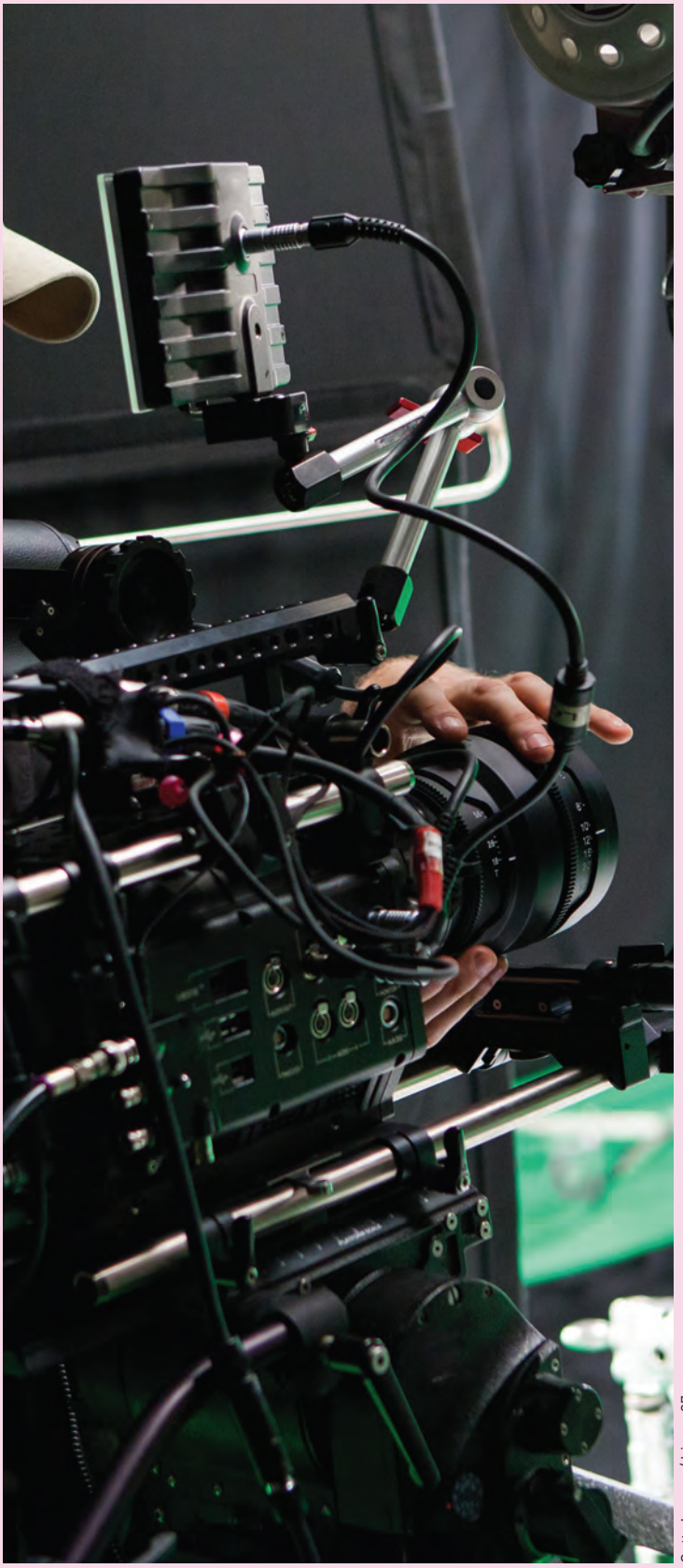
4

Technologies of the moving-image media



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ABOUT TECHNOLOGY

The technologies of media representation are mostly taken for granted. Consumers tend to focus on the product. Very few teenagers streaming video on their mobile phones could explain the technology that puts it there. Yet the technologies of representation have a profound effect on the message, and even on the users.

Media technologies tend to become routine. Even our bodies develop habits around them – our fingers get used to texting and swiping, and our sitting positions comfortably suit themselves to tablet computers, laptops and desktops, or wall-mounted television screens. We are habituated and feel at home using media technologies.

One of the defining characteristics of the media is the use of technology. One definition of the media is 'the technological means of communicating messages'. But how do we define what is meant by 'media technology'?

Media technologies of representation can be defined as the tools and processes necessary to mediate the form and content of media communications. The technologies help to create the meanings but can also block some other meanings. For example, radio can transmit sound but not images; a camera angle in a film can tell some parts of the story but hide others. Therefore, media technologies can both enable and constrain the creation of meaning. This broad definition allows for media technologies to be considered as a combination of three key components:

- **Hardware and software.** Media technologies include the actual machines of transmission – the hardware. However, the term also includes software, such as the editing software used in production. The capabilities of the software change the nature of the message just as much as the hardware does. Consider the potential of computer-generated imagery, now common in today's media. Compare that with the special effects available before the 1990s.
- **Institutions.** Technologies affect the media organisations that use them, but sometimes the organisations developing the ideas have an effect on the technology itself. For example, the internet has changed almost every organisation in the modern world. However, the internet in its earliest stage of development is often seen as a product of American universities and the United States military. The web-like structure of communication was used so that nuclear attack would not wipe out the entire system (see page 255).
- **Practices and processes.** Technology involves more than just machines. Media technologies of representation are also part of the traditions and practices of media operators. The term includes the social practices or habits and customs that develop around the technology. For example, there is a whole tradition of camera technique based around the usage of camera technologies. These techniques are often passed down from person to person within the industry. These people affect the ways in which the technology is used.

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Figure 4.1 Vintage filmmaking. The practices and processes of a particular technology are also a part of that technology. For example, a camera is more than just an electronic device. As a technology of media representation, it includes all of the processes, customs and habits of camera use that have developed since the early days of photography and film.

Theories of technology

Theories of communication technology are often divided into three main approaches: technological determinism, determined technology and socially constructed technology.

