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(And in answer to Paul M's question, I haven't got a program to do it, the fancy lettering is all lovingly copied by hand from the bit patterns in a manual - it makes me that little bit monastic )

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AA  PPPPPP  AA  44  9th June 1991
AAAA  PP  PP  AAAA  444  Editorial - John Bray
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AAAAAA  PP  AAAAAA  4444444  John Bray - Euro-Contact
AA  AA  PP  AA  AA  44  Matt Bishop - The End of SF as we know it
AA  AA  PPPP  AA  AA  4444  Paul Marrow & John Bray - "You can't get
There from Here" parts 3,4,5
Simon McLeish - Tehanu review
Matt Bishop - Armageddon the Musical - rev
Mel Dymond - Cuckoo's Egg review
Odds & Sods
Product Warning Labels
EEC Motoring Phrases
Theasaurus poetry
Faces

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Down a Dirty Line - John Bray
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What's the use of power if you can't abuse it? I know I set a much earlier deadline for Issue 4, but coming back from holiday to a 1.4Meg download from cix, and magazines up to the eyeballs, I realised I'd have no time to write anything myself for me old beauty. So after a week's delay, I've still written nothing yet, but I can get my chin over the pile.

Scotland was good, 2,500 miles charging past the scenery. Shame about the shortage of young women begging lifts to the bases of mountains. I had to settle for umpteen castles instead. Back here, my next great plan is the CONTACT extravaganza (see later), but I also aim to start imposing my editorial clout on you all.

In the first few issues of the APA, I accepted everything. This got people writing, and lots of good stuff (Paul's and Phil's articles especially)

came out of it. But when Abbey Crunch nearly hit 100k, it all seemed too bloated for me to sub-edit and you to read. So from this issue I'm going to tighten my grip on it all. I'm going to paraphrase comments and reject things. (Simon sent in a couple of Piers Anthony and David Eddings reviews, but as I discussed with him, reviews of authors with such predictable styles gain nothing. I've much rather receive pieces like the Godel's Theorem piece, which I must read on paper to understand). I've removed Lucy's comments, as they were conference-type snippets that didn't really fit into the whole smoothly.

So from now on, you get what entertains me. I'll include some funnies from CIX and Usenet, but mainly it's up to you to keep the wires singing. I've sent a note to the silent majority saying that they've been removed from the mailing list until they respond. Don't let it happen to you, keep on dunking your biscuits in that same old way.

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Bollox (with great Gonadz)  
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Dave Clements on 'Where were you When'

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As far as \*I\* am concerned, the Challenger Accident is the pivotal event of 80's, in much the same way as the Kennedy assassination framed the 60's, with its attendant paranoia and conspiracy theories. In our age, Challenger prefigured the Chernobyl accident (which is also a candidate for a where were you when spot) that came shortly after, and the Hubble Space fuck-up. In many ways, one can look on the 80's as a time when faith in science and technology, at least of a main stream kind, has waned, and these events really set the tone. New Age mysticism (if that grandiose title doesn't give it too much credit) could also be seen as a part of this process.

Dave kicking a Cyberpunk when he's Down

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The basic problem, as I see it, with Gibsonist cyberpunk (I'll get to other forms later) is that its fractal. By this I mean it in the absolute definition of it having a fractional dimensionality. Thus something can have area-like properties, but really be a line (the Sierpinski space filling curve is an example of this). Cyberpunk in the Gibson mold has a dimension of about 2.5, I would guess. This means that it seems to have a great deal of complexity, and that this comes from it possessing true, three dimensional depth. On closer inspection though, you can tell that this is all in fact just surface. A very convoluted and intricate surface to be sure, but its just surface nevertheless.

There are no real 3D characters, the world doesn't hold together, the technology and its effects are not believable. Its fun, certainly, just as wandering through the Mandelbrot set is fun, but it is ultimately unsatisfying. In this classification of Gibsonist cyperpunk I'd include Gibson himself, Kedrey's Metrophage, and possibly Shirley though I've not read much of him. Possibly Jeter too, but he does drift close to Dickian reality warping at times (and his horror books really pack a punch, which is where he's really at now).

The opposing camp to this is Sterling Cybeepunk. This is best demonstrated by Schismatrix, but his short stories in Crystal Express and Islands in the Net are also good examples. Sterling knows what he's at. He knows his technology, has a grip on science, and genuinely \*thinks\* about what could happen. He also operates on a broad enough canvas at times to approach that purest of SF ideas: assessing man's place in the long term future of the universe. Sterling's SF may not be comforting in his answer to this

perennial question (see \*Swarm\* in Crystal Express for one of the most chilling expositions of one of his views) but he's there with the best SF writers in trying to probe the \*really\* distant future and its possibilities in a realistic way (ie. Space Opera doesn't count).

Unfortunately, I don't think any other Cyberpunks can be classified as in Sterling's 'group' except the man himself, but if Cyberpunk does nothing else but place Sterling in a position to get his ideas out and published, then it'll have done a good thing.

Matt goes for Simon

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Simon McLeish should by now have been inundated with mail from peeved physicists -- are there \*really\* people who think Godel's theorem will apply to GUT, or do they just think that some result \*analagous\* to Godel's theorem will prevent our ever knowing everything there is to know about the universe? The former is flatly ridiculous, the latter might have some credibility, if we could only produce analogues of "derivability" and "truth" that applied to the "system" (presumably the universe and all its physical laws). "Derivability" would, I suppose, have to be something like "knowledge", and "truth" would be "reality", but this then leaves us up the creek. Firstly there would seem to be no way of "deriving" this principle, via the universe and the laws of physics (which leaves the whole thing firmly in the realm of philosophy, or possibly theology). Secondly, we would have to assume a "reality"; the only thing preventing me from asserting that Heisenberg's Law is the analagous law that I'm groping for -- because it asserts that we can never know the position and momentum of a particle -- is because, under this analogy, it would have to \*have\* a position etc; there would have to be some absolute truth. Ummm. Errr. You don't have one of these slack-brained physicists to hand, do you? That way we could at least understand their argument... I enjoyed the article, though.

