Examen HAVO

Hoger Algemeen Voortgezet Onderwijs

20 06

Tijdvak 2 Dinsdag 20 juni 13.30 – 16.00 uur

Engels

Tekstboekje

600061-2-41t

Smoke-free pubs

 \square WE finally have a minister proposing to outlaw smoking in bars, among other public places, and the smoker in me <u>1</u>.

Having lived in California, I experienced first-hand its ban on smoking in public places. Though I expected this to ruin my trips to the pub, I found it made it far more pleasant. Clothes worn to the pub for an hour could be worn again the next day, the number of cigarettes I smoked reduced and I was no longer forcing others to inhale my emissions.

Jerry Twomey,

Woodlawn Court, Santry, Dublin 9.

The Irish Examiner

Tekst 2

Women fare better in recession than men

By Barbara Hagenbaugh USA TODAY

WASHINGTON – Women have scored another victory in the battle of the sexes: They've become more recession-proof than men.

For the third economic downturn in a row, the unemployment rate for men is running higher than the women's rate – a flip-flop from the months directly preceding the downruns, when men fared better. The trend is a big change from the 1950s, '60s and '70s, when women had higher job rates than men in both down and up times.

"Men's employment ... is much more responsive to economic downturns than women's," says Vicky Lovell of the Institute for Women's Policy Research in Washington. Women tend to work in professions, such as health care and education, that are still in demand when times are tough.

If the trend continues, it could factor into household decision-making, such as which person should take time off to take care of an elderly parent or a sick child.

USA Today

Children get sex lessons from soaps

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Ben Dowell

- TWO THIRDS of children are getting their information about sex and relationships from soap operas and adult chat shows such as Jerry Springer's, new research will reveal this 5 week.
- 2 The two-year study, commissioned by broadcasters and regulators, found the shows were regarded as a "useful" source for the "facts of life" by children aged 9 to 17.
 - Almost 80% of those questioned believed their parents underestimated their sexual knowledge, drawn from programmes such as EastEnders and the Jerry Springer show, all of which are broadcast before 9pm.
- 3 ¹⁵ While critics claim it is evidence of children getting a dysfunctional view of sexual relationships, the researchers argue it is providing them with a better insight than sex-education classes at school. "Children
 - 20 feel that schools don't talk about the emotional complexities of the subject of sex and relationships, which television does," says a source close to the report, compiled by researchers at the Institute of Education, part
 - 25 of the University of London. Teaching in schools is said to be "too narrow" and "moralistic".
 - Susan Stranks, former presenter of the children's show Magpie and a broadcasting
 - campaigner, however, was concerned that young children, particularly, could start to see troubled relationships as the norm. "My concern is that programmes like The Jerry Springer Show present a distorted picture of
 relationships as always being damaging and
 - ³⁵ relationships as always being damaging and problematic."
- 5 The study, to be published tomorrow, was based on in-depth interviews and workshops with more than 800 children across England.

- It confirmed that the vast majority of children 89% had a television in their bedroom. Two-thirds said they had seen a programme or video with too much sex in it. Yet only a third of those switched it off. Although television
- 45 was a key source for information about sex, two-thirds still said their mother was as important in learning about the facts of life.
- What most startled the researchers was the knowhow of youngsters and the ease with
- which they discussed subjects formerly considered taboo for minors. A nine-year-old girl told researchers that exposure to sex and marriage break-ups was "normal", adding:
 "They are a part of society even if you don't so agree with them."
- They also understood how the media might be manipulating them. For example, two 12year-old girls told the researchers: "They use HIV storylines in soaps to get people
- 60 interested just so they can make more money." And many thought people "faked" problems in order to appear on shows such as Jerry Springer's.
- The findings, however, confirmed the fears
- 65 of some experts that children were being introduced to sex at an increasingly younger age. John Beyer, director of the campaign group Mediawatch, said: "At a time when the government is trying to clamp down on
- ro teenage pregnancy, too many programmes have an obsession with all manner of sexual perversion and I am not surprised to hear children feel they know more about sex than their parents."
- 9 75 Zoë Ball, the former children's television presenter who has a three-year-old son, said television's impact could be overestimated. "I don't think that any amount of chat shows or soaps can replace what kids learn in the
 - playground from each other," said Ball."Their bodies change and life just takes over."