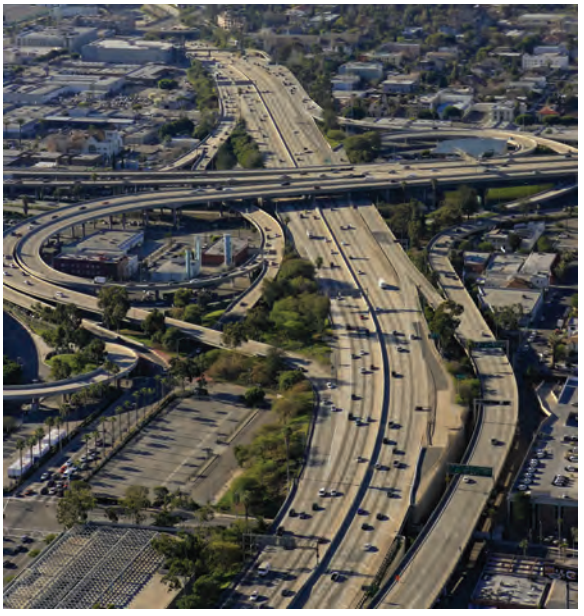
Technological determinism

Technological determinism argues that the nature of technology determines the nature of society. Some theorists call this the 'billiard ball model'. A new technology comes along like a billiard cue ball and shatters the established order, with its effects ricocheting in unforeseen directions. Using this

theory, it can be argued that the internet (or the car, or the aeroplane) has totally changed society. First came the invention, then came the effects.

Supporters of this theory might point to the car as a good example. From its popular uptake in the 1920s, the car has radically changed our sense of distance, our shopping habits, dating habits, city design, house design and a whole host of other aspects of society.

However, this theory of technology allows no possibility of human responsibility once the technological invention has been promoted. The theory seems to suggest that the technology has a mind of its own and just takes over society – whether the community wants it or not.



Shutterstock.com/Sai Chan

Figure 4.2 Freeways in Los Angeles. Supporters of technological determinism would argue that the invention of the car totally transformed society, irrespective of what people actually wanted. The technology determined what would happen.

Determined technology

The theory of determined technology regards technology as being shaped and determined by the particular society that creates it. In this view, it is other social factors, such as economic or political forces, that influence the nature of the technology that a society produces. Technology historian Brian Winston makes the point that, like all of us, technologists are social beings who operate within social constraints – they are people like everyone else. This limits what advances are possible and under what circumstances they will be made available for use.

Winston sees technological change as something that is created by a wide variety of forces that may be operating in society at the time. These affect inventors and their ideas, just as they affect everyone else. What eventually determines whether a new technology will be accepted, or even arise in the first place, is what Winston terms 'supervening social necessity'. Supervening necessities are events, desires or urgent requirements that create the need within a society for a particular technological development. For example, the supervening social necessity of the Second World War created the circumstances for the development of the atomic bomb.

Socially constructed technology

The socially constructed technology approach sees the relationship between society and technology as a complex and interactive two-way exchange of causes and effects. Technology develops according to the ends to which society puts it. In other words, we get the technology that we deserve – like it or not, it was society that developed it. A different society would create different technologies.

Critics often argue that this approach does not take into account the powerful demands of big business corporations and their ability to impose their will on the wider community. This view is seen by some critics as giving too much power to society.

Getty Images/FPG

Figure 4.3 The technological possibility of video phone calls existed as far back as the 1950s. A number of issues held back its marketing, including society's willingness to accept it. In a sense, society had no need for such a thing while it remained clumsy. The socially constructed theory of technology suggests that a technology will not thrive unless it meets an overwhelming necessity in society.

4.1 ACTIVITIES

1 Using the theory of technological determinism, select a technology and **evaluate** the impact it has had upon society. List as many impacts as you can and detail how they ricocheted through many aspects of society. Respond to the areas of investigation in the following table.

EXPLAIN	ANALYSE	APPRAISE
Explain the technology you have selected. **Give information** about its general purposes and uses. **Explain** its penetration into the market. **Explain** as many of the impacts as you can, making a list.	**Analyse** component features, **examining** each and **considering** the impacts on society, evaluating effects in as many areas as you can think of. **Examine** the ways in which society has been affected and decide how society may have looked if the technology hadn't been introduced. **Analyse** the **strengths and limitations** of the introduction of the technology, **making judgements** using positives and negatives for society as **criteria**.	**Appraise** the **significance** and **status** of the technology, **drawing conclusions** about its overall **worth** to society when compared with other alternatives or the prior environment.

2 Look at the penny-farthing in Figure 4.4 and then research the history of some of the technology 'duels' or 'battles' of the past century or so.
Explain why one technology failed to gain a popular following, while another technology succeeded. **Identify** the key factors that led to one of the technologies being adopted. Examples could include the famous VHS versus Beta video battle, or the more recent Blu-ray versus HD DVD battle.

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Figure 4.4 The penny-farthing is sometimes used as an example of socially constructed technology. This bicycle was not necessarily an inferior design, but instead was used by riders for speed and demonstrations of daring. When large numbers of people wanted to ride bicycles for commuting purposes, the design was changed to the modern 'safety cycle'. Society got the bicycle design that it wanted – hence socially constructed technology.

EVOLUTION OF TECHNOLOGY AND AUDIENCE ENGAGEMENT

Media technology has been changing at a rate faster than that experienced in many other industries – so fast, that many analysts talk of a communications revolution. The last 20 years have been a time of great optimism, but also great fear. Change has disrupted many of the older, accepted ways of doing things. It has forced many media businesses to either change or go under.

Evolving technology and the 'experience economy'

The Hard Rock Cafe soared to global notoriety because it developed the successful idea of combining service with a unique experience. Food was more like props for an out-of-the-ordinary experience. Getting a coffee or having lunch in a cafe is a common everyday occurrence; most cafes are relatively the same. However, in a time of plenty, what the consumer wants is a special experience. This is what made the Hard Rock Cafe a viable company: their understanding of consumer experience.

Ideas about the **experience economy** began to surface during the late 1990s. At the time, it seemed like commodities and competition were very common, and it was easy for most people to find products. But what people lacked was something like a special experience to make them buy a product. Over time, the idea of shaping experience around a product became more common.

The experience economy is often defined as the next step in the progression of economic value, and it is driving technological evolution.

The word 'economy' has been added because the experience has become part of the product. Experience is for sale, as much as the product is. Thus, experience is commodified (converted into a commodity or product). The personal experience is not just about entertainment – it is about something highly memorable and lasting, but it is also about **aesthetics**. The consumer's choice to engage with products is guided by visual appeal and the potential this has in constructing a memorable experience.

Consumption is linked to the ways in which the product is staged by the company. Steve Job's remarkable strategy in presenting the new iPhone in 2007 was not about a simple phone. It was about offering the public a new aestheticisation (beautification) of everyday life, using more pleasing aesthetics to reshape the common phone call. Possessing the new iPhone became an experience of a cool new lifestyle choice. Since other companies such as Nokia and Samsung were not marketing their phones in the same way, Apple was able to soar well above their competitors. However, it was not very long before other companies began to catch on.

