson's family and colleagues in a situation which might have appeared scandalous if she had flown to Venezuela as a 'mere' spouse.

Ed Long

The First Emperor

China's Terracotta Army

During the last few months the queues of visitors at the gates of the British Museum early in the morning and in the Great Court throughout the day have become longer and longer. Foreign tourists and the local public have converged on the museum in greater numbers than usual to see the exhibition *The First Emperor: China's Terracotta Army* dedicated to Qin Shihuangdi (259–210 BCE), founder of the Qin Dynasty (221–206 BCE), the first imperial dynasty of China.

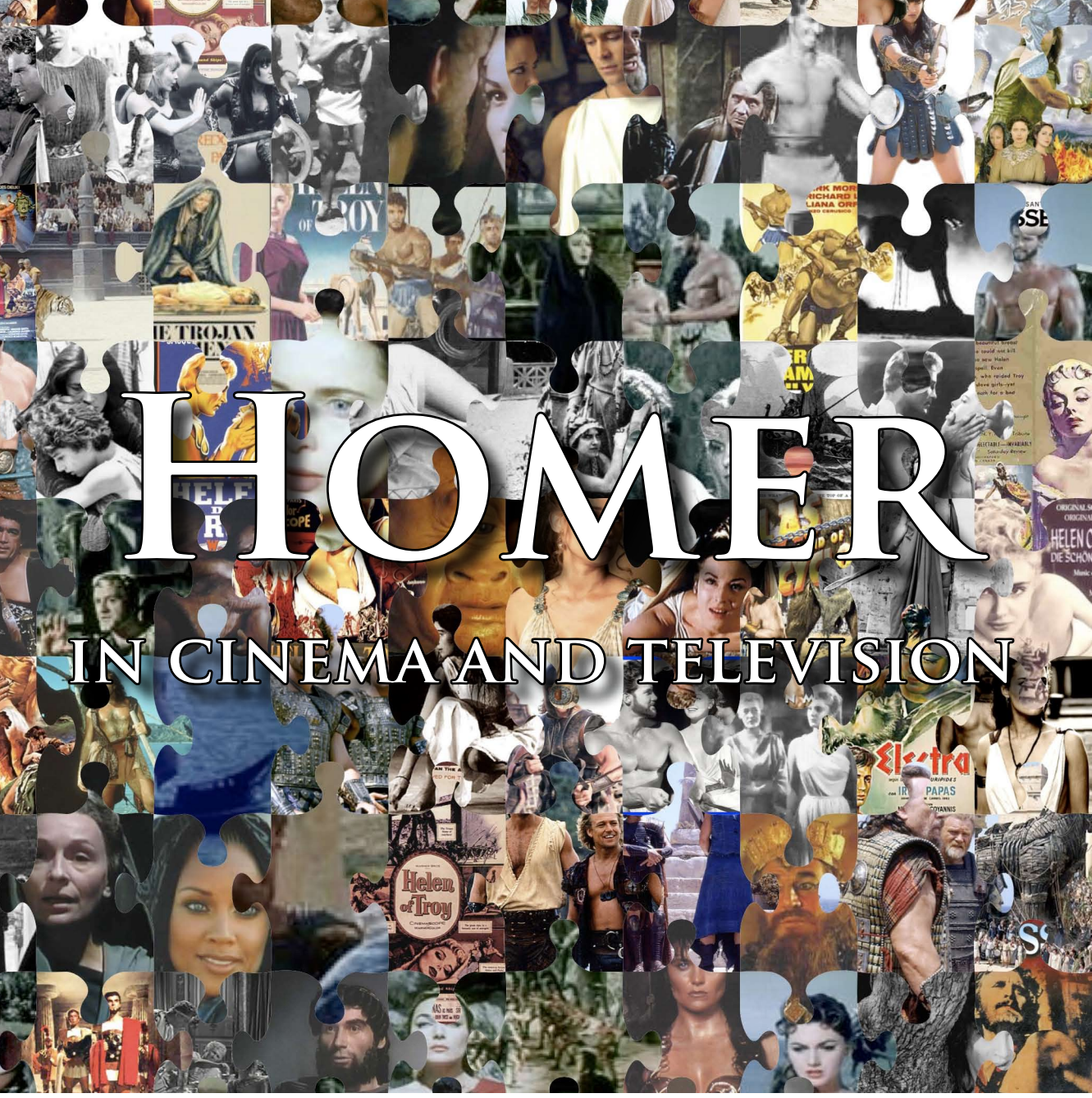
Undoubtedly, the main attraction of the exhibition has been the group of warriors from the terracotta army buried in the imperial tomb to protect Qin Shihuangdi from hostile supernatural forces after death. There are twelve complete terracotta figures on display, out of the thousands excavated so far from the burial pits near modern Xi'an, in Shaanxi Province. This representative selection of warriors – all cast as life-size statutes, and modelled with realistic and accurate details – trigger powerful suggestions of a set of traits nowadays associated with the image of Qin-Dynasty China. They are symbols of the emperor's power, a statement of an efficient and imposing military structure, and a manifestation of an elaborate system of funerary ritual practices and beliefs in the afterlife.

At the same time, the significance of all the other objects on display, which the visitors can admire along the exhibition route before reaching the main assemblage of terracotta warriors, should not be overlooked. They also supply essential clues for the understanding of a crucial moment in the history of China. An assortment of bronze coins of various provenances shows a gradual shift in form. The widely varied shapes – previously peculiar to specific geopolitical areas – were replaced by the typical round coin with a square hole in the middle, already circulating in the pre-existing Qin state and still used as a model for Chinese money in the 19th century. Some specimens of bronze weights and the characters inscribed on them all reflect the uniformity in measurements and writing promoted by Qin Shihuangdi. In fact, the inscriptions themselves refer to the decrees on the standardisation of weights and measures issued by the First Emperor. His unprecedented efforts to introduce homogenous systems throughout the empire aimed first of all at creating cohesion among people formerly divided in numerous states and spread over a vast territory. Precious bronze vessels with gold inlays and refined jade ornaments are an elegant complement to the display. They demonstrate the high level of sophistication and specialisation of Qin-Dynasty crafts, derived from the artistic and technical experience of the artisans of the Eastern Zhou Dynasty (770–221 BCE). The strong cultural legacy of pre-imperial China clearly appears in decorations such as intricate dragon-shaped motifs of Zhou tradition, and in the manufacture of ritual objects like the flat disc *bi* and the square tube *cong* already used in the Neolithic period. In a similar way, the influence of the short-lived Qin Dynasty on later cultural developments is exemplified, for instance, by a stone armour excavated from one of the pits of Qin Shihuangdi's tomb and painstakingly reassembled by archaeologists. The method of construction, with small square plaques connected to each other through copper strips, and the funerary context in which it was found recall the structure and function of the jade burial suits of the following Western Han Dynasty (206 BCE–CE 9).

Finally, it is worth highlighting that the exhibition was displayed in the Round Reading Room, the renowned domed structure completed in 1854 in order to provide scholars with a suitable research area, and to house the impressive collection of books now constituting the British Library. Iconic symbols of China are thus hosted at the very heart of the British Museum, in a space emblematically linked to the history and public image of this institution. This spectacular arrangement well represents the harmonious combination of different cultural elements: an inspiring model in today's increasingly globalised socio-cultural atmosphere.

Text: Iside Carbone, Department of Anthropology
Photo provided by Jane Portal, curator, British Musem

Armoured general, terracotta, Qin dynasty (221–206 BCE). Museum of the Terracotta Warriors and Horses of Qin Shihuang, Lintong, Shaanxi Province, China. Photo by kind permission Shaanxi Provincial Cultural Relics Bureau.



The ancient world has been a perenially attractive subject for filmmakers and, after the popularisation of the theatrical film in the first decades of the 20th century, the new medium provided opportunities for the ancient world to be depicted in a number of exciting ways. The world of Homer provided a core mythological source of antiquity and, having influenced the education and entertainment of many generations of people in various countries, was destined to play an essential role in the cinematic epics to follow. But how have the changes in society affected the expectations of the audience and the modern representation of Homeric themes?

Ridley Scott's multi-Oscar-winning epic *Gladiator* is widely hailed as having relaunched the sword-and-sandal genre, with a multitude of films set in the ancient world following soon after (such as Wolfgang Petersen's *Troy, Oliver Stone's Alexander* etc.) to varying degrees of box-office success. Scholarly interest in cinematic portrayal of the classics, likewise, has seen a recent resurgence and many new and unexplored viewpoints on the classical tradition have come to the surface. The world of Homer, however, is far from being a novel subject matter in theatrical film: the ancient world in general and specifically the Homeric matrix is omnipresent and, over the years, directors and audiences have repeatedly elaborated and assigned new meaning to it depending on current political and social dynamics.