The Sunday Times

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Dogged by prejudice

THE TRUTH ABOUT DOGS

by Stephen Budiansky Weidenfeld £20 / Viking \$24.95 263 pages

We have it all wrong about dogs. Or so the distinguished American science writer, Stephen Budiansky, argues. We think they are loyal, hardworking and compassionate. Dogs may save people from drowning, from freezing, from being burgled. Dogs, we tell ourselves, evolved as our partners in hunting, herding, guarding and fighting. They are man's best friend.

<u>9</u>, as Budiansky points out, dogs may bark at everything that moves and then sleep through a burglary. Dogs don't clean up our excrement. We clean up theirs. We feed them, walk them and suffer their extremely anti-social and sometimes violent behaviour. "If biologists weren't as blind as the rest of us, they probably wouldn't <u>10</u> to classify dogs as social parasites."

True, dogs evolved from wolves and still have some of the keenness of a wild animal. That is part of their appeal. But they are wolves who discovered long ago that you don't have to go out to hunt with the pack to <u>11</u>. Behave with sufficient gentleness and charm and humans will do the hunting for you.

We humans not only assume dogs think and feel like us – "Rex, why are you looking so guilty, if you didn't hide my slipper?" – we assume they perceive like us too. In this witty, serious, enlightening book, Budiansky shatters the illusions and replaces them with some moderately firm science. We learn about the evolution of dogs, about their relatively poor sense of sight and their stunning sense of smell.

In particular, Budiansky argues that although in a number of important respects dogs are not like wolves, they still have a sociable pack mentality: a keen sense of hierarchy and their place in it. <u>12</u>, most dogs are happy to accept the authority of their owner – the dominant male – so long as they are treated consistently as "underdogs". Trouble arises when communication breaks down, and dogs are treated as subjects at one moment, as masters next. <u>13</u> dogs

often arises because we humans lack the most basic understanding of dog psychology, although Budiansky admits that intensive inbreeding might also play a part in creating aggressive, mentally unstable dogs.

The apparent pleasure with which this book attacks our dogged prejudices might sound rather heartless, but it is not. Budiansky's aim is not, he argues, to <u>14</u> the extraordinary close and often deeply touching bond between humans and their dogs – to replace the romantic illusion with the cold truth of science. On the contrary, Budiansky is a dog owner and lover. He



merely believes, reasonably enough, that we are not doing dogs any favours by treating them as our close cousins. Dogs don't want to be forced into the role of would-be humans. Rather, we should appreciate dogs for the extraordinary qualities they really possess – as expressions of the diversity and wonder of life. Or, as Budiansky puts it: "Let's face it; if dogs truly were human, they would be jerks. As dogs they are <u>15</u>."

Ben Rogers

The Financial Times

Tekst 5 Disoriented Minds

The following text is the opening passage of the novel Disoriented Minds by British writer Minette Walters.

One

Colliton Park, Highdown, Bournemouth Monday, 4 May 1970, 1.30 p.m.