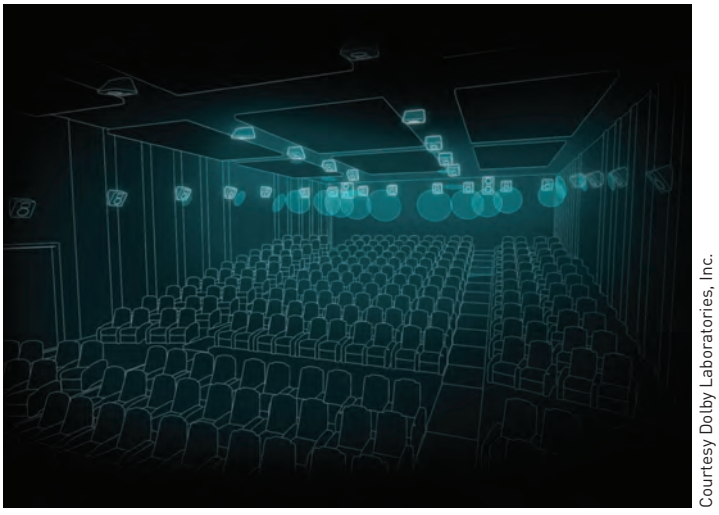
A number of recent advancements in new technologies have been shaped by the experience economy. For example, the push toward a marketable virtual reality (VR) is motivated by consumer interests in better experiences. The gaming console is now too ordinary. VR is therefore the aestheticisation of that everyday gaming experience. But it won't be long before the activity of watching television will converge with VR. This experience is currently being investigated by a number of technology companies. Steven Spielberg's *Ready Player One* (2018) is not only a reflection of consumer interest in the new aesthetics on offer in VR, but also a blunt comment about how everyday life and technology is so heavily intertwined. VR television could be a reality sooner than you think.

The difficulty faced by every company is in sustaining the memorable experience. Once it becomes common, or ordinary, the consumer will likely vacate in preference for another better experience. In other words, if the experience wears off, consumers will seek other brands. The pressure to sustain consumer interest has led to new shifts in the function of new technologies. In many cases, new technologies are no longer concerned with invention as much as they are with fashioning brand loyalty. Designing products so that they can undergo constant updates is one method among many designed to sustain experience. But consumers will chase any experience that is greater, so brand loyalty is in danger of becoming obsolete.

The evolving cinema experience

Viewing the big screen in theatres is characterised by dynamic and spectacular sounds and vision. Imagery is (naturally) large scale, of high resolution and luxurious. For the viewer, satisfaction appears to be mostly a result of the experience of this context. Much of the technological work that has been invested in supporting and sustaining the big screen format has largely been motivated by an experience economy. For example, recent years have seen significant advances in three-dimensional viewing and sound, which is a testament to the way in which experience economy underpins the cultural practice of cinema-going.

Dolby Atmos appeared in Australian cinemas in 2014. Unlike its predecessor, Dolby Atmos is capable of mapping the soundscape so that sounds function as an expression of three-dimensional space. Listening to a film now resembles the spatial qualities of sounds in real life. This new technology elevates the practice of watching cinema, transforming the theatre space into a more special experience.



Courtesy Dolby Laboratories, Inc.

Figure 4.5 Diagram showing the many speakers required for Dolby Atmos to function. Each speaker is assigned a particular sound to create a three-dimensional soundscape. This forms an important part of the viewing experience, bringing a greater sense of it being life like or of high fidelity.

The increase in 3D screenings of certain blockbuster films is also a telling indication of the ways in which the experience economy is shaping viewing habits at the theatre. Making use of a technique called stereoscopic vision, films are either recorded in 3D or post-converted into 3D using computer-generated technologies. These new technological advancements bring new directions in how fidelity (the degree of exactness or truth to real life) comes to the cinema.

The evolving television experience

Viewing the small screen, in contrast to the theatre, offers a completely different experience – one that used to be significantly diminished in both nature and scale. The advent of television in the 1950s brought exciting new modes of viewership. However, it lacked the dynamic experience of theatre spaces. This was primarily a result of the limitations of the technology – a smaller screen with monophonic sound.

The constraints of television technology, particularly the size of the screen, resulted in the medium being characterised as domestic, mundane and ordinary. As a result, the gap between television and theatre was quite large.

During the early 2000s, new developments in technologies allowed televisions to merge into the domain of wide-format viewing. This was an example of the experience economy motivating shifts in the way television was approached. Widescreen televisions now offered greater fidelity in their image. Colour range increased to near infinite numbers and resolutions were greatly expanded. Viewers were now able to experience high-definition content in the comfort and privacy of their home.

The changes occurring around television design also affected the television industry. The shift from 4:3 to 16:9 format created a whole new set of aesthetic strategies for television productions. Television shows that were once deemed 'regular' received an upgrade to become legitimately competitive with what the cinema had to offer.

Platforms such as Netflix now offer films and series for television viewing that employ the same strategies as Hollywood productions. The aesthetic strategies of the television series

Alamy Stock Photo/A.F. Archive

Figure 4.6 The aesthetic strategies of the television series *Fargo* (2014–) were designed for large-format viewing. Long shots like this characterise the show as more of an experience based on spectacle. The experience of the image as spectacle is only made possible by the increased size of the television screen.

Fargo (2014–) employ panoramic compositions similar to John Ford's Western films. This approach to cinematography, normally reserved for theatre screens, put the essence of big screen **spectacle** into television production.

The evolving home-viewing context

The rise of domestic home theatre rooms has also influenced the experience of television. These rooms operate like miniature cinema spaces, complete with sound-proofing and multiple-speaker set-ups – all designed to replicate the experience of the cinema itself. An individual consumer can purchase a large-format television and six to 10 speakers for surround sound, and outfit their space to resemble a cinema.

Building companies now offer theatre spaces in their home designs by default, signifying the importance of a dynamic viewing experience in everyday life. The implications of these developments are far reaching. Television can now encroach upon the once exclusive experience of the theatre, allowing for the home to become a functioning part of the broader experience economy, and the filmic event to become more accessible. The inclusion of home theatres in new homes indicates the extent to which experience economy has shifted domestic viewing habits.

> 'The action movie changed radically when it became possible to Velcro your muscles on. It was the beginning of a new era. The visual took over. The special effects became more important than the person.'
>
> **Sylvester Stallone**, actor

Evolution of CGI

4.2.1 How CGI changed movies forever

4.2.2 A computer-generated imagery history

Computer generated imagery (CGI) is defined as the use of computer graphics to create or enhance images. CGI animation refers to the use of moving CGI to make up sequences in games and movies.