Paul Marrow - Fig Roll Bites Man

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A meta-comment on Dave Clements' comments: surely a society is only an emergent property of individuals, and thus whether the society or the individual is the prime mover of change is a bit misleading, since both are intertwined. By analogy with group selection, though, it is quite possible that emergent properties at the societal level might cause change in a different, or the opposite direction from that advocated for and instigated by individuals (I don't think it is too difficult to think of such cases), but this would (obviously; look at the state of sociology), be very difficult to quantify.

In thinking about Mark Nelson's piece it occured to me that I was having considerable difficulty recognizing the concept of cyberpunk, despite being familiar with it ever since I read "Count Zero" when it came out in paperback (no, I didn't read William Gibson's three in the right order and I still think Count Zero is the best of the three.) I have not bought or read many cyberpunk novels recently, although I have read a number of short stories but many of these were on the pages of interzone, where I tend to read everything that appears, eventually.

I wonder whether, for me at least, cyberpunk has been too successful for it's own good, and I have accepted many of the trappings and stylistic features of the movement as essential to the corpus of ideas around which good modern SF novels are based. Only the most extreme cyberpunk books appear to me to be distinctive, and I can no longer beleive these, as they seem all style based on very little substance, without the semblance of rationality which (as Neal Tringham suggests, underlies the genre). After

all, these cyberpunk characters do sleep sometimes don't they? Where do they get all the money to support all their medical expenses, and why do the necessary operations required to install cyberware never have unfortunate side-effects? In the cyberpunk (i.e. American) future, how do they pay for the private medical services (zaibatsus, you cry, but they are not all employed by these)? Must stop ranting here, as you can see, I have stopped beleiving in it.

Despite my difficulty in recognizing cyberpunk as a sub-genre, I am disinclined to agree with Mark Nelson that "The Shockwave Rider" is cyberpunk, although in the information net it does have a communication system which may be, retrospectively, similar to Gibsons Cyberspace, although John Brunner presumably hadn't considered things like virtual reality when he was writing his book. (One question: why is it so easy to move around the country (the USA) in this electronic future? After all, having electronic communication doesn't give you limitless financial resources, and surely the net makes it easier for Big Brother to check up on you?) Perhaps the reason for this is that I think that "The Shockwave Rider" lies too squarely within the traditions of non-cyberpunk SF. Oh dear, there goes my faliture to recognise a genre again: perhaps I should stop rambling and try something else.

Neal Tringham pointed out that science fiction, despite its love affair with science, has on the whole ignored the more complex and interesting ideas of current science, in favour of much over-simplified ideas which are often outdated (the treatment of biological evolution is an example of this; although "Last and First Men", for example, is a good book, it doesn't have much basis oin current evolutionary biology). I too would like to see a good SF short story about chaotic turbulence, and I would like to write a good story about theoretical population genetics and possibly even the assembly of biological communities (yes, these subjects too can be fun!) I suppose the effort that has to go into the act of creation of a science fiction story to some extent precludes the further effort required to understand and assimilate complicated scientific ideas. Things were easier in Arthur C. Clarke's heyday.

Paul Marrow - Gonadz to Tarnover Two

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Mark Nelson seems surprised by the rise of military censorship as war-reporting technology becomes more sophisticated. I don't find this at all surprising. As the technology of journalism becomes more advanced, yes, pictures can be returned from the middle of a war zome more quickly, but then it is easy to pull the plug on a load of electronic gadgetry (I seem to rememberr this happened in Baghdad). Of course, you might have batteries, but what do you do if you run out? It must not be forgotten that electronic warfare has emerged as a branch of the military all of its own, responsible for 'snowing' televisions during news reports of conflicts, and presumably capable of more drastic effects. The most effective anti-electronics weapon, the nuclear bomb, has, fortunately, seen little use in recent years, but nevertheless the potential is clearly there. As technology advances, we come more dependent upon it.

This is not to say that former wars were much more truthfully reported. Vietmsnam probably was, but, as I read somewhere recently, this may be due to the gradual way in which the US conflict (as distinct from the French) in Vietnam developed. Journalists had plenty of time to establish themselves before the Viet Minh (Viet Cong) stole enough weapons from the Americans and South Vietnamese to become a serious threat. In contrast, the military (as opposed to diplomatic) involvement in the Gulf was highly organised from the very start, and this organisation was maintained.

Further back the lies that emerged from front-line reporting in the First

World War almost beggar belief. The tale is told of a Brigadier who went down to the trenches to inspect his units and burst into tears at the horrific sight, so different from his briefings. But there are probably plenty of modern examples of massive lies as well (East Timor?)

It is well to recall that before habeas corpus journalists could be removed quickly and conveniently just by imprisoning them: the imprisonment of the Times correspondent in Manchester around the time of the Peterloo massacre during the early 19th century (c.1812?) enabled another later national newspaper, The Guardian, to come into being, as the London newspapers still wanted reports from Manchester even after the newspaper of record was removed.

I am sure there are enormous amounts of other examples that could be quoted to support trends in censorship in wartime: these are just some that rose to the surface among my recent reading. In general, all I can say is, technology brings its advances and its disadvantages.

