



Science-Fiction Fanzine

Vol. XIV, No. 1; January, 2002

The Israeli Society for Science Fiction and Fantasy

The next Gefen lecture will be on **Sunday, January 27, 2002, at 20:00.**

הרצאה במסגרת סדרת ההרצאות ע"ש עמוס גפן בבית אריאלה בת"א 27/01 יום א, 20:00

המרצה: רז גרינברג

"טבע, טכנולוגיה, אידיאולוגיה ואמנות ההנפשה - מבט על סרטי המד"ב של הייאו מיאזאקי"

The event is in **Hebrew**, and will take place at **BEIT ARIELA (25 Shaul HaMelech, Tel Aviv)**

There is no charge for admission to this Society event

Shortcut URL to Society page:

<http://sf-f.org.il>

Commentary: Scientific Accuracy of Arthur C. Clarke and Stanley Kubrick in the film *A Space Odyssey – 2001*

It's often said that Clarke and Kubrick's film *2001* is exceptionally scientifically accurate. Commentators have claimed that there is only one error: When one of the characters drinks a liquid through a straw while in free flight in a spaceship travelling to the moon, the liquid falls back into the container when he stops drinking. In free flight the liquid should not "fall" down. No other error in the movie has been noted.

In his talk "From the Dawn of Humanity to HAL" to the Society for sf and Fantasy at Beit Ariela last month, Prof. Dan Grawer, from the Department of Zoology at Tel Aviv University, criticized this praise. The problem, he says, is that sf fans are only acquainted with the physical sciences. In fact, he says, there are several other errors in the film, but they are all in the biological sciences. He contends that sf fans, writers and readers, are ignorant of biology. The primary thrust of his criticisms is the early part of the film: "The Dawn of Man". The "Dawn of Man" sequence takes place in Africa, as we can see from the tapirs browsing next to the ape-men, since tapirs are an African animal. Unfortunately, one of these ape-men is attacked by a jaguar. However, jaguars are not African; they are found only in the Americas. Tapirs look a lot like pigs, but they are not pigs and don't snort like pigs. The tapirs in this movie snort like pigs. The African Genesis of man was not accepted science in 1964-1968 when the book was written (although it is accepted science

today – I find this criticism puzzling). The displayed development of man from plant gatherers to hunters is unlikely. The speaker expressed various other doubts about Clarke's highly condensed development of man. Unfortunately, I, as a typical sf fan, am only knowledgeable about the physical sciences, and didn't follow most of it.

An additional comment by Grawer had to do with the food eaten by the astronauts on their many months' long journey to Jupiter. They are always shown eating liquid mush. It's been proven that men cannot live in good health for months on a liquid diet. So such as basic thing as the food the astronauts eat is wrong.

I might note that Dr. Sara Beck Svetitsky, at a private showing of *2001*, pointed out an additional error in the physical sciences. There is a scene on the airless surface of the moon in which spotlights illuminate the monolith. The light of the spotlights is dispersed as it would be in air. Had the movie been completely scientifically accurate, the light would have had completely sharp boundaries. Since the scene was filmed in air, it would have required some tricks to give the impression that it had been filmed in airlessness. Those tricks were not done.

Still I personally think it's a great film, and unusually scientifically accurate. It's certainly more accurate than *Moon 44* (1990) which had helicopters fighting an air battle on an airless moon!

Two Examples of Anthropological Science Fiction

By Aharon Sheer

Some of the most interesting sf is based on **anthropology**. The word comes from the Greek words "anthropos" which means "man" and "logos" which means "study". Hence anthropology is the study of man – a pretty wide term. In practice, the term is limited to the following (borrowed from the *New Grolier Multimedia Encyclopedia*):

"Anthropology" is the study of human differences, cultural and biological, against a background of the nature all humans share. In anthropology the term "culture" denotes a people's heritage of custom and belief. A culture is a system of ideas that have been transmitted down through the generations -- assumptions about the world, rules and ways to act, goals and ways of achieving them. A sub-branch of anthropology, the comparative study of social and cultural systems, is sometimes called "**ethnology**" (from the Greek word "ethnos", meaning "culture" or "people").

Much of the best sf that deals with alien beings is based on what anthropologists have learned from studying human societies all over the earth. These lead to speculations about possible social and cultural systems of truly alien beings.

Rocannon's World by Ursula K. Le Guin (1966), 122 pages.

This is a wonderful book. It's a good adventure story, but it's a *very* good presentation of aliens. Ursula K. Le Guin (1929 -) is the daughter of Dr. Alfred Kroeber, a celebrated anthropologist who published much work on Native Americans. (The "K" in her name is for Kroeber.) In his day he was one of the two or three best anthropologists in the world. Le Guin absorbed anthropology from childhood, and many of her books present alien ways of thinking. In the "**LOCUS POLL: The Best sf Novels Ever Written** (before 1990)" (see *CyberCozen* November 1998), two of her books, ***The Left Hand of Darkness*** and ***The Dispossessed***, were listed among the top 31 sf books written before 1990.