The photographic image bears a strict resemblance to the object it represents in the historical world. That is the nature of the mechanical reproduction of the camera – it is capable of an extreme precision. A photo of a tree looks exactly like the tree that was captured. Because of this relationship, the image itself carries persuasive power. Viewers engage with the image, and believe it is real because they think the camera does not lie. This engagement with the persuasive power of the image also informs a viewer's involvement, particularly emotional investment. In cinema, a viewer's connection with story is in part due to the degree of realism in the text itself.

The introduction of CGI complicated this relationship. Because viewers are so well attuned to the realism on offer in cameras, CGI first presented itself as more of an obstacle. The computer-generated construction of human form in screen space lacked the precision of the mechanical reproduction of the camera. Early films that featured poor or sub-standard CGI were (and still are) difficult to engage with because of that displacement of reality. The sudden introduction of a CGI object in screen space did nothing more than reposition the viewer's attention upon the artifice of production practice.

The evolution of CGI reached a crucial point in the 1990s. Steven Spielberg's *Jurassic Park* (1993) probably represents the biggest turning point in the history of CGI. Using newly developed technologies in rendering, dinosaurs were provided with a physical texture unlike anything that had appeared before. The result was a hyper-realistic image that stunned audiences.

Many critics stated that the climax of *The Mummy Returns* (2001) fell flat because of the flawed digital design of Dwayne Johnson as the scorpion monster. By that year, audiences expected better. Sadly, there is also a long history of poor CGI that illustrates a negative impact upon emotional investment.

The CGI image has now begun to closely resemble the photographic properties of a mechanically reproduced photo, taken by a camera. This means that the image not only carries persuasive power, but it also provides a positive experience for the viewer. Thus, CGI is a highly active ingredient in the viewer's engagement with and experience of the screen. This engagement and experience are dependent on the ways in which convergence with realism is managed.

Courtesy NBC Universal

Figure 4.7 The obviously flawed digital design of the scorpion monster in *The Mummy Returns* (2001) creates a difficult viewing position for audiences. Viewers attempt to align the figure with reality, but struggle to do so because of the differences in lighting, saturation and movement.

Pixilation animation

4.2.3 Learn about pixilation

4.2.4 Animation basics: what is pixilation?

Pixilation animation involves the use of pixels (small squares) to create an image that lacks overall clarity. From a distance, the combination of pixels (and their colours) allows the viewer to see an image, although it still remains quite obscure.

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Pixilation animation is an aesthetic that has gained considerable currency in recent years. Pixels were used primarily in the design of video game aesthetics in the 1970s and 1980s, with much of the gaming industry relying on pixels for well over a decade. Thus, early video games became closely associated with pixilation, as did the decade of the 1980s.

By the 1990s, the use of pixels to create aesthetics decreased in popularity, and technologies advanced in specific ways to reduce the presence of pixels altogether. As resolutions grew larger, pixels became smaller. By the early 2000s, pixels were subtle and gave way to newer, smoother aesthetics that seemed to resemble reality much better.

However, after the release of *Minecraft* in 2009, pixel art experienced a sharp resurgence in popularity. Pixels began to appear again in games, various artworks, advertising and even as commodities. The impact that pixilation animation has had on culture is probably most notable in Google's decision to name their smartphone 'Pixel'. Their use of this term indicates the degree to which the word itself has become a functioning part of everyday life.

For the generations who were young in the 1980s and early 1990s, the impact of pixilation animation has resulted in forms of engagement underpinned by nostalgia. Nostalgia is a yearning for the past in the immediate present and is always present in popular culture.

The presence of pixels in aesthetics is merely an expression of patterns of consumer tastes.

Alamy Stock Photo/Fir Mamat

Figure 4.8 *Star Trek Trexels* is a nostalgic pixelated game for Apple iOS devices. Its design aesthetic is deliberately pixelated. Pixelated animation has become popular partly through the game *Minecraft*, but also as a remembrance of the 1980s and 1990s. For younger generations, it represents a return to simplicity that modern high-resolution images cannot offer.

They operate as signs for a particular 'golden age'. For younger consumers, pixel animation functions in terms of a new aesthetic. Since they have no point of comparison (no experience of the 1980s), their engagement with pixel animation cannot draw from nostalgia. Instead, pixel animation represents a fresh shift in aesthetics that is remarkably different from the high-resolution CGI that saturates the contemporary image. For them, pixilation animation might be likened to a new form of technology.

Virtual or digital actors

4.2.5 Brave new world for virtual actors

> 'I'll be back.'
>
> Movie catchphrase associated with actor **Arnold Schwarzenegger**

With virtual acting, Arnold Schwarzenegger could indeed 'be back' well after he has finished with being in the movies. Initial steps have already been taken with the resurrection of his younger self in *Terminator Salvation* (2009) and *Terminator Genisys* (2015). Popular sequels could continue well after the actor himself has aged too far.

A virtual or digital actor is a computer-generated actor. Virtual or digital actors can be either based on a real human being or completely digitally created (that is, without an equivalent in the real world).

Digital actors are often used as extras, or in stunt scenes that feature hyperkinetic action. They are the unpaid actors who play the parts that were once performed by real people. Various actors in the industry have expressed anxiety over the continued development of the digital actor, such as Tom Hanks – his concerns are to do with the loss of paid work. However, other actors are more positive about the

Alamy Stock Photo/Paramount/ Everett Collection

Figure 4.9 A digital re-creation of Arnold Schwarzenegger in *Terminator Genisys* (2015). The obvious artificiality creates problems for viewers, who spend time registering it instead of experiencing tension or fear in story.

use of digital actors, such as Andy Serkis – he argues for a new category of Academy Award reserved for digital actors and motion capturing.

In their earliest inception, digital actors functioned only in terms of a passive component of the *mise en scène*. In *Titanic* (1997), digital actors were used to create large background crowds populating the decks of the ship. However, advances in technology has seen the rapid rise of digital actors to the limelight. The role of Clu in *TRON: Legacy* (2010) was key, and he shared a significant amount of screen time with real-life actors. Advances in software are narrowing the gap between the digital world and the physical world.

Impact on industry

The human film star, now known as the 'carbon actor', has been an important part of film production for a century. But advancements in technology, and the rise of the digital actor, have set up an interesting situation where carbon actors must now compete with their digital counterparts for roles in upcoming productions.