- 1 IT WASN'T MUCH of a park, barely half an acre of wilted grass off Colliton Way where local people walked their dogs in the mornings and evenings. During the day it was hardly frequented at all, except by truants who hung around the trees that lined the fences. The police rarely visited it and anyway, there was a hundred yards of open space between the only entrance and the offenders. In the time it took two overweight coppers to lumber across, the teens were long gone, vaulting the low fences into the gardens that formed the rear perimeter. As complaints came in thick and fast from homeowners whenever this happened, the police, preferring an easy life, tended to leave the youngsters alone.
- 2 The logic ran that while they were in the park they weren't thieving, and it was better to turn a blind eye and concentrate official efforts in the city centre. To the cynical police mind, truanting came low on their list of criminal behaviour.
- 3 Situated at the poorer end of Highdown, Colliton Way had little going for it. Unemployment was high, school attendance poor, and the proposed new buildings on the acres of waste ground behind it, which had promised jobs and houses, had faltered to a halt. The only site under construction was the Brackham & Wright tool factory, which was a planned replacement for the present, antiquated building in Glazeborough Road. This was no consolation to its workers, many of whom lived in Colliton Way, because up-to-date technology and automation always brought redundancies.
- 4 The most persistent truants were three boys. They were charismatic and generous as long as their leadership wasn't challenged, dangerously violent when it was. It made them a magnet for unhappy children who misinterpreted generosity for affection and cruelty for regard, and none of the children understood how damaged the boys were. How could they, when the boys didn't know themselves? Barely able to read or write, only interested in immediate gratification and with no rein over their aggressive impulses, they thought they were in control of their lives.
 - That May Monday followed the aimless pattern of the many before. So entrenched was the boys' truancy that their mothers no longer bothered to get them out of bed. Better to let sleeping dogs lie, was the women's thinking, than face a beating because their overgrown sons were angry at being woken. The boys were incapable of getting up. None of them came home before the early hours – if they came home at all – and they were always so drunk their sleep was stupor. All three mothers had asked for them to be taken into care at one time or another, but their resolve had never lasted very long. Fear of reprisal, and misguided love for their absent firstborns, had always effected a change of mind. It might have been different if there had been men around, but there weren't, so the women did what their sons told them.

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Minority report

Integration has a long way to go

- 1 When the 17-year-old British boxer Amir Khan won a silver medal at the 2004 Olympics, the celebrations went far into the night in two
 - ⁵ places. In the Pakistani village where his bride-to-be currently lives, his in-laws could boast that they had made a great deal. But this celebration was a tea party by comparison with the media circus in Britain.
 - 10 The fuss had less to do with Mr Khan's boxing than with his father's dress sense – in particular his British flag waistcoat. The message was that the Khans were winning it for Britain. Yet the family was still hedging
 - 15 its bets. Alongside Mr Khan, Amir's uncle sported a T-shirt carrying the national flag of Pakistan.
 - The Khans' uneasiness symbolises a dilemma faced across Europe. Can migrant
 - 20 families assume that even if they want to be British (or French or Spanish) they will be accepted as such? How to reconcile the economic integration of people bringing new skills and labour with the social integration
 - ²⁵ that makes societies work?
- 3 In the past, most migration into Britain was post-colonial – the descendants of African slaves from the Caribbean, textile workers and farmers from the Indian sub-
 - 30 continent. Today the flows are from the states around the edges of Europe's rich heartland: Turkey, Iraq, Somalia and of course eastern Europe. Yesterday's West Indian nurses and Sikh bus drivers are being
 - 35 followed by today's Czech carpenters and Polish nannies.
- 4 The 4.5m migrants who came to Britain since 1945 will be surpassed by the numbers who arrive in the next quarter century to do
 - ⁴⁰ hard-to-fill jobs (and pay our pensions).
 These migrants will be lighter-skinned, which may make them stand out less. But, not being from our former colonies, they

won't speak English and they are more 45 likely to be Muslims than Christians.

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The lessons of the past aren't encouraging for their integration. Integration has been patchy at best. Though students of Chinese and Indian origin are

- outperforming the national average by the time they leave school, black, Pakistani and gypsy children fall far below. The police remains a largely white force patrolling increasingly diverse communities.
- According to a YouGuv poll, more than half of the white Britons do not have a single non-white person in their circle of friends. Even more astonishing, young people from ethnic minorities are twice as likely as their
- 60 parents to have a circle of friends which includes no whites.
- Today immigration regularly turns up in the top five concerns for British voters. The Tory leader, son of a Jewish immigrant from
- ⁶⁵ Romania, has cleverly positioned his party to take advantage of public anxiety without opening himself to charges of "playing the race card", proposing a sensible Australianstyle system to regulate the flow of
 ⁷⁰ migrants.
- The Labour home secretary plans to launch a strategy for "race equality and community cohesion". This will involve more citizenship teaching, more support for
- rs summer camps to bring young people together, more insistence on everybody speaking English.