The sociological and technological changes of the last fifty years have reinforced the need for justification of the present through past more esteemed cultures. Such appeals to classical tradition have led to the production of counter-mythologies of the past such as those created by Hollywood in a number of movies and TV series. These alternative narratives encourage modern interpretations of the ancient world by artists and new audiences and seek to be examined and authorised by the academic community and the classicists.

This article will examine the reception of Homer in 20th- and 21st-century cinema and will provide a short survey of the movies which are related to the cinematic nature of the *Iliad* and the *Odyssey*. What are the similarities and the differences in the representation of the Homeric world through the years of cinematographic production and how have the needs of the modern audiences changed, now that the Homeric texts are no longer a central part of their education? Most importantly can the Iliadic war actually be filmed?

Homer was already popular in theatre, painting, opera, education and literature of the 19th century and, during the infancy of cinematography, the Homeric epics made a compelling choice: the Iliadic violence, the spears and swords, the chariots and the breathtaking combats provided great spectacle and entertainment for audiences of all eras. Powerful kings, complex mythological queens, demigods and demimortals are all familiar themes to the viewers of the 20th century. The adventurous world of the Odyssey with its legendary journeys, dangerous monsters, and seductive demigoddesses; Odysseus the mortal hero who defied Poseidon's wrath and Calypso's tempting immortality challenged the filmmakers to attempt the re-creation of a world which was both distant and legendary in the minds of the viewers who were eager to receive it in its visualised cinematic form.

In addition, excavations in Troy and Mycenae at the end of the 19th century by the German treasure hunter Heinrich Schliemann had recently proved that certain parts of the Homeric world were indeed historical. The theme of the epics also provided a great variety of classical subjects and dilemmas on contemporary issues: love and betrayal, faithfulness and unfaithfulness, military and family life, piety and impiety, wrath and reconciliation, war and peace. The Homeric world is a whole world of action and reaction and we can imagine the eagerness of those first cinematographers to challenge for the first time the visual representation of a literary text preserved in the hearts of people for more than 2,500 years.

The Homeric world became a popular subject for films in the very beginning of the 20th century, with films like Maurice Caussade's *La Naissance de Vénus* (1900) and *L' Île de Calypso: Ulysse et Polyphème* (1905) by Georges Méliès. Mario Caserini's *The Last Days of Pompei* signalled the birth of epic cinema, which was followed by the french film *Le Retour d' Ulysse* directed by Charles Le Bergy and André Calmettes. Although the first productions of the Homeric epics were mainly French and Italian, during the second decade of the 20th century American films dominate the cinematic scene mainly with movies related to the stories of Aphrodite/Venus and Diana (*The Pursuit of Venus* 1914, *The Story of Diana* 1914, *The Triumph of Venus* 1918).

During the 1920s, Homer continued to attract the attention of directors and film studios with different adaptations of the story; the interest is mainly shifted towards the stories of demigoddesses such as Circe, for example *Il Canto di Circe* (1920) and *Circe the Enchantress* (1924). In terms of subject, the 1920s was monopolised by the figure of Helen and introduced a whole new breed of epic movies to come featuring the legendary Queen of Sparta (*Helena*, 1924, Germany; *The Private Life of Helen of Troy*, 1927, USA; *The Queen of Sparta*, 1931, Italy). The obsession with the variety of aspects of Helen's persona (wife, princess, whore) led to new representations, from the image of a romantic and tragic heroine (*The Face That Launched a Thousand Ships*, 1953–4, Italy; *Helen of Troy*, 1955, USA) to lighter depictions such as the cartoon character in Disney's *Hercules: The Animated Series* (1997) or the rather anti-heroic Helen in *Xena: Warrior Princess* (Episode 1.12 – *Beware Greeks Bearing Gifts*).

The Second World War signified a decline in the epic cinematographic world. Fake swords and spears were incapable of attracting the interest of an audience which had experienced the horror of modern tanks and military planes. Furthermore, the violent militaristic world of the *Iliad* was too close to reality and could easily have evoked recent suffering. Conversely, the more peaceful world of the *Odyssey* could only cause indifference in a real world menaced by destruction. Financial decline, the difficulties in shooting and casting and the indifference of the audiences for entertainment in a world where survival was the primary need led to the absence of cinematic elaborations of antiquity in this period.

The end of the war and the period of economic recovery which followed reinvigorated the audience's interest in epic film. The 1950s and 60s were characterized by a steadily increasing production of films related to ancient subjects, chiefly the Trojan war. Since the gods and goddesses had already been widely presented and visualized in a number of films, this time saw instead the re-elaboration of the mythological role of the heroes and the representation of their active part in the Homeric epics.

It is in this period that movies like *Helen of Troy* (1955, USA) starring Rossana Podestà as Helen, or *Ulysses* (1955, Italy) with Kirk Douglas enjoyed great success and prepared the way for the golden era of the epic movie. In the 60s, a number of films began to feature the famous Homeric heroes – mainly Ulysses and Achilles or monsters like the Cyclops – together with other classical characters such as Atlas or Hercules. This led to films such as *Atlas in the Land of the Cyclops* (1961, Italy), *Ulysses Against Hercules* (1962, Italy) and *Hercules, Samson and Ulysses* (1964, Italy). The 60s was the era of the bodybuilder (for example Steve Reeves) who embodied his own version of the ancient Greek heroes in return for the glory and fame of the sword-and-sandal movies of Cinecittà. The producers and directors used Greek and Roman myth with their complex narratological webs in order to create new interlinked scenarios of stories often depicting the superiority of physical strength and the cinematic representation of mythological violence in order to satisfy the contemporary needs of their audiences.

It is interesting to note that the 60s also marked the first serious attempts from Greek directors to elaborate their nation's own glorious past and communicate it to modern Greek audiences. The most famous example is Michael Cacoyannis' *Electra* (1962). This film featured Greek actors, authentic locations (it was filmed on the archaeological site of the Mycenae, bringing the viewer

Helena (1924), Germany

closer to the Homeric setting) and Greek dialogues. After *Electra* was nominated for an Oscar in the Foreign Language Film category, Cacoyannis' preference for films related to the Homeric story and to Greek tragedy continued with an Oscar-nominated production of *The Trojan Women* (1971) starring Katharine Hepburn and Vanessa Redgrave, and *Iphigenia* (1977).

Trojan themes also appeared in TV series at this time. One of the first episodes of *Doctor Who* (*Myth Makers, Dying Days of the Trojan War*) featured the arrival of the Tardis on the plains of Asia Minor, not far from the besieged city of Troy where the Doctor is hailed by Achilles as the mighty Zeus and taken to the Greek camp, where he meets Agamemnon and Odysseus. Forced to admit he is a mere mortal, a traveller in space and time he is given just two days to devise a scheme to capture Troy – and we all know what this scheme was! Sadly, archives of this episode were destroyed by the BBC but the soundtrack is available as part of the BBC Radio Collection and the episode has also been novelised by Donald Cotton (*Doctor Who – The Myth Makers*).

After a short period of indifference towards the Homeric subject in the 70s and 80s, television opened new perspectives for a modern elaboration of the myth. Television miniseries became more and more popular at this time. Films also increasingly targeted specific audiences such as 'the Star Wars generation' for movies like *Clash of the Titans* (1981) or adult audiences for the X-rated *Caligula* (1978) and these films tested the ground for new genres of television offerings. Cable television and satellite technology significantly contributed to the expansion of the spectrum of the audience; 'family-viewing' became a part of our life and teen audiences became a significant TV target

all over the globe. Made-for-television series like *Hercules: The Legendary Journeys* and *Xena: Warrior Princess* set new targets in their digestion of Greek (and consequently Homeric) myth: the ancient myth takes new dimensions since it is used in a diachronic (or rather a-chronic) way and it results in the creation of a new megamyth which accepts the coexistence of different heroes from various mythological cycles. Episodes from the Trojan myth reappear in both *Hercules* and *Xena* and, in one episode of the latter (*Athens City Academy of Performing Bards*, 1996), Homer himself appears and accompanies Xena's companion Gabrielle to a bard competition in Athens.

The differentiation of the needs of modern audiences together with the improvement of visual effects led to the inclusion of fantasy elements in the stories which have been particularly successful in cinematic entertainment. This becomes clear with the representation of the gods in *Hercules* and *Xena* who are divided between anthropomorphic supermen and computer-generated monsters. The economic success of these series have inspired more traditional Homeric portrayals such as NBC's Emmy-Award-winning project *The Odyssey* (1997), which is a faithful representation of the *Odyssey* with strong visual references to the Homeric text: close-ups of Athena's eyes which remind the viewer of Homer's sparkling-eyed Athena in the *Odyssey* and Hermes' winged golden sandals are also depicted as described by Homer.

The 21st century has started in a dynamic way in terms of Homeric movies: a new TV series called *Helen of Troy* began in 2003 and, in 2004, Petersen's *Troy* aimed to introduce a new debate on the depiction of the classical world by the Hollywood movies.