This has some interesting implications on performance, and more industrial practices such as auditions. Perhaps the day will come when carbon actors must justify their presence in a production, especially if a digital actor commands no wages at all.

There are other ways in which the digital actor has affected the industry. In recognition of the potential for the technology, the first 'post-human talent agency' was created in 1998. It specialises in the relationship between human emotion and its physical expression. Other companies are actively pursuing the rights to the imagery of deceased actors, and a number of living actors.

Carbon actors themselves are in preparations for selling the rights to their own image for when they reach retirement.

Audience impact

Digital actors release television and film production from its dependence on the physical world. This has significant implications, perhaps the largest of which is how a viewer might approach emotionally investing in the performance of a digital actor. For instance, can a digital actor induce an emotional experience in the viewer such as crying or laughter? This may also bring new meaning to the way in which the suspension of disbelief functions.

Despite the advances in software and hardware used to create them, digital actors are yet to achieve that subtlety needed to make the transition completely convincing. Digital actors still have an artificial look – they are not as actual as a carbon actor. The character of Clu in *TRON: Legacy* (2010) was not Jeff Bridges the carbon actor, but a recreation of 1980s Jeff Bridges imagery using a combination of software and earlier footage from other films. The resulting synthetic appearance of Clu had the resemblance of Bridges, but was only hyper-real, not photorealistic. Perhaps there was some acknowledgement of his imperfection in the character's full name: 'Coded Likeness Utility'.

The Uncanny Valley

> 'It's a paradox of animation that you can put arms and a face on a spoon, say, or make a deer talk, and it looks cute. But make a character too lifelike, and the brain no longer reads it as good animation, but as reality with something wrong about it. That's the uncanny valley.'
>
> **Steve Rose**, writer, *The Guardian*

In 1970, Japanese roboticist Masahiro Mori noted that an object becomes more appealing as it is **anthropomorphised** (takes on more human characteristics). As an object gets closer to looking human but not exactly right, it suddenly becomes weird and unsettling to audiences. This phenomenon is referred to as the **Uncanny Valley**. The 'valley' refers to the dip in a graph of how appealing an object is as it gets closer to human likeness (see Figure 4.10).

One theory as to why this occurs is that we have evolved to tell if something is slightly 'off'

in another human and be wary of it. This issue is an important consideration for animators, game designers and roboticists.

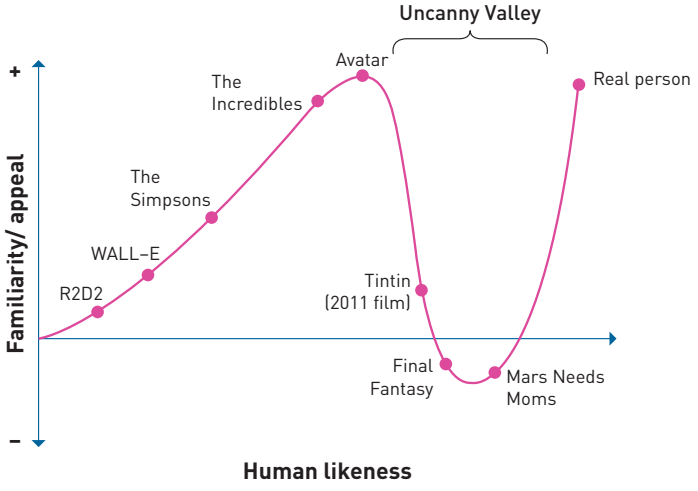

Figure 4.10 A graph of the Uncanny Valley phenomenon with animated characters and films. As a character becomes more human-like, we find it more appealing and can empathise with that character. When a character is almost human but something is not quite right, we find the effect uncanny and the character loses its appeal. Creating convincingly realistic CGI human characters is still the end goal for many media producers.

Final Fantasy: The Spirits Within (2001) was one of the first films to use motion-capture technologies in order to create 'realistic' human characters with CGI. Unfortunately, the film fell into the Uncanny Valley and made a significant loss overall. Ten years later, the CGI animation *The Adventures of Tintin: The Secret of the Unicorn* (2011) was commercially successful and won a Golden Globe Award for Best Motion Picture – Animation. However, Tintin's representation, particularly the face, was still considered strange and unnatural by audiences and critics.

One way around the issue is to stop right on the valley's edge – to stylise characters just enough so that they're not trying to look like photorealistic humans. Animation companies such as Pixar and DreamWorks, and the creators of films like *Avatar* (2009), have successfully designed characters in this way.

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Figure 4.11 Pixar's 2017 film *Coco*. Pixar's first foray into creating 'realistic' characters was the baby in their 1988 short film, *Tin Toy*. Although the baby represented significant advancements in CGI technology at the time, its appearance and movements landed it squarely in the Uncanny Valley. With the negative reactions to *Tin Toy*, Pixar learned a valuable lesson about character design. Since then, Pixar has tended to create more stylised human characters.

Technology panics

Technology panics are fears that grip society when a new technology is introduced. They may occur for a number of reasons:

- **Fear of change.** New technologies can be transformative, some dramatically so. In all changes there are winners and losers. For society as a whole, change is not always an overall improvement.
- **Loss of control.** Industries based on existing technologies have a financial stake in the old way of doing things. They may promote technology panics as a means of protecting their own businesses. Newspapers often criticise competitor media forms such as social media, television or the internet.
- **Protecting the vulnerable.** Fears frequently develop around the uptake of new technologies by young people. Those in positions of control (such as politicians, teachers and parents) tend to be older and concerned for the welfare of younger generations.
- **Generation gaps.** New technologies may appeal to younger people, and older generations may develop concerns out of a lack of understanding.

Can panics be justified?

Calling something a 'panic' suggests that the fears or concerns are not real, or that they are blown out of proportion. While this can be the case, it is not always. Sometimes there are valid reasons for concern that need to be addressed, or gradual changes that need to be made if society is to accommodate the new technology. Sometimes change needs to be made to the technology. This is all part of the process of socially determined technology.

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Figure 4.12 Technology panics may be based around themes such as pornography, violence or the loss of childhood. A technology panic can recur as basically the same fear but applied to different technologies.

Who creates panics?

British communications professor Chas Critcher says there are five main groups within society who have the potential power to create technology panics (and other sorts of panics):

- the media
- politicians and the government
- police and law enforcement groups
- lobby groups, pressure groups and demonstrators
- public opinion.

Together, these groups form an immensely powerful force and other points of view are easily drowned out. However, the five groups do not always line up in agreement and a panic is not guaranteed.