Above all, the government will need to send some signals to the Khans – both at

- home and abroad that Britain respects Muslims. One way would be a law to protect Muslims from discrimination based on religion. Today it remains perfectly legal to post a "No Muslims Allowed" sign outside a
- ⁸⁵ hotel, restaurant or pub; British laws prohibit this kind of discrimination on the ground of race but not of religion. Fulfilling his promise to make Muslims equal should be the Prime Minister's first step.
- 90 Trevor Phillips: chair, Commission for Racial Equality

The Economist

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Eating habits Mac attack

FAST FOOD NATION: THE DARK SIDE OF THE ALL-AMERICAN MEAL. By Eric Schlosser. *Houghton Mifflin;* 356 pages; \$25

- 1 ARE burgers and fries a product of the profound social changes of the past 50 years, or were they to a large extent responsible for them? Eric Schlosser, the author of this attack on multinational restaurant brands opts for the latter explanation. "There is nothing inevitable about the triumph of the fast food nation," he concludes. But it happened nevertheless and, in his view, it is to be blamed for many of the evils of modern America and their global spread.
- 2 The modern phenomenon of fast food originated in California just before the second world war. Today, there is scarcely a corner of the world that is free from McDonalds' trademark golden arches, invariably spawning a cluster of rival chains selling hamburgers, pizzas, or fried chicken, doled out by smiling teenagers willing to accept minimal pay. They

are cheap, cheerful, popular and children love them.

- 3 So just what is Mr Schlosser's beef? Apart from his nutritional reservations - too much fat, salt and sugar - he documents how, as the chains expanded, they were able to dictate terms to the suppliers of potatoes and ground beef, their basic ingredients. This caused an upheaval in agribusiness, as a few large suppliers quickly forced less efficient producers out of the market. The drive to keep down costs and increase the speed of production led to the employment of cheap unskilled labour and to the widespread toleration of dangerous and unhygienic practices among growers and processors, which regulatory bodies have failed to police. 4
 - Mr Schlosser, who is a skilful and persuasive investigative reporter, sees all this as a damaging corruption of the free market. He is especially incensed by promotional techniques aimed at impressionable children. A 1997 giveaway of Teenie Beanie Babies increased the sale of McDonalds' Happy Meals from 10m a week to 10m a day. And a survey found that 96% of American schoolchildren could identify Ronald McDonald, the chain's mascot. Only Santa Claus scored higher.

The Economist

Tekst 8

BAN ON OPINION POLLS

Sir, – A. Leavy (July 20th) supports the position that there is a valid case for a total ban on opinion polls. This statement is made on the basis that "opinion polls are powerful tools in the formation and manipulation of public opinion". So too are newspapers, books, radio broadcasts, TV programmes etc. I seem to remember a chap in another country who tried to stifle such "opinion formers" when he came to power in 1933. Adolf Hitler or something – Yours, etc.,

CORMAC F. GAYNOR, Dunboyne, Co Meath.

The Irish Times

600061-2-41t

Bang bang you're banned

- 1 GUY FAWKES night is going out with a bang. Britain's annual fireworks festival on November 5th was the last before tougher measures will be
 - 5 introduced to restrict the size of fireworks, regulate sales and institute a curfew. Some police chiefs want to ban private fireworks altogether.