Although *Troy* was not favourably received by the majority of classicists, it succeeded in renewing the discussion of issues like the visualisation of the gods or the use of specific cinematographic techniques in order to depict the Trojan War. In comparison to earlier movies and because of an internationally-targeted audience *Troy* avoids a direct physical visualisation of the gods. Petersen chooses other ways to include the divine world (statues, architecture, etc.) and leaves the viewer free to decide whether the causes behind each one of the events lay with human decision or divine intervention. Even Ares is totally absent: the only mention of the God of war is when Achilles asks Briseis, who for the whole of the movie is against any violence, whether she respects Ares equally to the other gods. When monotheism merged the features of all gods of Olympus into God, it deprived even Ares of an individual face and made it easier to depersonalize the war. The absence of gods in *Troy* is a result of such depersonalisation together with Petersen's reluctance to propel the film into the realm of fantasy.

From a military viewpoint, *Troy* combines realism with a Homeric heroic world: scenes of hand-to-hand combat are combined with close-ups of the leaders of the Greeks and the Trojans and their reactions. On the other hand, the common soldier is ignored; the lesser warriors in *Troy* are a faceless multitude. They have no individualised devices on their shields and no plumes on their helmets, they have no elaborate armour and they are destroyed as if they were computer generated, virtual beings in a video game – which anyway is precisely what most of them are. This is the reason why *Troy* fails to transmit to us a genuine 'feel' of ancient epic battle scenes. As we watch *Troy*, we know that beneath most of the masks of his armies there are not real people. In that respect, *Troy* presents the war through selected heroes even more than the *Iliad*. While Homer takes time to name and provide short biographies and genealogies of lesser warriors who fall in battle, Petersen's computerised armies shift the director's focus onto the elite.

The myth of the Trojan War can be recalled in infinite ways and retold through all kinds of cinematographic techniques because of its mythic character. The significance of this war has changed constantly over the last century, adapting to time and place. The 20th and 21st centuries have been innovative and at the same time important for introducing Homeric gods to the cinema with the main purpose of presenting Homer to a new audience and establishing the power of the epics as a global classical influence in this new medium. The changing needs of an audience which no longer faces the *Iliad* strictly as an educational text but mainly as a source of entertainment has confronted the filmmakers of the 20th century with the difficult problem of presenting the Homeric war. These difficulties arise from the problem of melding historicity with dramatic effect: the complexity in the reconstruction of battle scenes in combination with narratives echoing the ideas and philosophy of each era. Certainly, the 20th century has paved the way for creative ways in which the Homeric gods and heroes are presented in cinema. It will be up to the creativity and imagination of current filmmakers to see whether the 21st century will suggest a new modernised model for the visualization of the Homeric epics.

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Music on the Mind

Have you ever listened to Café del Mar and been overwhelmed with the sense of serenity, or has a Radiohead CD ever brought you to the verge of depression? Have you ever wondered why?

There is something unique about music with its undisputed affect on our mind: an effect which neuroscientists are only just beginning to understand. Music appears to be surplus to any biological purpose, while at the same time being a strongly learned phenomenon involving significant higher-order cognitive processing, as there is an extraordinary array of physical and mental functions involved in the appreciation of music.

Contemplate the ability to read a person's mind and play out a tune he or she is mentally humming. Science fiction? The ICCMR team at the University of Plymouth has made a major advancement towards achieving just that. They have developed the Brain Computer Music Interface (BCMI)-Piano, a system that uses brainwave (EEG) information to compose and play music in real time. Although to achieve the more complex goal of playing a mentally hummed musical sequence, rather than 'just' using mental cues to compose one, it is vital to combining the understanding of the intricate structure of music and the understanding of its respective neurological response.

The EPSRC project *Learning the Structure of Music* (LeStruM) has this latter goal as its objective. The project merges the three main areas of *Music Cognition, Representation,* and *Machine Learning* in an attempt to expand the

understanding of the relationship between musical structure, musical performance and the listening experience. This is quantified in the form of brain scans of individuals listening to music. While LeStruM's goals may sound far fetched, the first steps have already been made. It was found in a recent study that, when applying a newly-developed machine learning technique to brain scans (fMRI) taken from individuals listening to both tonal and atonal musical sequences, that it was possible to infer whether a *new* individual is listening to a tonal or atonal musical sequence by *only* observing their 'brain'.

The machine learning technique applied is a combination of a General Linear Model (GLM); a standard fMRI analysis tool and a Support Vector Machine (SVM): a supervised learning method. Analysis of fMRI scans using the GLM first identifies the regions of the brain that are significant (the ones to look at), while application of the SVM on these regions allows the differences in activation in response to tonal versus atonal stimuli to be determined.

Such investigative projects provide us with a better understanding of music; the human brain and the relationship between them. It has the potential for eventually enabling paraplegic individuals to perform and compose music. In addition, it is possible to manipulate music sequences to elicit responses from autistic children thereby enhancing the current scope of communication.

Before such abilities can be achieved, however, much work has to be done. Ultimately, projects like LeStruM may bring us a step closer to the understanding of the true nature of music and its effect on our mind.

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Photo © Tom Trevatt, model Amal Khalaf

Websites

1. www.lestrum.org
2. www.cmr.soc.plymouth.ac.uk
3. www.davidroihardoon.com

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Machine learning is a bottom-up approach which is motivated by the capabilities of modern computers with the goal of designing and developing algorithms and techniques that allow computers to 'learn'. The major focus of this approach is to extract information from data automatically, by computational and statistical methods.

Electroencephalogram (EEG) is the measurement of electrical activity produced by the brain, recorded by electrodes placed at different locations on the scalp.

Functional magnetic resonance imaging (fMRI) measures the changes in blood flow to different regions of the brain during a particular perception, experience or task. These changes are believed to reflect the different levels of activation of brain regions during the particular experience or task.

General linear model (GLM) is a statistical linear model which can be applied to the analysis of brain image data to identify regions that are significant across subjects (although it also has many other applications). For each voxel of an fMRI scan, a GLM describes variability in data in terms of various experimental and confounding effects. Assuming the GLM, the activation changes at some of the voxels are shown to be significant.

Support vector machine (SVM) is a supervised learning method which, given training data, generates a model or classifier that maps a set of inputs (data) to a set of outputs (e.g. tonal v atonal categories). The model is derived by maximising the separation between the training data falling in the different categories.

The Art and Science of Picasso's *Guernica*

Pablo Picasso's 1937 canvas, *Guernica*, is among the most compelling images of modern warfare. Picasso completed it in the tragic circumstances of the bombing of the Basque village of Gernika, which is universally recognized as one of the first attacks involving a population of innocent civilians. *Guernica* cries out loud an unspeakable truth about primitive feelings of fear and pain that the destructive power of war brings about in the most genuine and crude manner. But what really makes Picasso's canvas so unique? This journey inside *Guernica* is an effort to explore its lasting representative force and unravel the inner nature of Picasso's artistic choices, which transcended the sole domain of art.

Recent years have seen a fresh interest in the relations between Picasso's art and the scientific and technological discoveries that marked the beginning of the 20th century, leading to a number of enlightening interdisciplinary studies (see further reading). Paintings like *Les Demoiselles D'Avignon* and Picasso's subsequent cubist production (1907-1914) are achievements resulting from a process of discovery in which art is in dialogue with science and technology.

Picasso's cubist experimentation and its connections with science and technology play a central role in the story of the creation of *Guernica*. Cubism was not simply a stylistic choice for Picasso; it was a proper cognitive framework that he developed between 1907 and 1914 and never abandoned in his later production. By virtue of its relations with science and technology, cubism directed Picasso's creativity towards the most suitable representation for *Guernica*.

The Art and Science of Cubism

Picasso's initiation into the realm of science is better understood within the wider framework of the scientific and technological changes that shook Europe at the beginning of the 20th century. Paris was at the centre of a cultural revolution that stemmed from the impact of unparalleled discoveries upon collective imagery. Technological advancements such as aeroplanes and their use in warfare brought about a radical reinterpretation of the categories of space and time. The invention of war camouflage challenged the rules of perception and defied notions of form and space in novel and disorienting ways. Wireless telegraphy and telephones granted rapid transmission of information in real time, independently of distance. Experiments with images in movement revolutionised the field of photography and culminated with the advent of cinema as a popular form of mass entertainment. The discovery of X-rays and radioactivity suggested the possibility of a reality beyond sense perceptions. Even the abstract field of mathematics underwent dramatic changes after the formulation of geometries that exceeded the three-dimensional Euclidean system.

Numerous sources that popularized the latest scientific developments in an accessible language were available to the public. French newspapers and magazines such as *L'Intransigeant, Le Temps, Le Matin, Paris-Journal* and the *Mercure de France* recurrently presented quasi-scientific articles publicizing the latest discoveries. The popularisation of non-Euclidean and *n*-dimensional geometries especially interested Picasso, as it implied a radically novel conception of space that turned out to be crucial for the development of cubism.

