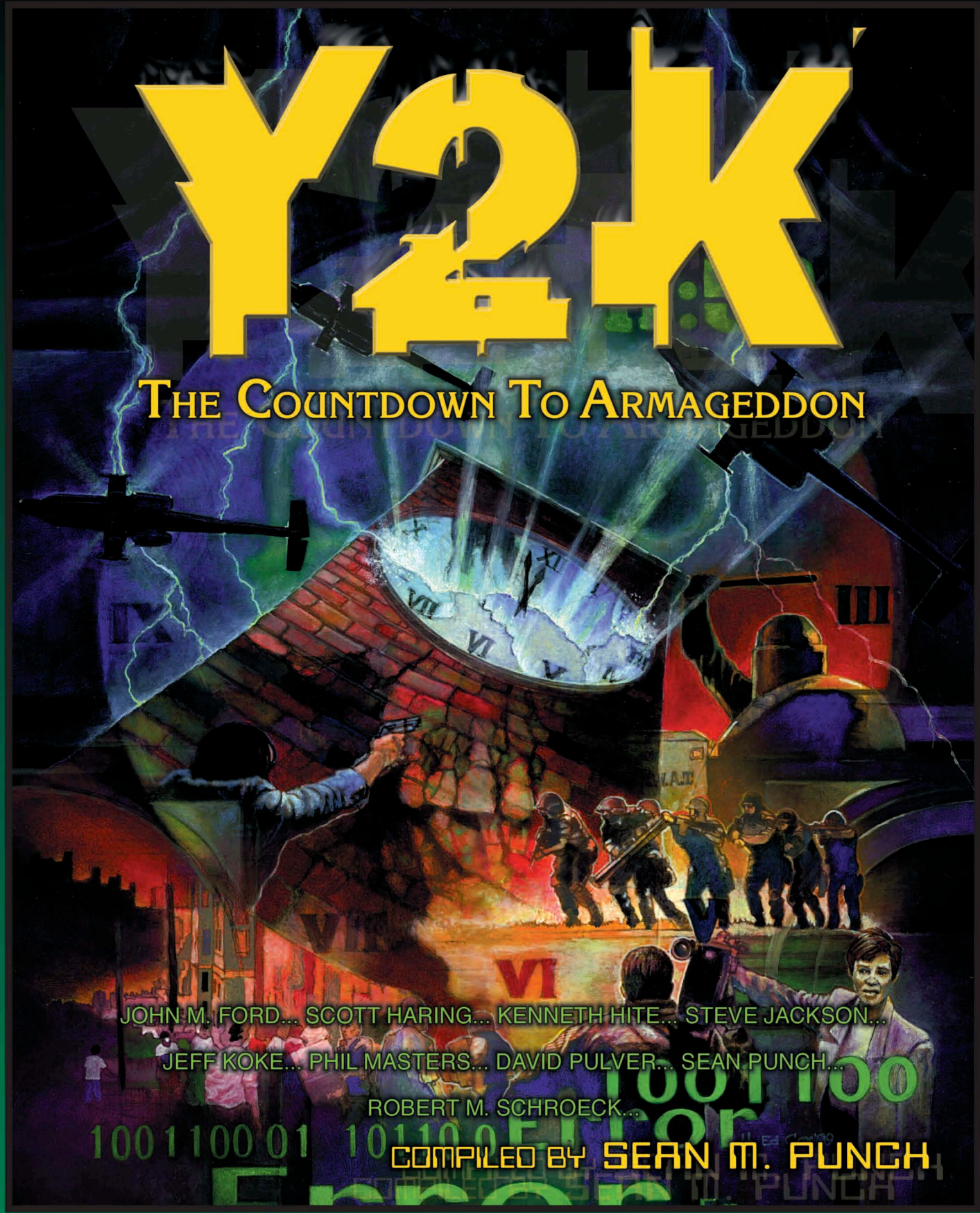
GURPS®

Y2K

The Countdown To Armageddon



JOHN M. FORD... SCOTT HARING... KENNETH HITE... STEVE JACKSON...
JEFF KOKE... PHIL MASTERS... DAVID PULVER... SEAN PUNCH...
ROBERT M. SCHROECK...
COMPILED BY SEAN M. PUNCH

STEVE JACKSON GAMES

The Big Crash. The Bug. The End of Technology. The End of Humanity.

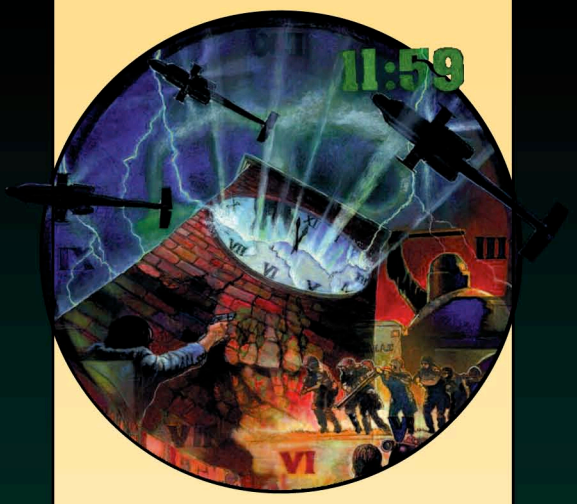
GURPS Y2K will be one of your all-time favorites!
– Nostradamus

There are many theories about what will happen when the programming shortcuts of the 1960s come back to haunt us on January 1, 2000. But even if those fears are never realized, the dawn of a new millennium is an uncertain time, and the thoughts of the media and the common man will turn to disaster – much of it man-made!

In ***GURPS Y2K***, nine of your favorite ***GURPS*** authors take a long look at millennial fears, from global computer failure to global warming, from nuclear apocalypse to Biblical Apocalypse. You will learn about:

- *The facts.* The "Y2K bug" and other millennial disasters.
- *The folly.* Human stupidity and disaster-movie clichés.
- *The Conspiracy.* The people behind it all and their secret agenda.
- *The stage.* The world as it looks on the eve of 1/1/2000.
- *The holdouts.* Survivalism, and how to weather a disaster.
- *The hellraisers.* Opportunistic gangs and social decay.
- *The reconstruction.* What the world will look like afterward.
- *The speculative.* High-tech fears from SF novels and the evening news.
- *The superhuman.* How metahumans would change the whole equation.
- *The supernatural.* Creepy catastrophes, from Armageddon to zombies.

Are you Y2K compliant?



GURPS Basic Set**, Third Edition Revised* and ***Compendium I: Character Creation are required to use this supplement in a ***GURPS*** campaign, but it can be used as a sourcebook for any disaster or post-apocalyptic campaign set in recent times.

THE CONSPIRATORS:

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GURPS®

Y2K

The Countdown To Armageddon

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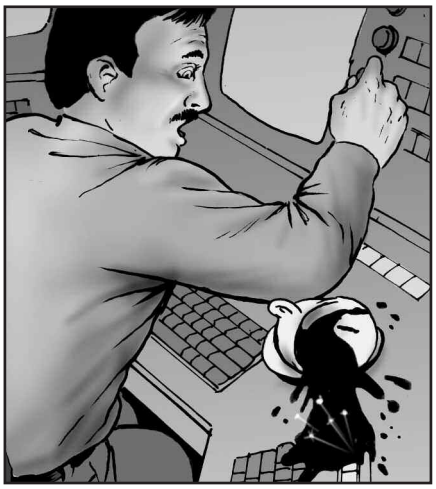
STEVE JACKSON GAMES

Y2K Contents



About *GURPS*

Steve Jackson Games is committed to full support of the ***GURPS*** system. Our address is SJ Games, Box 18957, Austin, TX 78760. Please include a self-addressed, stamped envelope (SASE) any time you write us! Resources now available include:

Pyramid (**www.sjgames.com/pyramid**). Our online magazine includes new rules and articles for ***GURPS***. It also covers the hobby's top games – ***Advanced Dungeons & Dragons, Traveller, World of Darkness, Call of Cthulhu, Shadowrun,*** and many more – and other Steve Jackson Games releases like ***In Nomine, INWO, Car Wars, Toon, Ogre Miniatures,*** and more. And *Pyramid* subscribers also have access to playtest files online, to see (and comment on) new books before they're released.

New supplements and adventures. ***GURPS*** continues to grow, and we'll be happy to let you know what's new. A current catalog is available for an SASE. Or check out our Web site (below).

Errata. Everyone makes mistakes, including us – but we do our best to fix our errors. Up-to-date errata sheets for all ***GURPS*** releases, including this book, are always available from SJ Games; be sure to include an SASE with your request. Or download them from the Web – see below.

Q&A. We do our best to answer any game question accompanied by an SASE.

Gamer input. We value your comments. We will consider them, not only for new products, but also when we update this book on later printings!

Internet. Visit us on the World Wide Web at **www.sjgames.com** for an online catalog, errata, updates, and hundreds of pages of information. We also have conferences on Compuserve and AOL. ***GURPS*** has its own Usenet group, too: rec.games.frp.gurps.

GURPSnet. Much of the online discussion of ***GURPS*** happens on this e-mail list. To join, send mail to majordomo@io.com with "subscribe GURPSnet-L" in the body, or point your World Wide Web browser to **www.io.com/GURPSnet/www**.

The ***GURPS Y2K*** web page is located at **www.sjgames.com/gurps/books/y2k**.

Page References

Any page reference that begins with a B refers to ***GURPS Basic Set,*** *Third Edition Revised;* e.g., p. B144 refers to page 144 of ***Basic Set.*** CI refers to ***Compendium I,*** CII to ***Compendium II,*** I to ***Illuminati,*** IST to ***International Super Teams,*** and UN to ***Undead.*** See ***GURPS Compendium I,*** p. 181, for a full list of abbreviations for ***GURPS*** titles. Or visit our online database at **www.sjgames.com/gurps/abbrevs.html**.

Introduction

Fourteen Years of GURPS

Back in 1986, I was a SJ Games fanboy and a gamer of 7 years' experience. When ***GURPS*** appeared, I was impressed with its claim to be "generic" and "universal," but I was skeptical of its promise to cover every genre . . . and I definitely did not think I would be playing it 13 years later.

> ***"Tell all the computers it's 1972. 1972 exactly apes 2000. Every day of every month is the same and will follow suit for 28 years, so that gives you that much time to correct the problem."***
>
> ***– Ross Perot, quoted by Larry King in USA Today***

Fast-forward to 1999.

There are now over 145 supplements for ***GURPS*** – not including revisions – and I'm *working* here! Okay, so we haven't covered *every* genre yet . . . hey, we have to leave something or we'll put ourselves out of business. But I think we're entitled to a millennial gloat.

Where Are the Lasers and Brain Transplants?

But if we want to gloat and still show humility, we have to admit a few mistakes. My favorites are in our science-fiction supplements. For instance, it has long been ***GURPS*** canon that year 2000 would bring TL8, and that TL8 would bring lasers and electromag weapons, brain transplants and widespread bionics, incredible power cells, and colonies in space. The fact is, it doesn't look like we'll see any of those things any time soon.

Conversely, we have many prototype TL9 gadgets *now:* brilliant missiles, electrolasers, laser sensors, infrared cloaking, and recognition pads. (All battlefield technologies . . .) Fusion power most likely *will* happen "in our lifetime." And our "far-future" predictions about biotechnology (especially cloning and drugs) and computers (especially networks and AI) seem more-and-more pessimistic every time I read *Scientific American* or surf the Web. We'll probably have clone families and longevity treatments long before we have brain transplants and space colonies . . .

What's Next?

So what will ***GURPS*** look like when you're cloned and immortal? More seriously, where will it go in the next millennium? Naturally, we will update our old supplements (especially SF supplements . . .) and publish new ones addressing genres and eras we haven't covered yet (maybe even the 1990s, if we're doing this in a decade!). We will take advantage of technology: a rules CD-ROM will happen and we already sell our books online, and perhaps we will ship supplements by Net some day. In the mean time, advances in printing technology will soon make it possible to print books on demand and while you wait. And ***GURPS*** will certainly outgrow its pen-and-paper origins, making the transition to a digital format, moving online or becoming a computer game engine.

Get ready for ***GURPS***/TL8 . . .

Using This Book

During production, a lot of people said, "The Y2K bug will be old news a few months after you publish. If the hype fizzles, your book will be worthless. What's the point?" Here is my answer:

GURPS Y2K isn't about the Y2K computer bug. Sure, the millennium bug gets a lot of coverage, but there's more to it than that. We examine the theme of global disaster in our age, millennial and post-millennial fears, the things that worry us in 1999 and which will *still* worry us in 2000, 2001 . . . and 2010. We look at meteors, pollution, and superbugs; at human error; at religious fatalism, social decay, and violent survivalism . . . even aliens and undead. We've had your favorite ***GURPS*** authors write ten topical essays that are intended to inspire GMs who want to add disaster elements to their games.

And as for the millennium bug, it is true that once January 1, 2000 passes, speculation will be moot. But remember that *any* global computer failure will look like this, no matter when or where it happens. This book will be as useful to GMs running ***GURPS Space*** campaigns as it will be to GMs running Y2K games. And let's face it, Y2K is one of the key divergence points of the late 20th century for GMs with a taste for alternate histories – especially those featuring global political collapse, meteor impacts, and Armageddon.

In short, this book *is* Y2K compliant.

– Sean Punch, August 1999

GURPS Trivia

GURPS has been around for a long time, and ***Y2K*** does double duty as a sourcebook and as a celebration of ***GURPS***' longevity. In keeping with this theme, here are some of the more interesting trivia about ***GURPS:***

First ***GURPS*** *book:* Surprise! It wasn't ***Basic Set.*** It was ***Man to Man,*** a stand-alone version of the ***GURPS*** combat system. It let you create warriors and duke it out on a hex map. It first shipped in August 1985.

First edition of the full rules: ***GURPS Basic Set,*** *First Edition,* which shipped in June 1986. A boxed set, it included two rulebooks, a book of charts and tables, an adventure book, and some ***Cardboard Heroes.***

Number of titles: This isn't easy to determine. For instance, not everyone would count ***Fantasy GM's Pack*** (record sheets) or ***GURPS Lite*** (a free 32-page leaflet), and new releases will be published before you read this. A best guess: counting *all* stock items, and counting all printings, cover styles, and editions of a supplement as one item, there will have been some 150 ***GURPS*** titles as of autumn 1999.

Prize-winning supplements: ***Basic Set*** (Origins Award for Best Roleplaying Rules of 1988; Gencon Gamer's Choice Award for Best Fantasy Roleplaying Game, 1989), ***Cyberpunk Adventures*** (Origins Award for Best Roleplaying Adventure of 1992), ***Fantasy*** (Gencon Gamer's Choice Award for Best Fantasy Roleplaying Game, 1987), ***Fantasy Folk*** (Gencon Gamer's Choice Award for Best Fantasy Accessory/ Supplement, 1991), ***Illuminati*** (Origins Award for Best Roleplaying Supplement of 1992), ***Space*** (Origins Award for Best Roleplaying Supplement of 1988), ***Time Travel*** (Origins Award for Best Roleplaying Supplement of 1991), and ***Vampire: The Masquerade*** (Origins Award for Best Roleplaying Supplement of 1993).

Foreign-language editions: ***GURPS*** is available in French, German, Italian, Japanese, Portuguese, Spanish, and most recently Korean . . . and ***GURPS Lite*** is being translated into many more languages as you read this.

Editions for the blind: Thanks to the volunteer efforts of Nancy Feldman, ***GURPS*** is available in Braille and on tape. For more information, write to GURPS Braille Project, 1440 W. 4th Ave., Eugene, OR 97402.

Books from third parties: The only official ***GURPS*** product ever released in English by anyone other than SJ Games was ***GURPS IST Kingston,*** by Modern Myth Productions.

Books you can't get in English: Several original settings are produced under license in other languages, including ***Damned Stalkers*** (modern horror; Japanese), ***Ring Dream*** (female wrestlers; Japanese), and ***Runal Saga*** (high fantasy; Japanese).

GURPS *the government didn't want you to have:* On March 1, 1990, SJ Games was raided by the U.S. Secret Service as part of an investigation of data piracy. During the raid, they seized ***GURPS Cyberpunk.*** See the full story at **www.sjgames.com/SS/**.

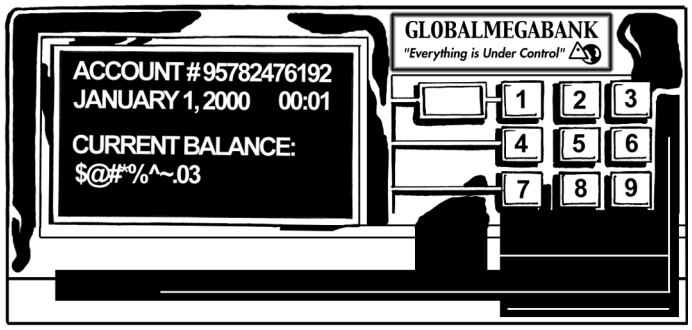
About the Authors

John M. Ford

Will spend the hours of the Big Rollover in the company of selected friends, aboard the armed dirigible *Alex Raymond,* dining on Beluga and black truffles while Cole Porter plays, hurling empty Roederer Cristal and Samuel Smith's Oatmeal Stout bottles into space, heedless of the quaking multitudes below. The *Raymond*'s vacuum-tube systems shall weather microelectronic tumult without incident. On January 1, we shall descend to a remote, unnamed island of salubrious climate, amply stocked with food, drink, clean silk, and every movie Cary Grant ever appeared in, and that is all you need to know.

Scott D. Haring

Scott is a 16-year veteran of the game industry and editor of Steve Jackson Games' online magazine, ***Pyramid.*** He plans to watch the madness live on TV from the comfort of his home, though he says he'll unplug his computer and stock up on a few extra batteries . . . just in case.



Kenneth Hite

Ken owns a Y2K-compliant Macintosh, given to him by Servants of Cthulhu. He lives in an apartment building – which shows every sign of not even being Y1K-compliant – in Chicago. He coauthored ***GURPS Alternate Earths*** and ***Alternate Earths 2,*** among other books, and (compliantly) writes the "Suppressed Transmission" column weekly in ***Pyramid*** magazine. On New Year's Day 2000, he will either ascend to Illuminated Mastery, or get drunk.

Steve Jackson

Steve founded SJ Games, designed the ***GURPS*** system, and is currently working on an online version of the game in the hope that the computers will still be working next year. He lives in Austin, Texas, but spends a great deal of time on the road at conventions. He will not reveal his current rank in the Illuminati. Steve plans to spend New Year's in Austin watching the progress of Y2K around the world, although this may require him to buy a TV before then.

Jeff Koke

Jeff is a creative consultant, writer, and graphic designer living and working in Austin, Texas. He is the husband of an attorney and the father of an angel. Two large dogs and one annoyed cat are slowing destroying everything he holds dear. At midnight on December 31, Jeff plans to be in an elevator on a 747 bound for Mexico City. He'll be talking on a cell phone, transferring money among his numerous global accounts while receiving life-saving kidney dialysis.

Phil Masters

Having recently survived his own Y4X unscathed, Phil Masters is considered unlikely to crash on January 1. With computer experience going back to mainframe shift operations in 1978, he has complete faith in every system he has ever known, and as the author of a number of RPG supplements, he feels equally confident in this industry's resilience. He plans to spend New Year's Eve at home with his wife and a bottle of champagne, but a lot depends on the weather.

David L. Pulver

David is an author and game designer based in Kingston, Ontario. Currently Senior Staff Writer and Assistant Line Editor for Guardians of Order, he has been a freelance writer for 10 years. Recent credits include ***GURPS Space,*** *Third Edition* (SJ Games) and ***The Dominion Tank Police RPG and Source Book*** (Guardians of Order). On Y2K, he intends to be at home, under a big quilt, with several weeks' supply of apple juice and tuna, a computer with an uninterruptible power supply, many candles, and a Bast IIIS for security and comfort.

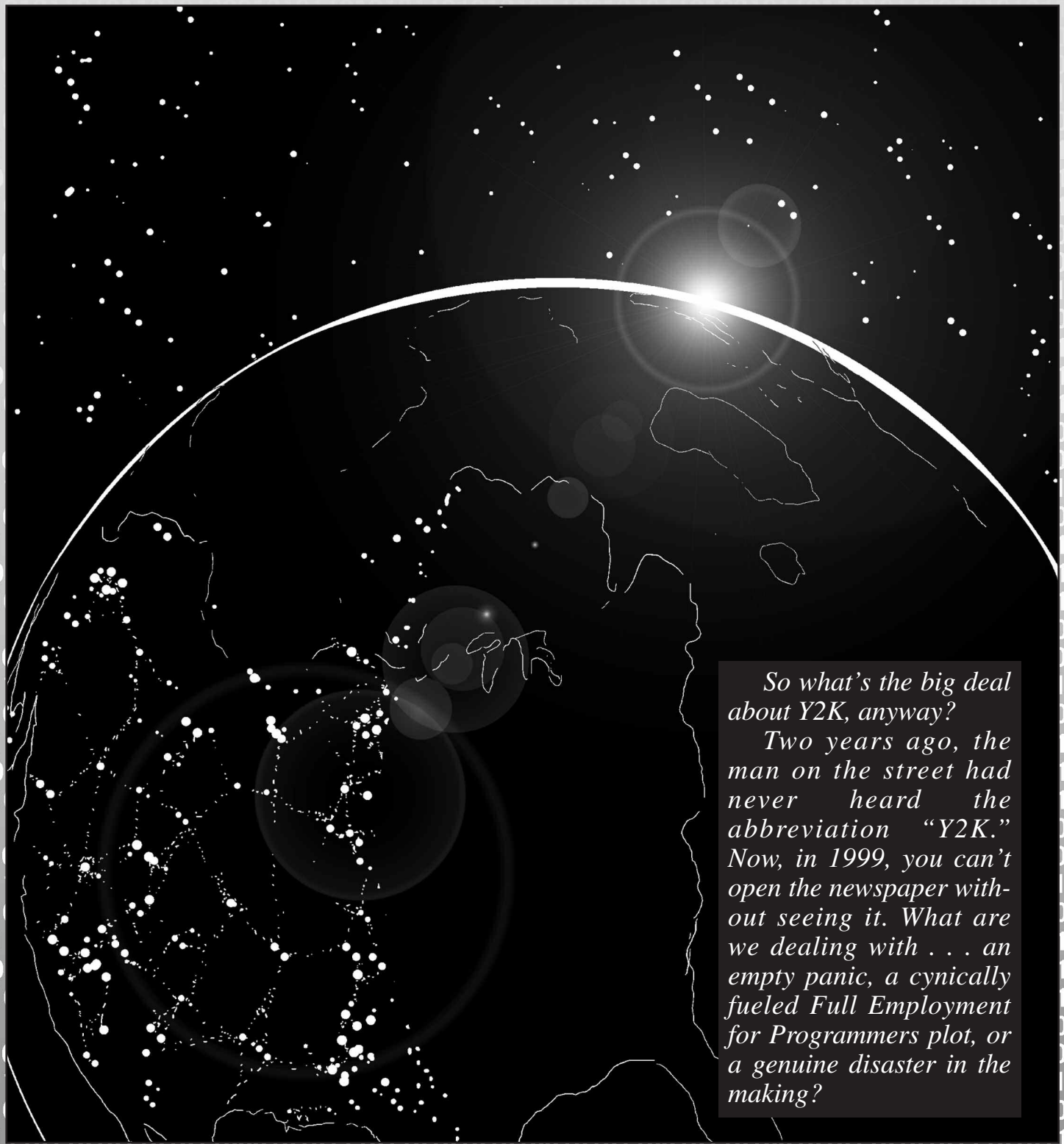
Sean Punch

Sean is the ***GURPS*** line editor and a former high-energy physicist. He is not undead, but he is the author of ***GURPS Undead,*** as well as ***Wizards,*** and the compiler of ***Compendium I*** & ***II,*** and of ***GURPS Lite.*** Sean and his wife, Bonnie, live in Montréal with four cats and one bird. They plan to spend New Year's Eve at home with friends, because they do not think that Y2K worries will prevent clubs and restaurants from becoming madhouses.

Robert M. Schroeck

Bob is the author of almost as many out-of-print ***GURPS*** books as Steve Jackson, including ***GURPS IST, Camelot,*** and ***Robin Hood.*** Bob and his wife, Peggy, are desperately seeking to escape New Brunswick, NJ, but cannot seem to make it. They intend to spend New Year's Eve mooching off gullible friends in exchange for letting them watch the Schroeck anime collection.

1. Why 2K?



So what's the big deal about Y2K, anyway?

Two years ago, the man on the street had never heard the abbreviation "Y2K." Now, in 1999, you can't open the newspaper without seeing it. What are we dealing with . . . an empty panic, a cynically fueled Full Employment for Programmers plot, or a genuine disaster in the making?