I agree with Mark's comments on war as computer simulation (and/or vice versa); its horrific and moving at such a rapid pace that I find my imagination almost outpaced by reality. I remember when Space Invaders was a sophisticated war game!

Paul Marrow - The Beginning of History

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I liked this a lot: having heard about 'The End of History' without much detail of its context, and disbelieving it from the start, it was good to read something which actually explained how otherwise sane historians and political scientists (so-called) could actually come to such a simple-minded conclusion. As I think you can guess, Phil's article hasn't made me come out any more in favour of it. However, I think now, a number of months after the start of the end of history (which I take as being the opening of the Berlin Wall on November 9th 1989), we can actually begin to assess whether it has started ending.

I don't mean to appear stupid by suggesting that history should end (in this particular sense) overnight, I don't think Phil's presentation of the argument suggests that (correct me if I'm wrong), but surely the relaxing of constraints produced by the end of the Cold War should be having effects in the form of the sort of global homogenization that Francis Fukuyama are implying? Perhaps we can see this sort of thing happening in Eastern Europe, but what if we look a little further?

I don't get a newspaper daily, and I rarely watch television, not having one of my own, but I do listen to the radio daily, and try to keep up with current trends in world affairs. Even so, recently I have been getting the impression that bigger and even more horrible stories are springing up in the gaps between when I actually listen to the news!

In Iraq a month or two ago we had one of the shortest and most successful (militarily) wars in history, and the first major use of US troops for a long time (but they haven't exactly been inactive, since recovering from the trough of the seventies; Grenada, Liberia, Lebanon, Panama, Iran- in no particular chronological order are examples). After that was over the world community (who they?) suddenly realised the Kurds were a multi-million strong problem, not to mention the more obscure Shi-ites in southern Iraq. Meanwhile the Arabian/Persian Gulf ecosystem is getting severely hammered (several peoples research projects in my Department have been radically altered for a start). Of course, this is old news, but it hasn't exactly gone away just because its been out of the news for a bit.

If that wasn't bad enough further starvation is occurring in Africa, a

cyclone has devastated Bangladesh (surely the worse place to be in such an event, but it's soil is so fertile), and the second horseman of cholera is stalking South America again. Meanwhile the unification of Germany has turned into a huge balls-up, and the Soviet 'Union' totters around on the way to a civil war. [Historical aside; isn't it interesting that the USA had Reconstruction after its civil war, while the USSR has perestroika (meaning guess what?) before...?] I guess thats about enough horrific events as I'm running short of ideas off the top of my head.

It looks to me that instead of heralding 'The End of History', the end of the Cold War has restarted stalled political movements and trends that were subsumed to the neccesity to survive a deadly nuclear stalemate for so long. (Yes, I know the nuclear warheads haven't gone away, except in small amounts, but the rhetoric of Mutually Assured Destruction or its alternative, winnable nuclear war, aren't taken seriously enough at present to suggest to me that they could actually be used as elements of last-ditch political strategy.) Add a few natural disasters, which are always magnified due to our use and dependence on technology, not to mention one vary artificial disaster (The Gulf War), and you have a fermenting mixture ideal to brew 'The Beginning of History'.

The doctrine of 'The End of History' seems to me to be an extension of the idea that the history of the USA is the history of the world. Having recently read a history of the USA (The Penguin History of the United States of America, by H. Drogan? (can't remember exact name)), I can see the reasoning behind this viewpoint- the USA has been preeminent in shaping historical trends this century, bit it is not the world. Nor has science come to a stop, nor is it likely to (not while I'm still having ideas!) Perhaps SF is tired and lack-lustre these days; certainly I look at the science fiction shelf in a typical bookshop, and see nothing which I would like to buy. But there are books I would like to buy, they are just not in the shops very often. I don't think SF has been around for long enough, or matured fully, for us to assess it's impending, or otherwise, sence. Time will tell, and I would like to comment on 'future satiation', but am feeling too exhausted.

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Old John's Kentish Ways  
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This idea won't die. Many people have asked for more snippets from the Surrey Soothsayer (nah, lets stay in Kent), puzzled when I describe someone's expression as 'Town Hall steps' (guess). Mel asked me the origin of 'Load of old coldswallop' (I know now, smirk), and I responded with 'colporteur'. No-one new has explained 'load of old toot' to me, so I'll try again. If I hobble round the room saying 'born on the side of a hill', which film am I quoting? Or complete the phrase 'I Scream, you Scream, we all scream for ...'

The fount is drying now, I'll excavate a new batch when I visit my parents next weekend, be warned.

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John Bray - Euro-Contact  
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At the Worldcon, Greg Barr gave a talk on CONTACT, an American group of 10 years standing, who set up and roleplay alien-human first contact scenarios. A tremendous ammount of work is put on in advance, designing alien worlds, ecologies, physiologies, etc., all the way up to alien cultures, languages and motivations. Physicists, geologists, biologists, medics, psychologists and linguistics experts try to build a society based on scientific principles. Sf authors like Poul Anderson and Larry Niven

must be able to justify any wacky ideas they introduce. People build wire-frame models on computer, artists add skin, and models are made in clay.

The end result of this is Contact conference in the Spring, where people role-play the encounter between a human (or alien) survey team and the alien race. Greg showed a short film of the events, with people describing how: 'I scuttle counter spin-wise and flagellate him with a dextra pseudopod' - 'I look baffled'.

All this seems great fun, everyone able to ride their own hobby-horse and yet claim that every mandible/glottle\_stop is justified scientifically.