Within this atmosphere of change and expectations, Picasso and his circle, comprising the poet Guillaume Apollinaire and the writers Max Jacob and André Salmon, embarked on a creative enterprise that compelled them to explore diverse realms of knowledge and confront the traditional separation between art, science, philosophy, technology and literature. Many characters revolved around them and fostered their journey towards the birth of avant garde.

A figure that had a lasting influence upon Picasso's artistic production since the cubist years was the American writer Gertrude Stein. Her scientific training at Harvard University allowed her to act as an intermediary between artists, scientists, philosophers and writers. Her Parisian apartment at 27 Rue de Fleurus was a privileged place in which the latest developments in the fields of science, philosophy, psychology, art and technology were discussed.

Picasso and his circle were habitual guests at Rue de Fleurus. Linda Dalrymple Henderson, professor of Art History at University of Texas in Austin, and Arthur I Miller, professor of History and Philosophy of Science at University College London, suggest that in those circumstances Picasso might have learned about William James, Stein's mentor at Harvard, and his experiments on the perceptual effects of optical illusions. James' psychology was a source to which Picasso returned at crucial moments in the development of cubism and later on, in the period that preceded the completion of *Guernica*.

Over seventy years after its completion, *Guernica* continues to challenge and stimulate the public, and it does so by appealing to our cognitive responses to the universal language of geometry

A central character in the story of the relation between cubism and science is the insurance actuary Maurice Princet. Princet had an interest in advanced mathematics; his mistress Alice Géry introduced him to Picasso in 1905 and since then he became part of his circle. Picasso's friend André Salmon and the cubist painters and writers Albert Gleizes and Jean Metzinger report Princet's lectures to Picasso and his friends, which comprised discussions on non-Euclidean geometries and the fourth dimension.

Pablo Picasso (May 9 1937). *Guernica*, sketch 15. Composition Study. Pencil on paper. 24.1 × 45.4 cm. Madrid, Museo Nacional Centro de Arte Reina Sofia

In his memoirs, Gertrude's brother Leo Stein describes Princet as "a friend of the Montmartre crowd, interested in mathematics, who talked about infinities and fourth dimensions", thus testifying his presence at 24, Rue de Fleurus (see L Stein, further reading).

The sources that Princet privileged in his lectures were Henri Poincaré's *La Science et l'Hypothèse* and Esprit Jouffret's vividly illustrated *Traité Élémentaire de Géométrie à Quatre Dimensions*.

Notions from non-Euclidean geometry and the fourth dimension were at the core of Picasso's revolutionary cubist aesthetics, which consisted of the reduction of forms to their conceptual geometric properties. After 1907, the year in which he completed *Les Demoiselles d'Avignon*, cubism became the lens through which Picasso looked at reality.

The new geometries furthered Picasso's research of novel ways to explore the nature of space. This culminated in a reformulation of the very concept of spatial relations on the picture plane that verged on the possibility of conceiving geometrical relations that cannot actually be perceived. This aspect of cubism played a fundamental role in the spatial organization of *Guernica*. Faced with the problem of devising a suitable representational framework for objects and characters in his 1937 canvas, Picasso recurred to conceptual resolutions that he developed during the cubist years with the indispensable aid of geometry.

The Art and Science of Guernica

Guernica is simultaneously an indoor and outdoor painting. The spatial organization of the canvas suggests that the scene is taking place in a large rectangular room. The electric bulb, the table at the rear of the room, the tiled floor and the semi-opened door are all elements suggesting an indoor setting. Conversely, the structure of the buildings, the flames on the top-right roof, the sun-like shape of the electric bulb, the presence of the bull and the horse evoke an open space, which in many respects mirrors journalistic accounts of the bombing of Gernika, with which Picasso was familiar.

An explanation of Picasso's treatment of spatial relations in *Guernica* requires an examination of the painting in terms of cubist elaboration of pictorial space. Cubism eradicated any relevant distinction between inside and outside or figure and ground, thus reducing all space in the canvas to a simultaneous view of multiple perspective points at once. A similar conceptual representation is the key to the universality of *Guernica*. The use of cubist elements enhanced the shocking impact of the canvas on the public and directed Picasso's creativity towards a result that could satisfy his representative needs.

A great advantage in studying *Guernica* is that it is a relatively well-documented painting. Picasso numbered and dated all the preparatory sketches. His then mistress, the surrealist photographer Dora Maar, captured the states

of the painting in a photographic record of the canvas in progress. This preparatory work gives us a glimpse of the way in which he conceived *Guernica* and clarifies the role of cubism in the completion of the painting.

Picasso began his work on the canvas on May 1, four days after the news of the bombing of Gernika. Ten sketches were drawn between May 1 and 2, followed by a pause of one week. On May 8, Picasso resumed painting in a more organized manner. Sketch 15 (left), dated May 9, discloses Picasso's decision to use cubism as a device to solve the problem of representing *Guernica*.

Until May 9, Picasso concentrated his efforts on the foreground of the painting and the pictorial organization of the figures. He focused on the relations between characters by isolating individual figures or grouping them according to different combinatorial possibilities. His decisive intervention in sketch 15 concerned the conceptual problem of representing space and spatial relations in the painting. The outcome of this experimentation emerged as a combination of factors that exceeded the domain of artistic creation.

The organization of the background in sketch 15 reveals Picasso's breakthrough: the geometry of cubism could solve the pictorial problem of the spatial organization of *Guernica*. The drawing condenses his reflections on the nature of space and the possibility to visualize objects from multiple perspective points. Picasso obtained the extreme geometrisation of the buildings through the depiction of a manifold of intersecting planes, which served as a device to isolate and explore conceptual properties of space.

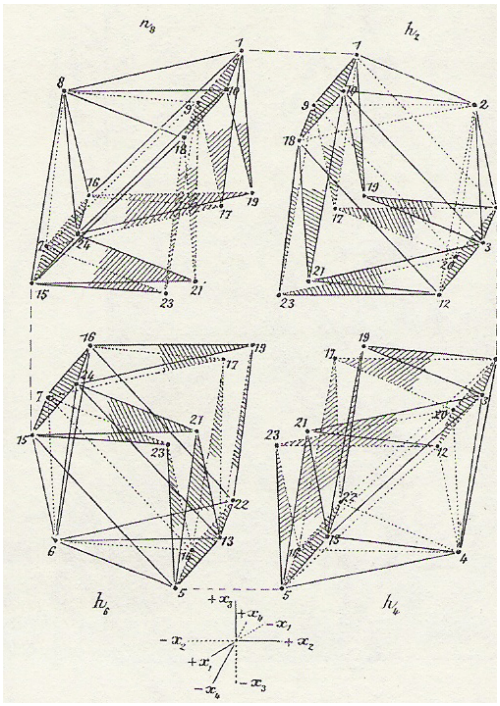
There are at least two sources which could have inspired Picasso's spatial organization in sketch 15: Esprit Jouffret's *Traité Élémentaire de Géométrie à Quatre Dimensions* and William James' experiments with optical illusions. Both were sources with which Picasso was familiar since the cubist years.

Jouffret's *Traité* was first published in 1903 and it was among the topics that Maurice Princet discussed in his lectures on geometry. The book summarized the current literature on non-Euclidean and *n*-dimensional geometries and provided his readers with detailed projections of four-dimensional polyhedra onto a two-dimensional surface. A characteristic of these projections was their extreme faceting, which could be obtained through a method known by mathematicians as 'perspective cavalière'. Besides the technical details, Picasso might have been challenged by the degree of precision of Jouffret's figures and their conceptual power in conveying alternative concepts of space.

The extreme faceting of Jouffret's solids closely resembles Picasso's depiction of spatial relations in sketch 15. The background of the sketch is composed of triangular folding planes and angles seen from different viewpoints. Jouffret's multifaceted polyhedra shaped Picasso's visualization of space and guided his progress towards a geometric organization of space in the canvas that overthrew perspective in three dimensions.

The second source that might have directed Picasso towards a satisfactory spatial organization in Guernica is William James' 1890 *Principles of Psychology*. In volume 2, James referred to an optical illusion discussed in Ernst Mach's 1886 *Analysis of Sensations*, which he named the "folding visiting card illusion". The card can appear either as if it is open towards the viewer or away from him and flip back and forth. Although the relations between light and shadow do not change, the viewer's eye is deceived: James interpreted this as evidence that the movement occurs cognitively in our brain.

Picasso's awareness of Mach/James' illusion might have been stimulated by his conversations with Gertrude Stein. Folding planes began appearing in Picasso's canvases starting from the preparatory drawings for Les Demoi-



EP Jouffret (1903). *Projections on a plane of the rotation of a four-dimensional ikosatetrahedroid*

selles d'Avignon in 1907, when he was a regular guest at 27 Rue de Fleurus. The same optical illusion appeared also in later works, such as the curtain for Jean Cocteau's ballet *Parade* (1917) and the stage backdrop for Sergei Diaghilev's *Pulcinella* (1920).

