The feature that unites every kind of sf is the construction – in some sense – of a world other than our own. This may be another planet (or even another universe); or it may be a ‘future world’ in which conditions have changed in some dramatic way. But whatever new conditions or circumstances apply – alien invasion, Martian colonies, a permanent cure for the ageing process – the writer has to signal the changes, and the reader has to be able to understand the significance of these signals. Thus, the reading of an sf story is always an active process of translation.¹ What are we being told about the characters, the politics, the social conditions of the imagined world, through the medium of these bizarre artefacts, landscapes, relationships, industries and customs? The icons of sf are the signs which announce the genre, which warn the reader that this is a different world; and at the same time constitute that difference.

More than in any other fiction, in sf the imaginary setting is a major character in the story – and this fictional surface is held together by the highly foregrounded description of unreal objects, customs, kinships, fashions, that can be identified and decoded by the reader. The word ‘icon’ is derived from the Greek eikon – it means an image, but the term came into English usage via Byzantine art, where an ‘ikon’ is, specifically, a stylized representation of Christ or one of the saints. Similarly, an sf icon will represent something both supernatural (or at least other-worldly), artistically conventional (in that certain features are mandatory) and yet clearly belonging to the public domain. Just as Mary Shelley’s Dr Frankenstein constructed the monster rather than ‘inventing’ him, it is probably fruitless to trace any of the icons of sf back to a single, original author. Vampires existed (widely) in folklore before Bram Stoker’s Dracula, and mechanical men were known before the word ‘robot’ was first used in the sense that is now so familiar. Equally, since icons are culturally determined and to some degree each individual sf book or story is a culture, each book or story will have its own variant iconography (a differently designed robot, an idiosyncratic form of faster-than-light
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drive), to match the writer’s particular intention. However, it is possible
to identify, or to suggest, a core repertoire of these salient images, and ex-
amine their meaning – meaning which is available and relevant not only to
sf readers, but to any consumer of twenty-first century folklore.

Rockets, spaceships, space habitats, virtual environments
The rocket, with its upward thrusting phallic shape and dramatic flight, is
an inevitable symbol of energy and escape, but a rocket is a weapon (first de-
ployed on the battlefield in medieval China) as well as an innocent, spectacu-
lar firework. Though it was the sf dream of interplanetary travel that inspired
Tsiolkovski, the seminal theorist of modern rocketry, theory became practi-
cal application only in the development of the German V-2 super-weapon.
This ambivalent identity has been a vital feature of the rocket’s career, in
the real world and in sf. Thomas Pynchon’s Gravity’s Rainbow (1973), the
American postwar novel which is a text of central significance to modern sf,
weaves the story of this deadly icon, in the closing phases of the Second
World War, into a rich and complex myth of origins: the rocket as both the
climactic achievement and the embodied death wish of modern civilization.
In Gravity’s Rainbow, as the innocent adventurer, Tyrone Slothrop, pursues
his quest for the ultimate device, we find the combination of hero-tale, tech-
nical specification and mystical speculation which is the great romance of
classic sf: but also modern sf’s insistence on conspiracy theory, seductive
gadgets, brand-names, and the love-affair with ever more potent weaponry.

A rocket with a human payload is the ultimate image of Gravity’s Rainbow,²
and in the real world it is still impractical to launch anything
into space except by sitting it on top of a giant V-2 stuffed with explosives,
and, so to speak, lighting the blue touch-paper. In sf itself, however, the
rocket as a symbol of escape to the stars has long been superseded. These
days, planetary launches are rare in spacefaring sf; the whole struggle to
leave Earth has usually been elided into the distant or recent past (Stephen
Baxter’s Voyage (1996), with its highly technical yet emotionally charged
account of a first crewed flight to Mars, is a very interesting exception).
The finned, phallic cone has been replaced by the spaceship. Designed not
for experimental parabolas but for exploration, for freight and passenger
transport and for long-term occupation, the spaceship (whether it carries
colonists or invaders, or hides monsters in its secret depths) is an alternative,
contained world in itself.