You can view a technology panic timeline by following the weblink.

4.2 ACTIVITIES

1 Research in more detail one of the media panics that have occurred over the past 100 years. Respond to the areas of investigation in the following table.

EXPLAIN	ANALYSE	APPRAISE
Explain the technology that gave rise to the panic. **Give information** about the reactions in the community, **illustrating** with some examples. **Identify** some of the main concerns.	**Analyse** the contributing factors or component parts behind the panic. **Interpret** the reactions in terms of the reasons for the panic. **Analyse** the chief cause of the panic, **making judgements** about the relative strengths of different concerns.	**Appraise** the **significance** and **status** of the panic with the benefit of hindsight (from the perspective of the present day). **Appraise** the degree to which people were justified in their concerns, **drawing conclusions** about the **significance** of the long-term impact of the technology.

2 **Construct** a timeline of 'reverse panics' that shows the benefits of each of the technical breakthroughs listed in the timeline of technology panics (available via weblink).

3 Select five to 10 video game, film or television characters that have been created using CGI technologies.
Construct a graph of the Uncanny Valley using the **conventions** of graph design. Place 'Familiarity/Appeal' on the vertical axis and 'Human likeness' on the horizontal axis.
Analyse the **representation** of the characters in terms of familiarity/appeal and human likeness. **Consider** how technical codes and conventions are used to create the characters.
Symbolise the degree of character realism by placing an image of each character on the curve of the graph. Present your graph to the class
Explain why you have placed each character at that position on the 'appeal curve' of the graph. As part of your presentation, provide additional visual **examples** that **illustrate** the elements of the character design that have influenced your decisions.

4 **Appraise** the performance of a digital actor in a movie. **Systematically examine** the performance and use research and your own observations to work out where this performance comes from. Inquire into the understandings or qualifications a computer operator must have in order to create a convincing performance in a digital actor. **Make a judgement** about the **worth** of a virtual actor to audience emotional investment.

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TECHNOLOGIES AND THE MEDIUM

> 'The content of a medium is like the juicy piece of meat carried by the burglar to distract the watchdog of the mind.'
>
> **Marshall McLuhan**, literary scholar and futurist

The medium is the message

Canadian literary scholar and futurist Marshall McLuhan coined the famous phrase 'the medium is the message'. McLuhan argued that each new medium is unique in the way that it communicates. Each new medium disrupts society and changes how people think in its own particular way; McLuhan argued that the actual content of a medium was not as important as this. Television disrupts society just by being television – whatever it broadcasts is less important than the actual medium itself. Therefore, the medium is the message.

It was McLuhan who came up with the term 'surfing' to describe how people would switch from one television station to another, or listen to radio while watching images on television. The term has since become widely accepted to describe the behaviour of internet users.

Hot and cool media

McLuhan proposed that a medium can be either 'hot' or 'cool', depending on the way that it communicates. If a medium required a lot of effort from the audience to participate and create the meanings, McLuhan claimed that it was 'cool' or low definition. If the audience did not have to put in much effort, because all the details were provided, then McLuhan regarded the medium as 'hot' or high definition.

Today, 'cool' can mean 'chic' or 'interesting' and 'hot' can mean 'sexy'. However, McLuhan took the terms from their usage in jazz music. Hot jazz is full of big, rich sound with lots of brass. Cool jazz is often produced with just a single instrument – much simpler and smaller.

- **Hot media.** Media that dramatically extend a single sense so that little extra effort is required are termed hot. McLuhan classified film as a hot medium because it extends sight and includes so much detail in a single frame. In jazz terms, film is 'big sound'. McLuhan also classified photography, radio and newspapers as hot media.
- **Cool media.** Simpler, smaller media that require more effort are classified as cool. McLuhan claimed that television is a cool medium because its ability to show detail is much less. This would certainly have been the case with television in the 1960s, although it is debatable as to whether it applies to today's HD television. Cartoons and telephones were listed by McLuhan as cool media (although, again, this refers to phones in the 1960s).

Analogue and digital technology

Analogue media

Analogue media use materials from the real world to transmit their messages. These materials include paper, film, magnetic tape and sound waves. Analogue media can usually be seen and understood in their raw form. Media technologies in place before the 1980s were analogue, but many continued using analogue into the 1990s and beyond. For example, digital film projection did not take off until after 2005. The final switch-off for analogue television broadcast signals did not occur until 2013.

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Figure 4.13 Binary code is a symbol system expressed in ones and zeroes. Digital media production and transmission relies on binary codes. The code shown here could represent the *Mona Lisa* or an ad for washing powder. Until a computer decodes it, the codes all look very similar.

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Digital media

Digital media use a numerical code system based on zeroes and ones to represent information such as letters, images and sounds. There is little apparent difference between the code for a great work of art and that for an advertisement for soap powder.

Film as a medium

Legend has it the audience stampeded in terror at one of the first cinema showings in Paris in 1896. The first movies were made in France by the Lumière brothers. One of the films, *L'arrivée d'un train à La Ciotat* (1896), shows a section of railway station platform in the town of La Ciotat bathed in sunlight. Suddenly a train appears, heading straight for the camera – and the audience. As the train approached them in 1896, panic broke out in the theatre: people jumped out of their seats and ran for their lives.

Audiences are more film-literate now. They have grown up with film and know the language, and are no longer so easily frightened. But film still possesses the power to transform an ordinary object, such as a train, and make it extraordinary. David Lynch's *Wild at Heart* (1990) begins with a fierce explosion. As it turns out, it is nothing more than a match being lit – the ordinary is instantly transformed by the power of the cinema.

A film is a sequence of still shots that are projected onto screen, creating the impression of moving images. This impression of movement is due to a characteristic of the human eye known as the phi phenomenon, which is commonly called persistence of vision. Film aims to communicate meaning through recorded images and sound.

The cinema is larger than life. It can amplify both the best and the worst in humanity. It has had a powerful role in 20th-century tyranny as well as in democracy. The tyranny of Stalin's Soviet Russia was powerfully reinforced by Sergei Eisenstein's films. Eisenstein is credited with developing the editing technique 'collision of images' or montage (see page 40). *Battleship Potemkin* (1925), Eisenstein's heroic film about working-class struggle, was used

Alamy Stock Photo/World History Archive

Figure 4.14 The world's first feature-length film was made in Melbourne. *The Story of the Kelly Gang* (1906) premiered on Boxing Day 1906 at Melbourne Town Hall. By 1908, the film had toured Australia, Britain and New Zealand, billed as 'the longest film ever made'. Reports of increases in crime followed the film everywhere it toured. Despite its role in history, all reels of the film were believed to have been lost by the 1940s. However, some fragments were recovered in the 1970s and have now been restored. Almost a quarter of the film has been restored and digitised.