The geometric shapes that characterize sketch 15 obey the same principle as Mach/James' folding card. The planes constituting the background of the sketch can be seen as either folding forward or flipping backward. Their arbitrary shadowing produces an effect of visual ambiguity, so that a conceptual effort is necessary for either ways of perceiving the spatial organization of the sketch. The same organization governs the buildings and windows in the final canvas and is at the basis of the simultaneously indoor/outdoor setting of *Guernica*.

Jouffret's projections and Mach/James' folding card were cognitively fertile visual stimuli because of the crucial commonalities that Picasso discovered in their respective representative functions. Both representations consisted of intersecting and folding planes, which guided him towards the multi-faceted rendering of the background of sketch 15. In both representations, arbitrary shading was essential for the attainment of the visual ambiguity that directed Picasso towards the indoor/outdoor setting of the final canvas. Crucially, both representations were conceptual vehicles to convey geometrical properties of space.

Guernica as a Challenge to the Traditional Separation between Art and Science

Picasso continued his work on *Guernica* until early June 1937. He kept producing sketches and manipulated negatives and photographs taken by Dora Maar while working on the final canvas. Yet, it was sketch 15 that opened the path towards the most appropriate solution to the compositional problems that *Guernica* posed. The drawing allowed him to break out of the boundaries of the domain of art and turn to geometry as a conceptual vehicle to visualize spatial relations in the canvas.

The scientific and mathematical roots of cubism provided Picasso with cognitively fertile and novel ways to think about space. They allowed him to convey a reasonable amount of abstraction to the painting and at the same time preserve the pictorial status of objects, with their properties and their relations.

In this respect, the creation of *Guernica* compels us to reconsider the traditional academic separation between art and science. Great achievements in both fields are guided by the capacity of highly creative people to think across domains and overcome boundaries that separate diverse fields of knowledge. A common characteristic of creative endeavors in art and science consists of establishing novel and cognitively valuable relations between apparently unconnected phenomena. Both artists and scientists seek representations of reality that will foster our understanding of the world. In this attempt, they are faced with the problem of finding suitable representative vehicles to convey new knowledge in a perspicuous and fertile manner.

The lasting representative force of *Guernica* hinges on geometry as the vehicle of Picasso's conceptual message. Over seventy years after its completion, *Guernica* continues to challenge and stimulate the public, and it does so by appealing to our cognitive responses to the universal language of geometry. By bringing together two apparently disparate domains, Picasso challenged the distinction between artistic and scientific knowledge and produced a universal cry of protest against war that never lost its power to remind institutions, authorities, artists and common people of the horrors and cruelties of war.

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Portrait © Tom Riddick, Department of Anthropology

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Flexible minds

gender-bending experiments in language

Italian, unlike English, is a language in which all nouns are marked for grammatical gender. The words for 'man', 'donkey', and 'table' are all masculine whereas the words for 'woman', 'tiger' and 'chair' are feminine. Gender splits the language into two groups with different attributes but, in the mind of the speaker, are these attributes of the word or of the objects themselves? It has been suggested that speakers of gender-marked languages like Italian think of these creatures and objects as having male or female characteristics. So do Italians think of donkeys as being particularly manly? We sought to address this question.

How would a bilingual speaker think about these donkeys and tigers when speaking in English – a language that does not assign a particular gender to the nouns? We studied Italian speakers who learnt English as a second language and compared how they talked about animals in both languages. We reasoned that, if it is true that the language we learn as children determines the way we think about the world, then it should not be possible to learn to talk about the world in a way that is appropriate in another language – that would imply going against what we already know.

To test how objects were categorised in the minds of bilingual speakers, we devised an experiment where we showed participants pictures of common land animals on a computer screen and they had to name them as quickly as possible. When we try to talk under time pressure we tend to make a lot of slips of the tongue. These slips are not random, however: when we substitute one word for another, for instance, they are often similar in meaning. By looking at the types of slips bilingual speakers made both in Italian and in English, we could determine the role of grammatical gender in thought. If grammatical gender affects the way Italians perceive the entities to which words refer, and not simply the words themselves, then our Italian-English bilinguals should perceive that tigers and skunks are more similar to each other because the words for these animals in Italian are marked feminine. When performing the task we would expect them to substitute these words for each other more often than by chance. More importantly, this should happen regardless of the language in which they are performing the task.

If, however, we observe a bias in the errors bilinguals make in Italian only, not in English, then we have evidence that it is the gender of the words that leads to the slips, not the objects, and that gender affects only how Italian speakers talk about these animals, not how they think about them.

We found that in fact grammatical gender only affected the types of errors bilinguals made when the task was in Italian but had no effect when the task was in English. Indeed, when we compared the slips bilinguals made in each of their languages with those that monolingual Italian and English speakers made, we found that they were indistinguishable: bilinguals behaved like monolingual Italian speakers when they performed the task in Italian and like monolingual English speakers when the task was in English.

This flexibility in adapting to ways of speaking about the world enshrined by different languages suggests that our thoughts and concepts are not irreversibly determined by our first language: although the language we speak clearly affects the categories we deem similar, when learning a new language we are able to form new categories independently of our native tongue. In short: Italian speakers don't think of donkeys as being manly any more than English speakers do!

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Tuakana

my sister, my brother or my cousin?

"Differences between cultures cause many more severe complications for the translator than do differences in language structure". This quotation comes from the Baptist minister and pioneer of linguistic theories in Bible translation Eugene Nida. Even though translators may bridge languages and cultures, in their work they are constantly faced with challenges – but are the barriers to translation rooted chiefly in the linguistic or cultural differences involved?

Cultural difference causes many problems for translators: certain concepts are missing in their entirety from some cultures and sometimes cultural norms forbid translations that are seemingly possible. If we accept that every language can express the extent of human experience, the only block to translation should be insufficient vocabulary to describe unfamiliar concepts, objects or environmental peculiarities. But is linguistic difference so easily overcome? Some argue that this presents few translational problems – everything can be explained to some extent – but I hold that this is not always the case. We will examine various degrees of difficulty in translation caused by cultural or linguistic difference. In order to determine whether culture or language is the greatest hindrance to translation, the distinction between them must be established. Finally, with the help of examples of where this boundary is unclear, we will consider the distinction between cultural and linguistic difference and establish the extent to which these really are invariably separate phenomena. We will consider a range of opinions from key figures in translation studies and, taking examples from as cultures as varied as Scandinavia and the Pacific Islands, try to determine whether Nida's assertion echoes the reality for translators today.

Cultural distance

Let us first consider examples where translation is difficult due to cultural difference – where a relevant situational feature for a source language text is lacking in the target language.

One Portuguese term, *saudade*, has long troubled translators. Defined as 'yearning' with an 'overtone of melancholy and brooding loneliness and an almost mystical reverence for nature,' saudade has no simple equivalent in English. Britons can understand such longing, but it is not identifiable as a distinct concept within British culture. Conversely, *saudade* is central to Portuguese culture as the foundation of the national music genre, *fado*. This is not an example of linguistic difference causing translation difficulties, as the differing lexicons result from different cultural phenomena. Portuguese do not experience *saudade* because they have a word for it – they have a word for it because they experience it. Scholars are not agreed on the translational problems of *saudade*. The American philosopher and linguist Jerrold Katz would argue that the above lengthy definitions qualify as English translations of *saudade*, as he considers paraphrase acceptable when a similar target language term is lacking. One could extend

this principle to absurd lengths, however: even though a target language text in which every sentence were a trillion words would satisfy Katz's principle, it clearly would not satisfy human behaviour. It is difficult to determine what constitutes translation, but by rendering *saudade* in these terms, the 'everydayness' of the Portuguese is lost. This demonstrates the challenges that cultural difference can present.

There are, however, instances where the target audience has no concept of the source language idea. Anglophones understand *saudade*, but translation proves problematic when dealing with completely alien concepts. Bible translation into Tahitian proved challenging as the Tahitians had no term for 'hate'. The closest alternatives were *riri* 'furore', *hae* 'rage' and *au'ore* 'lack of love'. This is another example of culture rather than language making translation problematical; if Tahitians were culturally capable of feeling hatred, we would expect their language to have a word for it.

Conversely, there are instances where literal translation is undemanding, but the target culture finds it unusual or even forbids it. In Scandinavia, when a guest next meets a host after a dinner-party, it is customary to say 'thank you for last time' (in Danish *tak for sidst*). In English, this sounds plausible but unlikely. While the construction is translatable, the cultural setting makes translation problematical. More fitting may be 'It was a good party, wasn't it?' which is not a translation per se, but an adaptation. Comparable examples abound, but this case is interesting as the cultures are so similar.