Usually her books have a technological human like us who meets these aliens and tries to understand them – often failing just as we would do.

The hero, Rocannon, is an anthropologist – an ethnologist, the leader of an Ethnographic Survey sent to this barely surveyed planet by the interstellar League of All Worlds. He starts by meeting aliens with a Middle Ages type of society. Then we meet aliens with an early industrial civilization, with electric lights and railroads, who live underground. Rocannon encounters representatives of these two groups, understands that this is a fragile world which must be protected from advanced technological interference, and persuades the League to interdict the world. He then leads an expedition of ethnologists to study it.

The League has starships that travel near the speed of light. Eight years of travel to this world passes in one night for Rocannon. But if he were to return to his own planet, 16 years would have passed. An anthropologist who does such work becomes completely disconnected from his own background.

This world is unique in that it has several intelligent cultures, some biologically related to one another, others completely different (as, for example, the two mentioned above). Some have telepathy (a rare thing). In one case the telepathy is not of thoughts but of feelings and sense of place. Rocannon is able to feel close to some of these beings. Others are repellent.

There is one race that he likes, but which he finds difficult to understand because they do not name things or themselves. They have nicknames that describe behavior or appearance – but no fixed names. What are those mountains called? he asks one. They are just mountains. What about those mountains over there? They're just mountains. But when you talk about going to the mountains, how do you know which mountains are meant? He gets no answer. It is left for the reader to remember that these people are telepathic. Surely they can understand each other without using names. How can Rocannon the human understand them?

The thriller aspect of this book is that some high technology rebels against the League have set up an illegal base on this planet. For the rebels the natives of this planet are dirt. When any natives object, the rebels easily wipe them out. Sometimes the wipe natives out just for fun. The cruel rebels can hide on this primitive, interdicted world, and there is no one to tell the League they are there. Well – I could have done without this aspect of the book, even if it provides the excuse for Rocannon's travels across the world. There is so much of interest in the aliens, and in Rocannon's meetings with each group, that I would have preferred a less brutal way of generating a plot line....

If you are interested in alien thought processes (in short, in anthropology), this is highly recommended.

***Unearthly Neighbors* by Chad Oliver (1960), p. 144.**

Chad Oliver (1928 – 1993) was a professional anthropologist. He was a pioneer in applying anthropological ideas to sf stories. While Oliver is not a great writer – none of his works are in lists of the best sf novels – his stories are always interesting to me to read. This novel describes an anthropological study of the completely non-technological inhabitants of a planet circling the star Sirius. The beings have language, and society. They have communities and culture. Yet they use no tools of any kind. How can this be? It's often said that the anthropologists visiting primitive societies are either met by beautiful women bringing bowls of fruit to eat, or by spear-throwing men trying to kill them. How does the anthropologist know what to expect? And how can he genuinely study these peoples in either such case? As an honored guest the anthropologist is almost as much outside the society as he is when he is an enemy. The intelligent beings on this planet, who go completely naked, are clearly human beings, different from earth's humans only in that they have very long powerful arms, which enable them to swing from tree branches like apes. How will they receive their star-travelling guests? How can you talk to them? You "can go through several lifetimes very nicely without ever saying something as useful as: 'I am a man from another planet, and I only want to talk to you.'" (p. 40) Here we have an anthropological thriller in which the excitement is in trying to figure out what the aliens are really like, why they behave in the way they do. In this respect the book is not dated at all, and it is fascinating.

The following quote illustrates the author's view of anthropology in sf:

"It's frightening to realize how ignorant we are, and how thoroughly conditioned by our own limited experiences. Stories and learned speculations about life on other planets always seem to emphasize the strange and exotic qualities of the alien worlds themselves, but the life-forms that exist against these dramatic backdrops all live like earthmen, no matter how odd their appearance may be. (Or else they live like social insects, which amounts to the same thing.) All the caterpillars and octopi and reptiles and frogs have social systems just like the Vikings or the Kwakiutls or the Zulus. Nobody seems to have realized that a culture too may be alien, more alien than any planet of boiling lead. You can walk right up to something that looks like a man – and is a man – and not know him at all, or anything about him...." (p. 33-34)

The funny, really dated part of the book, is the first part. For this story – we are told – takes place in 1991 (the book was written in 1960). Here are some quotes, which are wonderful for their vision of 1991:

"He flipped on the projector, testing it for tomorrow morning's freshman class. The three-dimensional picture took shape in the air, without a screen...." (p. 9)

(Yes, the hero is a professor of anthropology, like author Chad Oliver himself.)