It is a big market. Around 12 million

- people attended organised displays alone.
 Britain consumes around 10,000 tonnes of fireworks every year.
- 3 Some of this is just jollity. But there is a growing menace from firework
 - ¹⁵ hooliganism too. British Telecom says fireworks have been let off in 2,237
 telephone boxes so far this year. Some 30
 have been destroyed in Liverpool alone.
 Royal Mail pillar boxes have also been
 - 20 wrecked, and the letters inside destroyed. Cars have been targets too. A particularly nasty and dangerous habit is posting lit fireworks through domestic letterboxes.
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- The new laws will establish regular ²⁵ inspections of fireworks shops and depots, financed by an increased licence fee. Currently a fireworks sales licence costs only £13 (\$21.70). The new one will cost about £200. Other measures include
- ³⁰ limiting the permitted bang to 120 decibels. This would rule out the Giant Flash Report rocket, a new type of projectile favoured by those who care little for pretty coloured stars, but like a
- 35 really loud noise. And letting fireworks off after 11pm will be illegal.

Will it work? Experience so far suggests that legal restrictions alone are ineffective. There are tough constraints on

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- 40 firework sales in Northern Ireland, but nobody takes much notice. Making life more expensive for retailers will create incentives for illegal traders who already benefit from selling at a lower price than
- their law-abiding rivals. And the curfew will be hard to enforce. "If you see a firework explode 400 feet in the air it is hard to know who let it off on the ground," says Tom Smith of the British
 Pyrotechnists Association.
- A better approach would be more confident and vigorous policing. There are plenty of existing laws to deal with people who create a public nuisance,
- ⁵⁵ whether by letting off fireworks or other means. Timid, deskbound police are often loath to make arrests for fear of yet more paperwork.
- A second remedy would be to restrict
- the illegal trade, which helps
 irresponsible buyers to get hold of large
 and dangerous products. Almost all
 Britain's fireworks are imported from
 China. At the ports, 10-20% leak out of
- official distribution channels, and are sold anywhere, such as in pubs or from car boots. Liverpool's fire service recently found 1.7 tonnes of fireworks illegally stored in a private house.
- 8 70 Thirdly, enforcing better the existing law that bans sales to anyone under 18 can make a difference: in Liverpool, the authorities cut firework-related disorder by 20% last year by using hidden cameras
 - 75 to film shops that sold fireworks to children and then fining them.

The Economist

DEAR LUCINDA...

by brendan vaughan

World Without Tears

THE GREAT LUCINDA WILLIAMS has a new album, *World Without Tears*, and at least one devoted fan at Esquire wants to weep. An open letter to a fallen hero:

Lu, we need to talk. I love you, I do. But you've been acting so weird lately. Last summer, when I saw you in New York, you *rapped*

⁵ half your new songs. And now this new album ... well, I guess I just need some space. And, yeah, I want to hear other people.

It's not that *World Without Tears* 10 is a disaster, Lu. It's not. It's

decent. In fact, I liked it on first



listen. Which is a bad sign. Nothing

betrays fleeting art like instant accessibility. Appreciating great music – appreciating any great creation – takes a little work, 15 right?

The worst part is, I think you're faking it. Not on the slow burns – no, those tracks ring true. But these rockin' songs – I don't mean to be harsh, Lu, but they're so *ordinary*.

My theory? After *Essence* came out, you listened to all those ²⁰ critics (and fans) whose reaction was, "Sure, it's a good record, but it's not *Car Wheels* – it doesn't *rock*." And you tried to give the people what they want. Mistake. *World Without Tears* sounds schizophrenic, as if cowritten by Lucinda Williams, fifty-year-old balladeer, and some half-remembered version of your younger ²⁵ self.

You know what I miss the most? Your stories. You used to take me on such incredible journeys! Unhappy endings, yeah, almost always, but they were *stories* – rich and vivid and brimming with unforgettable characters. You seduced me with

those songs, with the lives of those characters, and I fell as hard as a fan can fall. Sure, there'd been other women, other singers with other tales. But I'd never felt that way before.

That's all over now. And it's not me, Lu, it's you. I guess I just miss that spark, that lost magic between us. Maybe I'm being too ³⁵ hard on you. I probably am. But then, that's love.