An extreme example comes from the Pacific island of Wallis. The words for 'eat' and 'drink' in Wallisian are *kai* and *inu*. When referring to high-ranking people it is culturally taboo to use these terms and an honorific *taumafa* must be used, encompassing both actions. This troubled Bible translators who were unable to differentiate between eating and drinking when referring to Jesus, rendering some of his actions ambiguous. 'Jesus ate' could be translated into Wallisian, but culture forbade this.

Linguistic difference

In the words of Louis Hjelmslev, founder of the Linguistic Circle of Copenhagen, language can "work over the inexpressible until it is expressed". Sometimes, however, linguistic difference presents real problems for a translator. We will consider three degrees of linguistic difference: difference that does not make translation problematical; difference that troubles the translator and difference that renders translation impossible.

The phrase 'I have' appears readily translatable, but possession is expressed differently in different languages. Finnish and Latvian indicate possession by using inflected forms of the personal pronoun, together with an appropriate form of the verb 'to be'. Finnish uses the adessive case, *Minulla on puhelin* ('I have a telephone', literally, 'at-me is a-telephone'), whereas Latvian uses the dative, *Man ir telefons* ('to-me is a-telephone'). The constructions differ, but the translation is straightforward – the meaning is the same. A Latvian hearing *Man ir telefons* will arguably understand the same as an Englishman hearing 'I have a telephone'. Here, linguistic difference is irrelevant.

Examples exist, however, where differences are not irrelevant. When translating the sentence 'I hired a worker' into Russian, more information is needed: was the action completed ('aspect')? What is the speaker's sex? This causes few problems if the context is known, but is more problematic when taken as a stand-alone sentence. Whilst this information can be given in English, it is not compulsory – unlike in Russian. Many languages cannot be as ambiguous as English regarding gender. When translating 'I am happy' into French, the gender of the speaker is fundamental: je suis *heureux/heureuse* (male/female). Finnish demonstrates greater ambiguity by not differentiating between masculine and feminine pronouns, *hän puhuu* ('he/she speaks'). Differing specificity complicates translation. If ambiguity is central to the text, translation can be impossible.

Grammatical gender typically presents few problems. Translating *la maison* (French, feminine) into *das Haus* (German, neuter) is uncontroversial. Problems arise when the gender is a textual feature. The representation of Death (German: *der Tod*, masculine) as an old man in German fairy tales sits uncomfortably with Russian children, as the Russian word for death, *смерть*, is feminine, personified as a female. The linguistic basis of these translation problems is supported by research showing that Russians generally personify certain weekdays as males and others as females, unaware that this correlates with their grammatical gender. These problems are somewhat exceptional.

The use of wordplay can often render translation impossible. Consider the following passage:

> '... there was no Small Change but many Checks on the Bank wherein the wild Time grew and grew and grew.'

This text contains many puns, where one component refers to two lexical items simultaneously. The likelihood of a target language having one graphological/phonological component for the same two lexical items is minute, let alone for each pun here. On rare occasions puns may work in a similar way in both source and target language but a text with several puns is essentially untranslatable. Where puns appear, linguistic difference will always figure and translation problems follow. French, for example, has no substitute for 'bank' in this scenario as no French word encompasses the range of meanings present in the English term.

Cultural and linguistic difference

Are cultural and linguistic difference always fully independent translation challenges? Language and culture are intrinsically linked – separating them often seems artificial or impossible. Culture drives language, and language is a vital part of culture.

The Leeds-based Iraqi linguist Hussein Abdul-Raof gives an example where it is difficult to determine whether linguistic or cultural difference causes translation problems. When translating the following Qur'anic extract from Arabic to English, the absence of grammatical cases for English nouns and the English reader's probable lack of understanding of Arabic cultural norms combine to present the translator with a difficult task:

> 'Behold, they entered his [Abraham's] presence, and said: 'Peace!' He said 'Peace!' [and thought] 'These seem unusual people.' (Q51:25)

The Arabic word spoken by 'they' is *salaamun*: 'peace' in the accusative case. Abraham's reply is *salaaman*: 'peace' in the nominative. The words look similar, but there is a key cultural significance in their difference. In Arabic culture, the nominative enjoys an elevated position over other cases: according to the Qur'an, one must return a greeting with one that is more polite. Abraham is greeted in the accusative and replies in the elevated nominative. Linguistic difference – employed for cultural reasons – makes an English translation impossible. Additionally, 'peace' is a standard greeting in Arabic, unlike in English. This resembles the Danish *tak for sidst* example, although it differs fundamentally in that although the Danish can be translated into English syntactically, the Arabic *salaamun/salaaman* cannot. It seems that cultural difference is the principle reason for translation difficulty here. This is evident if we consider a West European language that can express the grammatical difference between the Arabic forms. The Faroese word for 'peace' is *friður*, or *frið* in the accusative. *Frið* and the response *friður* do not constitute acceptable greetings in Faroese, although the meaning is the same. The cultural importance of the word *salaaman* and the higher status of the Arabic nominative are lost. Accordingly, we could categorise this as cultural difference complicating translation, but it is essentially linguistic difference that blocks any literal translation into English.

In the Cook Islands, a female refers to her brothers and male cousins as *tungane*, whereas a male refers to his sisters and female cousins as *tua'ine*. Both refer to younger siblings of their own sex as *teina*, whereas older siblings and cousins of their sex are *tuakana*. This causes problems when translating from Cook Islands Maori to English. It is difficult to translate the term *tuakana* without the context – should it be '(older) sister', '(older) brother' or '(male/female) cousin'? We have numerous alternatives for one Maori word. Is this cultural or linguistic difference? Does English lack the words for these 'foreign' ideas, as with saudade, or do the Maori terms refer to familiar objects, but place different emphasis on the relationships?

Earlier we discussed grammatical gender and aspect as examples of linguistic difference between languages, but these could also be considered a part of the source culture. Linguistic differences may reflect the cultural mindset of the speaker. It seems, however, hard to imagine that bilingual Swedish and Finnish speakers change their perception of possession when they switch codes (the Swedish 'possession' construction resembles the English). Many Maori speakers also speak English. It seems unlikely that they view their siblings differently depending on which language they are speaking at a given time – the differences must be linguistic. It is interesting to consider bilingual populations when discussing cultural and linguistic difference in translation, as it is the closest one can get to changing only one variable. It is tempting to conclude that all differences are cultural, but the above examples show that this is not the case. Both cultural difference and linguistic difference exist, but the exact relationship is hard to determine

Conclusion

The above examples have shown that both cultural and linguistic difference cause translation difficulties. Language

difference can be so great as to render translation impossible. Wordplay is often untranslatable as it relies on the intricate workings of a given language. A language's degree of specificity can also complicate translation. Translating an ambiguous phrase into a language which is constrained to be more specific relies on the translator being aware of the context. This is not always possible.

It can be difficult to decide whether it is cultural or linguistic difference that causes translation difficulties in a given scenario, as in the Arabic example. Culture and language are intrinsically linked and we have seen the influence they exert over each other. They are not so similar as to be indistinguishable, but at times the difference is obscured by their close relationship.

Nida was correct when he wrote that linguistic difference will rarely trouble the translator as much as cultural difference. Naturally, a language has no word for a concept that the local culture does not recognise. Cultural terms can often be paraphrased, as with *saudade*, but it can be difficult to discern what constitutes a translation and what is only an explanation. Languages have a degree of universality and most languages can overcome linguistic difference by adding or removing words, or paraphrasing to convey the original message. By definition, this universality cannot extend to cultural difference.

While linguistic untranslatability does exist, it impacts upon a small fraction of language use – predominantly wordplay – whereas cultural difference can cause problems in many spheres of translation. Although linguistic difference is far from irrelevant, it is cultural difference that truly challenges the translator.

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Further reading

1. Hussein Abdul-Raof, 'Cultural Aspects in Qur'an Translation' in *Translation and Religion: Holy Untranslatable?* edited by Lynne Long

2. JC Catford, *A Linguistic Theory of Translation*

3. Eugene Nida, 'Principles of Correspondence' (1964) in *The Translation Studies Reader*, Second Edition, edited by Lawrence Venuti

Moving Borders

a blog on migration

Moving Borders: the Aesthetics of Migration is the title of a weblog I have recently started concerning my research interests, but it is also the title of a postgraduate research day that I organised at UCL on March 31 2008.

The idea behind this event goes back many months, when I started my Mellon post-doctoral fellowship here at UCL, and I noticed how many people, PhD students in particular, were actually interested and involved in research on migration from many different perspectives. I decided that it would be interesting to bring together some of them, at least those I had the chance to get in touch with, for a workshop where we could have the opportunity to share our research and interests in migration and related issues. My priority was to involve people from different disciplines, who were especially interested in the aesthetic dimension of migration; in other words, in the cultural effect that the social phenomenon of migration can bring into a 'host' culture. The idea of talking about an aesthetics of migration comes from the recent notion of 'migratory aesthetics', coined by the cultural theorist Mieke Bal – it is also the title of a large international project bringing together a group of British and Dutch scholars. This collaborative research project has already produced meetings, exhibitions and a collection of essays entitled *Essays in Migratory Aesthetics: Cultural Practices Between Migration and Art-making* published in 2007.