The Contact people have set up some of their scenarios for schools (a 4 week project for 12-14 year olds is being tried in Kansas... Kansas!), and have branched out into inter-collegiate 'plan our 21st century solar system' competitions.

Greg was keen to make contacts with other groups (China and Germany so far), and sent out newsletters to those who left addresses. So much of my info is thanks to Dave for his copy.

I thought it would be fun to try something similar here, on a smaller scale at Illumination (1992 Eastercon in Blackpool, you will be flyer'd).

I reckon the best way to approach it would be for people to design 1 alien race in advance, then running a series of workshops at the con. Items like 'Model a biologically realistic alien in plasticine' with Jack Cohen judging, or some repeat of the alien archeology items done before. Workshops could discuss our experiences and possibly design another race over the weekend. The climax would be a role-playing session where our survey team meets up with the alien race(s).

To do this would need quite a lot of commitment, both before and during Illumination. I've already interested the London Astra people - Martyn Fogg, the famous terraforming dentist (off expenses paid to a NASA Ames workshop with Sagan et al next week) is bubbling with ideas about fibre optic nervous nervous systems and exoskeletons. He's sent off for one of the sets of American Contact papers, which should give a good idea of possible areas of research and pitfalls. I'll also spread the idea on CIX, and hope to get a good response there.

Are any of you interested in helping? Paul is an obvious candidate for the biology/ecology side, Dave and Amanda for the Astrophysics, but how about the rest of you? Ever fancy creating a mathematically based language, justifying the emotions of alien beings, generating histories of alien cultures, writing the popular songs? Given my antipathy for the role-playing side of things, I'll need to sub-contract the encounter scenario itself.

I reckon e-mail is the ideal format for this kind of discussion (and indeed the American Contact people use BIX a lot, I'm hunting for e-mail addresses now). I aim to act as co-ordinator for the project, copying information between the various groups, and rejecting anyone's attempts to make the creatures into Weaver-walloping super Predators with scenario: "Hi there wierdos", scream, gobble, gobble, burp.

Let me know straight away if your interested. Remember nothing is decided yet, so install your mandibles first.

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Matt Bishop - The End Of Science Fiction As We Know It?  
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Over the last couple of issues of this APA, Neal Tringham and Phil Raines have made concerned noises about the future of sf. In particular, are there any ideas left to explore, or are sf authors doomed to recycle the same old rubbish until the readership gives up and buys something else? I don't think the future is quite that bleak, so in the interests of helping John to break 100K, here are my reasons why.

Let's start with a bold (or, at least, dramatic) step. Let's take the 90% of sf which is crap, and ignore it. Hack writing will always be around and, more or less by definition, will not contain anything new. This should leave us with a few -- perhaps five or ten -- books per year which have some merit. These are the books we should be concerned about -- are they running out of ideas?

It seems reasonable that the flow of major ideas should slow down; space travel, time travel, space opera and the like could only be original once. Advances in science bring advances in sf; breakthroughs in biochemistry gave us a flood of stories about genetics, breakthroughs in computers gave us cyberpunk. As Phil commented, the lag between fiction and fact is shrinking, and this is probably due to authors desperately searching for new ideas, who now find themselves right at the forefront of research, scanning the technical journals for new ideas. In this sense, at least, sf is bound to run out of ideas; science simply cannot produce new marvels at the same rate as authors can write about them -- but the field need never grind to a complete halt. Remember, all we're looking for is material for those five or ten books...

I think that sf, having concentrated on gadgetry for most of its existence, is now being forced away from that viewpoint. There just aren't enough gadgets; there is nothing new enough, or interesting enough, to justify writing stories which read like early Asimov. Those writers who are capable of writing well should profit by this; they can effectively write stories using old ideas, but with some degree of characterisation. I'm all in favour of this arrangement -- a small flow of new ideas, and a natural pressure towards better writing. Upmarket mainstream novels (by which I mean the sort of thing that Picador publish, for example) continue to appear, despite the relative dearth of "new things" to write about in the real world; the pressure here is for insight and characterisation. Why should it be any different in sf?

To bring this down to a concrete example : it has been alleged that Shepard's Life During Wartime contains no ideas that weren't in van Vogt's Slan -- does this matter? Shepard (whose book I have read) has skill with language and characterisation that van Vogt (whose book I have abandoned) simply doesn't. Should it concern me that van Vogt got there first? My answer, as you may have guessed, is no.

I would be delighted to see sf move more towards the mainstream. If the freedom that it gets from not being fixed to the here and now were used to explore ideas about people, rather than about gadgetry, there seems no reason why sf should ever run out of things to say. A few authors have been doing this for years, of course. Consider the (woefully neglected) novels of D.G. Compton. Compton's style is simple; "There is this science-fictional thing," he says, "and it does this; never mind how. Now looks what happens when a group of people get to use it." Compare this to the average hard sf writer, complete with technical appendices. Worse yet, compare it to the writer who feels compelled to write hard sf with technical appendices even though not competent to do so (Barrington Bayley's The Zen Gun springs unbidden to mind). I could stand on my soapbox and go on about the innate superiority of soft sf for pages and pages. (Indeed, I may well turn this whole thing into an OUSFG discussion meeting.)



So, to sum up : yes, hard sf's flow of ideas is doomed to slow to a trickle -- there simply aren't that many new ideas. Soft sf, hopefully, will be in a position to take over, and re-use the old sf ideas in a more human context. Hopefully sf will, because of this, move much closer to mainstream fiction, and such "trivialities" as plot and characterisation can finally take precedence over sensawunda.