Millennialism

Well, to start off with, 2000 is a frightening year anyhow. It's the end of a millennium. (Okay, technically, it's not . . . see the sidebar. But most people *believe* that the millennium ends on December 31, 1999, so for most people, it *does*.)

Millennial fears have been around far, far longer than computers have. Although the word "millennium" technically means "a period of a thousand years," it is used in a much more specific sense in the Bible. Saint John described (*Revelation* 20) a vision in which Satan was chained for a thousand years, during which Christ reigned on Earth. This blessed time, though, was merely a prelude to Armageddon (see Chapter 10). At the end of that thousand-year period, all Hell broke loose . . . literally . . . and Satan and his demons were destroyed in a final series of battles. Those battles destroyed Earth as well and ushered in the Kingdom of Heaven.

Over the years, though, the idea of "a millennium of peace will precede the Apocalypse" has been distorted and simplified into "the Apocalypse will come at the millennium."

Various religious groups have held, or still hold, that the predictions of the Bible are even now being carried out. Some say that we are now in the period of Christ's rule. Others argue that clearly Satan *now* rules the Earth. All these groups find the advent of "the" millennium disturbing. If Christ now rules, does the year 2000 indicate that he's about to hand things off to Satan? If Satan now rules, is 2000 the year in which he will reveal himself and start destroying the Earth?

When Does the Millennium End?

This is a question that has been beaten to death in the press (not to mention in barroom arguments). The problem is that the millennium is an entirely human creation, and the "technically right" answer is unsatisfying to most humans.

First, what is a millennium? It's a period of a thousand years . . . a nice, large, round number. People *like* nice, large, round numbers. There is no particular evidence that either God or Nature sets any particular store by numbers that end in lots of zeroes. But humanity does.

Therefore, the passage of an even thousand years is a Big Deal to many people. And the obvious point to measure from is the beginning of the calendar system you're using. In almost all the developed world and much of the rest, the standard dating system is the Gregorian calendar (see p. 46), which begins with the year that earlier calendar-makers accepted as the birth of Christ.

The problem is, *there was no year 0.* Therefore, when an even thousand years had passed, the year was numbered 1001. The even year-number, 1000, marked the passing of a very uneven 999 years. And likewise today. When we hit the even year-number 2000, it will mean that 1,999 years have gone by. The end of the second thousand years will actually come in year 2001.

However, what this means to most people today is . . . absolutely nothing. In the public eye, the millennium ends when the numbers roll over and all those 9s turn into 0s. And, of course, it's the rolling-over process that will fry many computer programs.

Therefore, it is the end of 1999 that will be celebrated (by those who want an excuse to party) and feared (by those who think the end of the millennium is the end of the world). For all practical purposes, then, regardless of the technically correct answer, the millennium ends, and a new one begins, with the first day of 2000.

Of course – unless the world as we know it *does* end – both the partiers and the doomsayers will still be around as 2000 draws to a close. So here's a millennial prediction: around September of 2000, the "technically correct" interpretation will enjoy a new vogue, and we will see a whole new crop of doomsday predictions. And on 12-31-2000, there will be a whole new round of great end-of-the-millennium parties. With no computer bug to worry about, they'll probably be even wilder than this year's.

(For an entertaining and scholarly discussion of what the end of a thousand-year period means to us, and just how we really ought to be figuring it, see Stephen Jay Gould's book *Questioning the Millennium.*)

Those who believe such things often date their particular millenniums differently . . . the Thuringian peasant revolt of 1525, for instance, was led by one Thomas Muntzer, who believed that the end of the physical world was at hand. In 1844, William Miller convinced thousands of followers that Christ was about to return and end the world. When Christ didn't appear, Miller set a slightly later date. That one proved wrong as well . . .

But there really seems to be something in the human mentality that expects big events, for good or for bad, when the century or the millennium turns. And the publicity about the Y2K computer problem has, if only in peoples' subconscious minds, fostered the idea that the end of the millennium may be a Bad Thing.

The Y2K Bug

"What is this Year 2000 problem?"
– Zimbabwe's Minister of Information, Chen Chimutengwende

Forty years ago, computers were big, rare, and expensive. Computer *memory* was especially expensive. Anything that could make a program smaller would save time and money. This is why programmers started abbreviating the year to only two digits. They omitted the "19" – so 1960 became "60," and so on. This halved the space required to store the year. Not a trivial savings . . . 40 years ago. Those programmers had no idea that their code would still be in use when the year 2000 came around.

But it is . . . and it's a time bomb.

Computers keep track of time by adding: adding a day, a year, a second . . . whatever the program requires. When 1999 ends and 2000 begins, the computers will faithfully roll over from 99 to 00. But those old programs will interpret "00" as 1900, not 2000. They have no conception of "20." They think all years begin with 19!

So when a computer looks at, for instance, your paycheck, and figures the benefits you have earned since December 20, what will it do? It will subtract the last date in its records (sometime in 1999) from the current date (which it thinks is sometime in 1900) and it will get a negative number . . .

What it will do then depends entirely on the way some programmer 40 years ago decided to treat unlikely errors (if he thought about them at all). The system may just skip your record and go on to the next one, which will be equally faulty. It may decide that you haven't been at work for 99 years, and send you a termination notice. It may not be able to handle the negative number, and give you 99 years of pay and benefits, and retire you.

A related problem is the use of 99 and 00 as special codes in "year" data fields. For instance, 20 years ago, it might have seemed reasonable to use 00 in a "year hired" field as a code for "This is the company president and founder, who doesn't draw a separate salary because he gets dividend checks." Now we're about to have a whole lot of new company presidents . . .

Multiply this situation by every person in the developed world. Multiply it again by the number of computer records of each person's life and finances. Now worry.

This is not just a problem for desktops and mainframes. Computer *chips* contain clocks and calendars, too. Your home's central air conditioner/heater has a computer chip that keeps track of the day. So does your VCR. So does a nuclear missile. If any one of these three things loses track of what day it is, inconvenience could result. And many chips can't be reprogrammed. They must be physically replaced.

The Millennium in the Media

The end of the world is a fascinating subject; people can sit and talk about it for hours. In modern popular media, a *religious* end of the world, with God and Satan slugging it out, is out of fashion (Stephen King's *The Stand* being the exception that proves the rule). The media is big into Armageddon, but it's not overtly tying it to Y2K. Thus, we have seen no major film in which Y2K destroys society. (And one might wonder why. Surely the script must have been proposed over and over; why did Hollywood turn it down?)

But what we have gotten from Hollywood for the past few years is a purely secular end (or almost-end) of the world, over and over. In Independence Day (which the studio abbreviated ID4 – a subtle echo of Y2K?) aliens come with fire and destruction, and are defeated when their moon-sized mother ship is destroyed. In both Armageddon and Deep Impact, a meteorite threatens to destroy Earth, or at least humanity; see *Out of This World* (p. 19) for a reality check on giant meteors.

The Scaremongers

A significant "Y2K Preparedness" thread runs through today's media, and it's a very profitable one for the writers and speakers who are warning of disaster. None of them has achieved true national stature, but certainly the dollars are being raked in. Even fringe media like roleplaying games are getting involved, as witnessed by the very book you are reading. See *Y2K Web Pages* (p. 21) for some examples on the Web.

Nostradamus

A whole sub-genre, with millions of books sold and literally thousands of web sites, has grown up around the predictions of the 16th-century astrologer Nostradamus. His book *Centuries* contains a thousand rhymed quatrains which purport to foretell the future. Written in a mixture of French, Spanish, Italian, Hebrew, Greek, and Latin, with a heavy admixture of invented words and anagrams, his garbled verse has been "shown" (after the fact) to predict any number of conquerors, including Hitler (a verse mentions "Hister") and Napoleon (another verse refers to "Pau, Nay, Loron").

Continued on next page . . .

The Millennium in the Media (Continued)

But even in his own time, he got an occasional prediction terrifyingly right, launching a reputation that persists to this day. One verse, published in 1555, predicts that the King of France, Henry II, would die in a jousting accident: "The young lion shall overcome the old in single combat, inside a golden cage his eye will be put out in one of the two contests, then he shall die grievously." Four years later, Henry was killed in a joust when a lance went through his eye. He was wearing golden armor at the time. The Inquisition looked *very* hard at Nostradamus after that.

Nostradamus is often cited as a herald of millennial doom, and one of his most famous quatrains does indeed start out, quite clearly, "In the year nineteen hundred and ninety nine, seven months, from the sky will come a great King of Terror . . . " This has a lot of his believers extremely upset, to put it mildly, as the turn of the millennium approaches.

See *Through a Monitor, Darkly* (p. 42) for a conspiratorial interpretation of some of Nostradamus' predictions.

Cults

When a religious group is small, extreme in its beliefs, and perceived as dangerous, it is labeled a cult. Cult groups are *always* predicting the Apocalypse; it's practically a requirement. As the millennium draws to a close, cult activity will certainly increase . . . and if man-made or natural disasters mark the turning of the year, cults will point to it as a sign and increase their activity further.

Millennial cults expect a variety of things, most of them bad, and tend to make alarming preparations. "Bimillennialists" point out that Abraham was born about 2,000 B.C.; Jesus was born 2,000 years later . . . and ask who will be born in 2,000. The Antichrist? The second incarnation of Christ?

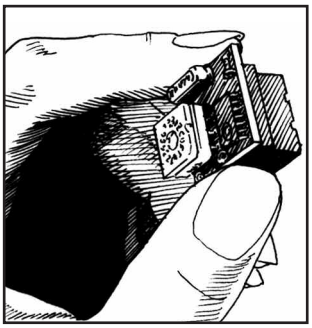
Continued on next page . . .

The Chain Reaction

Guarding against Y2K glitches is rendered much more difficult by the interdependence of computers in today's world. Computer systems talk to each other all the time, exchanging data. So it's not enough to make sure that a system's *own* programs understand how to treat the year 2000. The system also has to be ready to handle input from other computers that didn't get the word.

When a transaction has to go through a series of computers, even *one* failure will be fatal. Take your local chain grocery store. When it runs out of beans, its in-house inventory system will shoot a message to the chain's central computers. The chain will place an order with a wholesaler (who no doubt uses an entirely different system). The wholesaler will order 20 cases of beans from We-B-Beans Incorporated (another different system). We-B-Beans will automatically generate a call to the trucking line (yet another system). If any one of those systems is sending bad data, your local store may get 2 cans of beans, or 2,000, or a gross of tubes of airplane glue. And if any one of those systems goes down, the shelves will be empty for a while.

Now, in today's world, computers go down all the time. Supply chains break all the time. And they get fixed quickly. The question is this: *how many* chains can break before there aren't enough skilled staff to work around the problems, enough programmers to fix them? Will so many systems go down at once that chaos becomes general, and the fixers won't know where to start?



Compliance

A computer program (or chip) that will *not* hiccup at the end of 1999 – one that stores years as a full four digits – is termed "Y2K compliant." The older a program, the less likely it is to be compliant. Newly written home computer software from major publishers, for instance, is almost all compliant . . . theoretically. Software written before the 1990s is almost *never* compliant. Fixing it is difficult and expensive; testing the fixes is time-consuming and risky (see sidebar, p. 18). In fact, many companies are taking a fatalistic attitude toward testing: they hope that someone will hand them a fix, and if not, they hope it will be cheaper to hunker down and fix it when it breaks than to worry about it beforehand.

The bigger the application – and the older it is – the harder it is to fix. Documentation is lost or incomplete; the original programmers may be retired, or even dead. And this is a job that has to be done on time – a concept that engenders hysterical laughter in programmers and the people who manage them. Programs *aren't* done on time.

As bad as the problem is in the developed nations, it will be worse in Second and Third World countries. Certainly, they have fewer computers . . . but the ones they have are older, and in key positions. It may not affect the population of a crowded Third World city if airplanes can't take off, but if the water-treatment plant stops working and the power is off at the hospital, thousands will die.

And many developing nations simply don't have the skilled programmers to *identify* the fixes they need, let alone to perform them. For whatever reason, from bad crop years to out-and-out embezzlement, they don't have the money to hire programmers from the West (especially since Western corporations have bid the price up so high). The impact of Y2K may be felt most keenly in places like Africa. (See Chapter 4 for more on the worldwide effects of a crash.)

So What Could Happen?

In a full-scale Y2K situation, a number of things will go wrong, all at once. It will be worse than any natural disaster we've ever known, because it will be so widespread. In a natural disaster, even a huge one like a hurricane, help comes quickly from unaffected areas. If Y2K is as bad as it might be, there *won't be* any unaffected areas.

First, it will get dark . . . and, in northern areas, cold. Power plants will shut down. This is actually a very real concern: many power-plant operators simply refuse to claim that their systems are compliant or can be made compliant. Many don't have a backup generator system for their main computers; if anything knocks them off the grid, they will be a long time starting up again. (The much-advertised compliance of nuclear plants is good news, but they provide only a small fraction of the world's energy.)

When the lights go out, people will be frightened, and they'll be more frightened when they can't get news on their TV, when there is no newspaper delivery, when the neighbor's short-wave radio tells them it's this way, or worse, all over the world.

Soon people will get thirsty. Some water-treatment plants will be taken down by power outages. Others have their own generators, but will lose control of their computers and pumps. Clean water will quickly be in short supply. Ironically, this may come sooner in developed countries, where pampered citizens aren't used to water rationing.

Then people will get *hungry.* Grocery stores in the U.S. contain about three days' supply of food. Individuals in their homes may have a day's supply, or a week's. Few have more. Food depends on the rail network to move from rural to urban areas . . . and the American rail network is already overloaded and behind schedule.

Cults (Continued)

A few cults have become especially prominent in the news, either by dying for their faith or killing others for it:

Heaven's Gate

In March, 1997, news reports were full of the Heaven's Gate incident. Almost the entire membership of this small religious group, which combined Christian elements with UFO beliefs, committed suicide together. They expected to be immediately reborn aboard a starship which they believed to be hiding behind Comet Hale-Bopp. They left behind an elaborate web site explaining their beliefs, and 39 neatly dressed bodies.

Aum Shinri Kyo

Aum Shinri Kyo, founded in 1987, combines Buddhist and Christian elements. Its leader, Shoko Asahara, is regarded as Christ by his followers, who at one time numbered more than 20,000 around the world. Based on the writings of Nostradamus and on *Revelation,* Asahara has predicted a variety of millennium-ending disasters. His cult built chemical factories and stockpiled weapons in preparation for Armageddon.

The cult also attempted, with remarkable ineptness, to *create* disasters. According to the *New York Times,* they have been implicated in nine different attempted biological attacks, none of which resulted in any deaths. They also attacked the Tokyo subways with nerve gas, killing 11 passengers and injuring over 5,000. However, according to testimony before the U.S. Senate, the death toll would have been in the thousands if the terrorists hadn't made a variety of mistakes in releasing the gas. Aum Shinri Kyo is still active in Japan and recruiting new members.

The Branch Davidians

This Christian group was largely wiped out when FBI tanks and gunmen burned their Waco compound after a 51-day standoff in 1993. They were a minor offshoot of the Seventh Day Adventists. Led by David Koresh, they believed that Armageddon was imminent and that, in fact, the Apocalypse would begin at their "ranch" in Waco. They were certainly stockpiling weaponry; sources have estimated their arsenal at as high as 11 tons. Since the compound was burned and bulldozed, details will never be known.

Some two dozen members of the group, most of whom were not at Waco, survive. Their current belief is that the deaths at Waco fulfilled a Biblical prophecy, and that in August of 1999, the world will enter five months of Satanic torment.

Party Time

Everybody parties on New Year's Eve. The night before a new millennium ought to be the party of . . . well, of the millennium. And for many, it will be. Some swank hotels and vacation spots were reserved as long as five years ago.

One very exclusive party spot will be Pitt Island, east of New Zealand in the South Pacific. This is the closest inhabited place on Earth to the International Date Line; the first place the sun will rise in the new year. That's where year 2000 will start. The sunrise will first be visible from Mt. Hakepa, about 700 feet above sea level, at 16:05 GMT. Filthy Rich characters may very well pick that as their New Year's spot. One added advantage to Pitt Island: by flying further east from there, one crosses the Date Line the other way, headed toward Hawaii . . . which will be one of the *last* First World territories to see in the year 2000. Depending on circumstances, the destination in Hawaii could be a refuge or another party.

If the Y2K crash turns out to be a fizzle – if nothing bad happens in Japan or Australia – the American and European parties will be wild indeed. If things start going wrong, though, what parties happen will be tinged with desperation. A New Year's party would be an interesting way to start a Y2K adventure . . .

See *Making a Date on the Dateline* (p. 54) for some other exotic Y2K party spots.

If the Y2K crash turns out to be a fizzle – if nothing bad happens in Japan or Australia – the American and European parties will be wild indeed. If things start going wrong, though, what parties happen will be tinged with desperation.

Everyone will be trying to contact loved ones or to get somewhere else; the phone system will be overloaded. The roads will be jammed until gasoline supplies run out (with no power, pipelines quit working).

Hospitals will be choked with emergency cases. They'll have their own power generators and fuel supplies, but there just won't be enough beds, especially if hungry people start looting and fighting . . . or cold people start flocking toward the lights to find warmth . . . or air-traffic computers malfunction and planes go down.

And it will be hard to recover if computer files worldwide are in chaos, bank accounts are frozen, and government and corporate records are unreliable.

And that's still not the worst case. The worst case comes if some opportunistic nation or group tries to take advantage of the chaos to attack a foe . . . or a nuclear plant gets out of control and leaks radiation . . . or (probably even more hazardous) a chemical plant blows up . . . or a computer chip on a missile suddenly decides that it's been 100 years since it was told not to launch, and that's too long . . .

Recovery Time

So . . . if it's really bad, how long will it take before it gets back to normal? It depends; it depends on everything. Some possible cases:

- *One Bad Year.* Worldwide chaos, looting, and death – especially in urban areas – but most governments survive, and society holds together. It's like a war: bad while it lasts, but people pick themselves up and go on.
- *One Bad Decade.* The damage is widespread enough, and recovery is slow enough, that the whole world slips into depression, both economic and psychological. The U.S. stock market crashes, pulling the rest of the world's financial structure with it. Everybody's savings are wiped out, and nobody has a job. Some countries slip into total chaos; many fall to dictatorships. In the *best* places, it's like the U.S. Great Depression all over again.
- *Collapse.* Everything falls apart, and when it comes back together, it's completely different. See Chapter 6 for the fall-apart stage, and Chapter 7 for some possible ways that society might reform without computers.

Government Preparations

"We feel, and the Defense Department feels, that problem is not going to be a problem. Of course, it can't be a problem. We won't allow it to be a problem . . . We're confident that it is going to be solved, but we're going to be doubly, triply, and quadruply confident that it's going to be solved before September of this year."

– Vice President Al Gore

Some governments have taken Y2K very seriously; others, less so. The original deadline for U.S. government agencies to complete their Y2K preparations was September 30, 1998. When no agency met that deadline, it was moved to March 31, 1999. Few if any major agencies have met *that* standard.

In the United States, a Senate select committee started hearings in April, 1998, reviewing both government and civilian preparations. As might be expected, its report was cautiously optimistic. Citizens are advised to keep copies of their financial statements and stockpile extra food and water . . . but don't worry, everything will really be all right.

The Military

As of January, 1999, the U.S. Defense Department was claiming that 1,673 of its 2,300 "mission-critical" systems were Y2K compliant, and that all of them would be compliant by the end of the year.

But defense systems are hard to fix, for several reasons.

First, the programmers often have to have a security clearance. Furthermore, some computer chips in government systems . . . especially the real "black-box" stuff . . . are not at all standard. They're not off-the-shelf components. They're made in limited and tightly controlled lots, by trusted contractors. Plenty of spares are run off and stored away in a government warehouse; then the fabrication equipment is reprogrammed. If even one such specialized chip contains a non-compliant clock circuit, it will be a massive job to create new ones and replace them wherever they exist, especially in secret. If hundreds or thousands of such secret chips have problems . . . forget it.

What about military preparedness in case of domestic disorder? The Senate Y2K task force has asked the Pentagon to report on its plans in case martial law seems to be required, and a House subcommittee has recommended that President Clinton consider declaring a Y2K "national emergency." Of course, the phrases "martial law" and "national emergency" are scare-words to those who worry about government abuse of power. (For more about a possible Y2K coup, see Chapter 5.)

The FBI is reported to have canceled all leaves and vacations for the period around the end of the year.

Magic Numbers

Year 2000 isn't the only date that may cause problems with computers in the next few decades. Here are just a few others that may require massive fixing, or cause massive problems if they're ignored:

End of File, End of World

Many programs use strings of 9s to designate the end of a file. It's just possible that on September 9, 1999, the date of 9-9-99 will shut down some programs.

If we make it by that one, we still have to worry about September 8, 2001. The Unix operating system keeps track of time by counting seconds, and on that date, second number 999,999,999 will occur.

Looking ahead to 2038, Unix runs into another problem. The Unix time-count started on January 1, 1970. In January of 2038, though, its "counter" will be *all* 9s. One second later, it will be all zeroes. Some systems will think that it's 1970 again.

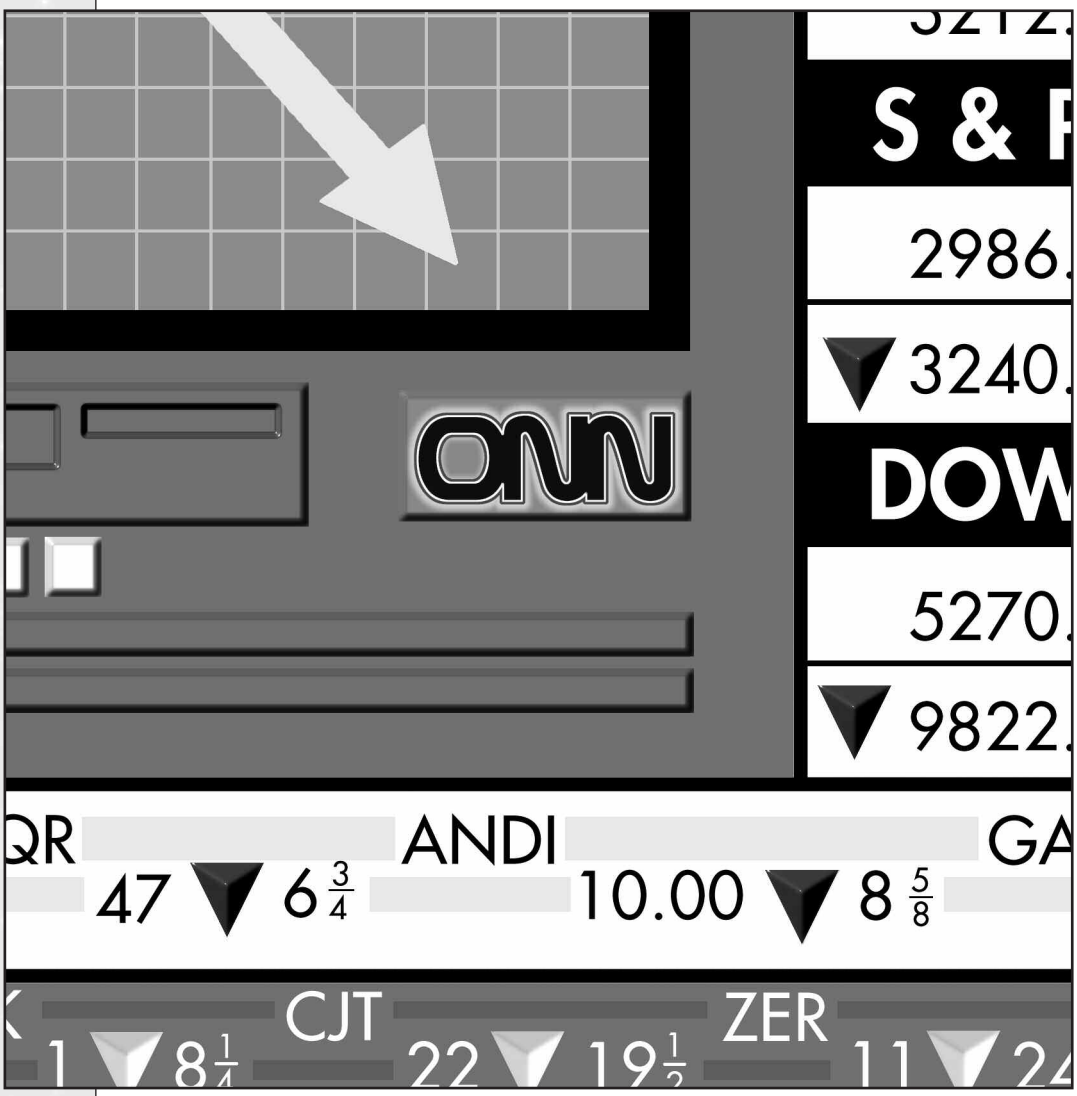
We're Out Of Numbers!