Postwar sf writers, grasping the barren prospects of our solar system and
the immensity of the journey to any more hopeful landfall, quickly realized
that travelling to the stars (even at the most fantastic speeds) would be a
matter of years, or even many generations. Alexei Panshin’s *Rite of Passage* (1968) is a rewarding example of the complete starship novel, in which social engineering, town planning and education schemes have equal status with the adventure story. Panshin’s characters leave the ship for their initiation into the terrors of the unknown, but the assumption that danger lies in the abyss outside the spaceship’s metal shell can be reversed to great effect. The nightmare scenario of the monster within can invoke an exquisite sense of vulnerability, as in Ridley Scott’s 1979 movie *Alien* – foreshadowed as early as 1958 in a short story by Jerome Bixby, ‘It – The Terror From Beyond’.

In Bruce Sterling’s epic *Schismatrix* (1985), the fragility of space habitats is so terrifying that the use of weapons of mass destruction has become utterly taboo, even in a lawless and fragmented human future. But in spite of that most celebrated of sf images – the fragile giant jewels, drifting in immense darkness, against a backdrop of pinprick diamonds – in the Kubrick film *2001*, the fictional spaceship is usually a place of refuge, security, stability. In C. J. Cherryh’s Merchanter series the great ships that ply between habitable planets have a baroque feudal culture of their own, like privateers on the Spanish Main – the crew members stripped of any ties to the planet-bound by vast, time-distorting distances. Space ‘stations’, hubs where ships like these are serviced, become multi-layered cities, with exotic markets, zoning laws, class divisions, slums and parkland. Voyages may be so endless (as in Gene Wolfe’s *Book of the Long Sun* series) that all notion of a destination is lost, and the ship’s inhabitants remember their original purpose only in myth. Stories closer (notionally) to the foreseeable future reflect the military origins of real-world space flight. *Star Trek*’s Starship Enterprise may be read as ‘a US navy nuclear submarine, cruising aimlessly around the Pacific, dispensing the morality of the Age of Liberalism at a vaguely doveish period in the Cold War’; and there are many variants on this naval, expeditionary theme. Even more realistically, the space habitat may become a giant shopping mall, which might as well be parked anywhere in suburbia. The ship can be a huge living organism (like Moya the Leviathan in the TV series *Farscape*), or a hollowed-out asteroid, as in my own novel *White Queen* (1991). Whatever shape the vessel takes it will be the locus for a drama of human relationships, an examination of ideas of conflict and dependence, recalling the medieval image of the Ship of Fools. The spaceship, forging its lonely way through a vast, inimical ocean, becomes a world like this one: a vulnerable and yet demanding closed environment, contradicting the rocket’s promise of escape from our origins. The idea of escape from the human condition, by means of applied technology, has transmuted into a different form.

Can the virtual environment be an icon? Access to the virtual world has as yet no fixed, visual image attached, either in reality or in fiction. The nearest
equivalent to the universally recognised finned cone, or the sleek gleaming shape of the starship, is the rather disgusting body-bag or vat of slime (as depicted in the definitive cybermovie *Matrix*) in which the cybernaut must be immersed, for a full virtual experience. In Pat Cadigan’s intuitively satisfying (but equally disgusting) variant, people remove their eyeballs so that they can be plugged-in to the virtual via their optic nerves. Other authors have found a modem-jack inserted into a hole in the back of the skull sufficient. In *Permutation City* (1995), Greg Egan’s powerful treatment of virtual space as a colony-world, the cybernauts can, essentially, download their whole human personalities into the software avatars they have adopted in the world behind the screens, abandoning the ‘real world’ and their ‘real bodies’. In my 1997 novel *Phoenix Café* I reversed the transaction, and had the virtual environments of my futuristic videogames prepared in the form of eye-drops loaded with molecular code. Your mind does not enter the virtual world, the virtual world enters your mind, and becomes an overlay on the everyday scene (which is possibly, currently, the sf idea closest to market-reality). Whatever mediation we choose, the persistence of the physical body, the ‘meat’ that is left behind when we enter the seamless digital world, remains—linking this new concept to the ancient sf image of the super-potent but absurdly vulnerable disembodied brain. The debate will continue, as inner-space becomes—in sf as in the real world—something like the supplanter of the romance of galactic exploration and empire. But whatever kind of vessel we choose, what companions do we have with us, on this sf voyage?