[Given the crap attempts at characters by Bear, Lee and co, I'd rather have the sensawunda JRB]

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Paul Marrow - You Can't Get There From Here  
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(Part 3) Genetic drift...  
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Well, we've decided to go to the stars and realised that generation starship is the only way to do it, since FTL is not possible, and relativistic travel is not technically feasible. Having enduring the rigours of genetic damage due to radiation, and the bizarre distortions of inbreeding, what will the few survivors have to cope with? Unfortunately, the Pandora's Box of population genetics theory isn't empty yet...

Another consequence of small isolated populations (so says the book) is non-adaptive genetic change through random sampling. That is to say, within a small population, genetic material will not be mixed or represented at random in the offspring because there are much less combinations of possible parents than of possible genetic variants. Over time this can lead to quite rapid genetic change, but has very little to do with evolution by natural selection. Thus genetically similar human populations setting off in different generation starships would be expected to diverge rapidly in genetic composition, and the smaller the population, the more rapidly this might occur.

If divergence occurred to a sufficient extent, the resulting population might be so different as to be unable to interbreed and produce offspring; the usual criteria of different species. Thus the use of generation starships could lead to the fragmentation of the human race into dozens of different species in different stellar systems.

You might think that the timescale of a generation starship voyage is too short for speciation, an event which can take millions of years under certain circumstances. However under similar theoretical considerations as above (genetic drift) we would expect speciation in smaller populations to occur more rapidly- and we have good evidence from fish populations in lakes that speciation has occurred in less than 3000 years (because the lakes in question have only been around that long). The classic example are the several hundred species of cichlids (a type of fish) in Lake Victoria: all different but closely related. Now, sadly, almost all extinct due to the introduction of a predator.

3000 years is well within the sort of timescale sf authors have considered for a generation starship - and thus one could postulate a humanoid universe like that of the Hainish of Ursula Le Guin; where numerous humanoid races (species really) exist on different planets which were all settled by the Hainish in the distant past.

This is in fact the only biologically plausible way we could get science-fictional humanoids: the sort of dressed-up-humans beloved of "Star Trek" and others imply not convergent but coincident evolution! Chimpanzees share about 99% of our genetic material, but, presumably due to the mutation of some regulatory (controlling) genes they look extremely different. Evolution is inherently unpredictable and would not be

expected, on purely probabilistic grounds, to do such a similar thing twice. After all, there are probably lots more possible evolutionary solutions which we haven't seen.

(Part 4) The Reply...

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I was pleased with the reception of these pieces, which I originally wrote in July of last year and split up into bits so as to give me something to go in John's APA which I could produce quickly. I hope you will forgive me taking up some more space to clear up some queries, and attempt to answer some comments...

Amanda Baker commented on my remarks on the effects of radiation on human populations. In answer to your first question, the amount of research that has been done on the long-term effects in a population of interstellar radiation is very little, if any. What I based my ideas on was the little that is known about the effects of radiation in individuals on Earth, and the body of results in theoretical population genetics. I accept that, in the case of workers in the nuclear industry, there are tremendous statistical problems obscuring any clear view of the effects of radiation on the workers and their families; not to mention the difficulty of gathering sufficient data. After all, we can't do controlled experiments on these people, and the amounts of radiation they are exposed to are so small, in comparison to background radiation. Also the timescale on which studies have been carried out is so short.

I am an evolutionary biologist, and thus I do tend to be biased to taking the long view, but theoretical population genetics offers a 'mechanics' for predicting, or at least qualifying, the effects of radiation, but it requires large, preferably infinite populations and evolutionary timescales. It seems to me, that, notwithstanding the possible exaggeration of effects on workers in the nuclear industry and their families, and even if the dosage of radiation received in interstellar space is low per unit time, the time span we are considering is sufficiently long for considerable genetic effects to build up. The theory of 'genetic load' predicts that this will become significant in inbred populations over evolutionary time, although of course these are arbitrary population genetic populations, and the relevant parameters for human populations are not known (and may not be calculable).

It is true that 'monsters' in the sense I suppose of grossly physically deformed individuals are very often non-viable in complex organisms like mammals (do you remember the stories predicting the bizarre deformities to be found in the third-and-later generation descendants of Hiroshima and Nagasaki? Where are they now?) I guess I was using a rather misleading example (the only one I could think of at the time-sorry). But I don't think it seriously disrupts my argument. Aside from the third or so of zygotes in humans which are spontaneously aborted (presumably due to genetic abnormalities), genetic disorders do get through, in disconcerting large frequencies. Modern medical techniques can treat conditions like haemophilia (indeed, before the onset of transfusion-induced AIDS, haemophiliacs had a greater life expectancy than normal men due to excellent medical care), but since many disorders are recessive, it is very difficult to eradicate them. Germ-line DNA manipulation may change all this, if and when it comes, but I deliberately ignored that can of worms in my articles as it is so unpredictable.

In the isolated population of a generation starship these disorders would build up (unless one had a very regimented mating system, and over a sufficiently long period of time that would only slow down the inevitable). After all, there are only so many genes to choose from in forming new

individuals, and, as John alluded (although I'm not sure where the figure of 7/8ths came from), peoples descendents have only part of their genes. If some forms of a gene are only found in a few individuals, by chance alone, those rare forms may be lost, but other rare forms may become commoner as they spread among descendents. Recessive genes are a particular problem here because they carry so many disorders, and because natural (or otherwise) selection won't act on them while they are in single copies, but they can have considerable effects in the future.