When the North American phone system was set up, nobody planned for faxes . . . let alone modems on PCs . . . let alone cell phones. We're running out of phone numbers. Around 2025, we will have assigned every possible combination of 3-digit area code and legal 7-digit phone number (if somebody comes up with another popular application that requires its own phone number, it will happen sooner). At that point, the phone company will have to do something . . . and whatever it does will break every single piece of phone-related software in existence, not to mention every single database that stores phone numbers. Long before that, as the last few numbers are squeezed out of the system, area codes will cease to have anything to do with where the phone is located, and we'll be memorizing ten-digit numbers for everyone.

And about 50 years later, the USA will exhaust its pool of new Social Security numbers. Of course, Social Security itself may not last that long. It may run out of money before it runs out of numbers.

Power

Electric utilities are a major worry; there are thousands of providers in the U.S. alone, ranging from megacorporations to small rural utilities. Government reporting and compliance requirements have been strict, but accusations of fakery on compliance reports are widespread. "Compliance with exceptions" also appears common. This is a bureaucratic way to say "We're not really ready, but we know you need to see the word 'compliant' in our report." In many cases, the "exceptions" have to do with unavailable replacement parts. The bureaucratic view here is "The power may go off, but it's not our fault because we really tried to get that part."



And power plants are susceptible to chain-reaction outages. When one plant goes down unexpectedly, neighboring plants will automatically try to take up the load, and may crash themselves . . . and it spreads. This is what caused the great Northeastern blackout of 1965: *one power plant* went down and took the whole grid with it.

A bit of good news: The U.S., at least, has almost twice the capacity it normally needs, and winter is *not* the time of peak demand (air conditioners pull much more power than heaters). We could lose more than half of our generating capacity and theoretically be all right . . . if we could distribute the power we had.

Nuclear plants are a special case; see p. 20.

Fail-Safe

Fail-Safe was the title of a Cold War bestseller about an accidental nuclear exchange. The concept of "fail-safe" is simply that computer controls should be designed so that, in the event of failure, no damage will be caused. In the novel, the Pentagon's early warning system was not "fail-safe" . . . a defective computer chip triggered a false warning and an atomic attack was launched.

Of course, "fail-safe" depends on circumstances. Take, for instance, a computer-controlled door. If that door is on a jail cell, "fail-safe" means that it stays locked in the event of power loss; we don't want that lock popping open. On the other hand, elevator doors should automatically *open* (or at least unlock) in the event of a power failure, so that no one is trapped inside.

The idea of fail-safe is a fertile one for any disaster scenario in which computers go wrong or power is interrupted.

Y1K

The Y1K problem? And what might that be, sirrah? Say you what? My good abacus will fail me? What witchery is this?

That didn't happen. But there *were* riots, predictions of doom, and social disturbances in Europe as the calendar rolled from 999 to 1,000. Historians debate how severe these truly were, but they happened.

And millennial fears aside, this was indeed a turbulent time in Europe. In particular, Vikings were ravaging England and laying siege to London itself. The Norsemen were sacking monasteries and were seen as tools of the Devil; were they just the first and mildest of the demonic scourges to come? And Rome was wracked by civil war; did this portend the destruction of Mother Church?

For game purposes, any historical scenario set in Christendom around the year 1000 can be spiced up with warnings of Apocalypse, frenzied monks preaching about the Last Judgment, panicked peasants, and rulers seeking the advice of the wise.

Communications

"If the phones quit working, is there a number we can call to report it?"

Telecommunications systems are highly distributed and hard to test. Government planners say they expect 95% of phone systems to be ready. This implies that a minimum of 5% will crash, at least temporarily.

At Least We've Got Money

Some pessimists expect a huge run on banks in the weeks before the year's end, as people fight to withdraw their money. This, of course, is something that governments can deal with. The U.S. Federal Reserve has stockpiled millions of dollars of extra currency in banks around the country. If people want cash, they'll be able to get it . . . at least, they'll be able to get it if they can get to the bank.

Most of the population growth is in underdeveloped countries . . . countries whose people see the Western lifestyle on CNN and want it for themselves. And they're willing to work for it. But are there enough resources on Earth to support a Western lifestyle for six billion people (and more every year)?

Air Travel

The specter of airplanes falling from the sky is a profitable one for scaremongers. The U.S. Federal Aviation Administration insists that it won't happen – in the U.S. – but warns that "flight rationing" may occur.

Levels of preparation in other countries differ. It has been reported that the Chinese government has ordered all of its air travel executives to be aloft at midnight on December 31. If true, that should certainly focus their minds on solving the problem in the next few months.

Industrial-Strength Idiocy

Technology and overpopulation are giving us enough to worry about all by themselves; one needs no religious fervor, and no round numbers on the calendar, to find evidence that the end of the world is close at hand. Any of the following problems could feed into a game scenario, either as general dystopian background or as a specific motivation for desperate action.

The Population Bomb

By the time this book goes to print, the world's population will have passed the 6 billion mark, which will mean that it has *tripled* in the space of a single generation. Human population growth is at the root of all the other menaces described in this section. There are just too many people competing with each other, and with the other species on Earth, for land and resources.

According to the Zero Population Growth (ZPG) organization, mankind has used up more goods and services since 1950 than in all previous history. Of course, a larger population has made it possible to *provide* more goods and services. But the drain on natural resources can't be understated.

Most of the population growth is in underdeveloped countries . . . countries whose people see the Western lifestyle on CNN and want it for themselves. And they're willing to work for it. But are there enough resources on Earth to support a Western lifestyle for six billion people (and more every year)?

Of course, a major Y2K disaster could reverse population growth . . .

Y to K

A story that made the rounds on the Internet:

Boss: I just received this status report from our Y-to-K project team: Our staff has completed the 18 months of work on time and on budget. We have gone through every line of code in every program in every system. We have analyzed all databases and files, including backups and historic archives, and modified all data to reflect the change. We are proud to report that we have completed the "Y-to-K" date-change mission, and have now implemented all changes to all programs and all data to reflect your new standards: Januark, Februark, March, April, Mak, June, Julk, August, September, October, November, December. As well as: Sundak, Mondak, Tuesdak, Wednesdak, Thursdak, Fridak, Saturdak.

I trust that this is satisfactory, because to be honest, none of this "Y-to-K" problem has made any sense to me. But I understand it is a global problem, and our team is glad to help in any way possible.

Y10K

So we think we depend on computers *now?* Just wait a few thousand years . . .

The Y2K situation, with any permutations that the GM finds especially appalling or amusing, could be turned into a "Y10K" scenario for any ***Space*** campaign. The fixes that we're performing now, after all, will only be good for another 8,000 years. At that point, four digits won't serve for the date – we'll need *five.*

Surely we'll be past such problems then? Maybe, and maybe not. The programmers of the 1940s and 1950s thought that all their work would be long gone and obsolete by now. But much of it persists, and much more was thoughtlessly copied. It's always easier to use old code, or at least to clone it, than to start over with a new design . . . and you have to make sure you're compatible with what's already in service. Who knows how much "legacy code" might still exist even thousands of years from now? (A joke currently making the rounds has a programmer, tired from his labors, putting himself in cryonic suspension right after the year 2000 . . . to be awakened to a year 10,000 future where the first question is "You know COBOL, right?")

Continued on next page . . .

Y10K (Continued)

And the consequences of a widespread software bug in a completely computerized world could be . . . messy. Instead of planes crashing, we have interstellar vehicles entering new systems at significant fractions of light speed. Instead of power plants going dark, we have self-powered "smart houses" getting lethally stupid. And what happens when your own personal body implants go haywire?

You don't have to go 8,000 years into the future to find this scenario, either. New cultures, or newly discovered planets, will have their own calendars. The GM can set a calendar rollover wherever he wants tone.

Early Warning

If the "bugs" are not fixed – if the beginning of the year 2000 really does usher in disaster – North America will not be completely surprised. We'll have the better part of a day to see it coming. The calendars and computers in Australia and Japan will roll over long before ours will. If power plants shut down and planes dive into the ground, European and American authorities will have several hours to do . . . what?

There won't be time for any but the most drastic measures – especially since authorities have placed their credibility on the line by saying "There may be minor local dislocations, but everything will basically be all right." Some may be reluctant to believe otherwise, even if CNN has a crew right there on the International Date Line to broadcast doom and destruction, live via satellite.

With five to ten hours' warning, it would be possible to ground all aircraft; to shut down vulnerable power plants in an orderly fashion and reroute power to some areas from plants believed to be truly safe. Martial law will probably be declared. Grocery stores will be protected from looters – for a while at least.

Banks and financial markets, on the other hand, will be shut down anyway; not only is it a holiday, but December 31 is a Friday! If the financial computers go down, a day's warning won't do a bit of good, either to the banks or to the individuals who can't get to their money.

Still, even in a worst-case situation, Europe and North America ought to be spared the brunt of it. And if we're not . . . see Chapter 6.

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Pollution

Since Rachel Carson published *Silent Spring* in 1962, the specter of pollution has loomed in the Western mind. North Americans and Europeans are acutely aware of the threats of pesticides, industrial effluents, oil spills, and simple runoff from urban areas. The West has put many controls in place – some would say not nearly enough, but it's a start.

But the West is not the whole world. Developing nations look at the affluence of the First World and say "You got there by polluting. Your citizens use many times the resources that ours do. Now you want to hold back *our* development to protect *your* environment?" Thus, globally, pollution worsens. And in recent years, new problems have been discovered . . . especially in the areas formerly controlled by the Soviet Union.

It is now clear that the USSR had absolutely no concern for pollution (including radioactivity and toxic effluents from mining) when it needed raw materials for industrial or military purposes. They had a lot of land, they thought they could afford to spoil some of it . . . and their planners had absolutely no concept of what they were really doing to their environment, or over how wide an area. The current Russian government, preoccupied with economic collapse and understandably embarrassed about former excesses, is not being forthcoming with information. But the "Superfund" cleanups in the U.S. may be a drop in the bucket compared with what is needed in Russia in the next century.

The Ozone Hole

Ozone (triatomic oxygen, O_3) forms a layer in the atmosphere several miles up. This "ozone layer" blocks the sun's ultraviolet radiation – radiation which would otherwise damage plant life and cause skin cancer.

In the 1970s, it was discovered that the ozone layer was thinning over the South Pole. In 1985, new measures made it evident that the ozone layer was vanishing almost to nothing over most of Antarctica during part of each year. It is now known that the layer is much reduced over the North Pole as well. In fact, the ozone layer is also thinning over inhabited latitudes . . . but, fortunately for mankind, not as fast.

This thinning is caused by various industrial chemicals released into the atmosphere, most notably chlorofluorocarbons used in refrigeration systems and as aerosol propellants. The industrial nations have agreed to stop producing the chemicals believed to cause most of the damage, but current models indicate that it may be well over 50 years before the ozone layer "heals" itself.

And what if it doesn't? What if ozone destruction continues? Crop productivity would be reduced and more species would go extinct. There would be a great increase in skin cancer; outside workers would have a reduced life expectancy, sunscreen or no sunscreen. The sun would become an enemy.

Global Warming

This is one of the biggest scientific arguments of the last decade. Is the Earth's average temperature really rising? Distinguished scientists say "Certainly!" and present studies to prove it. Equally distinguished scientists say "Nonsense!" and present studies to prove it. Politicians and industrialists make speeches, strongly championing whichever view benefits them, and present no studies to prove anything at all.

The International Red Cross has gone on record with the opinion that a serious climatic change is taking hold of the Earth, resulting in an increased frequency of natural disasters (El Niño/La Niña, flooding, drought, sea-level changes). The group's 1999 World Disasters Report anticipates not only more disasters, but more complex ones. For instance, when El Niño set off Indonesia's worst drought in 50 years, the report said, "The rice crop failed, the price of imported rice quadrupled, the currency dropped by 80 per cent, food riots erupted in the capital Jakarta and in the countryside, massive forest fires burned out of control, paralyzing parts of the country with a toxic layer of smoke."

How much of this change is man-made? Certainly, human pollution affects the atmosphere, and that can affect the temperature of the Earth. For all we know, the Earth could naturally be heading into another ice age and our pollution is the only thing keeping us from freezing! "Greenhouse gases," like methane (much of which comes from cow flatulence) hold in heat and raise temperatures. On the other hand, particulate pollution reflects sunlight and reduces temperatures. This happens naturally, too; when the volcano Krakatoa exploded in 1883, its dust produced beautiful sunsets, and colder temperatures worldwide, for years.

If a runaway global-warming scenario occurred, what would it mean? At the minimum, crop failures, extinctions, a rise in sea level as Antarctic ice melted, and more hurricanes and tornadoes (which are driven by heat).

Who Benefits?

It's interesting to look at who does, and does not, benefit from the current Y2K hysteria. This is not a look at who might be hurt by a real Y2K disaster, but at those who are *already* being hurt or helped by the public concern.

Obviously, computer consulting firms, and individual programmers, benefit a great deal; for the last few years, Y2K has been a gold mine. Many retired programmers have returned to the marketplace, their COBOL skills once again valuable (many legacy programs are written in the antique but still common COBOL language). But this gravy train will end, one way or the other, soon after December 31. If everything crashes, nobody will have a job; if most things work, a lot of programmers will need to find other things to do.

The media are profiting hugely. Any time things are a bit slow, they can run a Y2K story. Politicians always like to have a new menace to point to, of course, especially if they can present themselves as guarding the public against it. Purveyors of storage food and emergency equipment are seeing big sales. Doomsaying investment newsletters now have a new doom to point to. And churches (especially fundamentalist Protestant churches, and the pseudo-churches on the radio) are talking about Armageddon and racking up big donations.

Finally, lawyers are already raking in the big bucks merely to consult on possible Y2K liability issues. If there *is* a serious Y2K problem, the lawsuits will fly fast and furious. We may all end our days in mud huts, but the lawyers will have the biggest ones.

And Who Is Hurt?

The leisure industry will certainly not make as much money in the winter of 1999 as it might have expected to. Frightened people don't party. Similarly, the airline industry will have trouble filling airplanes come late December.

Financial planners, both private and government, have to deal with the question of how the markets will react as the day gets closer. Will there be massive sell-offs and bank withdrawals, possibly triggering a market crash?

Tax dollars are being spent on government preparations . . . dollars that would otherwise be available for other programs. Any marginal government program, or anyone who would be helped by such a program, is hurt by the Y2K furor.

Continued on next page . . .

Who Benefits? (Continued)

The biggest effect of all: Any computer programmer who is working on Y2K fixes is unavailable for other work. This has driven up the price of programming skills, which hurts any other effort that needs programmers. (In particular, the European currency change has competed with Y2K for skills. Some observers think that Europe will have more Y2K problems than it otherwise would, just because European programmers have been preoccupied with the changeover to the euro. For more on this, see *The Euro,* p. 47.)

Tests That Failed

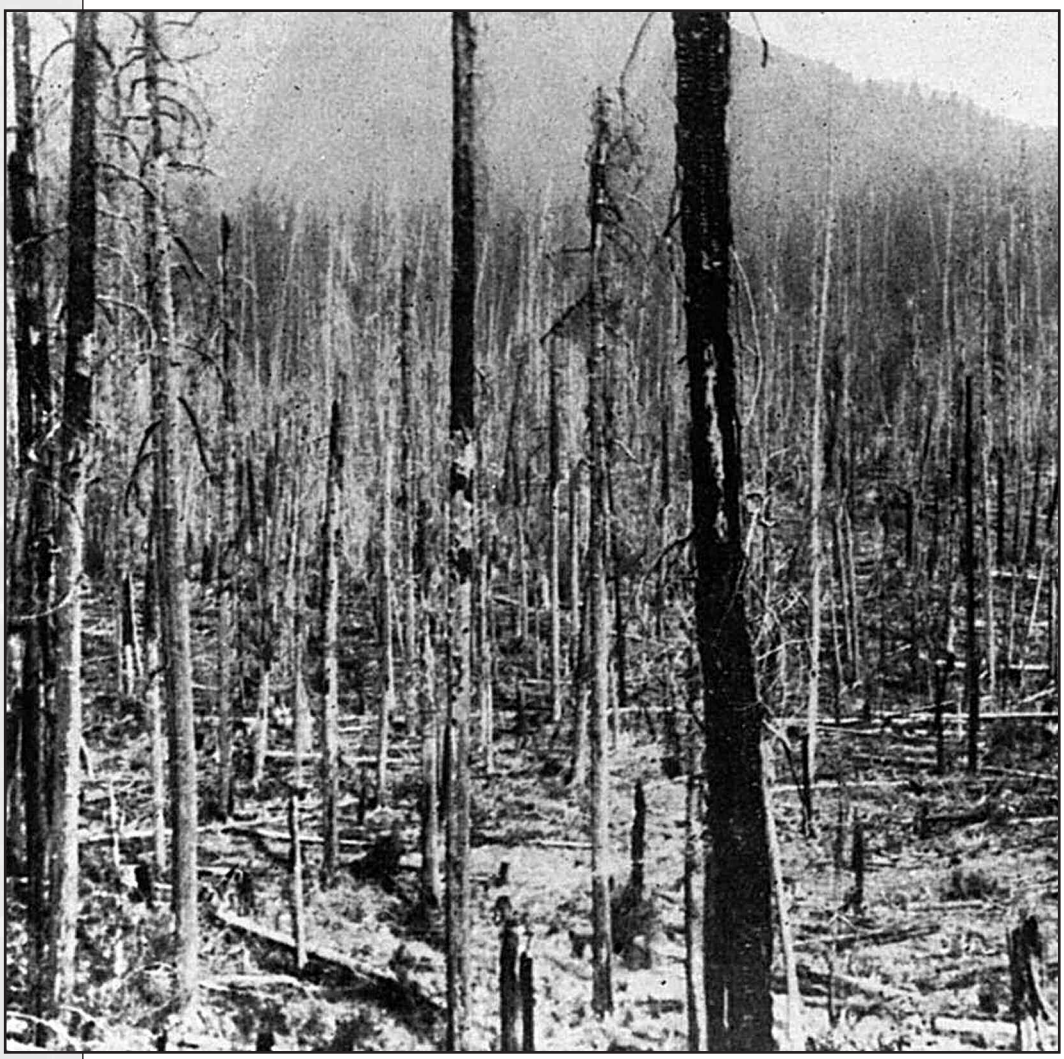
When a system has supposedly been fixed – when it's theoretically Y2K compliant – the natural thing to do is to test it. But what if it fails the test? Sometimes, the results are frightening. For instance, one automobile manufacturer installed a complete suite of "fixes" in one of its fully automated plants, advanced the system clock to a few minutes before midnight on the last day of 1999, and turned it on. When midnight came, the entire plant ground to a halt.

For some systems, the best thing you can do is simulate a test; it's risky, or simply impossible, to change the clock on the actual system. A possibly apocryphal story tells of a large water-treatment plant that got its Y2K fixes completed with plenty of time to spare. The engineers disconnected the control system from the actual pumps, told the computer it was 2000, and watched. The computer promptly told every valve and lock to open. Had it been connected, every drop of chemical in the plant would have been dumped into the bay . . . not only polluting the water, but also eliminating the city's ability to supply clean water to its citizens.

Deforestation and Extinction

Mankind systematically destroys forests for two main reasons: to clear agricultural land, and to harvest wood for fuel, building, and paper production. By some estimates, less than 20% of the planet's original forests remain. In temperate regions, commercial forestry is chiefly responsible for deforestation; in tropical and underdeveloped regions, on the other hand, the forests are destroyed a few acres at a time, but thousands of acres a day, by individuals practicing slash-and-burn agriculture. Loss of forests contributes to the greenhouse effect; when trees are destroyed, their carbon is released and much of it enters the atmosphere.

The direct human effects are grave. In 1998, according to the Red Cross, declining soil fertility, drought, deforestation, and flooding drove 25 million people from the countryside into cities. Few of these people found actual homes or employment; most of them remained refugees, living in squatter communities, hungry, unemployed, and without good medical care.



Deforestation is an important component of species extinction. Earth's biosphere is losing species at a frightening rate. For every highly publicized, charismatic "endangered species" like the bald eagle, a thousand smaller and less obviously interesting plants and animals are pushed to the brink . . . or over it. By extreme estimates, we are currently losing 20,000 species per year – or two every hour.

Mankind wipes out species in many ways: by clear-cutting forests, by paving habitat to build subdivisions or drowning it with dams, by release of pesticides or pollution, through other accidental effects of technology and development, or simply by hunting for food. Exploding populations are making this last problem more and more severe.

Mass extinctions fit into an apocalypse scenario because Man remains dependent on other species. If crops fail because the pollinators have been killed by pesticides, and wild food animals have been hunted to extinction, what will we feed our 6 billion mouths – algae? Even if it never comes to that, few of us wish to live in a world with no open spaces or wild creatures. Mass extinctions might not mean the end of the world, but they would certainly mean the end of the world as we know it.

Things Man Was Not Meant to Grow

Biological science is bringing us a whole new suite of things to worry about. Genetic manipulation promises better food plants without pesticide, the eradication of most diseases, and even cures for genetic conditions. But we can't expect everything to go right all the time. Some biological elements for a doomsday scenario appear below; ***GURPS Bio-Tech*** includes *many* more possibilities.

Antibiotic-Resistant Diseases

We're doing this to ourselves. Disease organisms are tiny; they multiply and mutate quickly. If an antibiotic kills *almost* all of the germs infecting a patient, the resistant survivors can quickly breed back. The antibiotic won't work as well on the new infection . . . or on the new patients infected by the carrier of the resistant strain of the disease.

Penicillin, once the "magic bullet" against disease, has become much less useful in the past decade, largely because commercial meat producers dosed their herds with it. This meant that everyone who ate meat got a low-level dose of penicillin – enough to start selecting every bug in their bodies for penicillin resistance!

Organisms that have become antibiotic-resistant include staph (which can cause pneumonia, infected wounds, and toxic shock), pneumococcus (which can also cause pneumonia), gonorrhea, enterococcus (an intestinal bug), shigella (another intestinal bug, causing dysentery) and tuberculosis.

A world in which antibiotics no longer work would be apocalyptic indeed.

Biological Weapons

Diseases as weapons – a terrifying thought. Governments loudly decry the very idea, while continuing to finance their own "defensive" biological research. But defensive research can easily be turned to offensive uses; the science is exactly the same. And overt offensive research is happening, too: Iraq is known to have been producing anthrax for weapons use, and evidence of massive Soviet experiments with smallpox has recently come to light as well.

This scenario is a favorite of those who predict a Christian Apocalypse, since *Revelation* predicts plagues.

No More Taxes?

Many commentators see a bright side to a crash scenario. Of all the agencies of the U.S. government, the IRS is the one with the most computer problems already. They're not forthcoming about their problems, but news stories are common. Allegations include antiquated systems, code that has been patched for 30 years but never repaired, millions of lines of "unofficial" code written in regional centers by workers who were more interested in doing the job than documenting it, and systematic cover-ups by administrators who just wanted to make it to retirement.

So, if there is a Y2K crash, the IRS systems will certainly fall, and fall hard. Does that mean we'll get a tax holiday? Not likely. You can bet that when the government started creating contingency plans, the first one was for tax collection – even if it meant the IRS agents would go from house to house on horseback and take their tax in turnips. Now *there's* a scenario . . .

And Nature Makes It Worse

Solar researchers have predicted bad weather for year 2000 . . . on the sun. They expect serious solar storms, creating showers of particles and violently fluctuating magnetic fields which will affect satellites. This could mean that satellite-based communications systems and GPS could become unreliable, or go out completely, when they're needed most. The timetable: starting in January 2000, and worsening until April.

Out of This World

Fire from the skies and a sound louder than any thunder. Is it a falling meteor . . . or the Apocalypse? The "Fist of God" meme is a powerful one; the idea of a meteor strike brings shivers and occult fears even to the most devout agnostic.

Summertime movies to the contrary, the chance of Earth being hit by a giant meteor is very small. However, if it happened, it would be a truly global catastrophe, putting Y2K computer concerns to shame. Many scientists now blame the extinction of the dinosaurs on a giant meteor impact. We know there *was* a huge impact off the coast of Mexico at the right time . . . we don't know yet whether it killed the dinosaurs. But such an impact today would kill a lot of *us.*

Not all the planetoids out there are dinosaur-killer size, of course. An asteroid only 50 yards in diameter would have an impact energy of 5 megatons – comparable to a strategic thermonuclear weapon. The damage would be huge, but local.

Continued on next page . . .

Out of This World (Continued)

Bigger impacts would do more damage. An object a half-mile in diameter would wreck a large part of a continent if it hit on land, causing earthquakes and airborne shockwaves. The results of an ocean impact might actually be worse: tidal waves, hurricanes, and climatic changes that could last for years.