**Robots, androids (and gynoids); cyborgs and aliens**

A robot (from the Czech *robota*) is a worker. In Karol Čapek’s play *R.U.R.* (1920), from which this name derives, mechanical men are created as workers, but become so competent that they supplant their masters. Perhaps the most visually definitive robot was Robby, the metal-box-bodied, goggle-eyed good servant in the 1956 film *Forbidden Planet*; but it was Isaac Asimov, in a series of story collections published between 1950 and 1977, who developed the concept. The Three Laws of Robotics, the unbreakable code of ethics written into a Asimovian robot’s ‘positronic brain’ have been so successful in fiction that they are worth quoting in full:

1. A robot may not injure a human being, or through inaction allow a human being to come to harm. 2. A robot must obey the orders given to it by a human being, except where such orders would conflict with the first law. 3. A robot must protect its own existence as long as such protection does not conflict with the first or second laws . . .
While real-world robotic devices proliferate, and the question of ‘machine intelligence’ (intelligent washing machines?) becomes blurred for us, Asimov’s image of the machine as the good servant has an abiding charm, and the Three Laws have passed into received sf scripture. In Divine Endurance (1984), my first sf novel, Cho, a ‘metagenetic gynoid’, the perfect intelligent machine, becomes the unwitting nemesis of a remnant humanity by following Asimov’s laws to the letter; and the grandmaster’s message – our machines are innocent but they may still destroy us – forms the basis of a tragic love story. In Asimov’s scenario the fact that the Three Laws are there to protect the humans from their mentally and physically superior creations was always clear. Robotic goodness, however, was the preferred image in liberal sf, becoming a theological romance in the legendary story by Anthony Boucher, ‘The Quest for St Aquin’ – where a flawed and doubting priest is brought back to grace through the faith of his sentient mechanical steed. It took a renegade, anti-technophile sf writer, Philip K. Dick, to write with pity and conviction of the revolt of the ‘replicants’, in Do Androids Dream Of Electric Sheep?, now most famous as the inspiration of the Ridley Scott film Blade Runner.

The conviction (which has support from the neuroscience of robotics) that the perfected ‘intelligent machine’ will have a human or quasi-human form, raises obvious ethical questions. But though mechanical men, immediately read as an futuristic underclass (‘gynoids’ in post-Divine Endurance print fiction are invariably depicted as whores), may resemble humans, they remain defined and devalued by their artificiality. A replicant, or ‘andy’, with an absurdly shortened lifespan, can be terminated without censure. A software-entity with a human personality, and more than human intelligence, can be legally subject to the Three Laws, and executed like a rebellious slave. What is the ontological status of a genetically engineered biological human being, mass-manufactured to order? Or a being born human, who has elected to exchange some or all of her body parts for hardware, or to morph into a non-human body more suited to some alien environment? In the real world medical technology is now creating cyborgs – human beings entirely dependent on machine parts inserted into their bodies. In vitro fertilization techniques have blurred the line beween children created ‘naturally’, and children made to order; while the full humanity (or otherwise) of cloned human babies is a matter of serious debate. In sf these situations have been examined and re-examined, and the sf skill of active translation has allowed readers and writers to construe the apparently bizarre dilemmas of post-humanity as very familiar moral questions of social dominance, race and ethnicity, so that asking ‘does a cloned baby have a soul?’ is as obviously distasteful as asking the same about the child of a chattel-slave, in the nineteenth-century USA.
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It may be already inevitable that the human race will fragment into the genetically rich and the genetically poor, or the biologically natural versus the bio-mechanically enhanced (a future history intensely documented in Nancy Kress’s *Beggars in Spain* series of novels (1992–6), and the 1997 movie *GATTACA*). It may be inevitable that machine intelligence will become recognized as equal or superior to our own. It is by no means inevitable that the final transformation of the ‘other beings’ icon – the intelligent extraterrestrial – will ever cross over from fiction and twilight-zone delusion into fact. The career of ‘aliens’ in sf has reflected (as all sf concepts must) changes and developments in the real world. In the late nineteenth and early twentieth century there was sober, Darwinian speculation about life and ecology on other planets, with the sensational corrective of H. G. Wells’s *The War of The Worlds* (1898). Aliens became competitors, and therefore our deadly enemies. In the chastened, exhausted years after the Second World War, and even more so in the 1960s, the decade of the Vietnam debacle and the Civil Rights Movement, peace was the message and aliens could be pitied, admired or defended, in print – though remaining monstrous invaders in the movies, battle providing better spectacle than trade missions. More recently, colourful (but conveniently humanoid) sf aliens – such as the aliens or demons in TV sci-fi and fantasy shows, such as *Star Trek*, *Buffy The Vampire Slayer* and *Angel* – have taken on a range of topical, dramatically useful roles: immigrants, ethnic minorities, underprivileged guest-workers, wily diplomatic opponents. But the scientific exploration of space offers little support, so far, to the sincere beliefs of ufologists and the hopes of SETI (the Search for Extraterrestrial Intelligence). Greg Egan, one of sf’s most uncompromising and poetic realists, gives the sorry picture of our likely prospects in his latest novel *Schild’s Ladder* (2002), where a young boy of the very far future, instead of having a spaceship land in his garden, finds a tiny patch of slime-mould that might be of genuine alien origin, and trembles in awe: ‘When the lamplight finally returned the rainbow sheen he’d glimpsed from inside the building was unmistakable, an irregular gleaming patch of some filmy substance... Tchicaya approached and touched it with his fingertip. The substance was slightly sticky, and the film clung to his finger for a fraction of a millimetre as he pulled away...’