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Figure 4.15 A 1930s Hollywood script girl or prompt. Early studios used lighting systems developed from technology used in searchlights in the First World War. Film itself has played a powerful role in world history during the last 120 years. Some argue that American films are as powerful as American military strength. American culture is sometimes called its 'soft power', while military might is referred to as 'hard power'.

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to support a cruel regime. The Nazi regime in Germany was boosted by the majestic films of Leni Riefenstahl. Her tribute to Hitler and the Nazi movement, *Triumph of the Will* (1935), although morally abhorrent, is still regarded as one of the masterpieces of film.

Hollywood films were as influential as US military and industrial might in making the 20th century the American century. The power of film has sold the American dream to millions around the world, while at the same time exposing its dark underside.

A primary medium

There are three levels of attention people typically pay to different forms of media. People can pay primary or close attention, for instance when reading a newspaper. They can pay secondary attention to radio or television (for example) while they are doing something else. Or they can pay tertiary attention to a medium when it is in the background and below conscious attention, as with department store muzak (uninteresting piped music).

A narrative medium

The Lumière brothers knew when they showed their early films that people were fascinated by pictures that moved. However, it was not clear what the new invention would be useful for. At the time, people thought of film as a kind of fairground attraction. It was predicted that the novelty would soon wear off.

Cinema could have gone in several directions. It might have become a solely documentary medium, or it might have developed into a kind of television with a variety of programs, such as game shows, news bulletins and music clips. Instead, film became a medium for telling stories. Originally, films were short, one-reel stories; later they became full-length features. Documentaries and non-narratives are produced, of course, but they are a minor component. The novel-length story with well-developed characters and a strong plot has remained the dominant form in the cinema.

Narrative versus spectacle

Film often uses a combination of narrative and spectacle. At different times in the history of the medium, one is favoured over another. Early film and film in the days of the big Hollywood studios (1920s–1950s) tended to slightly favour narrative over spectacle. In the modern era of the blockbuster film, spectacle tends to be slightly favoured over narrative.

- **Narrative.** In simple terms a narrative is a story. It can be defined as a chain of events occurring over time. Film uses time in two ways:
  - **Story time** is the time in which the events take place within the story. For example, it could be the story of someone's life and take place over 70 years.
  - **Narrative time** is the time taken by the movie to tell the story – usually around 90 minutes.
- **Spectacle.** This is an image in a film that is so striking and remarkable that the audience just wants to stare at it. In *King Kong* (1933), spectacle was provided when a lifelike Kong held Ann (Fay Wray) in his giant hands and ripped off pieces of her dress. Audiences of the time marvelled at the special effects. Modern computer-generated imagery now creates spectacles that audiences take for granted.

AAP Image/Gemma Phillips

Figure 4.16 The premiere of the Baz Luhrmann movie *Australia* (2008) was held at the Summergarden theatre in Bowen, North Queensland. The movie was filmed in Bowen. The cinema experience is both collective and individual. A large public gathering creates a shared experience, and the opportunity for shared behaviour.

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Television as a medium

'Television is the first mass-produced symbolic environment. The significance of that can be reflected in the word that sums up the most distinctive element of human life, the most crucial distinction between humans and other creatures – storytelling. We experience the world through stories. Whoever tells the stories of a culture defines the terms, the agenda and the common issues we face.

Television has replaced most stories told by parents and has either replaced or organised what we learn in schools or in church.

We need a new environment movement, addressing the environment that is most crucial to our humanity – the environment of the stories we tell; the environment that shapes so much of what we think and do in common.'

George Gerbner, Professor of Communication, University of Pennsylvania

'Television' – from the Greek *tele* meaning 'far' and the Latin *visio* meaning 'sight' – is defined as a telecommunication system for sending audio and video signals either via cable or through the air (terrestrial or satellite signals) between distant points. The word also refers both to the electronic device used to receive and reproduce the audio and video signals in your living room, and to the content or programming that is broadcast.

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Figure 4.17 The technological changes of the 2010s have led to a boom in **citizen scheduling**, through which the internet allows people to choose their own timeslots.

Why is television so powerful?

The eyes are superior to the other senses as information receivers. Hearing is the second-best sense. The combined impact of these senses is formidable. There is no doubt that television has changed society. It now performs a number of important functions that it would be hard for us all to do without. A modern world without television is inconceivable.

Television has many roles in society:

- **Television as bard or town crier.** British media academics John Fiske and John Hartley have developed the idea of 'bardic' television. Whenever there was a battle, a noble wedding or a murder, the balladeers (bards) of medieval times wrote songs and verse about it. The ballads were sung in every town and village, and the ideas of the time were passed from person to person. The verses of the balladeer reflected the central concerns of the society.

  Today, television fulfils this function, giving society at least one version of the concerns of the present day. When television was first introduced, this 'town crier' function was very evident. Most people did not own

Getty Images/Bettmann

Figure 4.18 Television as the 'town crier' in the early 1950s outside a department store in New York city. When television first appeared, people gathered around the windows of electrical goods stores to watch the news and to admire the new-fangled invention in operation.

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television sets, so they gathered outside electrical retail stores to watch 'the bard'. Television told them, and is still telling them now, of the world outside.

- **Television as modern folklore.** Folklore refers to the traditional beliefs and tales of oral cultures. It allows individuals to be part of a group, a culture and a heritage, and promotes social solidarity. Television works the same way. It presents a view of the current morality of society. It shows a selection of the achievements, the problems and views on the meaning of life within the group of 'folk' in the 'global village'.
- **Television as an educative medium.** Television can fulfil the need for information. All people have a desire for knowledge and understanding. Television can be a great educator on a huge range of topics. Reporting current events is also one of television's duties; it therefore has a responsibility to be truthful.
- **Television as an entertainment medium.** Television can provide entertainment. In this area it has taken over the roles of the circus, the theatre, the concert and the cinema as mass entertainment. It has borrowed heavily from all of these and created a great deal that is unique to itself.
- **Television as the caregiver medium.** Television can fulfil emotional needs. When a preschooler is seated in front of the television set, a parent watches a midday movie to relieve boredom or a tired office worker switches on the television after the evening meal, the television is being used to fulfil emotional needs. It may be the need for love, for company, for tension release or for escape. Its ability to meet these needs is one reason television is so powerful.