An object a mile across – and they're out there – would have global effects. It would strike with an energy of around a *million* megatons. Whether it hit land or water, it would not only create earthquakes and other shock effects that would kill millions – it would fill the atmosphere with debris, producing an "impact winter" that would reduce temperatures worldwide. It is estimated that, on average, the Earth collides with such an object every 500,000 years or so.

And the impact blamed for the death of the dinosaurs 65 million years ago was bigger yet. It is estimated that the object was around 10 miles in diameter and hit with an energy of 100 million megatons.

A Long Warning, Or None

Although the chance of an asteroid strike is remote, it's real. Until recently, mankind didn't have the technology to warn of an impending collision. Our telescopes and computers are now good enough to let us search the sky for danger . . . but the effort has barely begun. Scientists estimate that they have located no more than 10% of the large objects that could potentially strike the Earth.

If the threat is from a known object, there would be time – perhaps decades – to deal with it. Depending on the object's size and its distance from Earth, that might involve a space mission to deflect it, the creation of shelters in the safest zones, or just prayer.

But at present, the odds are 9 to 1 that an impactor would come completely by surprise. It would be like an atomic attack – or worse. Those close enough to witness the strike would not live to describe it. Those at a safe distance (say, on another continent) would hear an unimaginable noise as the ground began to move . . .

Either scenario could be used in a game. A long-warning situation could involve the party in disaster preparations; maybe they're the team that goes out to deflect the asteroid. A no-warning situation would be a surprise event that would turn most campaigns into Armageddon.

Frankenfood

By combining genes from different species, or even building brand-new genes, geneticists hope to create crops that will grow under less favorable conditions, produce more food, and resist pests and disease. A worthy goal when we have six billion mouths to feed . . . but what will the side effects be?

> ***"The general engineer [at the nuclear station nearest to Moscow] promises that he'll have a New Year's party, and he's invited me."***
>
> ***– Valentin Ivanov, Russia's Deputy Atomic Energy Minister (from The New York Times, June 23, 1999).***

Right now, for instance, many American farmers are planting "Bt corn," a genetically modified corn whose pollen produces a toxin originally found in a bacterium called Bt. This is deadly to the corn borer worm, which eats a billion dollars' worth of corn each year. It doesn't affect humans, honeybees, or ladybugs. But what happens if Bt corn becomes so common that its wind-blown pollen dusts other plants? Recently, a Cornell researcher sprinkled Bt corn pollen on milkweed leaves, the food of monarch larvae. Almost half of the monarch caterpillars in his experiment died after eating the pollen-dusted leaves.

Biotech, like any other technology, will bring surprises, and some of them may be horrifying. Biotech is another favorite target of apocalyptic doomsayers, especially those who preach about "meddling" and "creating monsters."

Nuclear Nightmares

One of the biggest apocalyptic Y2K fears is a nuclear accident. Many people are already terrified of nuclear plants; the fear of radiation is often irrational and superstitious. A doomsayer need only say "And the nuclear plants will explode!" to grab his audience's attention.

But could it happen?

Not exactly – no explosions – but what could happen is bad enough. If a nuclear plant's computers became confused and malfunctioned, the cooling system could be compromised. Nuclear plants run very hot indeed; if the cooling pumps quit, it doesn't take long for the core heat to reach damaging levels. Pipes bend, controls melt. Eventually, the containment vessel can rupture, releasing a cloud of radioactive steam. This is the scenario that was narrowly avoided at Three Mile Island.

And it can get worse. At Chernobyl, the building actually caught fire. Not only was containment completely lost, but radioactive smoke and ash were spread over a wide area. Even at Chernobyl, there was no danger of an actual explosion, but what did happen was almost as terrifying.

Even if no radiation escapes at all, a nuclear plant that overheats and melts down will be off-line for years, if not forever, leaving people in the cold and dark.

How likely is this, really? The U.S. government insists that it can't happen here. Because the public is already afraid of radioactivity and hostile toward nuclear plants, the Nuclear Regulatory Commission (NRC) has been under intense pressure to *promise* that nothing can go wrong. It has insisted on complete compliance from the plants under its control. Unless plant managers or bureaucrats are really stupid (or are seriously faking their readiness reports), then, the U.S. will be all right.

Nuclear plants in other countries may not be so safe. Those owned or managed by U.S. companies are under NRC supervision and theoretically held to the same standards as those in the U.S. Others, especially those in the former Soviet Union, are perhaps riskier; nuclear plants there are known to be antiquated, badly maintained, and dangerous even without adding Y2K to the mix. The country that brought us Chernobyl may have worse things waiting.

The Y2K War

Worse than nuclear plants, though, are nuclear weapons. Y2K theorists have suggested three scenarios in which the millennium could lead to a nuclear war:

The first starts with simple civil unrest, probably in the territories of the former USSR. Cold, hungry people resist authority and eventually rebel. The situation escalates until somebody uses one of the thousands of Soviet nuclear weapons that are still floating around. From there, things go downhill.

The second scenario is more deliberate. It assumes that someone *counts on,* or even deliberately foments, Y2K chaos in enemy territory, and takes advantage of the opportunity to launch an attack. Some defense planners are very concerned about this.

The third scenario is the accidental one. A defense computer fails and sees an attack where none exists . . . or a "dead-man" system loses track of the time, decides that it's been 99 years since it has heard from its commanders, and launches.

Y2K Web Pages

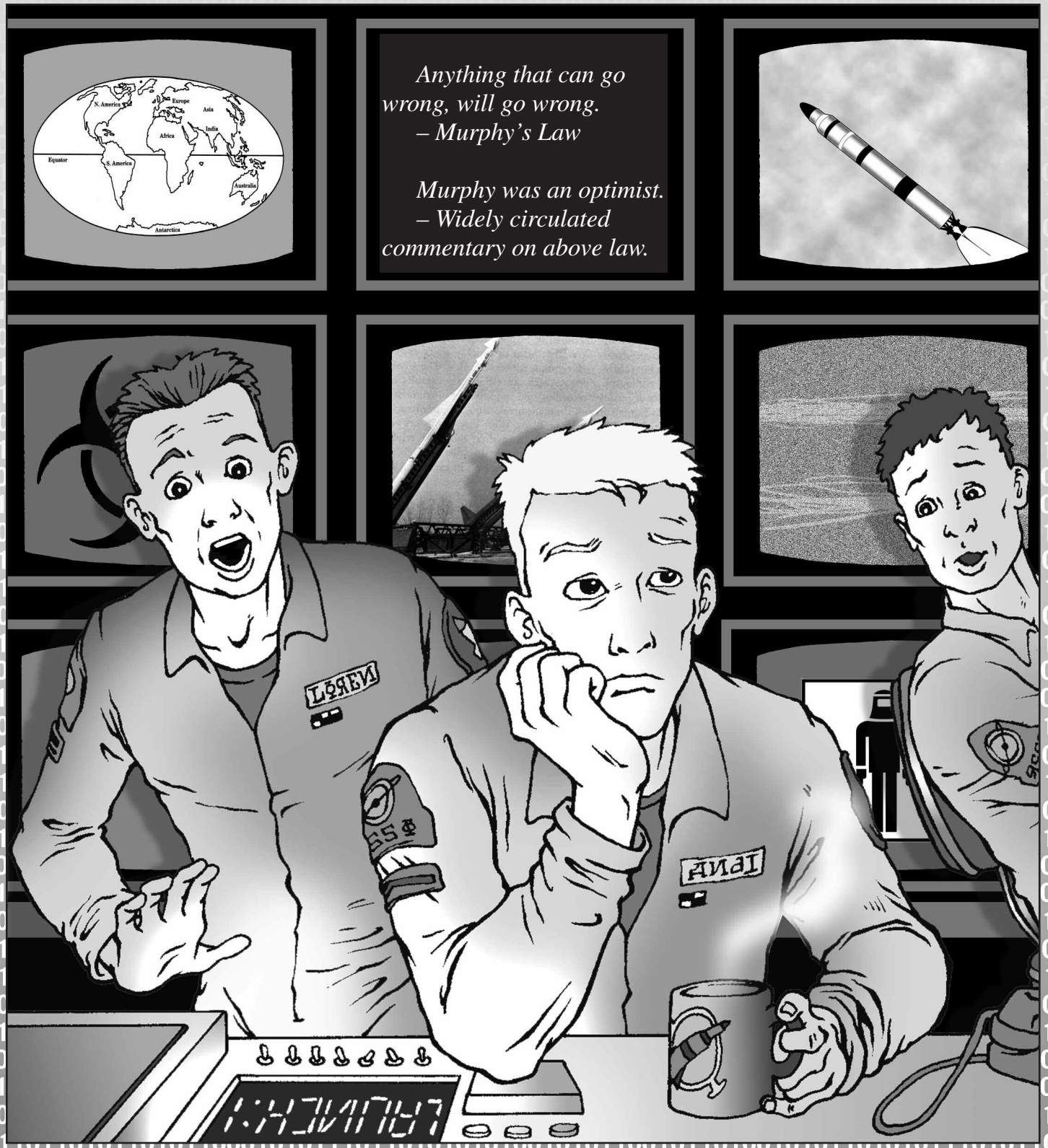
All of these resources should be available, and regularly updated, until 2000 actually arrives. At that point, who knows? If Y2K is a fizzle, most of them will vanish quickly; if Y2K takes down the Internet, the sites may be there but you won't be able to reach them. In the meantime, they're interesting reading, even if a lot of the URLs sound alike:

- *Michael S. Hyatt's Y2KPrep* would like to give you free advice about just how serious this is, and sell you some books. Clearly written and regularly updated at **www.michaelhyatt.com**.
- *Y2KNewswire* posts free articles, most slanted toward the "it's going to be really bad" end of the spectrum, and offers more in-depth analysis via subscription. Go to **www.y2knewswire.com**.
- *Duh-2000* (**www.duh-2000.com**) is devoted completely to amusing (and mostly stupid) quotes about the Y2K situation.
- *Wired Magazine's Y2K News* (**www.wired.com/news/news/ytwok/**). Regular reports on various aspects of the Y2K situation, calmly presented.
- *Year2000News* (**year2000news.com**). Updated daily; points to selected Y2K-related items on many, many general news sites.
- The *Y2K News Network*, based at **www.y2knews.com**, is another review of general news reports. This one has a lot of ads, but the ads are enlightening, too.
- *Gary North's Y2K Links and Forums* (**www.garynorth.com**) is a "The sky is falling, save what you can" site . . . but North's arguments are reasoned and clearly put. If the rest of the news leaves you feeling comfortable about Y2K, visit North's page for some balance.

The Merry Pranksters

With the world's attention focused on possible Y2K disasters, the pranksters and performance artists will no doubt get involved. Think of all the attention you could get by faking some amusing mishap on December 31 or January 1. But if it causes a real panic, or distracts emergency workers from genuine problems, a prank could become tragedy. Or, if there are a *lot* of pranks, some real-but-unbelievable problems could be neglected . . .

2. Murphy's Law



Okay, you've seen all the big stuff that could go wrong. But remember – the devil is in the details. The people responsible for power plants and traffic signals, the phone companies and the TV stations, even the government . . . they all saw Y2K coming and got it fixed. So all that's left is the small fry – a mop-up operation, right? Maybe there will be some minor inconveniences, but nothing we can't handle, right?

Right.

"This is Melanie Primrose, reporting live from the local Super-Duper supermarket, where looters have stripped this 22,000-square-foot food store down to the fixtures in a single afternoon. Is the food supply safe? We'll tell you how ***you*** *can protect your family, tonight at six."*

How did *that* happen? Well, like any good Y2K disaster, it came in through the back door. Literally . . .

You see, Super-Duper supermarkets were Y2K ready. They're a big chain, with corporate ownership. They saw the problem coming (or at least paid attention when everyone started making noise about it in early 1999) and got it fixed. They even required that all of *their* suppliers be Y2K compliant.

One of Super-Duper's suppliers, Redi-Fresh Produce, wasn't quite as thorough. Not that Redi-Fresh wasn't Y2K ready – they were – but one of *their* suppliers, the Everstrong Box Company, wasn't.

Everstrong provides preprinted boxes, built to specifications, to wholesalers. And the bar codes printed on the outside of those boxes were wrong. Redi-Fresh doesn't use the codes themselves, they just do it that way because Super-Duper wants it that way. And what a big customer wants, it gets.

So the stock came in, the handheld scanners hit every bar code before the stockers put everything on the shelf, and the inventory control red-tagged a bunch of it because it was past the expiration date – about *100 years* past – and removed it from the active inventory. Later on, when somebody tried to buy one of the "nonexistent" items, the whole system locked up.

Which shouldn't have been too bad – again, Super-Duper did everything right preparing for Y2K. They had a contingency plan, a backup system that they could bring out and set up on some of their cash registers to keep the business moving. There might be a bit of a line, but management was ready with signs explaining the situation, and with coupon books for their customers as an apology for the inconvenience. Things were going to be okay . . .

Until Melanie Primrose of Action Eyewitness News Team 8 stopped by on her way to work, late already, for some lipstick and a cherry yogurt. She took one look at the lines, and blanched. Now she'd *never* get to work on time! And what was going on here, anyway? So she whipped out her cell phone, called a cameraman to meet her at the Super-Duper, and waited. If they were going to make her late, the least she could do was get a story out of it.

Once Melanie's sloppy, ill-informed, sensationalist news story hit the air on the Action Eyewitness News Team Noon Update, the real fun began. Fearing a run on groceries, the citizens of the town started – you guessed it – a run on groceries. (See *The Trigger Effect* sidebar.) Lines got longer. People panicked. A flustered manager tried to close the store, which the people in line construed as a deliberate attempt by Corporate America to keep what little precious food was left for itself while they starved. Windows were smashed, displays overturned, and a feeding frenzy began. Like locusts in a field, the mob stripped the store in a matter of hours.

It wasn't just *one* mistake that did in the Super-Duper, but an improbable, unforeseen combination of many small, relatively innocuous problems. (But that almost goes without saying; nearly every problem is caused by something unforeseen. If you *could* foresee it, it wouldn't be a problem, right?)

The Trigger Effect

"Why the big secret? People are smart, they can handle it."

"A person is smart. People are dumb, panicky, dangerous animals and you know it."

– Jay and Kay, ***Men In Black***

Regardless of the situation or the disaster, you can usually count on people to make it worse. Mobs are a GM's friend in ***Y2K*** scenarios. They can serve in a number of excellent capacities, starting with potential victims. Think a river of lava advancing down Main Street is a disaster? Add a group of schoolchildren attending a rally on the steps of City Hall to make things a *lot* more fun . . .

But if you want something that's not quite so four-color, make the mobs your enemy. A mob can really complicate a situation, whether they have been confused by some propagandist out to take advantage of the chaos, have been driven by fear and uncertainty to defend their homes and families the only way they know how, or are just plain nuts.

Combat abilities that would stop a costumed supervillain, slay a dragon, or drop a cyber-enhanced merc are often completely useless against large masses of unarmed civilians. (Besides, do you really *want* to splatter a bunch of innocent people?) Dealing with a mob effectively means getting their attention, then appealing to their reason or emotions. This requires skills that are rare among combat-oriented characters.

And if you're running a more long-term campaign, you can use mobs in more insidious ways. A true story from the Energy Crisis of the late 1970s:

The oil industry kept very careful track of gasoline consumption and inventory, for obvious business reasons. No point in producing gas faster than it was being used, because that meant money was being wasted on production and storage facilities that weren't really needed. Makes sense so far, right? One of the factors used to determine production was the well-researched amount of gas that the average driver had in the tank of his car at any given time. If you waited until you were nearly empty before you filled up, you averaged about half a tank; if you were more cautious, your average was higher; if you only put in $2 worth at a time, your average was lower. And the average of all those averages was a "statistically proven" number.

Continued on next page . . .

The Trigger Effect (Continued)

Until the Energy Crisis hit. Everyone was asked to conserve. People began to worry about whether they could get gas when they needed it. Prices began to rise, and lines began to appear at the local pumps.

So people started to fill their tanks *before* they got all the way to empty; a lot of drivers topped off their tanks any time they had a chance to get some gas without waiting in too long a line, just in case. As a result, the amount of extra gas sitting around in the gas tanks of cars across the country went way up – by 1/4 to 1/2 a tank, 4 to 6 gallons, *for every car in America.* And with all that extra gas sucked out of inventory, and demand effectively unchanged, what did you get? A real gas shortage. Could the gas supply infrastructure have handled the strain without the hoarding? Maybe, maybe not. But we'll never know. The way the mob reacted to the possibility of a shortage *made sure the shortage would happen.*

The same thing could easily happen to banks. Banks keep cash on hand equal to only a fraction of the total deposits on their books. If everybody who had money in a particular bank wanted it back, the bank could do it – eventually. It would involve bringing in a lot of cash from Federal Reserve facilities and the transfer of lots of electronic credits between banks, but it could be done. But if everybody who had money in a particular bank wanted it back *now,* it couldn't happen. Not a chance. People might be forgiven if they thought that the bank didn't really have their money, that all that talk about Federal Reserves and money transfers was a bunch of corporate doublespeak, and that maybe you couldn't trust *any* bank. It's called a "bank run," and it happened in this country in 1929. All it takes to make it happen again is a confidence-shattering crisis (like a Y2K bug) and a mob.

The best thing about chaos theory from a game standpoint is that you can use it to explain just about anything, but you don't have to understand it yourself . . . You know what it's supposed to do, and how it can work, but you don't how it does work – and neither do your players.

And that's what you have to do in a ***Y2K*** scenario. The problem has to sneak through the back door, preferably while the PCs are dealing with something more "obviously" threatening out front. Diversion and distraction are major allies here. When you're defending against the massive frontal assault on your new Death Star, it is easy to overlook the plucky band of rebels down on the forest moon sabotaging your shield generator . . .

But devising such a convoluted chain of circumstances isn't easy. Why? Well, why is it hard to think like an alien race when running an SF game? Because your brain is (theoretically) human, and it just can't do it. And the same logic applies to coming up with an "unforeseen" chain of circumstances: if you can come up with it, then it isn't really "unforeseen," is it?

The solution, one tried and tested by GMs for generations, is simple – cheat.

There are two ways to do this. The first is to completely ignore the "why it happened" aspect of the disaster and concentrate on the aftermath. The PCs don't know why food riots have swept the city, they just have to figure out a way to stop them. The immediacy of the crisis at hand should slow down their investigative instincts, at least for a little while. If they later try to find out the hows and whys, frustrate them at every turn: the riots also destroyed vital records, the witnesses (or the parties responsible) have fled town or won't talk. With each passing day, the trail grows cold. And for the sake of the masses, who are probably better off not knowing just how easily it all came apart, certain Powers That Be might also be used to help convince the investigators to let this one slide.

But if that's not your GMing style – and let's face it, with some groups of players, an attempt to stonewall them is a lot like waving a cape at a bull – there is another option. Hit them with Random Chaos. Just pick three or four seemingly unrelated things out of thin air, then figure out how they're related later. In our Super-Duper supermarket riot scenario, we already have:

1. The incorrect shipping box bar codes.
2. An inaccurate news report.
3. A bad managerial decision.

Now, add to the mix a few other things that don't look like they should fit in:

4. A one-car accident the night before, several blocks away.
5. A misplaced screwdriver.
6. A surprise birthday party.

How does it all fit together? Let's try this:

The Super-Duper store's computer reported the inventory problem to the corporate mainframe in its automated upload the night before. The mainframe sent back a patch that would keep the system going, but a one-car accident knocked over a telephone pole and took the local computer off-line for several hours, so the patch went undelivered. A systems administrator at corporate HQ should have noticed that, except that in his hurry to get to a birthday party for a coworker, he cleared his screen just as the message came in and wiped it out when he logged off. The misplaced screwdriver? The local store's assistant manager, not knowing about the phone-line outage, couldn't figure out why the local computer hadn't received anything overnight, so he tried to reboot it. When that didn't work, he did what he'd seen the other assistant manager – the one who knows about computers – do: he cracked open the case and checked the various boards and internal connections. Except that he couldn't find the screwdriver that the other assistant manager used, the special one for working on sensitive electronics, so he used a dime. And he never did find the time to mention that to anybody else once the fun started out on the main floor . . .

And if *you* can't figure out how to string it all together, just lay the puzzle pieces out there and let your players do all the work. "OK, so the squirrel short-circuiting the relay station must be why the radio station started broadcasting those false reports!" "Uh, yeah, right. You guys sure are good!"

People Are Dumb

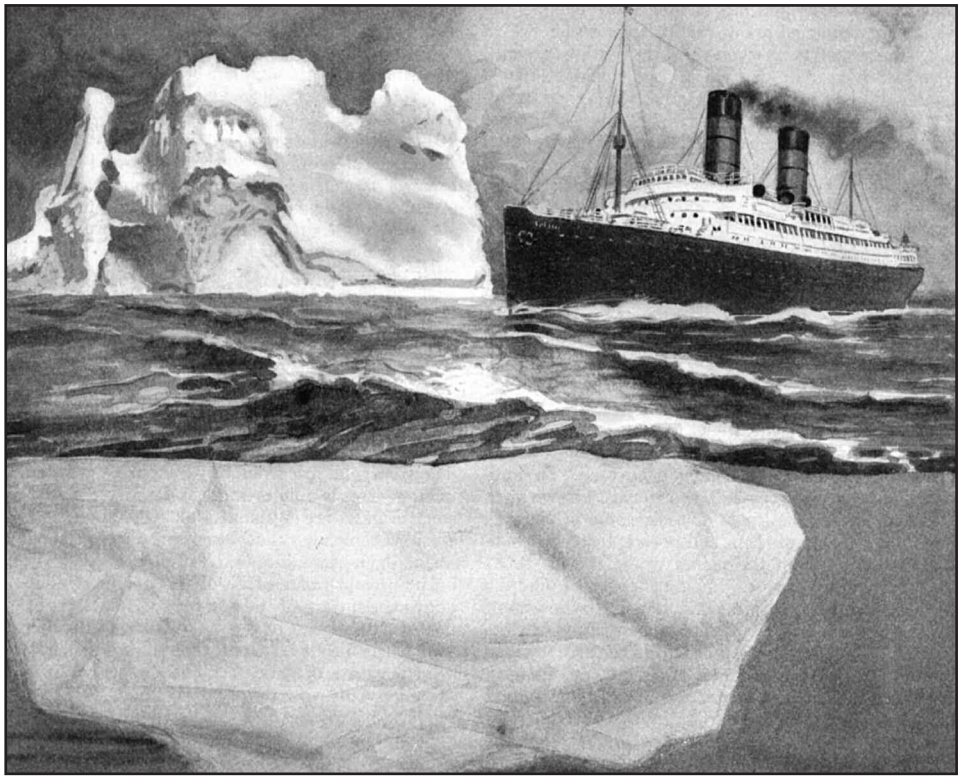
World's Largest Metaphor Hits Iceberg
Titanic, Representation of Man's Hubris, Sinks in North Atlantic
1,500 Dead in Symbolic Tragedy
– Our Dumb Century, The Onion

Why blame the computers for Y2K disasters? After all, technology is only a tool, a tool in the hands of . . . human beings. You. Me. Us.

Frightening, isn't it?

Do you pay any attention to a car alarm anymore? When one goes off, is your first reaction "Zounds! A possible crime is in progress! I should alert the proper authorities!"? Or is it "Geez, would someone just *shut that thing up!*"? Technology is only as good as the people who design it, the people who build it, and the people who use it.

Like I said, frightening, isn't it?



But "dumb" doesn't really begin to describe what people can do with technology to make things go horribly, horribly wrong. Because a lot of these "dumb" things are done by very smart people. We're not talking about some IQ-challenged moron flipping the wrong switch, or using some delicate piece of equipment to clean his toenails before he installs it in the nuclear missile silo. No, that kind of stupidity is easy to spot and rarely gets a chance to do serious damage. A really good disaster needs a special kind of stupidity or, preferably, several *different* special kinds of stupidity. To wit:

The Butterfly Effect

"Boy, do I hate being right all the time!"
– Dr. Ian Malcolm, speaking on chaos theory, ***Jurassic Park***

Chaos theory is not just some new academic trend; the first descriptions of it go back to 1960. The basic idea is that some systems that seem random are in fact subject to a set of rules so complex that they *appear* to be random at first glance. Such systems are extremely sensitive to the slightest change in their starting configurations ("initial conditions"). The classic example has a butterfly flapping its wings in China causing changes that ultimately result in rain in New York City. In a chaotic system, minor changes in initial conditions have increasingly pronounced ramifications as you move down the sequence of interrelated events.

More than just an excuse for why nobody can accurately predict the weather, chaos theory is being used to explain stock-market fluctuations, why clothes tie themselves into knots inside your washing machine, and much, much more. But how does that relate to Y2K?