Not exactly spectacular – but this colonized, terraformed planet will now have to be evacuated and become a nature reserve, because alien life, throughout the galactic empire, is so incredibly rare. As the great silence out there continues unbroken, actual ‘aliens’ may have to go the way of Martian canals and Venusian swamps, banished from our imagination. But the prospect of post-human speciation moves in to fill the vacated niche with an array of humanoid grotesques, and the far distant future will still provide a locus for
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stories of competition and conflict between widely divergent former colonies of earth. As long as there are other people around (especially if they look a little strange), the image of otherness provided by the term ‘aliens’ will survive, to fascinate and instruct us.

Animals, vegetables and minerals

In the hierarchy of sf plausibility, technophile extrapolation from the here-and-now takes precedence. Martians who build (or once built, long ago) canals, like jungle-infested swamps on Venus, were dismissed by the arrival of improved information about the conditions on our neighbour planets. Equally, the status of a fully imagined alien ecology – somewhere, out there, far beyond our present reach – has been at times dubious. Isn’t this just world-building fantasy, a kind of Narnia in sf clothing? But while the concept of an alien person allows us to discuss social, political and psychological permutations of human otherness, the alien planet, artefact, planet (or universe!) is equally vital. It is perhaps sf’s greatest aesthetic gift, to both readers and writers, and brings us closest to experiencing the romance of scientific endeavour. It is important that the sense of wonder invoked, at coming face to face with the workings of the cosmos, should be freed as far as possible from the economic and political constraints of ‘real’ science, and it is no accident that some of the most beloved images of sf are enshrined in narratives of pure encounter. Arthur C. Clarke’s *Rendezvous with Rama* (1973) is perhaps the most famous of these, where the fifty-kilometer-long alien artefact, or space probe, paying our system a glancing visit, remains almost entirely mysterious. In less ascetic versions of the same narrative, vanished aliens become intelligible, as in Frederik Pohl’s remarkable *Gateway* (1979) and its sequels; or else it turns out that the archaeology of Elder-alien life (as in Jack McDevitt’s *The Engines of God*, 1994, or Alastair Reynolds’s *Revelation Space*, 2000), contains information that is urgently vital to all concerned. But the obligatory thriller plot seems a descent into the banal: the centre of these stories is a vastness, an inhuman majesty that cannot be reduced to human terms.

Real-world space exploration provides a convincing template for deep-space encounters: sf is at its least fictional here. The practice and theory of alien archaeology can be extrapolated, with little alteration, from the conditions in Egypt or Iraq, a hundred years ago. The most admired of living imagined worlds is still probably Frank Herbert’s *Dune* (1965). The desert planet Arrakis is part of a galaxy-spanning human polity; but it is the arid terrain and its extraordinary wildlife that catches the reader’s imagination, more than the fantasy power-politics of the plot. Roger Zelazny’s *Lord of
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*Light* (1967), belonging to the same period, sf’s Age of Liberalism, draws admiringly on Hindu mythology and the culture of India, in the same way as Herbert uses Islam and the desert Arabs; and Zelazny writes even more evocatively, though with less narrative strength: ‘Near the city of Alundil there was a rich grove of blue-barked trees, having purple foliage like feathers. It was famous for its beauty and the shrinelike peace of its shade.’