The concept of migratory aesthetics refers, in Bal's words, to "the current cultural and aesthetic moment in view of the merging of cultures"; in other words to the cultural inspiration that migration can produce. All this made

me think about the possibility of bringing together interesting scholars who – in very different ways – are working on projects aimed at 'moving the borders' of cultural and social constraints. The papers presented have, in fact, considered a wide range of cultural practices such as literature, film, performance and of course a range of spaces in which migration has produced cultural 'clashes', such as cities, museums, squares, bars, clubs and virtual spaces such as the internet.

The UCL Mellon research day was a real success. The speakers included Izzy Hollis (King's College London), Meena Bhamra (UCL), Monia Acciari (University of Manchester), Daniele Comberiati (Université Libre De Bruxelles), Sanaz Raji (SOAS, London) and Alpesh Patel (University of Manchester), who all did an excellent job, as did the other participants who made the round table an especially interesting opportunity for discussion and inspiration. Many issues were raised and discussed , and all subjects were approached from a variety of cultural and disciplinary perspectives. This made the day a very special moment for everybody to realise the possibility of crossing and moving disciplinary boundaries and to build up a common platform for analysis and research. Issues relating to the legislative discourses applied to migration, such as political and social constraints and xenophobic attitudes against 'the other', were among the topics that deserved particular attention during the seminar's conclusive discussion. Much emphasis was also given to the concept of space – bodily and urban – occupied by migrants in the passage from one place to another. The reference to alternative ways of expressing migrant identities, such as digital media as a form of satire, or visual art and cinema, activated a great debate on how important it is to talk about the positive aspects of migration, that go beyond the trauma of abandonment and displacement, and that translate themselves in prolific cultural and aesthetic practices.

The research day constituted the first important objective of a project that I would like to develop further during the second year of my Mellon fellowship. For the Mellon Programme I have been running a series of interdisciplinary seminars on the topic of 'Migration and Non-Mother Tongue Writing' where I have invited scholars to present papers on issues related to migration. The seminars explored the theoretical and practical discourses and representations around the question of migration especially as related to literature and visual culture. They wish to contribute to the debate within comparative literature in relation to a world literature perspective that reconsiders the somewhat uniform understanding of national literatures, in order to overcome the limits set by local paradigms. Some of the seminars shared a focus on the Italian case, which is also central to my project. So far, the seminars have given me the possibility to explore different ways of investigating the literature and culture produced as a result of Italian migration, and more generally the interdisciplinary dimension involved in these issues.

Recently a 'town meeting' on the topic of migration was organised by the UCL department of Geography on April 30 2008. This was a particularly important occasion for scholars working at UCL with an interest, for different reasons, in the topic of migration. There were people from many different research areas and at many different stages of their careers, sharing their interests on migration and talking about the possibilities of building up a platform for common discussion. I am extremely excited to see how these ideas will develop in further projects to which I hope to contribute.

I am currently working on the organisation of an additional event: an exhibition at UCL of Mieke Bal's installation on migration, which will take place in September 2008. In the meantime, the blog remains active and open to all kinds of comments and suggestions.

Dr Federica Mazzara, UCL Mellon Fellow

Further reading

Sam Durrant & Catherine M. Lord (eds.), *Essays in Migratory Aesthetics: Cultural Practices Between Migration and Art-making*

Websites

1. www.movingborders.blogspot.com
2. www.ucl.ac.uk/mellon-program/events/borders
3. www.reporter.leeds.ac.uk/press_releases/current/migratory_aesthetics.htm
4. www.ucl.ac.uk/mellon-program/seminars/2007-2008

Pandemic! (don't panic)

Pandemics are worldwide epidemics. When the pandemic comes, you and I may not survive, but humankind will carry on. Professor Robin Weiss takes us on a tour of the pandemic throughout history and explains UCL's role in getting to grips with a number of these diseases in recent years.

In our increasingly connected world, disease can spread at an unprecedented rate and new pandemics are often hyped as threatening to wipe out the whole of humanity. In reality, pandemics are rarely successful in eradicating entire species: the UK rabbit population managed to bounce back even after 98% succumbed to myxomatosis in the 1950s. Outbreaks of disease, however, have significantly affected the fortunes of different societies over history – for better or worse. In 1348, over 30% of the European population perished in the Black Death, but there was an upside for the survivors: the resulting labour shortage liberated previously indentured peasants and villeins to earn fair wages. An even greater population crash occurred after the Spanish Conquistadors defeated the mighty Aztec empire thanks to smallpox and measles. Rather than liberating a people, however, the shortage of local workers as a result of this population crash spurred the traffic of Africans to America to work in slavery.

The long-heralded avian influenza pandemic has still not surfaced, leading some experts to wonder whether the virus is inherently ill-equipped to spread among humans. It would only take a couple of mutations to adapt to hu-

man cells, however, so we should not be complacent. The 1918/1919 influenza pandemic killed around 50 million people; reconstruction of the virus's genes from preserved pathology specimens indicates that it too came directly from birds. Sars in 2003 was a near miss. Traced to civet cats sold as food in a number of markets in Guangdong, South East China, the virus rapidly spread to Hong Kong – so why did it fizzle out? The reason is that only a small proportion of those harbouring the virus shed enough to infect others, and only did so after they became very sick indeed. With flu on the other hand, you can easily spread it for two days before taking to the sick bed.

Globalisation, of course, promotes the pandemic spread of diseases. In the 14th century, following Genghis Khan's conquest of both China and the Western steppes, plague travelled along the newly-established silk road. Syphilis was first noted in 1493 in the Iberian peninsula. It remains hotly debated whether Christopher Columbus brought it back from Hispaniola, or Bartholomew Dias (the first European to round the Cape of Good Hope) imported it from Africa. What we do know is that it reached as far as Japan in 1505 sailing ahead of St Francis Xavier. In the 21st century we may witness similar movements speeded up; it took only 24 hours to export Sars from Hong Kong to Toronto.

The year 2008 marks a pandemic silver anniversary, for 1983 was a vintage year for the discovery of three quite different pathogens: HIV, human papilloma virus type 16 (HPV) and the *Helicobacter pylori* bacterium. HIV, like Sars, represents a genuinely new virus for humans, coming from chimpanzees. Aids was first recognised in 1981, and the race to identify the cause was won by Françoise Barré-Sinoussi and Luc Montagnier in Paris. Since then, some 24 million people globally have died from Aids, and around 36 million currently live with HIV infection. Since 1996 anti-retroviral therapy has brought down the Aids death rate by 70% – for those who have access to the drugs. Yet we have failed to develop a safe, effective vaccine against HIV, and not for want of trying.

In contrast to HIV, HPV-16 and its relative HPV-18 which cause cervical cancer have co-evolved with humans and have always been with us. What was new in 1983 was their discovery by Harald zur Hausen and his team in Freiburg. This was the first virus to be identified through gene cloning rather than by isolation in cell culture. Two pharmaceutical companies have recently developed good vaccines to prevent HPV infection, by manufacturing 'empty' virus particles that contain no genes and therefore aren't infectious. The vaccine will be offered to pre-teen girls to protect them from cervical cancer in later years. I would vaccinate boys too; after all, how does HPV reach the cervix? But that would be an 'altruistic' vaccine, one that does not protect the individual but protects society.

H. pylori is a bug which grows in the stomach: an acid environment which was previously thought to be sterile. It causes stomach and duodenal ulcers, and also stomach cancer. It was detected in 1983 by Barry Marshall and Robin Warren in Perth, Australia and they won the 2005 Nobel Prize for this discovery. Marshall followed a time-honoured method in medical research by swallowing a culture of the bacteria himself, and promptly developed severe indigestion. Peptic ulcers had not previously been thought to be caused by infection, and it took 10 years for Marshall and Warren's claim to be generally accepted by the medical profession. Part of the resistance to the idea came from the pharmaceutical industry, because chronic treatment with anti-ulcer drugs was a lucrative market, whereas a single course of antibiotics to treat an infection is dirt cheap.