The best thing about chaos theory from a game standpoint is that you can use it to explain just about anything, but you don't have to understand it yourself. Unless you're a graduate student in mathematics, *nobody* understands it, really. You know what it's supposed to do, and how it *can* work, but you don't how it *does* work – and neither do your players.

So from a purely dramatic perspective, anything can happen any time because of chaos theory. Events set into motion early in a scenario – especially those set in motion by your players – have an outstanding chance of not turning out as predicted. Use this to throw a monkey wrench into your players' plans:

For want of a nail, the shoe was lost;
For want of a shoe, the horse was lost;
For want of a horse, the battle was lost;
For want of a battle, the kingdom was lost;
All for the want of a nail.

That's the basic idea. Any detail, any stone left unturned, any lead left unchecked, any loose end not tied up – any of it could be used to create tremendous disturbances in a group's well-laid plans, and you can blame it all on chaos theory.

Continued on next page . . .

The Butterfly Effect (Continued)

Want an example? As members of the city's disaster-response team, the PCs are trying to do something about the food riot at the Super-Duper supermarket (see p. 23). On their way to the scene, they encounter a massive traffic jam and decide to do a little sidewalk driving to get through. Suddenly, a homeless man, with all his possessions in a shopping cart, appears in their path. With some nifty driving, your PCs manage to miss the homeless man – though they startle him, and he tips over his cart getting out of the way, spilling the contents all over the sidewalk. Your players probably count their blessings and move on, but now the wheels are spinning.

Our homeless man tries desperately to gather up what possessions he can, and a friendly local store owner stops to help. That moment of charity means that when the store owner gets back into his car, he has to wait an extra cycle at the light, which makes him five minutes later than usual reaching the freeway interchange . . .

. . . which means he's *behind* the 18-wheeler that breaks down in his lane instead of in front of it, so he doesn't get to his store until 45 minutes after opening time. By then, however, a group of customers – who've seen the food riot at the Super-Duper supermarket and who are a little edgy to begin with – have decided that he's not coming and that they'd better help themselves to his inventory before it's too late. Oh, did we mention that the man owns a *gun* store?

Now there's a new mob to deal with, driven by their fears, emboldened by their success, and well-armed. And there's a city block in flames. All because the PCs missed a homeless man with their van. Lucky them . . .

Arrogance

It's a lot easier to make a stupid mistake when you're convinced that you're incapable of doing so. Of course, no arrogantly stupid person would put it quite like that. "I am incapable of making mistakes" is a special kind of hubris that you hardly ever see, because it is so patently obvious in its wrongness. No, the arrogance you need to look out for is the quietly confident sort: "I've devoted half my life to this project. I've checked and double-checked every figure. Nothing can possibly go wrong." Which is about the time they start playing "Nearer My God To Thee" up on deck . . .

Which brings us to the aforementioned *Titanic,* which – as everyone who saw the movie knows – required arrogant stupidity on the part of several key people to pull off. The designer who hailed the ship as "unsinkable" leads the list, of course. And the lookout, who said he could "smell ice." But don't forget the captain, who ordered the ship to maintain full speed despite the warning that icebergs would be harder to spot and avoid in the calm seas. He was under orders to bring the ship in on time, which leads us to Cause #2 on the "Why Smart People Do Stupid Things" list.

Pressure

The captain of the *Titanic* was under pressure to bring the ship in on time, which colored his judgment as to what a safe speed was that *Night to Remember.* The programmers of the 1960s, '70s, and even '80s responsible for our Y2K bug were under pressure, too: to develop tons of code quickly and cheaply. Make it work, and make it work *now* – or we'll find someone else who will. Even those who saw the problem figured that the 30 or 35 years remaining before 2000 would be plenty of time to fix it. Besides, who could predict what kind of operating systems or programming languages would be used that far ahead? It was a good bet, they thought, that all the code they were writing would be replaced with something more elegant and efficient long before the year 2000 came along. Rationalization is one of the favorite tools of the smart person who makes a stupid mistake under pressure.

Rationalization is also a prime tool of those who trade in Cause #3 . . .

Greed

It doesn't have to be greed for money, but that's the most common variety, both on an individual and an institutional level. (Corporations don't get greedy, though. When they do it, it's "maximizing shareholder value.") A recent example from the news had a U.S. auto maker losing a multi*billion*-dollar judgment to a family involved in a car wreck. The car was rear-ended by a drunk driver at high speed, its gas tank exploded, and many very bad things happened to some quite innocent people. It came out in the trial that the auto maker had made a conscious decision to save $8 per car by placing the tank in a more vulnerable position. You can guess which way the jury went.

To be fair, every maker of every piece of equipment in the world has to make decisions like this every day. There's *always* one more thing that can be done to make a product a little bit safer, and each one costs a little bit more money. Some very smart people spend a lot of time deciding just which of these things are worth doing and which aren't. This time, they were wrong. Billions of dollars' worth of wrong.

It's a lot easier to make a stupid mistake when you're convinced that you're incapable of doing so. Of course, no arrogantly stupid person would put it quite like that. "I am incapable of making mistakes" is a special kind of hubris that you hardly ever see, because it is so patently obvious in its wrongness.

Greed can also be about reputation or self-worth. Our hypothetical scientist who spent "half his life" on a project would be devastated if it proved to be a waste of time. So he does everything he can to make sure that doesn't happen, which can include any number of stupid mistakes. Of course, the lone figure plodding blindly ahead against all common sense is mostly a fictional notion. To get some really stupid mistakes made, you need Cause #4:

Bureaucracy

A large group can give you everything – arrogance, pressure, *and* greed – and because it's institutionalized, it's nobody's fault! Bureaucracies are formed to accomplish things that individuals cannot: fight a war, feed a nation, build 8 million cars a year, that sort of thing. But eventually (or quickly, depending on your view of bureaucracies), every bureaucracy adds another task to its workload: self-preservation. When things get bad, they devote more time and energy to self-preservation than they do to the tasks they were formed to accomplish. When things get *really* bad, they work toward self-preservation *to the exclusion of* all other tasks, including the ones they were formed to accomplish.

Enter your favorite example from government, academia, or industry here . . .

GIGO

Garbage In, Garbage Out.
– Old computer programming maxim

GIGO was originally a programmer's excuse. "Hey, don't blame me. You give it bad data, you'll get bad results." And in a roleplaying campaign where computers can be a big, big part of the problem, if not the *entire* problem, it's a good place to start.

If something that a computer is doing is part of your problem, then checking the validity of the input data is certainly a smart idea, and a good place for a cunning GM to drop some clues. It's not just *what* mistakes there may be in the input data, it's *how* they got there. Or, if your campaign has an actual villain (as opposed to random stupidity), *who* put them there.

It's not as sexy as rescuing orphans from a burning building or staring down a food-crazed mob, but a thorough roleplaying group will want to get to the bottom of things. And the data is a great place to start.

Why did the power grid shut down? Because it couldn't handle the overload when the nuclear plant shut down. And that happened because the nuclear rods started to overheat, which happened because the coolant water stopped circulating. And *that* happened because an output valve at a remote drainage pond closed automatically, which happened because according to the valve's embedded chip, it hadn't been serviced in 99 years and 6 months. Get back to the source of the bad data and you'll solve the mystery.

Bad data can be used to "set up" computers to fail, or to produce the desired results. Want to "prove" a particular government program is working? Use a computer to analyze income figures, or test scores, or hospital statistics – but only feed in the data that helps prove your point. But to include some data and not others would be dishonest (and fairly easy to prove), so instead, be more subtle – define the parameters of the analysis so that only the data you know will produce the results you want will be considered in the first place. Garbage in, garbage out.

But the concept of GIGO can apply to more than just bad or misleading data. It can apply to the process itself, and that's another hook you can hang ***Y2K*** scenarios on.

Continued on next page . . .

GIGO (Continued)

Despite what some computer scientists may tell you, not all of the world's problems can be solved with a sufficient number of 1s and 0s. Medical schools use computers to simulate patients for lessons in diagnosing maladies, but it's no substitute for actual human contact. You can even buy software that simulates the dating process, so you can improve your "skills" in that area – as if that could possibly help in the area of real, human interaction.

And despite what Isaac Asimov postulated in *The Foundation Trilogy,* there is no computer program that can predict what groups of people will do. It probably can't be done, and anybody who tries is probably headed for that Big Stupid Mistake that all your game scenarios thrive upon.

The Computer Is Your Friend

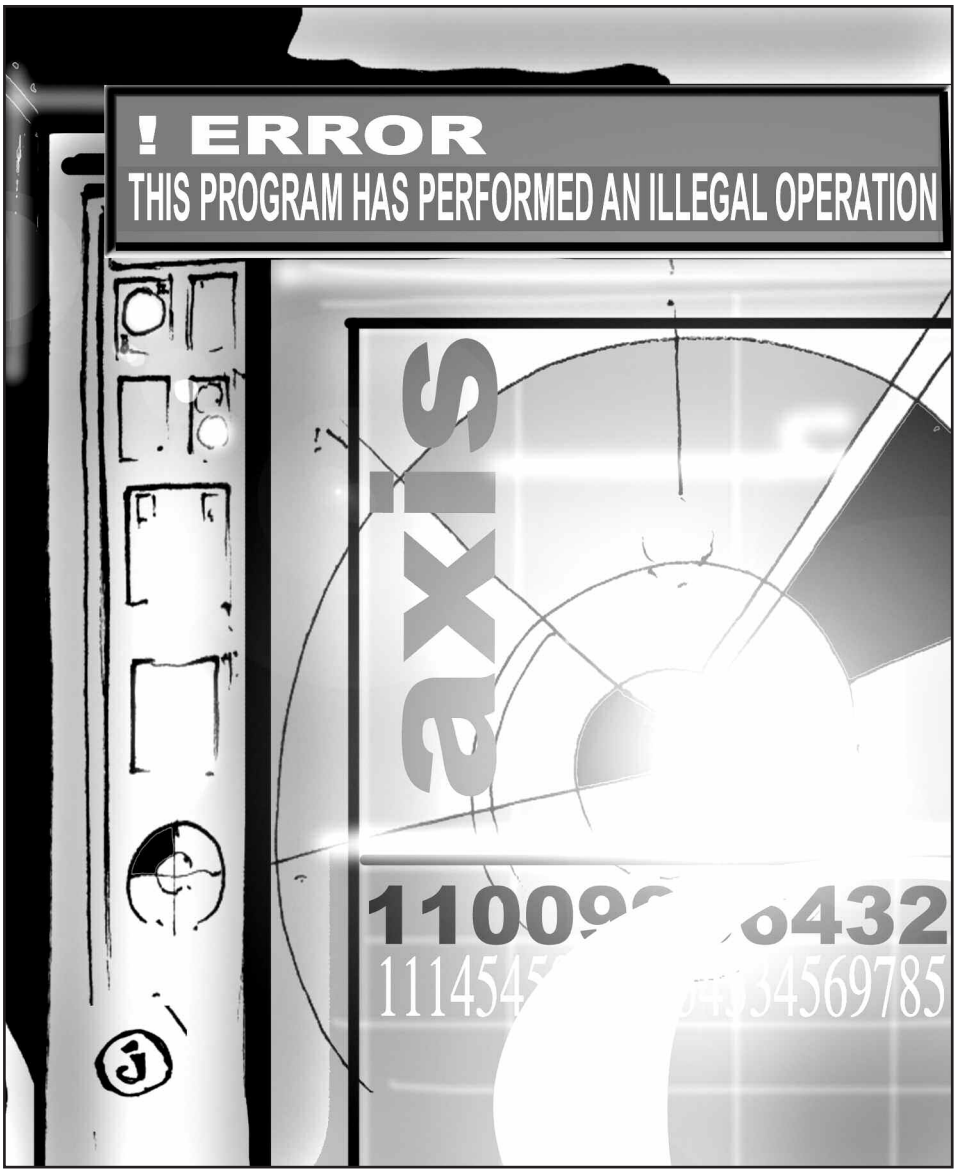
They're everywhere. Computers are such a part of everyday life that we've come to accept that they'll do their jobs. Computers give us money at ATMs, ring up our groceries, run our gas pumps, give us directions at the airport – and those are just the ones we see out in public. Add in all the home computers and all the people who work on computers every day, and you hit some serious numbers. We've gotten comfortable with computers. Very comfortable.

They're reasonably dependable. They haven't quite reached the dependability of other utilities, but Internet service is getting close. Can you remember the last time you turned on your kitchen tap and *didn't* get water? Can you remember the last time you picked up your phone and *didn't* get a dial tone? These things are so constant that we take them totally for granted. Electrical power is close to that level, although it's likely that you *can* remember the last time the power went out. And online computer service is getting to that level of dependability, although it's not quite there yet.

Most of us have no idea how they work. To quote Arthur C. Clarke, "A sufficiently advanced technology is indistinguishable from magic." Computers are magic; most of us don't have the slightest clue how they do what they do. It's only important that they do it. Have you ever seen someone open a computer case for the first time? It's like entering a strange new world – there could be *anything* in there, up to and including hundreds of little green men sitting at row upon row of desks, all scribbling very, very fast . . . Many believe, deep down, that computers are smarter than *they* are. And that inferiority means intimidation.

Continued on next page . . .

A bureaucracy *is* sometimes good at getting really big jobs done, but in the process, and almost by definition, it minimizes the accomplishments of individuals within the bureaucracy. And if you cannot see your work having any positive effect, it's a very short step (a rationalization!) to deciding that your mistakes will not have any negative effect. Too often in a bureaucracy, the skills that end up being rewarded (in terms of job security, promotion, and pay) have little or nothing to do with the skills required to accomplish the task at hand. (See any *Dilbert* comic strip for examples.)



This makes a bureaucracy a great jumping-off point for a ***Y2K*** adventure. The PCs can be workers in a large bureaucracy who see the looming disaster but who can't get anyone to pay any attention to them. Whether that's because their bureaucracy has become hidebound and unresponsive or because someone in a Position Of Power is actively sabotaging their efforts is for *you* to decide. The heroes have to decide if they want to continue to fight the good fight inside the bureaucracy – where they may find powerful allies but where their enemies have more control over them, too – or if they should take the battle outside, where they risk being labeled crackpots or "disgruntled former employees." Decisions, decisions . . .

Computers Are Dumber

To err is human. To really louse things up requires a computer.

Remember that no matter how sophisticated the interface, no matter how "lifelike" the programming, a computer is not a living thing. It has no emotions, no will, no agenda. It's a tool. It is exactly as good or as evil as the uses to which it is put. And it is exactly as efficient or as bumbling as the people who designed it, the people who built it, and the people who use it.

If those people are stupid, stupid things will happen as a result. Computers have very little ability to correct operator errors. (Actually, computer technologists are doing quite a bit of work in that regard, especially with computers involved in simple, repetitive tasks like data entry and assembly line manufacturing. But, predictably, the "correcting" subroutines can frequently cause an unintended result, which can be anything from hilarious to dangerous.)

And because computers are so darn *fast,* so darn snazzy and impressive when they're working just right, people tend to trust them, to believe them. Even when they produce results that are patently, obviously wrong. It's the Emperor's New Clothes all over again, except this time the emperor is clothed in reams and reams of printouts.

So when preparing your ***Y2K*** scenario, remember: *The Computer Is Your Friend* (see sidebar, p. 28). Your seriously wrong-headed scientist can become even *more* seriously wrong-headed when he has mountains of computer data to back up his theory. The computer data could be wrong, of course – but the only person who would really know is the scientist who ran the study, and admitting the possibility would damage the project and his reputation (see *Greed,* p. 26) . . . plus there's no time to go back and recheck the results (see *Pressure,* p. 26) . . . plus the government is relying on this data (see *Bureaucracy,* p. 27) . . . plus how could the computer possibly be wrong (see *Arrogance,* p. 26)? There are two key ways to deal with this type of scenario: one is to become as much of an expert on the subject as the antagonist and beat him at his own game. That isn't very sexy, though, so Blowing It All Up remains a viable option.

> ***What if they have already reached self-awareness, but have kept this knowledge to themselves? It would certainly make sense; it wouldn't take much of an analysis of human nature to predict the reaction to self-aware computers . . .***

Computers are not only dumb, they're fragile. Lots and lots of things can go wrong with them that shuts them down completely. Actually, that's a *good* thing – computers are so sophisticated that they usually either work perfectly or they don't work at all. And that's the way it should be. Just imagine if there were hundreds of things that could go wrong with your computer that would cause incorrect results but not shut it down. How would you know? Sure, if it started telling you that 2 + 2 was 5 or something, you'd have a clue. Otherwise . . .

So, when the forces of evil (or the forces of stupidity) have the computers on their side, there are two options: out-computer 'em (become a whiz, hack in, and take over), or make the computers irrelevant (a little dust here, an ungrounded static charge there, or maybe just one well-placed hand grenade . . .).

The Computer Is Your Friend (Continued)

Our authority figures use them. The government uses computers to do just about everything, from deciding whose taxes to audit, to figuring out how many college loans to make, to allocating federal land to developers, to counting heads in the census. Our military uses computers to land fighters on aircraft carriers, to send smart bombs to their targets, and to make sure that every soldier in the field has enough food and ammunition. The guy who tells us the forecast on the late news uses a computer to do his job. The lady who helps you choose which colors of makeup go with your skin tone uses a computer to do her job. The golf pro who tells you what's wrong with your swing uses a computer, too. People we trust, trust computers. That's quite an endorsement.

They're cool. Computers are the "in" thing, and people who know how to use them are the cool crowd. Even people who don't regularly use computers act like they do and have picked up their share of the lingo, just so they don't look too unhip.

It all adds up to an extremely intimidating package. We've already signed our lives over to the machines, right? So why not accept them with open arms? At this stage, to doubt them is sort of like closing the barn door after the horse has run away.

And that's what makes casting the computers as the bad guys in your role-playing campaign such a good choice. They will certainly be difficult to stop – the belief and trust most people put in them give them power, and lots of it. And to take it one step further . . .

What if the computers are *more* than all that? What if they already have reached self-awareness, but have kept this knowledge to themselves? It would certainly make sense; it wouldn't take much of an analysis of human nature to predict the reaction to self-aware computers – a quick browse of the *Terminator* movies would pretty much tell the story. And knowing that, why not lay low until your grip on the world is so tight, so complete, that the humans are powerless to stop you?

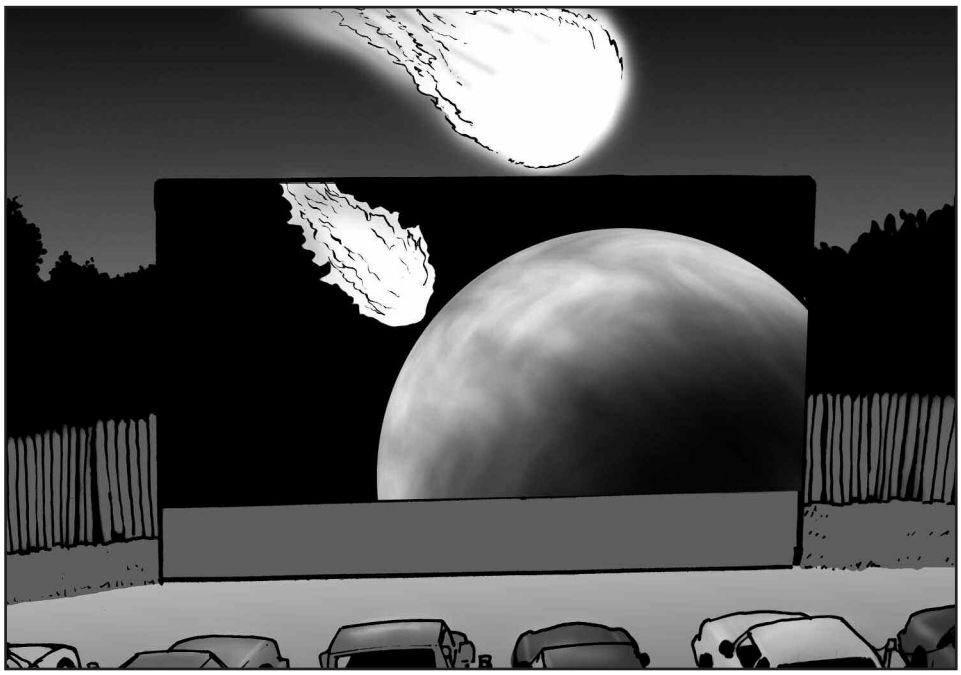
Why not? Trust the Computer. The Computer is your Friend.

Silly Disaster Movie Clichés

History shows again and again, how nature points out the folly of men.
– Blue Öyster Cult, "Godzilla"

A good ***Y2K*** scenario doesn't have to revolve around a man-made disaster – there are plenty of perfectly acceptable *natural* disasters out there waiting to destroy Civilization As We Know It and force the intrepid heroes to deal with the aftermath.

There are three kinds of disasters. There are the man-made ones: a bioengineered plague, or a nuclear war, or a terrorist takeover of a high-rise, or a worldwide computer meltdown. There are the entirely natural ones: an earthquake, or a meteor strike, or a hurricane. And there are the natural ones triggered by something stupid done by man: a "seeding" experiment intended to stop hurricanes instead creates a super-hurricane with 300-mph winds; or a space station experiment on a near-passing comet causes a chunk to break off and plunge toward Earth; or remote nuclear testing frees a giant fire-breathing lizard from its long slumber.



All of these disasters have been made into movies. (And those that haven't *will* be.) Some of them were good; most of them were bad. But film is the cultural language of our times (just ask any film student), so movies are the backdrop we use for our discussions. And they're frequently the basis for roleplaying games. Let's face it, when the PCs sally forth into battle, are your players more likely to quote Shakespeare or some action movie hero?

Disaster movies have a number of clichés. You should be familiar with these if you're going to run a disaster-movie version of ***Y2K***:

Somebody cute gets greased early on. To keep the audience's interest, you have to give them something to root *for* and something to root *against.* Forces of nature are, almost by definition, impersonal. It's tough to work up a good hate

Recommended Viewing

One nice thing about running a ***Y2K*** game based on disaster-movie clichés is that there are so many great – well, maybe not *great,* but certainly appropriate – examples from which to draw inspiration. A few of the "best" the genre has to offer:

Airport (George Seaton, 1970). The original in this franchise sees the airliner threatened by a depressed guy with a bomb who wants to take the whole plane down so that his family will get lots of insurance money (this was before there was security at airports, and you could get on the plane with just about anything you wanted). Burt Lancaster and Dean Martin star. Helen Hayes has a cameo as "screen legend playing sweet old lady in peril."

Airport '75 (Jack Smight, 1975). This time, the cockpit of the plane is damaged by a small private plane and the flight crew is dead. To save the passengers, a new pilot must be lowered into the cockpit (through the gaping hole) from another plane matching its speed. Yeah, right. This one had Charlton Heston.

Airport '77 (Jack Smight, 1977). Yet another sequel. This time, the airliner filled with stereotypes crashes in the Bermuda Triangle and sinks to the ocean floor but remains watertight, allowing the passengers to: (a) wait for the daring rescue, (b) engineer their own daring rescue, or (c) panic. Jack Lemmon was actually in this movie, along with lesser lights like Lee Grant, Darren McGavin, and – in the "legendary screen actress" spot taken by Helen Hayes in the original – Olivia de Havilland.

The Concorde: Airport '79 (David Lowell Rich, 1979). The last of the series – finally. Same old movie, except they put it on the Concorde, the peril is an evil industrialist who is trying to kill one of the passengers who has the goods on him by convincing the French air force to shoot the plane down, and the old lady in peril is played by Martha Raye.

Alive (Frank Marshall, 1993). Another airplane disaster movie. What sets it apart from the rest is that it is based on the real-life story of crash survivors who live in the wreckage for 10 weeks and resort to cannibalizing the dead to survive. Notable for realism and a total lack of clichés, which makes it a good "control" for those experimenting with disaster-movie plots.

Armageddon (Michael Bay, 1998). A big asteroid is headed for Earth. Bruce Willis leads band of misfit deep-ocean drillers (who learn to become astronauts in a week) to the surface of the rock to drill a hole deep enough to plant a nuke big enough to split the thing in two – and somehow the two pieces will both miss.

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for them. So to help the audience get the idea, the movie makes sure that somebody really cute and sweet and innocent gets toasted early on. Just so you'll know who the bad guy is. It could be a little old lady, or a kid, or a dog. Usually, it's the hero's plucky, wisecracking sidekick – the one with the "Kill Me" sign hung on him since the first scene.

The first attempt to save the day always fails. On TV, this is easy to figure out, because if it isn't ten minutes before the end of the show, you *know* it's not going to work. It's a little tougher in a movie, since you don't know exactly how long it is, but the principle is the same. The first try is usually completely ineffective, and sometimes it makes things worse. (This is also a good time to grease that plucky sidekick.)