Reading those words, as a sixth-former in Manchester around 1970, I was instantly entranced. Generations of sf readers have been introduced, sometimes without knowing it, to the fabulous diversity of their own planet, by the alchemy of sf. As our world becomes more and more crowded, and ignorance is dispelled by the information revolution and the popularity of long-haul travel, sf’s imagineers have become self-conscious about these borrowings. Today you are likely to find an author openly declaring that the invented planet has been terraformed and reconstructed on purpose, as a kind of theme-park devoted to ethnic and cultural nostalgia, for example, in Orson Scott Card’s Xenocide series, John Barnes’s *A Million Open Doors* (1992), or Nalo Hopkinson’s *Midnight Robber* (2000). Thus we can have a twentieth-century Caribbean-flavoured quartier of the human diaspora, just a dimension veil or two away (so to speak) from a recreation of ‘medieval France’. But the most thrilling of imagined worlds are those that combine a high level of intuitive satisfaction as ‘real’ ecologies with an equally high degree of authorial meaning—a purpose in the work, other than faux-verisimilitude. Frank Herbert’s *Dune* succeeds because the story of the desert planet is a story about scarcity, and the kind of human culture that scarcity produces; Herbert was, at the time, involved in environmental science and its fears. Sheri Tepper’s *Grass* (1979), a imagined-ecology novel of the same calibre, uses the sf device of a planet without habitat or climate diversity to create a stunning pampas world, but here the meaning of the story is found in an ensemble of native animals with a remarkably coherent, thrilling and fearsome metamorphic life cycle. The denizens of *Grass* pass from an entirely animal larval stage, through a phase of callous, destructive and aggressive sentience, and struggle to reach a final, multi-dimensional imago almost beyond human comprehension. The close juxtaposition of a callous, destructive and aggressive culture of human expansion (humans are colonists of the pampas planet) points the same moral as Arthur C. Clarke’s *Childhood’s End*—the perennial admonition and promise of the genre. If sf were an education scheme, the report card for the human race would always read ‘could do better’. But the sf audience will go on coming back for more, as long as the stubbornly aspirational message is wrapped in such an envelope of wonder, delight and playful invention.
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Mad scientists and damsels in distress

It is often said that sf is a genre devoid of convincing characterization. Whether or not they have the skill, sf writers do not have the space for deep and studied character development, because they are bound to foreground the imagined world, the action-adventure and the gadgets. There are some remarkable exceptions to this rule but it is true that sf relies, like the other popular fiction genres, on a set of stock figures, recognizable and emblematic as the characters of pantomime or the *Commedia dell’Arte*. There are countless hero-tales in sf; and many permutations of the basic romance of the young male adventurer. However, although plenty of sf heroes happen to be scientists, they usually, like Indiana Jones, display their sterling qualities outside their professional discipline. Gregory Benford’s *Timescape* (1980), one of sf’s few serious treatments of time travel, provides a rare exception, but this (like most real-life science) is an ensemble piece. Perhaps, ironically, the Faustian nature of scientific heroism is a difficult topic for the genre. Faust, the seeker after knowledge who challenges God and is destroyed when he makes a pact with the devil, is not the ideal central figure for a fiction designed to promote and celebrate Man’s godlike dominion over the material world. The measured, exalted insanity of Mary Shelley’s Dr Frankenstein, with his horrific project of creating life out of a collection of dismembered body parts, is the exception rather than the rule. A notable, and wonderfully crazed example, can be found in Greg Bear’s *Blood Music* (1985), the early masterpiece of a writer who has become one of the genre’s most respected apologists. Vergil Ulam, geek par excellence, has been ordered to destroy his colonies of intelligent lymphocytes (white blood cells engineered to possess self-awareness, and naturally supplied with a Darwinian drive to increase, multiply and take over the world). He just cannot do it.