"The cold Colorado air was bracing, and he felt fine as he climbed into his copter and took off. ... He eased the copter down toward his tasteful rock-and-log home in the foothills of the mountains, and was surprised to see an unfamiliar copter parked on the roof right next to his garage." (p. 9-10)

"He had never actually met the man, but his craggy face and silver-gray hair were immediately familiar to any tri-di viewer." (p. 10)

"... the U.N. was not yet as much a part of daily life as spaceships and taxes..." (p. 11)

"The servomec wheeled itself in, carrying a tray with two fresh glasses of scotch and soda. It wasn't much of a robot – just a wheeled cart with assorted detachable appendages..." (p. 11)

"... the development of the interstellar drive has made it possible for us" (p. 12)

"There were five tri-di photographs in full color. ... Heidelman handed them over without comment. Monte shuffled through them rapidly ..." (p. 14)

"After the robot – which had been engaged in clearing away the dishes and washing them up – had mixed the Scotch and soda ..." (p. 16)

"... he found Louise curled up in bed reading a novel. The book was entitled *Lunar Flame*, and Monte recognized it as the current bestseller that – to quote the dust jacket – 'ripped the plastalloy lid off the seething passions that boiled inside the Moon Colony.'" (p. 30)

So what do we have in 1991? Complete three-dimensional photography, including TV, flat paper stills, and projections. Everyone flies around in his own helicopter. Simple home robots that do all the household chores. A moon colony. Interstellar spaceships. Taxes. Well, there is still a little that is recognizable.... It's irrelevant to the rest of the book, but how could an author have been so wrong about so many things? This first part of the book makes the book seem so dated.... Note: The author revised this novel in 1984. Good thing....

Book Reviews by Aharon Sheer

The Compleat McAndrew by Charles Sheffield (2000, but based on short stories published between 1978 and 1999), 396 pages. These are comic strip stories about villains and heroes, and ideas. Each story contains a scientific idea (physics). The hero, McAndrew, is the world's greatest physicist, and both a theoretical and an applied physicist at that. Maybe we could compare him to Sir Isaac Newton in the breadth of his abilities. His sidekick is pilot Captain Jeanie Roker. They always go out into space together, where Jeanie's talent is keeping McAndrew (whose first names, Arthur Morton, are hardly mentioned in the book) out of danger. McAndrew will go anywhere any time if he thinks he can learn some physics from it.

Jeanie and McAndrew are the heroes. In addition, there are unpleasant villains. Sf author Robert Heinlein's villains were usually politicians, and bureaucrats were the smart people who kept the dumb politicians from doing stupid things. Sheffield's villains are bureaucrats – and Sheffield seems to think that all bureaucrats are evil. He certainly has a lot of nasty ones in this book (comic strip characters, as I said). Almost every story has two parts: imaginary future physics, often discovered by McAndrew himself, and a villain. The stories are exciting, they try to explain some current physics, and some future physics, and mix it with some danger and excitement, and humor.

One nice passage which serves as the basis of a story is the following (p. 223, 229):

“The laws of probability not only permit coincidences, they absolutely insist on them...” (p. 223)

Here is McAndrew's explanation for the above quote:

“Whenever a set of independent events occur randomly in time or space, you'll notice event clusters. They're inevitable. That's all there is to coincidences. If you assume that event arrival times follow a Poisson distribution, and just go ahead and calculate the probability that a given number will occur in some small interval of time, you'll find –“ (p. 229).

That quote is McAndrew talking – he gets cut off by someone who think he's talking over Jeanie's head.

McAndrew has invented a new superfast space drive. You can go to the stars in only a few weeks or months – ship time. Unfortunately, you can't travel faster than light, so it may be many years before you get back to earth again. Part of the idea behind it reminds me of the zero-zero drive in Poul Anderson's *Starfarers*. Presumably both Anderson and Sheffield got it from the same (current) theoreticians. The nice thing about this drive is that you get the enormous energy required to drive your space ship close to the speed of light from the fabric of space itself – free of charge.

There is – as usual – also an appendix explaining the scientific ideas and their current basis.

Here, from the appendix, is Sheffield's explanation of what Poul Anderson called the “zero-zero drive” (p. 368):

“If we calculate the energy associated with an absence of matter in quantum theory, the ‘vacuum state’, we do not, as common sense would suggest, get zero.

“Instead we get a large, positive value per unit volume. In classical thinking, one could argue that the zero point of energy is arbitrary, so that one can simply start measuring energies from the vacuum state value. But if we accept general relativity, this option is denied to us.

Energy, of any form, produces space-time curvature. We are therefore not allowed to change the definition of the origin of the energy scale. Once this is accepted, the energy of the vacuum state cannot be talked out of existence. It is real, if elusive, and its presence provides the loophole we need.

“Again, we are at the point where the science fiction enters. If the vacuum state has an energy associated with it, I assume that this energy is capable of being tapped.”