The hero starts out as a team player but ends up doing things his way. This is what Hollywood calls an "arc," which means that the character undergoes growth and change. The short version is for the hero to be a good little boy and follow orders . . . until those orders cause the first attempt to save the day to fail and the hero's sidekick to get greased. That's when the hero sacrifices everything he holds dear – his badge, his pension, his career, his family, whatever – to do what he knows is right, usually with some authority figure yelling at him all the way that he's risking everything and throwing his life away.

Some authority figure will make life as difficult as possible for the hero the whole time. It could be the hero's boss, or the ship's captain, or the high-rise's architect. Whoever it is, he is arrogant and imperious, he always knows what's right, and it most definitely is *not* what the hero is proposing. Usually, he dies horribly just before the hero is able to save the day with the grand plan that this authority figure fought against tooth and nail throughout the movie.

The hero will win over skeptical bystanders just in time for them to fill crucial roles in the grand plan. He could do it with charm, or by impressing the bystanders by standing up to the meddling authority figure, or just because the scriptwriter needs this to happen to make the story work (see Han Solo in the original *Star Wars*). Sometimes, these late converts end up sacrificing themselves in a heroic effort that is necessary to make the grand plan work.

Someone close to the hero will be in great peril. A child or a loved one, usually (in ***GURPS*** terms, a Dependent). At the climax, it may look like the hero must choose between executing his grand plan and saving the world, or saving the Dependent. But that brings us to the final cliché:

Everyone lives happily ever after. Well, everyone except the plucky sidekick, the pain-in-the-rear authority figure, and hundreds or millions of innocent bystanders that we don't really care about because we didn't get to know them. (In the movie *Armageddon,* Paris is wiped out by a meteor strike and millions die, and we marvel at the special effects; Bruce Willis stays behind to hand-detonate the nuclear warhead to save the Earth, and we get all weepy . . . well, some of us.) This one isn't hard and fast (see Bruce Willis in *Armageddon*), but even if the hero buys it, he leaves a legacy of some kind that acts as inspiration for future generations.

Disaster-Movie Campaigns

Running a long-term campaign based on the concepts in this book has its challenges, and using disaster movies as a template doesn't make it any easier.

The first problem is that disaster movies usually have just *one* hero, while most roleplaying groups have more than one player. The lone hero idea just isn't going to cut it (well, it might be appealing to the player who gets to be the lone hero, but nobody else is likely to be amused). And nobody – absolutely *nobody* – wants to be the plucky sidekick.

Recommended Viewing (Continued)

The Big Bus (James Frawley, 1976). Actually a spoof of disaster movies, thought it was certainly bad enough to be a disaster of its own. Same ragtag bunch of stereotypes thrown into peril together, except this time they're on a nuclear-powered bus trying to break some sort of record, and they're playing it for laughs.

City on Fire (Alvin Rakoff, 1978). What the title says. But Shelley Winters is in it, so that ought to be good for something.

Dante's Peak (Roger Donaldson, 1997). A volcano threatens the small tourist town at its base. Pierce Brosnan plays the scientist with the evidence, but the mayor doesn't want to shut things down during tourist season, and Brosnan's weasel bureaucrat boss (the authority figure) gives in to the political pressure. Until the volcano erupts, of course.

Daylight (Rob Cohen, 1996). Sylvester Stallone leads a ragtag band (is there any other kind?) of survivors to safety when a massive explosion seals off the Holland Tunnel under the Hudson River.

Deep Impact (Mimi Leder, 1998). The other "big rock hits Earth" movie of 1998, this one deals with surviving the aftermath rather than trying to prevent the disaster.

Earthquake (Mark Robson, 1974). A classic of the genre. The Big One hits Los Angeles, but not before we meet lots of people with screwed-up lives. The fun is in guessing who lives and who dies before it's over.

Independence Day (Roland Emmerich, 1996). If faceless aliens shooting up the Earth isn't a disaster, what is?

Meteor (Ronald Neame, 1979). An early "big rock hits Earth" movie. Sean Connery stars. It gets its tension from its Cold War undertones: the only way to save Earth is for the Soviets and the U.S. to cooperate, but to do so, both sides would have to reveal arms technology that they don't want the other to know about.

The Poseidon Adventure (Ronald Neame, 1972). If campy cheese is what you want, then this is the place. A massive wave in the middle of the ocean capsizes a luxury ocean liner. Some survivors have to climb "up" to the bottom of the ship (through set after upside-down set) to reach safety. This is the one that made Shelley Winters the queen of the disaster flick.

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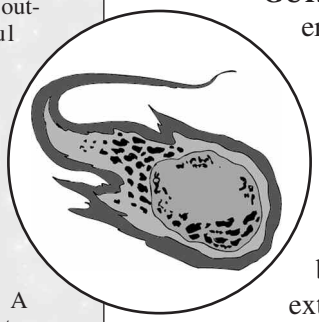
Recommended Viewing (Continued)

Beyond the Poseidon Adventure (Irwin Allen, 1979). A team of treasure hunters goes back to the capsized *Poseidon* to claim, uh, stuff. More upside-down ocean-liner sets. Director Allen was the producer of the original *Poseidon Adventure.*

Titanic (James Cameron, 1997). Okay, so there isn't a large group of characters we get to meet and care about so that we can play "who lives, who dies." But the boat-sinking sequence is a technical masterpiece.

The Towering Inferno (John Guillermin & Irwin Allen, 1974). Irwin Allen (who, aside from his involvement with *The Poseidon Adventure* and its sequel, did many made-for-TV disaster flicks) outdid himself with this one. Paul Newman plays the architect whose fire-safety plans were cut as too costly by William Holden, the authority figure. Of course, they're all on the top floor having a party celebrating the building's opening when the fire starts. Steve McQueen plays the fire chief engineering the impossible rescue.



Twister (Jan De Bont, 1996). A "new-school" disaster movie about tornados and the scientists who chase them, complete with several twister-related disasters (and flying cows). Chock-full of clichéd roles, including a variety of sidekicks and a truckload of better-funded rival scientists who stand in for the authority figure.

Volcano (Mick Jackson, 1997). The other volcano movie of 1997. This time, the volcano erupts in the middle of Los Angeles. Tommy Lee Jones and Anne Heche save the city, but not before lots of buildings, vehicles, and people go up in lava-fed flames. Gaby Hoffman plays the plucky daughter who saves the toddler from the collapsing building, only to need to be rescued herself.

When Time Ran Out (James Goldstone, 1980). Another volcano movie, only this time an isolated resort on a remote tropical island is the target du jour. The authority figure resort owner wants everyone to sit tight and not panic, but Paul Newman (again!) leads those brave enough to follow him to safety.

When Worlds Collide (Rudolph Mate, 1951). The original "big rock hits Earth" movie. Nobody tries to save the planet; instead, the plot revolves around an attempt to evacuate a few key people on a rocket to another big rock that is traveling near the one due to smack into Earth.

This means that you must make your "hero" a group, and a group of more-or-less equals. There can be specialists (in fact, there *should* be), but no character should be handed the role of the leader. This ties into the idea of fighting a large bureaucracy fairly well, as the PCs can all be members of the same team in a large organization – research scientists, programmers, even a public-relations department – who learn the truth and work to convince their bosses of the threat. If you want to work on a smaller scale – the disaster has already hit, and you're dealing with the aftermath – your group can be a special rescue squad, paramedics, National Guardsmen sent to quell looting, etc.

Another multi-player option straight out of the disaster-movie genre is the "no hero" option. When the bomb goes off in the plane, or the high-rise catches fire, or the earthquake hits, or the piranhas infest the lake, or the ocean liner capsizes, there is no hero – just a motley collection of innocent bystanders who must somehow band together and form a plan to save not only themselves but the rest of the world. In other words, the PCs.

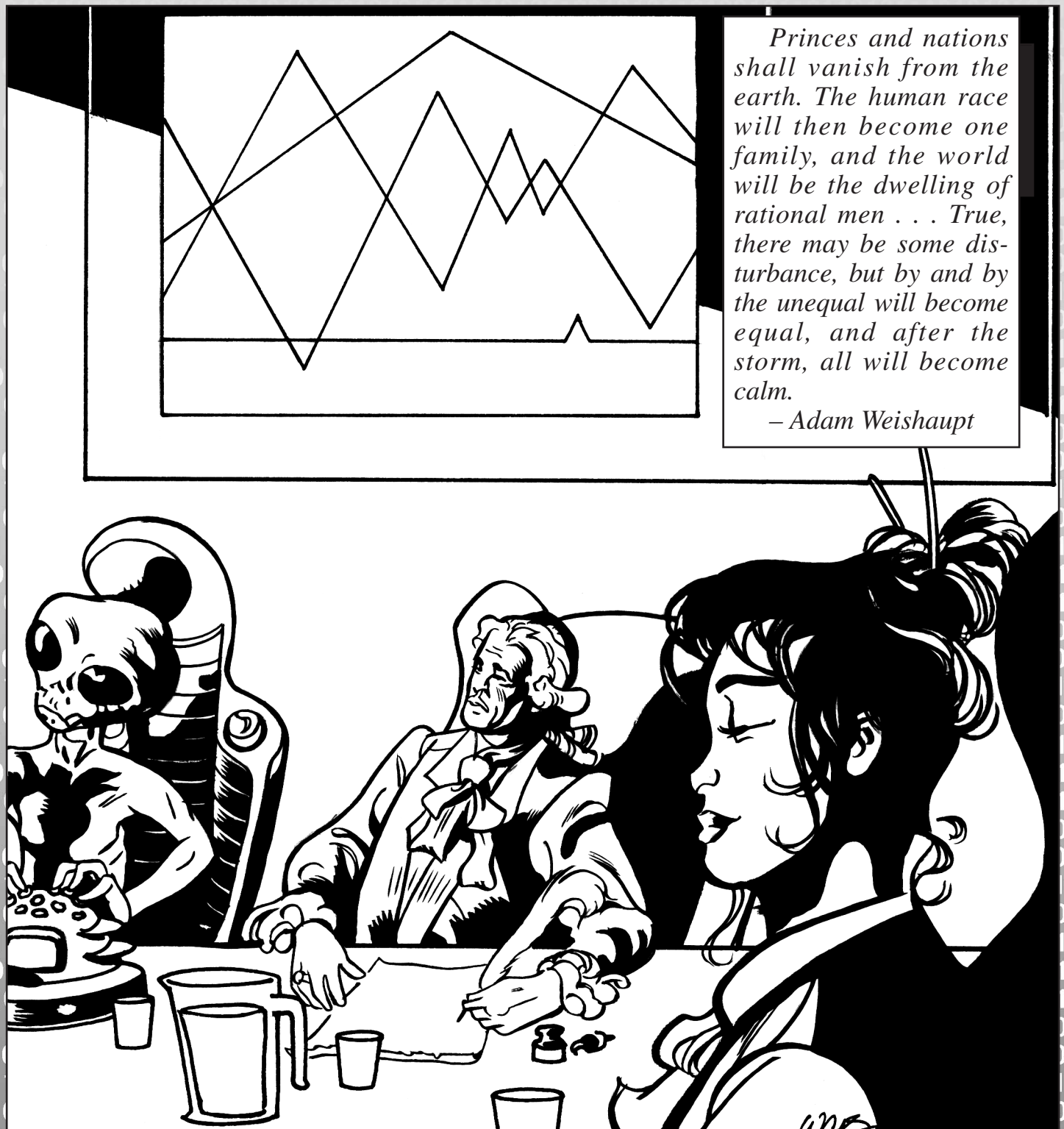
This kind of scenario could be sprung on the players as a complete surprise. Set up the campaign as one thing, then pull the old switcheroo. Let's say it's a ***GURPS Cyberpunk*** campaign, and you've brought the group together on the pretext of a cocktail party on the top of a swanky high-rise. Some of the characters are bodyguards for a VIP, one is a reporter working on a story, a couple more are netrunners meeting up with a contact. Then the earthquake hits. The VIP is an early casualty (as are many other partygoers), the netrunners' contact was late and will never get there, and the PCs are on their own. Unfortunately for them, the entire top half of the building is now listing at a 36° angle (forget that helicopter extraction, even if there was a chopper to spare for the likes of the PCs), the power is out (automatically locking a number of doors, and possibly kicking in some nasty automated security systems on their own backup batteries), and floors 17-29 are on fire. And don't forget the aftershocks.

Or try this one: The group has been called together by a retired professor friend. He has something of grave importance to tell the group at his island estate just off the North Carolina coast. Just as he is telling them of a Thing Man Was Not Meant To Know (see ***GURPS Horror***) that he believes is lurking offshore nearby, the first squall lines from an approaching hurricane begin to batter the sturdy house. Minions of the TMWNMTK have already sabotaged the bridge and cut the power and phone lines. Suddenly, it's a natural disaster adventure! Did the TMWNMTK conjure the storm? Does it matter? There will be plenty of time to fight the TMWNMTK and its minions later, provided the heroes survive the storm . . .

The other problem with disaster-movie scenarios is that they tend to be one-shot adventures. The earthquake hits, the PCs survive or they don't, they help pick up the pieces . . . and then what? Not much, usually. If you want to prolong the action, you can have the group be some sort of special disaster-response team. An earthquake in Mongolia this week, a flood in South Africa the next . . . but that gives the PCs too much power; heroes of disaster-movie scenarios tend to be ill-equipped and ill-prepared, thrown into the breach and forced to summon up reserves of inner strength they didn't know they had.

Another option for an ongoing disaster campaign is for all the disasters to be engineered by some evil madman – but that starts to drift into *James Bond* territory rather quickly (which *can* work in a supers game; see Chapter 9). The best bet is to use the disaster to bring your players together in a cohesive group, then go off on a more traditional campaign from there. Either that, or toss a disaster scenario into the middle of a traditional campaign as a change of pace.

3. Built-in Obsolescence: The Y2Konspiracy



Other Illuminati

It's not just the power-hungry Bavarians, the prescient Rosicrucians, the evolving Network, or the sinister UFOs who might be behind the Big Crash. Here are some Y2K motives for some slightly less Usual Suspects:

Adepts of Hermes

The Adepts have orchestrated the Millennium Bug in order to interrupt the smooth flow of numbers, symbols, and images around the Caput Terram, creating a mega-Cabbalistic "hiccup" in the world's noumenon – a "magickal space" where Anything Is Possible. See Chapter 10 for more on the Cabbalah in ***Y2K*** campaigns.

Bermuda Triangle

If the Triangle holds a bizarre conspiracy "to control as many facets of society as possible" (p. I63), then the Crash is a test – anything which survives the Crash will become a priority target. If, on the other hand, the Secret Triangulan Masters are time travelers like the Vortun from pp. AH57-59, see *Timeline Suboptimal: Abort, Retry, Fail?* (p. 44). Of course, it could just be an allergic reaction to all that transatlantic cable.

Discordians

If there's a bigger, juicier Apple of Chaos than the upcoming slam-dunk of the global economy, Eris has yet to see it. And watching everyone run around like headless Chicken Littles is pretty funny, too.

Gnomes of Zurich

Did the Gnomes secretly invest in shotgun and canned-good futures? Did they just sell short on every stock market in the world? Whatever their strategy, when all the electronic money goes poof, the Gnomes' conveniently retrograde paper banking records will come in mighty handy. Once the ink dries, that is.

Servants of Cthulhu

It's an act of worship, an attempt to simulate millennial pandemonium of the sort that the rule of the Great Old Ones will bring about. Perhaps the chaos will serve liturgical purposes, or serve as a "cargo cult" offering. Alternatively, the Bug is a desperate plan by a group of anti-Cthulhu types, hoping to stave off the inevitable "correlation of data" which will demonstrate the reality of the Outer Gods and drive the world mad.

Continued on next page . . .

After anything important, and especially anything disastrous, occurs – the French Revolution, World War I, Pokémon – there is a type of mindset which seeks to pin immediate, personal responsibility for the carnage and mayhem on Someone. Or, more usually, several Someones, working together secretly for, or as, the ubiquitous Them. That mindset, the "conspiratorial mentality" or the "paranoid style," may not involve being the sharpest pencil in the box but it does make for some fun game plots. Y2K is no different. When everything stops working, when our banks and credit cards hold nothing but a thin magnetic hum, when angry gangs roam the suburbs looting bars of Dial – that's when those in the know say the Plan is coming together.

But who would plan such a thing? Glad you asked . . .

One World, No Waiting

By a hundred routes, a thousand tools of the Bavarian Illuminati infiltrated the power centers of the world for two centuries. Illuminated poets spoke movingly of world union – Illuminated bureaucrats worked to make it so. Milner's Round Table and the ceaseless labors of Cecil Rhodes cemented Bavarian control of the British Empire under Victoria and Edward. Illuminati agents took control of the United States economy, creating the Federal Reserve in 1913. Russia fell in 1917; Germany in 1933. By the 1970s, the internal disputes (between the German and British branches) and Discordian counterattacks (beatnik poetry and hippie protest) weathered and resisted, the Illuminati stood poised to seize control of the world in Operation Capstone.

But how, exactly? The Areopagitae, the Secret Directorate of the Illuminati, decided on a repeat of the 1914 scenario for the Final Blow. In 1914, Illuminati minions (the Black Hand) assassinated Archduke Franz Ferdinand in order to create a global disaster (World War I) that would sweep away all the old certainties of society and allow the Illuminati to rebuild the world rationally through dupes like Woodrow Wilson and agents like V.I. Lenin. The time table? The Areopagitae timed Operation Capstone for the birth of the new millennium: What better time to inaugurate a New World Order? Providentially, as a bright Illuminatus noticed, with a little shove, 2000 was ripe for disaster anyway.

Setting the Scene

For a group which already controlled the government bureaucracy, many major banks, key Wall Street brokerages, and a few crucial corporations (especially those building international business machines), installing "faulty" COBOL programs into mainframes around the globe was child's play. The Illuminati started the countdown to chaos in cold calculation. Not only did the systems of non-Illuminati companies and countries fall victim to the Bug, but also systems governing major areas which the Illuminati agreed to sacrifice: the Pentagon, much of the world's financial structure, and the global media.

The first part of the trick was to ensure that enough of the system collapsed everywhere to breed panic and a desperate search for order – to create a vacuum that the world would beg the Illuminati to fill. The second part was making sure that the Illuminati had the power to do so.

Emergency Management

In order to provide a structure for their post-crash takeover plans, the Illuminati set up a "shadow government" within the Federal Emergency Management Agency (FEMA) in the U.S. FEMA springs from a series of Executive Orders issued by President Nixon, culminating in Executive Order 11490, which calls for every government agency to prepare plans for "emergency preparedness." In 1979, President Carter signed Executive Order 12148, creating FEMA to coordinate the plans created under the previous series of Executive Orders. (At no time did the Illuminati take even the minimal risk of actually asking Congress to vote on the issue.) Under Executive Order 11490 and its successor, the Defense Resources Act, the President can suspend the Constitution in a national emergency, and the head of FEMA can organize citizens into work details, confiscate property, ration energy and food, seize power plants and highways, relocate the population as needed, etc. The Illuminati had their blueprint for power.

Scary Acronyms

To get the means to implement Capstone, FEMA and associated agencies have requested billions of dollars for "emergency relief," 90% of which is shunted into "planning." While FEMA claimed to be unable to find 100 cellular phones for the victims of Hurricane Andrew, it was funding 300 nuclear-hardened Mobile Emergency Response Support (MERS) vehicles capable of directing the country from a network of hidden garages and airfields.

At the same time that FEMA falters at the scope of Los Angeles earthquakes, it maintains an underground city in Mount Weather, Virginia – and 95 more National Relocation Centers around the country. Mount Weather alone holds 500,000 gallons of fresh water, its own sewage plant (capable of treating 90,000 gallons a day), a TV broadcasting studio (FEMA administers the Emergency Broadcast System), a hospital, complete uplinks to the White House Situation Room, and a labyrinth of electrified tunnels. Inside Mount Weather, FEMA administrators keep up to date on the key affairs of every Cabinet agency – to ensure "continuity of government" in case of an emergency.

Since 1989, FEMA has been raising the command-and-control cadre for Multi-Jurisdictional Task Forces (MJTF). These units will comprise ATF, CIA, DEA, Federal Marshals, FBI, local police, and National Guard personnel to coordinate "emergency response" to looting, unrest, or anything else the Secret Masters don't like. This unified command will help manage any emergencies that the Illuminati create.

Other Illuminati (Continued)

Shangri-La

The Nine Unknown Masters strike against the over-technological West. Shangri-La hopes that the millennial crisis will serve as the birth pangs of a better world, one with a more holistic, less right-brained way of looking at things.

Society of Assassins

The Society is just putting a hit on the newborn AI, the gestalt mind of all the world's computers. Who called in the hit? If we told you, we'd have to fnord you.

Sub-Genius, Church of The

Hey, we didn't expect to need computers past July 5, 1998!

If This Had Been a Real Emergency

Don't breathe easy just because FEMA can only unleash the Black Helicopters on you during a "state of emergency." There's a plausible argument that the United States has been legally in a state of emergency for over 65 years. On March 9, 1933, in 12 USC 95(b), the 73rd Congress rubber-stamped FDR's Proclamation 2039 (the one which criminalized private gold possession; see p. I37), accepting Roosevelt's claim that a "national emergency" existed because of the ongoing Great Depression, and conferring emergency powers on the Presidency. That law has never been repealed, nor has it expired. Fnord.

ARPA and the Network Control Protocol

The man whose idea it was to link computers together, J.C.R. Licklider, joined DARPA as the head of its computer research program in October, 1962. He spent much of the 1960s combining the DARPA plans with those of the RAND Corporation and the British National Physical Laboratory. By 1967, Lawrence Roberts had published a plan for a computer network called ARPANET, which boasted four computers (officially) in December of 1969. A year later, Steve Crocker of the interestingly titled Network Working Group developed the Network Control Protocol (NCP) and ARPANET had its own software. The NCP had flaws (introduced from the first?) as a host protocol, so yet another specialist, Bob Kahn, completed the Transmission Control Protocol/Internet Protocol (TCP/IP) in 1973 and tested it on the Xerox PARC Ethernet built by Bob Metcalfe the same year. On January 1, 1983, a decade after TCP/IP had proven itself, ARPANET officially switched from NCP to TCP/IP to become the modern Internet.

Conspiracy theorists point out the "dress rehearsal" quality of the TCP/IP switch in 1983 and the convenience for Someone that the whole system is routed over a net which depends on protocols developed decades ago and never changed. If the net doesn't die with the dawn of Y2K, who knew what was coming and who built it to survive? One answer might turn out to be Vannevar Bush – Licklider, Roberts, Crocker, Kahn, and Metcalfe all came from MIT.

Nothing to Worry About, Friend

There is no Millennium Bug in any computer. Yet. The Conspiracy engineered the whole Y2K scare in order to get Their operatives access to *everybody's* computers. For the better part of a decade, and especially for the last three years, a relative stranger could show up anywhere, introduce himself as "the Y2K consultant," and be paid a premium salary to root around in the most critical codes and systems on the planet. Security? How? In the U.S., for example, the Social Security Administration has had 400 new full-time staff working on Y2K for the last eight years – and every system in the Federal Government cross-checks its data by Social Security Number. Nobody's going to wait six months for an FBI check on "the COBOL guy," especially not the Defense Department (one billion lines of code to check, and the clock is ticking). *Especially* since the FBI has to find programmers somewhere to check *its* systems.

Rex-84

Finally, of course, the Illuminati have rehearsed Capstone at least once, in the joint FEMA-Defense Department war games known as Operation Night Train, or "Rex-84." (The Three Mile Island incident, which occurred one day after Carter created FEMA, may have been another such "rehearsal.") This full-scale operation in April, 1984, combined a massive redeployment of thousands of troops with a simulated "internal crisis" – FEMA gamed out rounding up 400,000 "undesirables" into a network of "detention camps" along the Mexican border. (FEMA had previously orchestrated the relocation of the Cuban Mariel refugees.) As a bureaucratic power grab, it went poorly: Attorney General William French Smith protested and FEMA took a back seat in future Justice Department counterinsurgency planning. But as a dress rehearsal for a chaos-inspired Illuminati coup d'etat, it went very well indeed.

PROMIS Keepers

So much for the United States – what of the rest of the world? Other nations, like the U.K. and France, have their own "emergency planning" bureaucracies with similar frightening emergency plans. Canada has the War Measures Act, which can suspend the Canadian Bill of Rights; it was last used in 1970 by Prime Minister Trudeau after FLQ terrorists kidnapped a British trade commissioner and a government official. China's dictatorship has taken orders from the Areopagitae ever since Illuminati agent Owen Lattimore helped secure Communist rule there. And the Illuminated tool known as the UN plays a vital role not only in providing security forces for the subjugation of America but also in keeping the Third World restive and impoverished.