To certain extent I have overstated my case, in order to make the point, and deliberately ignored technological (and biotechnological) changes which may make some of the problems irrelevant. But it still bears thinking about. Finally, I should emphasize that I tend to view things from the point of view of populations, since this where the effects of evolution are quantified as changes in gene frequencies. Of course much research concentrates on individuals, since they are smaller (and cheaper). But population genetics theory provides a way of generalising from individual to population, and all populations are made up of individuals (except those irritating creatures whwere it is difficult to define individuals, and I'd rather avoid those if you don't mind) so the two areas of research are difficult to disentangle in this respect. Anyway, I think there are some nice ideas for science fiction stories in all of this...

John Bray (Part 5) The Technical Appendix

I've just been reading through Martyn Fogg's JBIS paper on the distribution of Easily-Terraformable and Habitable Planets. According to his figures ETPs (those that could be made habitable with the resources of a world-ship of carrying 1 million people) occur every 14 light-years, and HPs every 32 light-years. At an average speed of 0.005 c, it could take 6400 years for a worldship to reach an HP, what effects would you expect?

[a book reccomend to me on this is "Interstellar Migration and the Human Experience" by E.M Jones and B.Finney (University of California Press 1986?). Has anyone got a copy of this?

One thing that no-one can justify to me is: What political system would send out generation starships. Current long-term projects (eg airliners) might be 30-40 years between first plans and last retirement from service, but can you imagine any political party voting funds for 1000 year projects?

Rob Gray and K.V.Bailey discussed the analogies between big science and cathedral building in Matrices 88 & 89. They make valid points about the iconic nature of the work, but not the timescales. A mediaeval cathedral might take 3-400 years to complete, but the builders existed in a society with a stable religious structure where both the leaders and workers agreed on the need to spend vast sums on such icons. I feel that such days will never return, we will never again have such a predictable life.

People will always query why our resources should be used for purposes benefitting such distant generations. Comparisons cannot be made with exploration of the New World, as Europeans who set off on the Oregon trail would arrive in a few months or years, and any benefits of their labour would acruie to their children rather than themselves. Some people claim that had the Third Reich endured then lebensraum would have been sought amonst the stars.

Even if the starship Mayflower sets off for Barnard's star with a brave band of colonists aboard, what is to stop the grandchildren turning the ship round. Van Vogt has internecine battles in his "Voyage of the Space

Beagle", Harry Harrison tries condemning his colonists to the power of Aztec priests in "Captive Universe", but to achieve such stability would need complete isolation from outside influence, and then what good would such a society be in colonising a new world?

One interesting solution to the problems is based on the Schizmatrix idea, with mankind expanding through the asteroids. With unlimited resources, and a population used to living in space, why shouldn't some colony blast off for another star. If the Sun is merely a bright ball in a starlit sky, why should you feel attached to it or the groundhogs on Earth.

This scenario still does not allow for the sorriest sight in SF, the worldship 1000 years out from Earth overtaken by the Jones family on holiday in the jallop [sp?]. One thing in common between the stone-mason and nuclear physicist is their knowledge that if they don't start doing something now, it will only be delayed. I can envisage a Future Shock malaise, when no-one dares start the 200,20,10 year project in fear of the new star-drive, new mousetrap about to be invented. Provided development is a good fraction of a product's lifetime (and development seems to take longer now), the incentive exists, but would you start an 50 year project now?

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Simon McLeish - TEHANU: THE LAST BOOK OF EARTHSEA by Ursula K. le Guin  
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(Having let the Earthsea trilogy remain as a mere three books for many years, le Guin has finally decided to complete the tale (and have an automatic bestseller, regardless of quality). This book is not, unlike the others, designed for children but finding an adult audience; it is clear from the beginning that this is a book principally for adults. The issues it explores are deeper than those of the original trilogy, but that does not prevent it being a 'real story', in the way the other three were. The heroine is Elfarren, the priestess of the Empty Ones in the Tombs of Atuan; she has moved out of the public eye by marrying a Gontish farmer, who has died before the beginning of the book. The tale begins when she adopts a young girl badly burned in a near-end to a lifetime of abuse, and tries to bring her up as her own daughter, despite the powerful evil forces trying to harm the child. Ged returns on dragonback, shorn of his magic powers by his descent into the underworld described in The Farthest Shore. The interest of the book is in the way each of them comes to terms with the changes in their lives. The only flaw that sticks out is the extreme abruptness of the ending - le Guin's interest in her characters seeming to have overcome her sense of plotting. But le Guin's interest in the characters is reflected in the interest felt by the reader, who is at the end left with the feeling of being quite satisfied without quite knowing what has been going on. (The way I felt was distinctly reminiscent of Margaret Atwood's short stories.) Definitely recommended.

\*\*\*\*\*  
Matt Bishop: Armageddon - The Musical ---- Robert Rankin  
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Finally out in paperback, Robert Rankin's new novel is possibly his best yet. Terry Pratchett thought it contained enough jokes for a trilogy (insert snide comment here, if you must), and praised it lavishly, quite probably because Rankin is one of a very small group of sf humorists who can be genuinely funny without being a Pratchett sound-alike. The plot of this novel is not going to be easy to summarise, largely because it has been deliberately made as ludicrously improbable as possible, but let's try. It's a fast, frenetic account of the end of history, the basic premise being that Earth is, in fact, a soap opera for beings from another planet -

- and the ratings have been dropping ever since President Wayne Wormwood caused the Nuclear Holocaust Event at the turn of the millennium. This event was itself done purely to boost ratings, but life is now so tedious that people just aren't watching -- until Rex Mundi, religious affairs correspondent, finds out the truth about his sister Gloria's lifestyle. (Yes, Gloria Mundi. Really.) Does that help? No, I thought not.