I enjoyed this book more than any other book by Sheffield that I've read so far, perhaps because there is more humor than Sheffield usually has, and the two heroes are more believable than most of Sheffield's heroes.

The Crucible of Time by John Brunner (1982), 416 pages. Recommended by Shmuel Kahn. This book is a saga, the tale of an alien planet over tens of thousands of years. The intelligent aliens are totally different physiologically and evolutionarily from us. They have mandibles and claws, a flexible mantle covers their back, and they breed by budding. They live in symbiosis with plants and animals, and have selectively bred them for a wide variety of uses. This ability – one which would seem at first very useful – is also a disadvantage, for they have had a hard time developing technology. When your ships are huge sea beings that you have domesticated, why learn to work wood and metal? When you can pump water using domesticated beings with strong circular muscles, why learn to build mechanical pumps? They are beings very sensitive to fire – perhaps they evolved from pants? The idea that they breed by budding suggests that. So fire is something they also avoid. Still in the course

of their history they have learned to use fire to make lenses, for example, for telescopes and microscopes, and thus to study their world.

And what a difficult world it is! For their planet is passing through a gas-cloud, one in which there are closely packed stars, some of which are rapidly evolving and even blowing up (nova, not super-nova). In this book they have to cope with an ice age so terrible that almost all land is covered by ice, and they must live off the sea. During another period it is so warm that almost all ice has melted and they can live north of the Arctic Circle in reasonable comfort – there is no snow at sea level. They use plants to provide illumination during the many months of dark. At one point they pass through a cloud of debris left by a star that has gone nova, which is so radioactive that it changes their genetic composition and almost wipes them out as a species. They also face frequent meteor showers because of the density of matter in the cloud they are passing through. We all know the theory that the dinosaurs were wiped out by a large meteor (asteroid) hitting the earth. What if one such should hit their planet?

The only solution is to get out of this gas cloud, and that requires going into space. For their planet is going ever deeper into the cloud, and eventually it will come so close to some star that all life will be wiped out. But how can they discover that fact, and how can they do it when they have never developed much of a mechanical civilization? Will they build a living space ship, as in the TV series *Farscape*?

The book describes successive periods in the planet's history. Each time we meet great scientists who have, each time, a deeper understanding of what is happening. And each time these scientists are able to record their discoveries and leave them for rediscovery and further advancement after each dark age, or ice age, or other disaster.

The book is fascinating but there is too much repetition of one theme. In each period religion has become stifling and prevents new discovery. One of their physiological peculiarities is that poor nutrition brings them to a kind of dream state in which their rational faculties are damaged. Religions develop around these dream states and suggest that one should deliberately seek them, to gain new insights. In each of the seven periods described in this saga many young and old are caught up in this idea, and reject scientific thinking for discoveries from dreams. So that each time the same battle is fought again, between the scientists who reject dream thinking, and the religious people who urge it. This aspect of the business is rather boring after the third or fourth time of hearing the same tale.

Still the gradual development of these beings' knowledge of their world, its state, and their solutions, is well told by tales of the great people of each time. I would be interested in seeing what a biologist would think of the biology of these people. I also would be interested in what an astrophysicist would think of their history. **Science** fiction, indeed.

According to the *Encyclopedia of Science Fiction*, the book has a sequel, *The Tides of Time* (1984).

For Comments: POB 84, Rehovot 76108. Email: asheer@netvision.net.il. Tel: Aharon Sheer 08-947-1225

Editor: Aharon Sheer. Logo by: Miriam Ben-Loulu

For mail delivery of *CyberCozen*, please donate 30 shekels per YEAR; For airmail to US \$15; If Aharon Sheer can hand-deliver it, 15 shekels.

Copyright © 2002.

All rights reserved to specified authors and artists.

כל הזכויות שמורות למחברים וליוצרים, כפי שצוינו.

Quote of the Month

"The most vexing questions about humanity's future in space are those about people themselves and their adaptation and reaction to space. ... Even after purely physical problems, such as adaptation to low gravity, are overcome or alleviated, can humans effectively live and productively work in space for very long periods? ... Our limited experience with long-duration flight (with the Skylab and Mir missions) and other high-isolation environments (such as polar bases) shows that productivity, alertness, and capabilities suffer over very long periods. People get complacent and sloppy. The lack of privacy and the constant direction from ground control begin to irritate, and depression sets in. It is even possible for sociopathic behavior to develop, a disaster in a situation in which close cooperation is essential. ... I suggest that these problems are vitally important to the future of humanity in space and are addressable by living and working on the Moon. In this sense, the Moon can be looked at as a psychological and sociological test laboratory as well as a physiological one. If people are to be useful and productive in space, we must be able to successfully settle and work on the Moon."

From *The Once and Future Moon* by Paul D. Spudis (1996), p. 210-211.