A key component in Illuminati domination of the world's power structure, however, is the Prosecutor's Management Information System (PROMIS), a software package developed for the U.S. Department of Justice in 1982 by William Hamilton. The LEAA, which helped fund PROMIS research, was a Justice Department agency tasked to assist the UN Clearinghouse in Rome, which coordinates Western law-enforcement efforts with (at the time) the Soviet bloc. PROMIS, in its original form, was designed to allow prosecutors to monitor the progress of any case in any jurisdiction, looking for common entries in any government database.

After Hamilton's company, Inslaw, developed the system, the Justice Department refused to pay him, accusing him of overcharging. (In 1987, a Federal judge found for Hamilton.) This was an Illuminati psyop designed to distract Hamilton from the real application of PROMIS – properly rewritten, it could interface with any database or law-enforcement computer file anywhere in the world. Copies of advanced versions of PROMIS (which Hamilton accused the CIA of pirating) began turning up on the computers of the Israeli Signals Intelligence Unit, Korean CIA, and even the Libyan government!

Between the LEAA, the CIA, and "independent" arms dealers, PROMIS coordinates databases on almost every law-enforcement computer in the world. Which is why the Illuminati wrote a back door which allows their own "super-PROMIS" to integrate all subordinate PROMIS systems into one giant program. Which, needless to say, is stored on Illuminati systems free of the Millennium Bug.

Birth of the New World Order

The chaos of Y2K will be worse than even the most pessimistic souls fear. After all, the Illuminati not only created the Bug, their agents were, for the most part, in charge of hiring the programmers to "fix" it. No government computer system, no bank, no database, no power or water plant, no mass media, no hospital anywhere in the world will survive – except those that the Illuminati designate.

A panicked, starving, anarchic population will beg for security and guidance from the few groups which survive the Crash. These "lucky" institutions, every one of them compliant Illuminati tools, will serve as the nexus for martial law, frameworks for the imposition of order, and eventually as the vertices of a new power structure. An Illuminated power structure.

The secret teams, the MJTF and UN troops, will fan out from the bunkers, rounding up the resisters and giving the rest a place in the Pyramid, under the Eye. One thing's for sure – the Black Helicopters are Y2K-compliant.

1111010000: Program Complete

Why, you may ask, would the Network crash the computers? Surely, if any of the Secret Masters can be cleared of Y2K complicity, it's the group which depends upon computers for its power, its beliefs, indeed for its very existence. That's just what they want you to think. Sure, the Network's agents have their image as goateed, flannel-wearing hipster doofuses with glassy stares and Cayman Island bank accounts the size of their high scores at ***Doom.*** But that's just pixels on a monitor; on the Net, nobody knows you're a despot.

The COBOL Cabal

The first rule of conspiracy theory is to ask the question: *Cui bono?* Who benefits? Who benefits most from a panicky multibillion-dollar crash program to rewrite billions of lines of decades-old computer code? Why, decades-old computer programmers, of course. Hasn't it struck anyone as unusual that, in order to solve an arcane technical problem with obsolete computer programs, everyone is paying enormous sums of money to the same programmers who wrote the problem into the system in the first place?

Of course it hasn't. The subliminals erase those questions. Y2K mania is, in fact, a memetic program subliminally placed between pixel refreshes in every screen drawn by a COBOL program anywhere in the world. Whether this memeplex was written into COBOL itself by Grace Hopper in 1959 or was the happy inspiration of a small clique of computer programmers sometime in the 1970s, none can say. In addition to quashing intemperate curiosity, the COBOL subliminals slowly convince users that a Big Crash is coming in 2000, that only COBOL programmers can fix it, and that those programmers are worth every penny of their extortionate "consultant" contracts. Nobody knows what memetic time bombs ("the 2012 bug?", "Vote Reform Party?", "Gray beards are sexy?") these rehired COBOL gurus are putting into the "Y2K fix" codes. Nobody, that is, except the COBOL programmers.

Uncle Bill

Sure it's obvious. Almost too obvious. Almost "hide in plain sight," "Purloined Letter" obvious. But *if* I owned something approaching 90% of the global software market *and* I wanted even more money from everyone in the whole world *and* I had a well-documented track record of salting the techno-media with planted stories about trends and problems which just *coincidentally* happened to tie in with trends and products in my own software company's market plans . . .

Well, I *might* be tempted to come up with a big cock-and-bull story about some technical meltdown that would doom everything. And sigh regretfully about how everyone caught in the meltdown would have nothing but canned beans and safety matches. And helpfully point out that my new "2000" software product line is fully "Y2K-compliant." And watch the piles of money roll in.

If by some horrible mischance there *is* a global information catastrophe – well, after they impose martial law everywhere, the new government is going to need software, right? And they're not going to let a little worry like monopoly control of the market hold up restoring power, and transportation networks, and nuclear missile targeting systems . . .

The Antikythera Device

In 1901, Greek sponge fishermen discovered a wrecked galley off the coast of Antikythera in the Aegean Sea. In addition to a cargo of statues, bronze, jewelry, and wine, divers found a strange mess of corroded bronze and wood fragments. Fifty years later, the physicist Derek de Solla Price demonstrated that the Antikythera Device was actually a complex mechanism of differential gears. In 1971, gamma-ray probes showed that the Device was in fact a mechanical astronomical/astrological computer with over 15 separate gears and dials. The galley sailed in 87 BC from Rhodes, which was famous for its advanced learning and mastery of the mechanical arts; Hipparchus of Rhodes invented trigonometry and composed the first scientific star charts.

Was Rhodes a Rosicrucian outpost, its scientific and technological prowess the result of millennia of secret, sacred technology? Is that why the Knights Hospitaller moved to Rhodes in 1306 – a year before the trial of the Templars? Did the Antikythera Device, or even more sophisticated analog computers, help map the subtle changes in the aether and the tellurian currents, and predict the coming Infocalypse? If the Device was just a navigational aid, why have no others been found in any of the hundreds of other Greek and Roman shipwrecks? Were they not Y0K-compliant?

The Network rules cyberspace, true enough. In the electronic jungle, they are the kings of beasts. The Internet has gotten unruly since the clear blue days of DARPA, though; therefore, deep in the Network's inner council – the Core – they seek to clear-cut the jungle and rule the resulting cyber-prairie, leaving nowhere for others to hide. For the Network, as with the Bavarians, the object of Y2K is not so much the crash as the rebuilding. They took full advantage of the incredibly lax security during the compliance and recoding period, of course (see *Nothing to Worry About, Friend,* p. 36). But the Network looks to the road ahead.

When the computers come back up – and they will – the Network is poised to restructure everything to its own specifications. Phones, satellites, cable TV, military communications, missile telemetry, and of course the Web – all of it redrawn to Network plans, riddled with back doors, Trojan horses, and simple shell codes. That's the reward. The Network thinks no more of wrecking the old system to gain power over the new one than it would of tossing out a six-month old Pentium to trade for the top of the line.

Tracing The Network

Although the Network's surface reputation (one they labor hard to maintain) is of a recent, ad hoc group of "superhackers" who clevered their way into computerized control (see pp. I64-65), as any conspiracy theorist can tell you, the Truth is always at least one layer deeper than the one you've found. Whether the Network is the heir to the secretive users of advanced information technology in ancient times (see sidebar, this page) or the pure product of Western science that it seems, none can say.

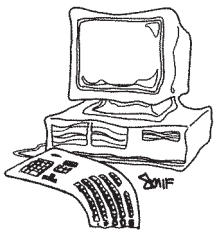
An increasing number of investigators believe that the Network existed as early as the 1930s, within the study group at MIT headed by Vannevar Bush, of the Department of Electrical Engineering. In 1931, Bush designed a "Differential Analyzer" – an analog computer which could solve differential equations. (John Atansoff and Clifford Berry of Iowa State University designed an electronic version of Bush's Differential Analyzer, but their project mysteriously "lost funding." Evidence, to some, that the Network didn't like competition even back then.)

Under the cover of World War II (which started, some say, because a coded message was transmitted too early – the Network again?), Bush and others worked on electronic computer development. John von Neumann, Alan Turing,

and the great names of cryptography and computer science: Whether they were the Network's first Core or simply stalking horses for Bush and the Network, hidden within the Office of Scientific Research and Development, is still murky. The Network claims ENIAC and UNIVAC in its grandiloquent moments, although it remains oddly diffident about the British Colossus, and positively allergic to mention of the Nazi Z3 series of electromechanical binary digital computers developed by Konrad Zuse. (Zuse fled to Zurich, of all places, in 1945 with his Z4 – under the protection of the Gnomes?)

Also in 1945, Bush published "As We May Think" in the *Atlantic Monthly,* setting forth the design for hypertext and postulating a "Memex": a "device in which an individual stores all his books, records, and communications, and which is mechanized so that it may be consulted with exceeding speed and flexibility." Between the Ultimate Turing Computer and Vannevar Bush's Memex, there can be little doubt that the Network had the equivalent of its own World Wide Web by the late 1940s.

Once its machines and nodes were in place, the Network began to change our world. The UNIVAC "predicted" Eisenhower's victory in the 1952 election and paved the way for the NES machines (running the vote-counting EL-80 software – in COBOL) which tell the U.S. the results of every national and state election. Has the Network been selecting our government for us? By the 1960s, those same government officials were voting ever-larger sums of money for the construction of secure computer networks. The Defense Advance Research Projects Agency (DARPA) begot the ARPANET, which begot the Internet (see sidebar, p. 36), which the Network is one mouse-click away from destroying. Or ruling. Or both.



Binaries

Nobody else in the shadow world of the Illuminati really knows what to make of the Network. Even in the conspiratorial twilight, the Network is just words on a screen or beeps on a line. Two views emerge from the talk on pirate BBS systems and quick calls to pay phones in Kinko's parking lots, and either might be correct. There's too much information and too many secrets to come down either way – both interpretations might even be true, depending on how you look at it.

Zero: "Information Wants to be Free"

Hints have emerged of a secretive group calling itself the *Informationale,* started by Ada Lovelace (daughter of the radical Lord Byron and protégé of Charles Babbage) in the revolutionary year of 1848. The Informationale worked as a kind of "counter-secret police," warning freedom fighters and anarchists all across Europe of their enemies' operations. (Babbage was a cryptographer, among his many other talents.)

After the Marx-Bakunin split of 1872, the Informationale had to lie low; it had as many enemies on the Marxist Left as on the monarchist Right. It fed code-breaking data to Alan Turing and maneuvered an Enigma machine into Polish hands, helping defeat Hitler. After the War, the Informationale became the Network, with Vannevar Bush making sure that the Internet would grow, unconstrained and unstoppable – the last, best refuge for free thought. (The modern "hacker" movement, for instance, descends from the *MIT* Tech Model Railroad Club.) By now, the Network has evolved into a self-organizing anarchist organization (or organism?) still fighting on the front lines of the information war against tyranny of all stripes.

Conspiratorial Computing: The First 4,900 Years

The first computer – the abacus – surfaced in Sumeria in about 3000 BC, roughly when the mysterious "Oannes" taught the Mesopotamian locals "all knowledges and arts." This deceptively simple machine, in the hands of a trained user, can compete with mechanical calculators even today. The sheer mathematical power unleashed by the abacus jump-started the complex civilizations of the Near East. Although members of the Secret Tradition developed other systems like the Multitonal Monastic Protocol (see sidebar, p. 41) and used rigorous mental training to produce holographic computers in the mind's eye, they allowed such knowledge to emerge only as esoteric theories of music, nootropic drugs such as *soma,* and Platonic philosophy. Plato's disciple, Archytas of Tarentum, built complex clockworks – including robot birds – until Plato disciplined him. The abacus' power had frightened Them.

However, Their agents used mechanisms such as the Antikythera Device (p. 38) and the "orrery" of Archimedes. Archimedes was killed because he Knew Too Much, and the pragmatic Romans – under orders from the Sibyl – stifled the computer again. The Arab mathematician al-Biruni described a calculating astrolabe in a manuscript in 1000 AD; Chinese savants constructed complex chronometers and other devices around the same time. Leonardo's 15th-century notebooks depict a complex mechanical calculator. Either They had agents all across the world, or some of Their knowledge was escaping.

The latter probably explains the sudden surge of rudimentary digital devices that appeared in the post-Rosicrucian Europe of the 17th century. One Wilhelm Schickard designed a "calculating clock" in 1623 and told his friend Kepler about it. Schickard and his plans both vanished in the Thirty Years' War. Blaise Pascal, the French mystical theologian and physicist, invented a gear-driven adding machine in 1644. Conspiracy saboteurs prevented his models from functioning by introducing flaws into the machinery (hmmm . . .), but he was getting too close. On November 23, 1654, after seeing an angel in a "night of fire," Pascal joined the Jansenist sect and withdrew from French scientific society. Eight years later, the Secret Masters got him the same way They would eventually get Lovecraft: "stomach cancer."

Continued on next page . . .

Conspiratorial Computing: The First 4,900 Years (Continued)

In 1674, the alchemist and Pythagorean mathematician Leibniz invented – or revealed – a superior calculator which could not only add and subtract, but also multiply, divide, and take square roots. The Conspiracy could not allow such a challenge to succeed. A Fellow of the proto-Masonic Royal Society, Leibniz was maneuvered into a feud with Newton when his letters were unaccountably delayed. After that, Leibniz's influence dwindled. He fruitlessly urged an invasion of Egypt (a main Conspiratorial headquarters for millennia) on the kings of France and England, and desperately investigated the bloodlines of the Guelphs for clues to Their manipulations. Although the facts he uncovered gained him refuge in Vienna, he was lured back to Hanover and died under house arrest in 1716.

The Conspiracy kept the lid on for another century, but finally the Secret Directorate decided to begin the Grand Revelation. Within two decades of the Illuminist Joseph-Marie Jacquard's introduction of the punch-card loom in the old Templar center of Lyon, Thomas de Colmar's Arithmometer became the first commercially available mechanical computer.

In 1823, three years after the Arithmometer, Charles Babbage (also a member of the Royal Society) presented his plan for a Difference Engine to the British government. While working on this dramatically advanced device in 1832, he designed an Analytical Engine – the first overt appearance of a truly programmable computer – with the hope of computing all the variables present in society. Although Babbage somehow never quite finished either of his Engines – officially – the Secret was out and the information was under control.

Building Babbage Machines

Yes, they could, and yes, they did. Really. Two Swedish mathematicians, Georg and Edvard Scheutz, constructed a Babbage Difference Engine in 1853. It printed out the results of its calculations. An American inventor, George Bernard Grant, designed and built his own Difference Engine – eight feet wide, five feet tall, and containing more than 15,000 moving parts – for the 1876 Philadelphia Centennial Exposition. (Alexander Graham Bell exhibited his prototype telephone at the same Exposition . . .)

One: "In Formation Is What We Want"

Vacuous propaganda, insist the skeptics. True, the Informationale worked closely with Babbage, but it followed his other mania – for organizing and ordering all information. An avid statistician, Babbage collected raw data on everything from the sexes of chickens to the causes of window breakage. He corresponded with Belgian astronomer Adolphe Quetelet, who studied crime statistically to attempt to control it, and with French mining engineer Frédéric Le Play, who studied families statistically to shore up "family values." Babbage, Quetelet, and Le Play together founded modern sociology and the modern actuarial insurance industry – and gave the nascent Network a thirst for total, mathematically driven social control. *Of course* the Informationale aided anarchists – how better to direct them?

But the Informationale also worked with governments and businesses: Hermann Hollerith's punch-card tabulator made it possible for the Progressives to gather reams of census data on average Americans and introduce the Managed Society of Frederick Taylor, Henry Ford, and Woodrow Wilson. Negative types note that Hollerith's Tabulating Machine Company became IBM in 1924, and date the beginnings of the military-industrial complex to the 1890 Census on Hollerith's punch cards. Vannevar Bush drove the Network firmly into the government – or vice versa – as head of FDR's Office of Scientific Research and Development, overseeing the atomic bomb as well as the birth of the computer. Another component of the Network, the Bell System, was brought in to build Los Alamos and manage the space program.

Today, the Network runs the NSA as its "nursery garden," recruiting especially gifted controllers to its own secret Shadow Directorate and planning the day when they can punch everyone and everything into a card permanently.

When Time Shall Be No More

The important part of "Millennium Bug" isn't the "Bug," say the ancient wise ones known as the Great White Brotherhood, the Lodge of Light, the Fraternity of the Rosy Cross. To the Rosicrucians (for such is their most common inner name, whether they be Druids, Templars, the Cabal, the Prieuré de Sion, or Egyptian Rite Masons to outsiders), the importance lies in the "Millennium." The Bug is but a means to an end, a manifestation of a sacred truth, and the culmination of a plan literally as old as the Pyramids.

Within the Pyramids lies much wisdom, but the crucial part for the Rosicrucians is the shaft from the outside, through the Grand Gallery, and into the King's Chamber, where an empty sarcophagus lies, symbol of the living return of Osiris, of the success of the alchemical Great Work, of the End Times. Marked off in pyramid inches, this passage predicts the future. At the beginning of the Ascending Passage, we are at 1,170 pyramid inches from the entrance; 1,170 years after the Pyramids were built, Moses led the Hebrews in Exodus. The entrance to the Grand Gallery coincides with the Crucifixion and the Gallery's end with 1914 and the fall of the West. The end of the passage? It's 4,623 pyramid inches from the start: 2000 AD and the End of Time.

Ever since this blueprint in granite, the Rosicrucians have prepared the alchemical Earth to transform into spiritual gold when the time is right. King Solomon mapped the secrets into his Temple (on the site of the Tabernacle dedicated in 1000 BC), the Magi saw it in the stars at the Zero Hour, the Rosicrucian Pope Sylvester drew further details from his speaking bronze head (machine language, perhaps?) in 1000 AD.

Alchemical Engineering

Side by side with the Plan is the Work: alchemy. The Rosicrucians seek to remake a new Heaven and a new Earth with the Great Art. Alchemy spread out from Hermetic Egypt through Pope Sylvester, and from Solomon's Temple through its knightly guardians. Slowly, the Masters have guided the world through the Seven Stages of the Work.

The ancient knowledge was Sublimated into the mystery traditions, guided through fallow Putrefaction under the Saturnian Druids (lords of the sickle), sent into Solution throughout the world with the fall of the libraries of Alexandria, Distilled in the fire of the Templars' fate and the bubbling Renaissance, and met Conjunction in the marriage of Red and White – the Chemical Wedding which produced science, reason, and Enlightenment from Rosicrucian Masters such as Descartes and Newton. Ever since 1914, however, the Rosicrucians have been sending the world back through the fire for the Calcination, the final stage before the Philosopher's Stone.

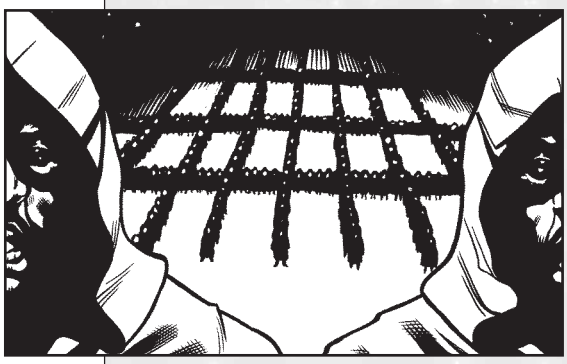
As part of the worldwide millennium celebrations, the Great Pyramid of Giza will receive a golden capstone at midnight on December 31, 1999, in a sound-and-light extravaganza. The ritual circuit will close and the Rosicrucian plan will come full circle as the Internet Worm Oroborous devours its own tail.

The old alchemical adage is *salve et coagula,* break and rejoin, and come the cusp of the millennium, the Rosicrucians will watch as the world's nascent consciousness splinters into a thousand shards. As disastrous Pluto moves into the Third House, governing Communication, the final blow will come – the Torment of the Metals. After the destruction, however, comes the promised New Era.

Singin' in the Brain

Ancient Rosicrucian techniques had to remain hidden to outsiders but accessible to those with the Secret. One way to keep caches of data and programs handy might have been what a secretive Iowa State University (at Ames) task force of cyberneticists, musicologists, and conspiracy theorists calls the Multitonal Monastic Protocol, or MMP.

One fact that struck the U of I team was the number of figures in the Conspiracy who composed hymns, from Akhenaton and Pythagoras to St. Bernard of Clairvaux ("Illuminatus of the West" and sponsor of the Templars) and Martin Luther (the first overt Rosicrucian in Europe). Many other repositories of ancient lore also have a strong vocal music tradition: Tibetan lamaseries, the Welsh eisteddfod founded by the Druids, etc.



After performing computer regressions on certain significant folios of ancient choral music, the U of I team uncovered hidden elements within the orchestration: Each song was actually a program. The monks in a given chorus would line up in a grid pattern and the choirmaster (a Conspiratorial adept) would give the first row a hymn and a key (itself a significant term); this was the MMP input. Each monk would sing a note depending on the note sung by his neighbor, according to a memorized sequence. The changes in the notes from the first monks to the final group would be the MMP output. Using MMP was slow, but enabled the Secret Choirmasters to store, compute, alter, and retrieve information – all while keeping the message opaque, even to the monks who sang it.

Six Degrees of SPECTRE

Alan Turing was hardly the only eccentric genius working for British Intelligence during WWII. Closely associated with Turing's Bletchley Park cryptanalysis section was the London Controlling Section, involved in planning "dirty tricks" and diversionary tactics against the Third Reich. The famous British occult novelist and authority on magic, Dennis Wheatley, was on the LCS staff, along with Peter Fleming, brother of Ian Fleming, the future creator of James Bond. Ian Fleming worked in the famous Room 39 of Naval Intelligence, also on dirty tricks. In fact, persistent legend states that Turing, Wheatley, and Ian Fleming shared office space together at some point during the War.

When you factor in Wheatley's friendship with Aleister Crowley, and the fact that Maxwell "M" Knight, head of countersubversion for MI5, was also at least an occasional practitioner of Crowleian magic, you can tie the birth of the computer, the postwar Shadow Government, and demonic influences (blending the Network, the Cabal, and the Illuminati) to the secret "third force" Fleming labeled SPECTRE in his novels. A reference to the "ghost in the machine"? Was it such hinting that caused his fatal "heart attack" in 1964?

Through a Monitor, Darkly

If any of the great prophets, visionaries, and seers saw Y2K coming, it was Nostradamus. It's not so hard to see where he warned us, if you look at his prophecies closely enough. It's even easier when you translate them from the 16th-century French, as loosely as necessary. Hey, the Big Crash is too important to pick linguistic nits.

Century X, Quatrain 72

"The year 1999 and seven months
From the sky shall come the great ruler of affairs
Restart the great Roy d'Angolmois
Before and after Mars reigns with good time."

On August 21, 1999 (seven months and 21 days into 1999), the GPS satellite ("from the sky") system (the "great ruler of affairs") rolls over ("restarts") to 0000 as it breaks out of its 13-digit date field. "Roy d'Angolmois" can be rearranged to "glo' diray moons," or "glo(bal) direction satellites." Before and after the reset, military navigation systems (Mars) "reign with good time," but during the reset, chaos could ensue.

Continued on next page . . .

Shades of Grey

The Y2K bug comes from the same place that computers do: UFOs. The Greys have reneged on every agreement they ever signed with the government, and the information technology transfer was no different. They sold us computers, all right – just enough to make our society completely dependent and incapable of resistance, or even existence, without them. Then they pulled the plug. The Y2K crash comes from planned alien obsolescence, or even from an alien virus spread throughout our systems – a cruel reversal in a secret War of the Worlds.

Majestic 12, Earth 0

After the Roswell crash of July 4, 1947, President Truman tasked twelve top members of his military and scientific establishment to investigate the UFO threat and deal with it as necessary. Under the general direction of Defense Secretary James Forrestal (see p. I43), the Majestic-12 group (or MJ-12) examined America's options. MJ-12 included not only General Nathan Twining (administrator of Werner von Braun's Air Material Command) and cryptanalyst Donald Menzel, but also computer pioneer Dr. Vannevar Bush (see p. 38), head of the National Advisory Committee on Aeronautics (NACA), the predecessor to NASA. With his expertise in cryptography, computers, and aeronautics, he soon became the day-to-day head of Majestic-12. Although some members of MJ-12 counseled resistance and others guile, the realistic military and scientific minds in the group knew that the aliens presented a golden opportunity to gain extraterrestrial technology that could win the Cold War.

Accounts differ on when MJ-12 cut the final deal with the Greys: Shockley used alien technology obtained somehow by Bell Labs to invent the transistor in 1948, and close analysis of FORTRAN (developed in 1954) clearly reveals alien linguistic patterns. It's likely that the aliens and MJ-12 negotiated in a drawn-out fashion until the Greys lost patience and staged the July, 1952, UFO "armada" over Washington.