What role has UCL played in these stories? Well, Peter Isaacson and Ming Du discovered yet another disease linked to *H. pylori* – a form of gut lymphoma called MALT. We didn't discover HIV, but back in 1984 Richard Tedder's lab and mine devised the most sensitive and specific blood test, which made blood donations safe again and led us to the dreadful realisation that 'slim disease' in Africa was actually Aids. With Peter Beverley, then at UCL, we found that HIV's first step in infection is for HIV to dock onto a cell surface receptor called CD4. The Medical Research Council's Clinical Trials Unit directed by Janet Darbyshire and housed at UCL has pioneered HIV treatment. How HIV develops resistance to drugs is investigated by Deenan Pillay, and Chris Boshoff provides insight into Aids-linked cancers, while Greg Towers has found novel mechanisms in human cells that explain why viruses do not cross over from other species more often. The Bill & Melinda Gates Foundation is funding an international consortium led by UCL to overcome the impasse to an Aids vaccine. Finally, don't forget that the Mortimer Market Centre at UCL is the best place to go if you need treatment for HIV and other sexually transmitted diseases – or just want counselling.

Professor Robin Weiss
Division of Infection & Immunity

The rewards and challenges of Biomedical Science in Africa

What is your impression of the developing world? Is it cute African children queuing for vaccination or treatment? Is it the environmental chaos following a bush fire? A shanty town on the edge of Dar es Salaam or Nairobi? Or the manicured lawns and civilised colonial world still found in many tourist resorts? Of course it is all of these. In a country like Tanzania you will be exposed to all of these aspects of life. The question is: which do you want to engage with?

Why would you bother to engage at all? As a student in UCL, in the centre of one of the major multi-cultural cities of the world, it does not take much imagination to see the potential excitement of working in a new country, with a new culture and environment. A little bit of sunshine might be nice! There is a real challenge, one we often are shy to admit: the wish to make a real contribution; to make a difference. As I hope I will show you here, undertaking research in Africa means getting 'up close and personal' in a way that is not possible working in a London college.

There are scientific reasons for undertaking research in these settings. If you work on infectious diseases, as I do, then it is self-evident that access to large numbers of infected patients can increase the speed of research and provide the numbers necessary for meaningful analysis. The limitations of this sort of study in the UK are illustrated by our work in the late 1990s in which we undertook a molecular epidemiological study of tuberculosis within the M25. In two years we recruited 2500 patients, but this number was only sufficient to draw general conclusions; when we started to focus our questions, the numbers all too quickly became too small for statistical significance. Scale can solve these problems, allowing more detailed scientific questions to be asked; but the real effect of scale is to focus one's mind and research on those with most need. Relevant research in a relevant setting is required. Too often we try to apply solutions worked out in a western health care system which are inappropriate and simply will not work in the tough environment of a rural health centre, for example. However, it is important to remem-

ber that there is a great diversity in facilities: I have seen laboratories in Africa equipped and running in such a way that makes me envious, but I have also seen laboratories without power to run their microscopes and fridges.

So, here is a challenge for you. Take a moment to think about these questions: what is important about your work now? When you describe it to friends and family, do you have difficulty explaining the relevance of your work? Can you place your work in a global context? We are all different with different drives to our science; some are fascinated by the minutiae, others need the bigger picture. If you are unsettled by the answers to my questions, perhaps you are in the wrong place in this spectrum. Perhaps you should consider a new challenge.

Having challenged you, I should offer some rewards. These are summarised by access, context and impact. The first I have already alluded to: working in the developing world you have access to large study populations and often these populations are enthusiastic to participate. The reasons people participate in clinical studies are complex, but across the world a major motivation is improved access to health care by participation. African governments have now created a strict ethical environment which is heavily regulated. Typically, studies we undertake at Kilimanjaro Christian Medical Centre (KCMC) will be regulated by UCL and KCMC ethics committees, together with at least one national committee – two if HIV positive patients are part of the study. One of the most remarkable aspects of working with colleagues in Africa has been the enthusiasm and motivation of the teams. Cynically this may be thought to be because working on a western funded project has financial and personal benefits, but my experience suggests it is as much to do with pride and loyalty to the project goals and team built over time.

Take a moment to think about these questions: what is important about your work now? When you describe it to friends and family, do you have difficulty explaining the relevance of your work? Can you place your work in a global context?

The access obtained by working close to the community also provides a unique perspective on the context for a disease. Working in tuberculosis, as a laboratory scientist in London, there is no requirement and little opportunity

Molecular practical course at Kilimanjaro Christian Medical Centre funded by the Society for General Microbiology to provide an introduction to molecular skills for microbiologists.

for me to meet with TB patients or visit clinics. In Tanzania we work at the National TB hospital: this physical and personal proximity provides a real context to our studies. In a community where HIV infection is high and co-infection with TB a major problem, healthcare workers, their friends and families are likely to be patients. The perceived distinction between healthcare workers and the community in the UK is simply not there. Though most dramatic when we consider TB and HIV, this applies across the infectious diseases.

Working in a big teaching hospital within the structures of UK higher education and healthcare it is easy to feel that your contribution is of limited or no value. Although our work in Africa is aimed at big issues there is plenty of scope for a significant local impact. A good example of this is the MSc projects our students undertook as part of the MSc in Clinical Tropical Microbiology. One such project was undertaken by a student who was monitoring antibiotic resistance in respiratory infections. This required the set up of a culture and bacterial identification system which was not usually resourced by the clinical laboratory of the sugar plantation hospital in which we were working. One day our intrepid student was asked to culture a specimen that certainly did not look like a respiratory sample. It grew and he duly delivered identification and antibiotic sensitivities to the medical officer, who was very grateful and explained the background. This sample had come from a cane-cutter's leg wound that was not healing. Without the culture performed by our student, the medical officer was struggling to identify an appropri-

ate therapy. This student had a very real local impact above and beyond the esoteric questions of his MSc project. Importantly he had to display a high degree of flexibility in his approach to the work. If you want impact from your work, you can't beat clinical studies undertaken in a relevant setting asking a big question. A good example of this is the work led by Professor Zumla in Zambia in which they demonstrated that children of all ages with clinical features of HIV infection should receive co-trimoxazole in resource-poor settings, irrespective of local resistance to the drug (published in *The Lancet* in 2004). This study informed the care of HIV infected children across Africa and has a direct impact on their survival.

If you take up these challenges, what are the likely barriers to your success? Actually, I would prefer to see them as further *challenges to be met,* rather than barriers. We often refer to the developing world as a 'resource-poor setting': the resources in question may be infrastructure, appropriately qualified staff or money. It would also be naïve to ignore the cultural context and personal agendas of everyone involved. Of course, cultural context does not only refer to differences between Africans and Europeans. In many of our collaborations, it is the cultural differences between north Americans and Europeans or Africans that cause complications (the nuances of UK-English and US-English are a particular source of confusion). Often it is a matter of perspective; what institution do the following terms describe? *Overwhelming bureaucracy, dodgy equipment, lack of funds, internal and professional politics.* Of course, on a bad day it could be UCL, or indeed any major academic institution around the world. The point is that one of the uniting factors for scientists the world over is the inadequacies (real or perceived) of their host institution. When working with a new institution, in a new environment, it is wise to remember the failings of your home institution and avoid the 'back at UCL we do it like this' approach to negotiation. It is important to understand how the host institution works, what its regulatory and management structures are and to establish your routes for integration. There is a real temptation to form coalitions of well-meaning outsiders. In the simplest form this inhibits capacity development; in the extreme it is a form of cultural imperialism. Communication is the key to success – communication on the ground with your collaborators but also regular communication and back up from your team at home. It is very easy to become isolated as you may have limited social networks around you.

You will be working in an intense world, absorbed by the subject matter and working closely with a wide range of staff. It is critical to value people for their experience rather than their qualifications. Often highly experienced research workers have not had the opportunity to study beyond a relatively early-stage qualification, though obviously certain roles require specific qualifications for regulatory purposes. Staff may be divided into 3 groups; able but no certificate, not competent but enthusiastic and trainable, and not competent. It will be your role to ensure that these staff deliver the project efficiently and ideally that you enable them to develop throughout the project. Often the few competent staff are divided between many different functions. As a postgraduate student or post-doc in the UK you are unlikely to have managerial responsibility, beyond perhaps the odd BSc student. Working as the sole representative of a research project at the site changes all this. You will become responsible for a wide range of staff; scientists, nurses, doctors, administrators, housekeepers and drivers. You may not be required to direct their daily activity but you will be responsible for the big stuff: how much are they paid? Where is the money that should have come from UCL four weeks ago? These people may not have bank accounts and are unlikely to have the resource to borrow from a bank or family member if the money is delayed. You suddenly become directly responsible for an extended family.

Having lined up your staff, you will be responsible for all aspects of project management – issues that you do not need to think about in the laboratory in London. Importantly, you will be responsible for the delivery of the project; a flexible approach is necessary as the unforeseen circumstances are rather more than you can expect at home: power outages can last from minutes to days and unusual weather may affect anything from power to staff and even patient recruitment. Of course one of the major problems is that, if you are not present, your project may slip down the agenda of the overstretched staff.

If you are looking for a challenge, if you feel ready to take on responsibility, if you want to make a difference, then undertaking research in the developing world may provide that challenge. There is plenty to do!

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