He held the syringe before his eyes for several minutes, knowing he was contemplating something rash. *Until now*, he addressed his creations mentally, *You’ve had it real easy... No severe test, no stress, no need to use what I gave you.*

So what was he going to do? Put them to work in their natural environment? By injecting them into his body, he could smuggle them out of Genotron... Of course, Vergil commits this folly, and cataclysmic mayhem ensues.

In Ursula Le Guin’s *The Dispossessed*, Shevek, an Einstein-like figure, provides a deeply thoughtful version of this story: the scientist viewed as a brilliant creative artist, forced by circumstance to confront the human meaning of his ‘pure research’. When Shevek chooses, unilaterally, and in wartime, to make an extraordinary, momentous technology available to all
humanity, the parallel with our own world is clear – but to many of the voices in *The Dispossessed*, Shevek appears as dangerously insane as Vergil Ulam. Shevek’s decision costs lives, although not on the bio-catastrophe scale of *Blood Music*’s scenario: but is all this loss justified by the birth of (in both cases) a whole new world? It is clear that to both Le Guin and Bear, the ‘mad scientist’ is not a bogeyman or a cartoon figure. He may be satisfying as a fictional character, but he also represents an idea, a discussion about the nature of responsibility, a topic for debate.

The topics of feminism and gender are discussed elsewhere in this volume, but an examination of sf’s icons would be incomplete without some reference to that fabled sf cliché, the diaphanously clad damsel on the cover. There is an unavoidable subtext in the science fiction adventure. Hero-tales generally involve the hero being rewarded, after his trials, by gaining access – in some sense – to the desirable female. The male reader, at least, expected a taste of that reward from the original pulps, and was rarely disappointed. But the cover-art of pulp sf by no means relied on the sultry damsel to the extent that legend claims, and though feminism finds much to contend with in sf, the classic writers were often – according to their lights – positive and generous towards women. The scientist at the heart of Asimov’s *I, Robot* stories is a female character. She may be presented in essentialist terms, as a frustrated mother to her machine-babies; but she is there.

One of the most striking developments in modern sf has been the emergence of the female-hero icon, who appears (like Joss Whedon’s *Buffy the Vampire Slayer*, or Eidos’s *Lara Croft*) to have captured the hearts of a generation of male writers. Critics have suggested that these potent young women have been appropriated by the male imagination, and are seen not as rivals but as permissive alter-egos – tough and tooled-up on the outside, yet desirable and ‘feminine’ within. Intriguingly, the female-hero of Alastair Reynolds’s recent and much-admired space opera, *Revelation Space* (2000), depicted in print as a bony, uncompromising, shaven-headed action-figure, appears on his website, with authorial approval, with a greatly enhanced cuteness quotient. Androgynous, childlike, culturally deracinated: lost in a hard-edged, grey-scale machine-made world in which (s)he is only tangential to the vast scheme of things, maybe Ilia Volyova is a very suitable candidate for the sf icon of our new century.16

**Traditions and challenges**

In the twenty-first century, the other-worldly, sacred status of many of the genre’s classic icons is rapidly changing. Rockets and space stations remain marginal to most people’s lives, but hand-held global communicators (their
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eerie resemblance to the *Star Trek* version owing more to ergonomics than sf prescience) have passed into the mundane. Cyborgs, virtual environments, genetically engineered plants, animals and even humans, artificial intelligence, cataclysmic climate change, mind-reading machines, quantum computing – it seems as if almost every wild, innovative, sf plot device has been annexed by the everyday. At the same time, the most visual of popular print-fiction genres is challenged by ever more rapid developments in the entertainment media. Gone are the days when the B-movies could not hope to provide the same spectacular special effects, eye-kicks and entrancing false-realities that could be created by the reader’s and the writer’s inner eye. But an icon is meaning as well as spectacle, and there is a logic to the icons of sf that will always recall the reader of these signs to the printed page, and verbal rather than visual argument. These images of the future and of human desire deserve to be revisited, in their original forms. They may not be accurate technical drawings (the encroachment of reality generally reveals the absurdity of the science of sf) but they occupy a strange and very specific borderland. They are not drawn from nature, or invoked from the notional freedom of ‘fantasy’: they are the reasoned hybrids of imagination and the machine.

NOTES

9. See http://www.sorayama.net/Gynoids/gynoids.htm/, for readers eighteen years and over only.