The soap opera angle lets Rankin get away with the sort of deus ex machina that would have appalled even the producers of "Dallas". Such a plot could easily wear very thin, very quickly, but Rankin handles the whole thing with considerable skill. Let's try another plot summary, and see if things start getting any clearer. The book is about how Elvis Presley and his trusty friend Barry the Time Sprout battle to save Earth from Dalai Dan, the 153rd reincarnation of the Dalai Lama and host of the appallingly tasteless gameshow "Nemesis", whilst the alien TV producers try desperately to bring the soap opera to a satisfying conclusion, probably by bringing about Armageddon. Is it sounding any less lunatic yet?

In a plot so thick it puts even Tim Powers to shame, Rankin leaps gleefully from subplot to subplot, slipping in auctorial comments, using every soap opera cliché known, lapsing into metafiction and pastiching everything from Blade Runner to the Bible. The book is a disorienting whirl of images and deadpan humour, practically guaranteed to leave you giggling on the carpet. Not only that, but all the loose ends get tied up at the end of the book in true soap opera style. Worth a few quid of anybody's money, I reckon.

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Mel Dymond - Cuckoo's Egg  
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What would you do if your computer couldn't communicate with the outside world?

For a start, you wouldn't be reading this article, since you would have no way of receiving electronic mail. Any programs or data that your friends or colleagues might want to send you would have to be sent on disc or, worse, on tape; you would have to wait days for the transfer while the Post Office got its act together. Any services you currently use that are not based at your site - libraries, databases, on-line services - might as well not be there at all. It would be back to the shelves and card indexes for those who wanted to find out whether books existed and where they were to be found....

In his book, "The Cuckoo's Egg", Clifford Stoll paints a sobering portrait of what can happen if the trust that inevitably forms a large part of a computer network is betrayed. From the humblest beginnings (a 75-cent accounting error), Stoll tracks down a hacker who romps freely through U.S. Army systems, due to the lax, incomplete or sometimes completely missing security on their computers.

Some of the security has been sacrificed for ease of use, for instance where users need one computer to be able to communicate with another extremely easily and so the password protection between the two has been removed; more often, it seems, the security has been compromised by system managers' laziness or incompetence, such as the cases where default passwords and accounts had not been changed or removed. In many cases the blame lies with the users themselves for picking passwords that range between 'easy to guess' (spouses' & children's names) and 'blindingly obvious' (the same as the account name).

In an ideal world, nobody would need passwords or access protection because no-one would even think of trying to read someone else's files or trying to enter computer systems which they were not authorised to access. Sadly,

this isn't an ideal world, and these things are necessary, but the hacking continues because they are so badly applied.

The major problem with computer (in)security at the moment, with the notable exception of the financial world, is that nobody seems to know whose responsibility it should be. Stoll was shunted around from agency to agency with everyone happy to listen but nobody willing to help - "It's not our bailiwick. Sorry." If no-one is willing to take control, who should we turn to when things go wrong?

Many people see hacking as 'harmless' or 'just a bit of fun', but Stoll compares hacking to burglary. It may be the case that the burglar who broke into your house last night didn't take anything or break anything, but how would you react if you knew that he had read your letters, your notes about your thesis and your private diary? Invasion of privacy is seen by many as the major problem caused by hacking, and Stoll found it very difficult to convince any of the law enforcement agencies otherwise, in the absence of 'glamorous' problems such as the theft of large sums of money or blackmail.

A further problem is caused by the inconsistency of laws between countries. What may be a felony in the area where the computer is sited might not be illegal in the area where the hacker was calling from. The police in one may not be willing to help stop something they do not regard as a crime. One of Stoll's major stumbling blocks was that the hacker he was tracing had followed a very long and convoluted route though the international telephone system, so several different authorities had to be involved, not all of whom were entirely helpful.

"The Cuckoo's Egg" is useful on another level - it describes graphically just what living with a computer freak is like. Stoll may not have started out this way (he is 'officially' an astronomer) but he certainly seems to be letting the search for the hacker take over his life by the end of the book. I pity his long-suffering girlfriend....

This book should be required reading for anyone who is involved in the management of computer systems, especially those attached to a network. I sincerely hope my system manager has read it - but just in case he hasn't, I'm keeping a watchful eye on my files and making sure my password is not guessable. If we all did the same, the problem of hacking would be greatly reduced - perhaps eliminated? We can only hope.

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Odds and Sods  
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And from Usenet rec.humour.funny via Matt

A Call for More Scientific Truth in Product Warning Labels  
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by Susan Hewitt and Edward Subitzky

As scientists and concerned citizens, we applaud the recent trend towards legislation that requires the prominent placing of warnings on products that present hazards to the general public. Yet we must also offer the cautionary thought that such warnings, however well-intentioned, merely scratch the surface of what is really necessary in this important area. This is especially true in light of the findings of 20th century physics.

We are therefore proposing that, as responsible scientists, we join together in an intensive push for new laws that will mandate the conspicuous placement of suitably informative warnings on the packaging of

every product offered for sale in the United States of America. Our suggested list of warnings appears below.

WARNING: This Product Warps Space and Time in Its Vicinity.

WARNING: This Product Attracts Every Other Piece of Matter in the Universe, Including the Products of Other Manufacturers, with a Force Proportional to the Product of the Masses and Inversely Proportional to the Distance Between Them.

CAUTION: The Mass of This Product Contains the Energy Equivalent of 85 Million Tons of TNT per Net Ounce of Weight.

HANDLE WITH EXTREME CARE: This Product Contains Minute Electrically Charged Particles Moving at Velocities in Excess of Five Hundred Million Miles Per Hour.