XXX, B

Esquire



Tekst 11

Wedding Superstitions & Traditions

When it comes to Weddings, everyone's superstitious. Even if you're the kind of person who walks under ladders on point of principle, or laughs their socks off when friends touch wood, you can bet that, when your wedding day dawns, wild horses couldn't stop you clutching something old and donning something blue. And that's just for starters. We guarantee that you wouldn't dream of seeing your fiancé on the morning of the wedding. And will you expect to be carried across the threshold? Of course you will!

But where do these old traditions come from?

Well, some can be traced back to Roman & Anglo Saxon times, some to Victorian rhymes and others to folklore that has been passed down through countless generations.

All of them are to do with bestowing good luck and fertility on the happy couple.

The Time & The Place

Sunday used to be the most popular wedding day, as it was the one day most people were free from work. Puritans in the Seventeenth Century put a stop to this, however, believing it was improper to be festive on the Sabbath. Today, Saturdays are the busiest, despite the rhyme

Monday for health, Tuesday for wealth, Wednesday best of all, Thursday for losses, Friday for crosses, Saturday for no luck at all

As for the time of year, the saying 'Marry in the month of May, and you'll live to rue the day' dates back to Pagan times. May, the start of summer, was dedicated to outdoor orgies (ie the summer festival Beltane), hardly the best way to begin married life! Queen Victoria is said to have banned her children from marrying in May, and Nineteenth Century Vicars were rushed off their feet on April 30th because Brides refused to marry during May. The sun has always been associated with sexual stimulation and, therefore future fertility. In Scotland it was traditional for the Bride to 'walk with the sun', proceeding from east to west on the south side of the church and then circling the Church three times 'sunwise' for good luck.

Something Old, Something New, Something Borrowed, Something Blue and a Silver Sixpence in her Shoe

This rhyme originated in Victorian times. 'Something Old' signifies that the Couple's friends will stay with them. In one version of the tradition the 'Something Old' was an old garter which was given to the bride by a happily married woman so that the new bride would also enjoy a happy marriage. 'Something New' looks to the future for health, happiness and success.

'Something Borrowed' is an opportunity for the Bride's family to give her something as a token of their love (it must be returned to ensure Good Luck), and 'Something Blue' is thought lucky because Blue represents fidelity and constancy. The custom began in ancient Israel where brides wore a blue ribbon in their hair to symbolise their fidelity. A sixpence was placed in the shoe to bring the couple wealth in their married life. Some brides still place a penny in their shoe during the marriage ceremony.

Dressing Up

Until the Nineteen Hundreds Brides hardly ever bought a special Wedding Dress, opting for their best outfit instead. Green was always avoided, as it was thought to be unlucky. To say a girl 'had a green gown' also implied that she was of loose morals, because her dress would be grass-stained due to rolling around in the fields! Hence 'Marry in Green, ashamed to be seen'. White Dresses were made popular by Queen Victoria, who broke the tradition of royals marrying in Silver. Symbolising purity and virginity, white was also thought to ward off evil spirits. Other traditions are that the bride should never make her own dress, that the final stitch should not be completed until she is departing for the Church and that she should never try on the entire outfit before the day. This was because it was felt dangerous for the Bride to count her chickens. For the same reason, a Bride should never practise signing her new name until it is legally hers, and wedding linen was marked with the Brides maiden rather than married initials. The tradition of Bridesmaids is evolved from the custom of surrounding the Bride with other richly dressed women, in order to confuse evil spirits.

Flower Power

Flowers have always been a big feature at Weddings. The Groom is supposed to wear a flower that appears in the Bridal Bouquet in his button-hole. This stems from the Medieval tradition of a Knight wearing his Lady's colours, as a declaration of his love. Each flower has its own meaning and can display a special message. Orange Blossom, for instance, signifies chastity, purity and loveliness, while red chrysanthemum means "I love you."