You can view a television timeline by following the weblink.

New media

The term 'new media' may be thought of in different ways:

- **Emerging new forms of media that are introduced as technologies evolve.** These new media may come out of existing technologies, but will have different properties and potentials. They will have the potential to change the 'media landscape'. Under this definition, new media can be seen as a continual process of invention and evolution. There will always be new media.
- **Media produced and distributed using binary code.** New media are the computer-based media of the 21st century. This second definition is more commonly used in discussions about media, but it is less easily described. New media are digital and not analogue.

Key features of new media

New media have all or some of the following characteristics (the list has been added to and adapted from one by Professor Martin Lister and his associates at the University of West England):

- **Digitality.** The new media convert information from real-world lived experience into numbers stored on a computer hard drive. This is different from the old analogue systems where lived experience was converted into another real and visible product, such as a videotape. This change means it is now easier to manipulate and alter the data.
- **Interactivity.** New media allow the consumer to interact with the product to make certain choices. This produces a change in the way the audience behaves – for instance, viewers may become users.
- **Hypertext.** The Greek word *hyper* means 'above' or 'outside'. Hypertext is therefore a system of links to other texts outside the first text. Hypertext in new media differs from the linear style of storytelling by allowing people to jump around from text to text and within a text.
- **Dispersal.** Traditional media are very expensive to set up. For instance, a television station costs many millions to establish. Computers have created new media forms that are much cheaper to participate in. New media allow widely dispersed many-to-many communication.
- **Shared.** New media involve user participation and encourage user-generated content. This allows wider involvement in the production processes.
- **Social.** New media allow groups of people with shared interests to collaborate.
- **Virtuality.** New media have created electronic 'places' and 'spaces'. In these virtual worlds, people can immerse themselves in two opposing

experiences. Using digital new media, they can either simulate reality or generate fantasy.
- **Global and local.** New media provide instant communication across vast distances, but also make it easier to socialise and communicate with friends locally.
- **Everywhere at once.** New media are embedded in everyday objects and in our daily lives in such a way that media forms are merging into one another.

The discourse of the 'new' in media

The term 'new media' is often used loosely. For example, is a television program viewed on a digital flat screen regarded as old media, while the same program viewed on YouTube considered to be new media? Or is the big screen new media because it is a 'smart' HDTV? Sometimes we use different terms for the same media. Clearly there is some reason why people want to use the word 'new'. The reason could be that describing something as new positions it within a discourse about 'newness'.

Discourses are ways of thinking that are set up by the culture of the language we use. A discourse is a pattern of thinking that we use in conversations about a topic. We think by means of language, even if it is visual or nonverbal signage. Therefore, language becomes a way of seeing the world. This is agreed to or given to us by the society around us, becoming discourses that we can participate in and contribute to.

Why 'new' is seen as good

Saying that something is new gives it additional power, because our society has strong patterns of thinking or discourses around the idea of 'new'. Attaching the word 'new' to 'media' locates our thinking even more strongly. There are several reasons for this:
- **Obsolescence.** Our society is based on the consumption of material goods. Retail shops and big business are constantly convincing us through advertising that a new product is better than an old one. Making something out of date or obsolete by creating something that looks new (even if it isn't) is called planned obsolescence.
- **Technological innovation.** Newness is closely associated with technological innovation. However, that innovation may not affect the experience of the user. For instance, the viewing habits of people have not changed much simply because they now have HDTV. The experience is much the same, but people believe they have something new.
- **The new as virus.** New developments embed themselves like viruses in the existing order and can gradually change the whole structure. Using the term 'new media' suggests that it has suddenly changed at a particular moment. Instead, there has been a gradual evolution that has preserved many aspects of the 'old'.

4.3 ACTIVITIES

1 Determine some of the characteristics of a film audience by conducting a simple survey. Ask classmates, teachers and family members how often they have been to the cinema within the past month. Collate the responses according to age groups using the following categories: 0–14 years; 15–24 years; 25–34 years; 35–44 years; and 45 years and over.
Analyse the results, examining the findings in each category. **Interpret** the results to produce a profile of the typical film-goer in the category. **Consider** any trends you can see developing.

2 Film theorists say that film has 'subsumed' all of the traditional art forms such as literature, music, art and drama.
Construct a list of the elements from each art form that film has used. For example, film uses plots and characters (among other elements) from literature.
Explain how film has incorporated each element from the original art form.

3 Some see film as a transitional technology, halfway between live theatre and virtual-reality entertainment. Discuss this idea.
Explain how this idea could work, **identifying** the elements of each and **recognising** the **particular qualities** that are evident in both film and either theatre or virtual reality.
Appraise the worth of the suggestion that the film medium will ultimately be replaced by high-tech screen entertainment.

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4 Conduct your own class survey of television viewing habits. Prepare a graduated scale of hours watched and then record the numbers of people watching for particular numbers of hours. **Analyse** your results, presenting the numbers per hours watched as percentages of the total number of people surveyed. **Interpret** the results, **making judgments** about what they mean for the future of television and its convergence with new media.

5 The television set no longer gets the undivided attention of its viewers. Research has shown a remarkable range of viewer activities while the television set is on. Observe your family for an evening. What other activities do they engage in while viewing? Alternatively, what is the range of things you do while watching television. Do your habits differ according to whether you are with family or friends? **Explain** your findings, **providing additional information** about the activities engaged in and giving some **examples to illustrate** the activities.

6 Compare a traditional ballad with a television drama.
Explain the main subject of each form of media.

7 **Analyse** reasons why people would listen to a traditional ballad and why they would watch a television drama. Compare the reasons and **make judgements** about any similarities. **Make an interpretation** as to what each tells about the society it came from.

8 Television is like folklore – it allows people to belong to a group. Think about what you watch on television that confirms your membership of a particular group.
Construct a short list.

9 Study the television viewing guide. Count the number of information programs and the number of entertainment programs.
Explain the findings.
Analyse the results, **interpreting** the impact of consumer tastes on television programming, and vice versa.

10 **Construct** a list of new media according to each of the two given definitions. **Identify** the differences between the two lists.

11 How new is new media? Brainstorm some of the media forms that are usually regarded as new media (such as social networking). Research the history of the media form.
Explain your findings, and in particular **identify** any connections with traditional forms of media.

12 **Explain** the differences in the experience for the user now that traditional media have also gone digital. **Identify** any changes that have come about for the audience as a result of digital media (such as digital radio or HDTV).

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