CONSUMER NOTICE: Because of the "Uncertainty Principle," It Is Impossible for the Consumer to Find Out at the Same Time Both Precisely Where This Product Is and How Fast It Is Moving.

ADVISORY: There is an Extremely Small but Nonzero Chance That, Through a Process Know as "Tunneling," This Product May Spon-taneously Disappear from Its Present Location and Reappear at Any Random Place in the Universe, Including Your Neighbor's Domicile. The Manufacturer Will Not Be Responsible for Any Damages or Inconvenience That May Result.

READ THIS BEFORE OPENING PACKAGE: According to Certain Suggested Versions of the Grand Unified Theory, the Primary Particles Constituting this Product May Decay to Nothingness Within the Next Four Hundred Million Years.

THIS IS A 100% MATTER PRODUCT: In the Unlikely Event That This Merchandise Should Contact Antimatter in Any Form, a Catastrophic Explosion Will Result.

PUBLIC NOTICE AS REQUIRED BY LAW: Any Use of This Product, in Any Manner Whatsoever, Will Increase the Amount of Disorder in the Universe. Although No Liability Is Implied Herein, the Consumer Is Warned That This Process Will Ultimately Lead to the Heat Death of the Universe.

NOTE: The Most Fundamental Particles in This Product Are Held Together by a "Gluing" Force About Which Little is Currently Known and Whose Adhesive Power Can Therefore Not Be Permanently Guaranteed.

ATTENTION: Despite Any Other Listing of Product Contents Found Hereon, the Consumer is Advised That, in Actuality, This Product Consists Of 99.9999999999% Empty Space.

NEW GRAND UNIFIED THEORY DISCLAIMER: The Manufacturer May Technically Be Entitled to Claim That This Product Is Ten-Dimensional. However, the Consumer Is Reminded That This Confers No Legal Rights Above and Beyond Those Applicable to Three-Dimensional Objects, Since the Seven New Dimensions Are "Rolled Up" into Such a Small "Area" That They Cannot Be Detected.

PLEASE NOTE: Some Quantum Physics Theories Suggest That When the Consumer Is Not Directly Observing This Product, It May Cease to Exist or Will Exist Only in a Vague and Undetermined State.

COMPONENT EQUIVALENCY NOTICE: The Subatomic Particles (Electrons, Protons, etc.) Comprising This Product Are Exactly the Same in Every Measurable Respect as Those Used in the Products of Other Manufacturers, and No Claim

to the Contrary May Legitimately Be Expressed or Implied.

HEALTH WARNING: Care Should Be Taken When Lifting This Product, Since Its Mass, and Thus Its Weight, Is Dependent on Its Velocity Relative to the User.

IMPORTANT NOTICE TO PURCHASERS: The Entire Physical Universe, Including This Product, May One Day Collapse Back into an Infinitesimally Small Space. Should Another Universe Subsequently Re-emerge, the Existence of This Product in That Universe Cannot Be Guaranteed.

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Individual US Subscriptions \$12.00  
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stevet on CIX - EEC MOTORING PHRASES FOR 1992  
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Indicators	Die Blinken lightenmitticken fur turnen.
Bonnet	Der Fingerpincher und Kopfchopper.
Exhaust pipe	Das Spitzenpoppenbangentuben.
Air horns	Die Votderhellvosdat Klaxonfanfaren.
Puncture	Der Dammunblasten Pflatten.
Learner	Das Dumkopf mit Elplatz.
GTi/XR3i	Die Elovalota Uzlskostligajitwagen fur Dumkopfblonde.
Estate car	Der Schnogginwagen mit Bagzerroomen fur rompeninderbacken.
Mini	Das Buzzboxen fur Traffickveerin, fistenshaken und Fingerraisen.
Petrol	Die Kostlijooze fur Geddinzegreesen offendertrousers.
Motoring club	Der Meetinghaus fur Wagennattern, elbowraisen und Chattenupziebirds.
Magistrate	Das Kortfuhrer das schauts "Zweihundertmarks und Lizenendorsen."
Parking meter	Die Klockenwerks Koinengobbler.
Windscreen wipers	Der Flippenfloppen muckenschpredders.
Roundabout	Das Eooezitatesislost Rundmitbumpenindermittel.
Brakes	Die Sctoppinderhurrypedel fur Edbangenondervindskreen.



Level crossing            Der Flattenbumpen mit choochootraken.

Low bridge                Das ding fur Makeneinengrossenbus ein  
singeldekker.

From tattler and pjacobs on CIX - Poetry by Thesaurus  
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Humpty Dumpty sat atop the bulwark,  
Humpty Dumpty had a superlative debasement,  
And the entirety of the potentates nags and the aggregate of the monarchs  
gang,  
Could not approximate Humpty simultaneously ditto

Mary had an ineffectual lamb,  
His flimflam was snowy as snow,  
And everywhere that Mary went,  
That lamb was self-assertive to abscond.

Jack and Jill went abreast the swelling,  
To bring in a caddy of ocean,  
Jack whittled down,  
And dissolved his apex,  
And Jill came capsizing anon.

Three decoy mice,  
Three meticulous mice,  
Ruminate how they ooze  
Savvy how they dribble  
They all seep beyond the spreaders cohabitant  
Who boycotted malodorous posteriors amid a steering knife

Come congregate 'round humanity  
Wherever you meander  
And confess that the waters  
Around you have matured  
And acknowledge it that soon  
You'll be drenched to the bone.  
If your duration to you  
Is worth deliverance  
Then you'd preferrably start swimmin'  
Or you'll submerge like a mountain  
For the epochs they are a-modulatin'.

Faces from Guy Kewney, renrut and kmysera on CIX  
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