Food for Thought

The Wedding Cake was originally lots of little wheat cakes that were broken over the Bride's head to bestow good luck and fertility. Today's three tier Wedding Cake is based on the unusual shape of the spire of Saint Bride's Church in London. Traditionally the newly-weds should make the first cut to signify sharing their life. Every guest then eats a crumb to ensure good luck. And sleeping with a piece under her pillow is said to make a single woman dream of her future husband. The giving of almond favours is connected with the motto: 'A gift of five almonds represents health, wealth, long life, fertility and happiness.' The throwing of confetti, meanwhile is an ancient fertility rite. Handfuls of grain or nuts were traditionally thrown because they are 'life-giving' seeds. In some European countries, eggs are thrown instead.

www.weddings.co.uk | Info Section | Home info@weddings.co.uk

You'll believe a man can fly. And shrink. And turn green...

Could a caped crusader really patrol your neighbourhood? **Roger Dobson** reports on how science has – in theory – finally caught up with comic book superheroes

Could the Incredible Hulk ever really exist? Is the world likely to see a very large green man with immense powers? Might Superman, Batman, Spider-man, Antman or Aquaman ever swoop down to rescue those of us in distress?

Well, yes, some of them could, it seems. Professor Jim Kakalios, who is working on a new book on the science of superheroes – for Gotham Books, of course – says that some of the powers dreamt up by comic book writers 70 years ago are now a theoretical possibility.

Much of Batman's arsenal, for example, has been practical for years, while Aquaman's trick of breathing under water has also become a reality. Even the Incredible Hulk may be a possibility, with the help of super steroids, genetic engineering and jellyfish. One of the few exceptions, says mild-mannered physicist Professor Kakalios of Minnesota University, is Superman, because his home planet Krypton, is something of a physical impossibility.

But with regard to the rest of the comic world's superheroes – many of whom were devised when electricity was still a novelty – large amounts of the science used has turned out to be spot on.

Take, for example, the death of Spiderman's girlfriend, Gwen Stacey, a seminal event in superhero history. She died in Spidey's web as he tried to save her, and 30 years ago many critics complained she would not have died. But Professor Kakalios has calculated that the writer's story has just as much science as fiction in it. "She was falling at roughly 95 miles per hour when she hit the web, and the impact on her body would have been 10 to 20 times the force of gravity. That proved that Gwen Stacey died of a neck snap when Spider-man caught her in his webbing. It is a textbook illustration of the conservation of momentum."

Then there is Superman: "Back in the 1930s it was presumed that Superman was so strong because he was acclimated to Krypton's gravity. We have calculated that the gravitational force of Krypton – Superman's home planet – is about 15 times that of Earth's. It turns out that the only way we could figure out how to make such a planet, it would be very unstable – it would explode. And that is what happens in the comics."



Science fact or fiction? How they measure up

The Incredible Hulk

Born: May 1962 in Marvel Comics.

Fictional powers: Dr Bruce Banner is exposed to gamma rays. He turns into a green monster with huge strength when he gets angry.

And science says: Gamma radiation causes sickness, cancer and death. But the Hulk could, in theory, be created by using anabolic steroids and genetically altering his skin with genetic material from jellyfish.

Batman

Born: May 1939 in *Detective Comics No* 27.

Fictional powers: Bruce Wayne is a bat-inspired superhero with brilliant fighting and detective skills.

And science says: No longer invincible. The once-fantastic crime-fighting devices attached to his "utility belt", such as smoke and gas capsules, oxyacetylene torch, infra-red goggles and wireless surveillance gear, are available in most high streets.

Independent on Sunday

Superman

Born: June 1938 in Action Comics No 1.

Fictional powers: Has

various superhuman abilities, such as flight and immense strength, that he uses in his fight for truth and justice.

And science says: If the planet Krypton had a gravitational field strong enough to account for Superman's amazing strength, it might not have been possible for a rocket to leave the planet's surface.

Spider-man

Born: August 1962 in Amazing Fantasy No 15.

Fictional powers: Peter Parker is bitten by a radiation-exposed spider and gains a number of powers, including agility and strength.

And science says:

Researchers believe that the mysterious silk of a spider's web is one of the most powerful materials on earth.