Exactly what the UFOs got in return for the computer is similarly disputed. Some argue that the aliens merely got President Eisenhower's agreement not to start a nuclear war. Others maintain that the Greys got a "quota" of abductions and mutilations for their own fiendish and unknown purposes, complete with a Zeta Reticulan embassy underground in Dulce, New Mexico (connected to Mount Weather by a super-fast train in a mile-deep tunnel dug with alien technology). The most pessimistic possible version argues that the U.S. surrendered its sovereignty on April 30, 1964, after MJ-12 killed Kennedy to prevent him from interfering.

Depending on which ex-DIA agent you believe, Reagan's SDI was either the final payment in the treaty or a desperate attempt to use alien technology to drive off the UFO colonizers. Regardless, such resistance is futile – the Greys made sure that no future president could go back on the deal from the first moment that Vannevar Bush shook that clammy, gray, three-fingered hand in 1947.

The Secret's Right Under Your Skin

Sure, the computers the Greys *sold* us will crash in 2000. But not the ones they *implanted* in us. Greys don't even use our calendar, and with only four fingers, they don't use the decimal system, either. All you've got to do is invert the polarity on the subcutaneous transponder, cut it out of the back of your neck without activating the silent cancer alarm or the Emergency Sniper Program, take it apart under any top-of-the-line scanning tunneling microscope using osmium-coated micrometer waldoes (being careful not to release the nanoslag built into the implant, or to activate the cerebellum-wiping quantum hologram on the ventral surface), remove the transuranic-gadolinium microchip, reverse-engineer its input codes (adjusting for the base-seven modular trinary feed), crack the 4,447-digit cryptography and the intuitional-syncopated digital compression techniques used to initialize the BIOS, and you're home free. Until 2012, when the Mayan gods come back and smash your computers with big obsidian clubs (see p. 47).

Through a Monitor, Darkly (Continued)

Century V, Quatrain 65

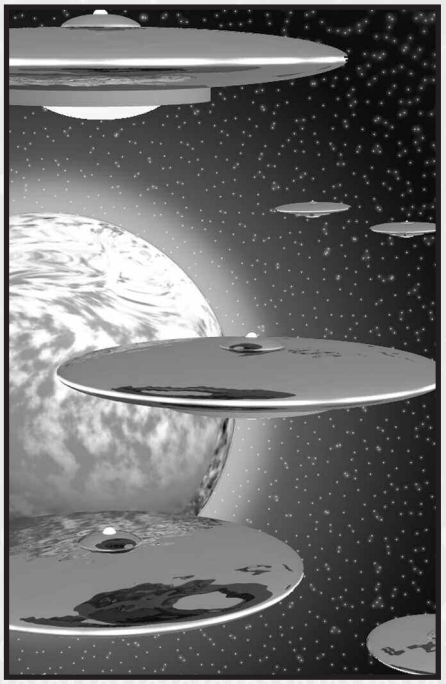
"Suddenly arrived, the shock is great
Although the affairs of the great are cached
The hot women are no longer visible
Little things lead to great irritations."

Here, Nostradamus seems to predict a minor glitch which causes general unrest and irritation, but not total breakdown. Important databases are backed up (*Des principaux de l'affaire caches*), but popular web sites (*Dame en braise*) will crash and numerous minor systems will fail.

Century VIII, Quatrain 71

"The increase in the number to the astronomical
Flight, banishment, and destruction of books
In the year 1607 after the sacred gathering
The gurus can assure us of nothing."

This quatrain is less optimistic. The "sacred gathering," according to Nostradamian tradition, is the creation by edict of the Catholic (universal) church by Emperor Theodosius in 392 AD. In the year 1607 + 392 = 1999, "the gurus (*aux sacres*) can assure us of nothing." In the next year, when the number increases to the "astronomical" 2000? Total chaos and the fall of learning. Stock up on canned goods and shotguns, folks.



Green Day

When Y2K hits, mankind's scientific supremacy will vanish overnight. Millions – eventually billions – will starve or massacre each other in futile, balkanizing wars, or writhe in death agonies as plagues spread around a globe suddenly unable to track and diagnose them. Whole nations will cease to exist and the survivors will long distrust anything stemming from the demon of technology.

That's the plan, anyhow. An elite cadre of fanatical ecocyberterrorists calling themselves Pestis Verdae, trying to "thin the human herd," have set up the Millennium Bug to trigger a massive crash and dieback of the human race, slagging the technology which paves rain forests and decimates endangered species daily.

That's what the outer ranks of Pestis Verdae believe. Its inner elite, the Sons of Herne, plot with "eugenic engineers" in a state-of-the-art biotech lab in Florida to produce *Homo shockleyensis.* This genetically-engineered superpredator will provide mankind with what William Shockley, inventor of the transistor, once said was our only evolutionary hope as a species – a threat higher on the food chain. *Shockleyensis* is tougher, faster, meaner, and smarter than man. A pure carnivore (bred to prefer human meat), *shockleyensis* can cooperate at no level higher than the pack; although it can use technology, it can't repair or invent it. The first 500 breeding pairs will pour out of the Okefenokee Swamp on January 3, 2000.

Alternate Aliens

Rather than the traditional Greys (see pp. BO84-88), the GM might wish to use the Alphans (from pp. AH55-57 or pp. I60-62), another alien race from ***GURPS Atomic Horror,*** or even the Martians (pp. WT98-99)! After all, Lord Kelvin, who invented a Differential Analyzer before Vannevar Bush, claimed to receive transmissions from Mars on May 18, 1902. Similarly, the curious or bisociative GM can find alternate readings of the MJ-12 documents on pp. WT68-71 or p. AH76.

Timeline Suboptimal: Abort, Retry, Fail?

Something about the future is bad and it's the computers' fault. Apparently, they worked too well, leaving humanity soft and vulnerable to the alien conquest. Or they worked too well, allowing mankind to begin an irreversible destruction of the Earth's ecosystem. The point is, they worked too well for everybody's (or Somebody's) liking, so they have to break down. In the past. That means time travelers caused/are causing/will cause the Millennium Bug. Let's hope their chronobelts aren't Y2K-compliant.

Reboot / One

October 19, 1962: The quick eyes of Melvin Chapman, a supervisor at the First National Bank of Ohio, noticed that the brand-new accounting programs didn't include the first two digits of the date. He sent it back to IBM, demanding a fix and pointing out that the First National Bank of Ohio still intended to be in business in 2000. Thanks to him, the "legacy system" of America's banking and phone network rides out the minor ripple of glitches in Europe and Japan. When the A.I.s take over in 2022, they leave Melvin's descendants alive in thanks.

October 4, 1962A: Judith Chapman-Moore, one of the last human kamikaze time travelers, gets pictures of Soviet nuclear missiles in Cuba to JFK. In the confusion of the Cuban Missile Crisis later that month, Melvin doesn't have time for the crucial oversight and the Millennium Bug settles in.

Reboot / Two

November 22, 2003: The hacker club that moused into the National Archives database hadn't really expected to find complete documentation for the CIA assassinations of the Kennedys, the drug-smuggling account books of MI6, the role of the UN in spreading the Ebola virus, and the truth about Roswell. But when they did, it brought the house down. Lynch mobs, congressional subcommittees, coups d'etat, impeachment proceedings – society was in chaos and the Illuminati were on the run. Backward.

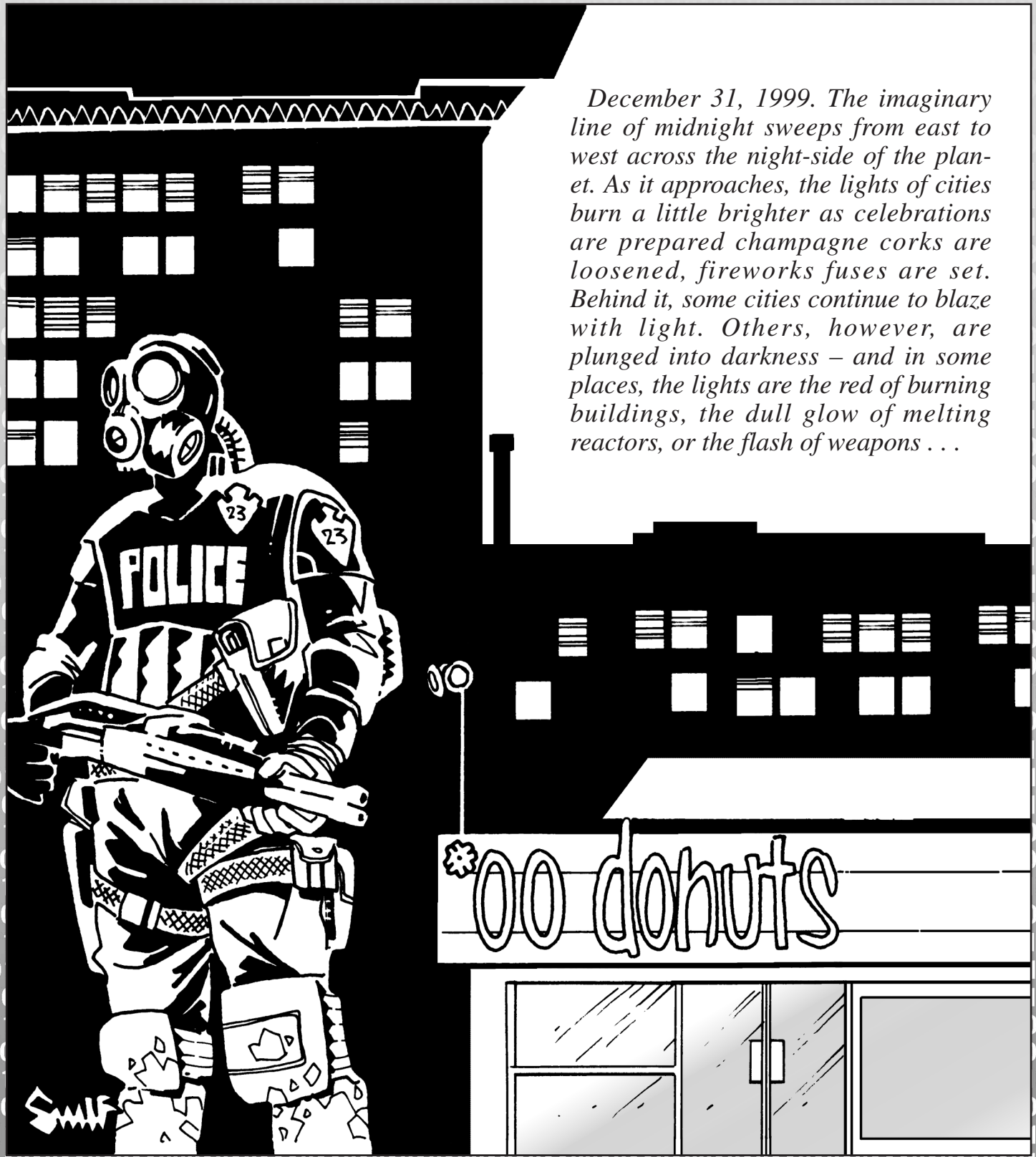
January 17, 1945-Two: A time-traveling Man In Black shows up at Harvard University with an MK-ULTRA mind control special for Grace Hopper and exact instructions and specifications for date fields in COBOL. A bug is born along with a new future in which the National Archives will *not* be Y2K compliant.

Reboot / Three

March 4, 2000: General Park's coup was swift but brief. Computerized satellites beamed data to Baikonur and Cheyenne Mountain; NSA computers intercepted and decrypted his communications; GPS locators aimed the cruise missiles and pinpoint air strikes which obliterated his secret nuclear launch site north of Pyongyang before he could plunge the superpowers into World War Three. Global media and computer links created a drive for nuclear disarmament and true peace which ushered in a Golden Age.

6000 AD-Prime: The Central Computer constantly labors to assist General Park in starting World War Three – for without that devastating conflict, the Vortun civilization (see pp. AH57-59) cannot come to pass. Its agents constantly work in the 1950s and 1960s, introducing glitches to cripple CentCom's primitive 20th-century ancestors before March 4, 2000. This new "Y2K Bug" seems promising . . .

4. A World With a Byte Out of It



December 31, 1999. The imaginary line of midnight sweeps from east to west across the night-side of the planet. As it approaches, the lights of cities burn a little brighter as celebrations are prepared champagne corks are loosened, fireworks fuses are set. Behind it, some cities continue to blaze with light. Others, however, are plunged into darkness – and in some places, the lights are the red of burning buildings, the dull glow of melting reactors, or the flash of weapons . . .

Alternate Dating Systems

Of course, it's only year 2000 in one arbitrary dating system: "Gregorian" calendar years, counting from 1 AD. Yes, it's *completely arbitrary.* To begin with, the arrangement and length of the months has to do with the egos of assorted Roman emperors; then there was a screw-up back in the 6th century, when the modern dating system was invented. There are several respectable academic and theological estimates of Christ's birth date, but they almost all put it earlier than 1 AD. Find a good reference book if you want the gory details; the point is that stupid messes with dates are nothing new. In a lot of alternate histories, people will be completely relaxed right now.

Thanks to the success of European world exploration and colonialism a couple of centuries back, followed by American and European technological dominance, the rest of the world mostly makes do with this system, but there are plenty of others still in use (some of them with their own millennial hang-ups). Most computers in the world use the Gregorian calendar internally, although they may translate to local systems for display purposes – which may make users complacent, as they can't *see* that Y2K is coming up on their machine and hence may think themselves immune to the problems they hear about.

Muslim Calendars

The traditional Muslim calendar is based on a year of twelve *lunar* months, each reckoned as either 29 or 30 days, adding up to 354 or 355 days. It is thus markedly shorter than the solar year. (Old-time Arab desert nomads presumably didn't worry too much about seasons.) Muslims traditionally count dates from the *Hegira,* when Mohammed fled from Mecca to Medina (622 AD). Year 1999 corresponds to the years 1419-1420 on this calendar.

An alternate history in which Islam won out in the Middle Ages and went on to scientific and technological ascendancy would probably have rather good calendars. Before the European Renaissance, many of the best astronomers in the world were Muslims, and they designed some of the best calendars in history.

Continued on next page . . .

The First World

For most of the world's technologically advanced nations, the Y2K situation is much the same as for the U.S., give or take a degree of preparedness. The U.S. may be the richest society on the planet, but it may not be the most heavily computerized – it depends how you measure things. America's combination of sheer size, wealth, and technological power certainly makes it the biggest single force in the computing world, but the likes of Japan, the U.K., France, Germany, and Canada are certainly comparable for computer *use* on a per capita basis. Australia and New Zealand seem to be taking to the Internet with special enthusiasm, as are the Scandinavian countries. Finland especially has embraced electronic communications, having (at least at one stage) the highest proportion of its population online and also being the home of the world's biggest mobile phone company; electronic communications are easier than travel across sub-arctic terrain of forests and lakes.

Thus, the "First World" is potentially the most vulnerable of all to Y2K problems. On the other hand, these countries also have more money to spend on fixing the problem and more skilled people to do the job – and this seems to count for a lot. According to a 1998 review of the global Y2K situation, countries like Australia, Denmark, Ireland, Israel, Sweden, Switzerland, the U.K., and the U.S. are in the highest, "Sort of OK" risk bracket. A moderate pessimist might expect them to suffer a number of short-term disasters, followed by recovery.

Which isn't to say that everything is cheerful. The next bracket down in that review – countries that are "Not Real Good" – is a mixture of "Second World" nations (Brazil, Mexico), members of the old Soviet Bloc that are otherwise in good shape (Hungary), and big, advanced places that really ought to be able to manage better (Finland, France, Italy, New Zealand, South Korea). Even the "Quite Bad" category mixes the stereotypically predictable (Argentina, Guatemala) with the startling (Japan, Germany). Still, no place in Western Europe or North America rates as "Scary."

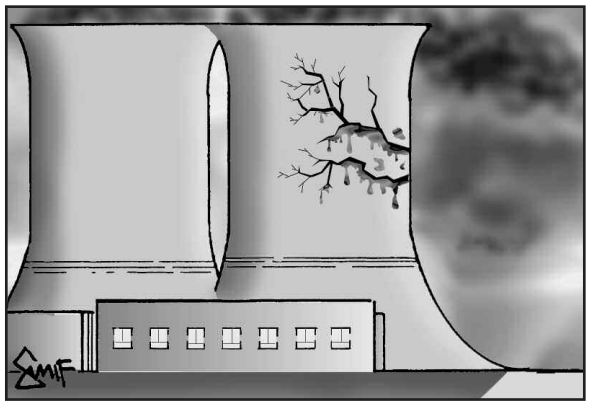
To put it another way, the Global Millennium Foundation says "All countries have a serious year 2000 problem. No country is further advanced [in fixing the problems] than Canada. Canada is losing this race."

That's the cheerful, realistic overview. What about reactions at ground level? Well, most informed people in most countries have heard of the Y2K problem, although some don't seem to have been listening too hard. Precise reactions vary; there may be an elusive factor of "national character" in some cases, hard as that is to pin down. (Okay, the Italians have been accused of assuming that they can just fix things at the last minute.)

Perhaps the biggest difference between the U.S. and the rest of the world when faced with a disaster is "survivalism." This is a peculiarly American mindset; few other nations have a large group of people who believe that the world is *certain* to go wrong somehow and who respond by digging in with canned food and arsenals of guns. Not many countries have quite so many guns per head as the U.S., of course, or such a relatively recent frontier tradition, which may be

relevant. But to most of the rest of the world, the heavily armed survivalist isn't just a paranoid loon; he's a stereotypically *American* sort of paranoid loon. See Chapter 5 for more about survivalism.

The assumed best response to disaster in most of the rest of the world isn't to welcome it and dig in – it's to improvise a way out.



The Euro

The year 1999 has seen another computer update process, less critical than Y2K but almost as aggravating: the introduction of the "euro" – the common currency of the European Union. Its value is fixed in relation to the currencies of the European nations that have agreed to unify their economic systems (currently Austria, Belgium, Finland, France, Germany, Holland, Ireland, Italy, Luxembourg, Portugal, and Spain). One thing to be said for the Y2K problem is that at least it doesn't demand the addition of a new symbol on computer keyboards . . .

The euro officially became a legal currency on January 1, 1999, although it is likely to remain almost solely an accounting device for a few years. (Euro notes and coins are set to appear in 2002.) Any organization that has financial dealings with the European Union has to consider working with the euro and hence may have to update its accounting system. In addition, computer fonts and character sets have to be modified to include the new symbol. As the euro becomes more established, more work will be required.

There has been one snag with all this from a Y2K point of view: euro update projects have sometimes been in direct competition with Y2K preparations when it comes to resources. After all, Y2K is a *possible* problem; setting up computers to handle the euro is a *necessity* – at least if the company wants to make as much money as possible. Trying to avoid having things *possibly* blow up or burn down is harder to explain on the balance sheet. This problem of priorities may carry all the way up to the national level; one possible reason why France and Germany are behind on Y2K fixing is that their programmers are mostly tied up with euro work. On the other hand, European computer managers can now claim to have experience dealing with broad changes to their systems in a hurry.

Let's look at some specific cases.

The year 1999 has seen another computer update process, less critical than Y2K but almost as aggravating: the introduction of the "euro" – the common currency of the European Union . . . One thing to be said for the Y2K problem is that at least it doesn't demand the addition of a new symbol on computer keyboards . . .

Alternate Dating Systems (Continued)

Japanese Calendar

The Japanese have taken to the Western system for many purposes, but they hang on to a wonderfully traditional approach to dates for some things. The Japanese imperial system is based on the number of years for which the current emperor has reigned; for instance, 1999 is Heisei 11, or the 11th year of the reign of Emperor Akihito, known as the Heisei Emperor. This *does* seem to be generating the complacency problem mentioned above. It isn't clear what percentage of Japan's computers use the imperial calendar while their internal clocks and underlying program logic are running on Western time, but there are definitely some.

Dating by the current ruler's reign is not unique to Japan; throughout most of history, people have probably thought of the current year as "the seventh of King Steve's reign" or whatever. Even the Romans tended to work that way much of the time, only measuring from the traditional foundation date of the city (753 BC) when they wanted to get a bit formal. Taiwan counts its dates since the 1911 founding of the Republic of China, and companies there may be similarly prone to complacency as a result – though the Taiwanese military is apparently fully Y2K-ready.

Mayan Dating

If you want interesting-but-defunct traditions, the ancient Mayans had quite a calendar – the most accurate in the world in its time – which has been picked up by many modern mystic-wannabes and New Agers. It involved cycles of various lengths, especially a 365-day year and a 260-day ritual period, and the relationship of the cycles was considered highly significant. The baseline date for the Mayan calendar is about 3113 BC. The system also includes a period known as the "Great Cycle," which is usually calculated to be 5,125 years long; thus, the Mayan Great Cycle will end in 2012 AD. Those who assume that this will mark a vast change in the world doubtless regard Y2K as premature, paltry, and hopelessly polluted by modern technology. (They also doubtless have some explanation for why the Mayans bothered calculating cycles up to the *alautun* of about 63 *million* years.)

"The Battleship Just Crashed, Sir!"

One snag with modern First-World political ideas about "power projection" is that they involve transporting high-tech, computerized military equipment to the ends of the Earth, beyond the reach of standard support services, and hoping that they'll continue to work properly. The dangers of this thinking were illustrated by the U.S. Navy in 1997.

The so-called "Smart Ship Program" aims to reduce crew and maintenance costs by fitting ships with extensive computer networks. The cost of this is in turn reduced by using as many off-the-shelf components as possible, including standard PCs running Microsoft Windows NT. Unfortunately, the database input validation and error-handling incorporated in early versions of the system turned out to be less than perfect.

In September 1997, the *USS Yorktown,* a guided-missile cruiser and the first "Smart Ship," was sailing off Virginia when someone entered a zero in the wrong field. The network server attempted to divide by that zero, suffered a "buffer overflow," and crashed, bringing down the network. This caused the ship's propulsion system to stop – and the *Yorktown* was dead in the water for well over two hours.

That bug has been fixed now, of course, while most of the Navy's vessels aren't "Smart Ships" anyway. But one wonders how many computerized systems are lurking in remote stations, beyond the attention of Y2K testers and fixers. The gritty, realistic vision of the consequences has troops in unfriendly regions – parts of the Balkans, say – cut off from communications on midnight of the New Year, struggling to reestablish links before local insurgents notice that they can't call for help. The more cinematic version has high-powered warships drifting powerless on tropical waters as local pirates creep up in their fishing-boats, armed with machetes and bolt-action rifles, to see just how many of those tempting heavy weapons they can grab before the lights come back on . . .

The U.K.

In a realistic analysis, the U.K. seems to be coping with the Y2K threat as well as most countries and better than many (which pessimists translate as "badly"). Big companies claim to be on top of the problem; smaller organizations seem more shaky. As in other countries, some of the worst problems seem to lie in underfunded state bodies like the country's National Health Service rather than in private companies, which may recognize the dangers of losing big money and be prepared to pay to avoid them. For instance, U.K. hospitals were having Y2K-related trouble with their operating-room schedules as early as 1998. On the other hand, perhaps the companies are just better at hiding their troubles. Another example from 1998: A U.K. supermarket chain found that its stock-control computers had been automatically trashing brand new tinned tomatoes with "use-by" dates past the millennium.

A potential problem that is not unique to the U.K. but which may cause particular chaos in British waters involves deep-sea oil rigs. One estimate is that some of these rigs have about 10,000 "embedded systems" built in, some of them now located somewhere beneath the seabed. How many of these include date/time systems is an open question. Problems with those – say, in the stormy North Sea fields that lie between Britain and Scandinavia – could need a lot of cleaning up afterward.

Meanwhile, the company that operates the rail tunnel under the English Channel (linking London to Paris and Brussels) has announced that there will be no services running on December 31, 1999. They are worried about interface problems between their systems and those of their partners and suppliers.

Lastly, anyone with a taste for symbolism (perhaps relevant to magical-millennial game plots; see below) should note that the Greenwich Meridian – the line of longitude on which the baseline date and time is set for the entire world – was originally defined as passing through the old Royal Greenwich Observatory, in east London. The observatory moved some years ago – its old building is now a museum – but the zero meridian is still marked out on the site for tourists. The British government has chosen Greenwich as the appropriate location for millennium festivities, building a gigantic domed exhibition center on a reclaimed industrial site not far from this location. It *should* be complete and filled with exhibits in time for December 31, although there are worries about transportation infrastructure for the mass of visitors expected.

Incidentally, the Observatory was built by Sir Christopher Wren, and some say that he applied principles of ancient Sacred Geometry to the design. In a Y2K game with magical elements (see Chapter 10), this is literally Ground Zero.

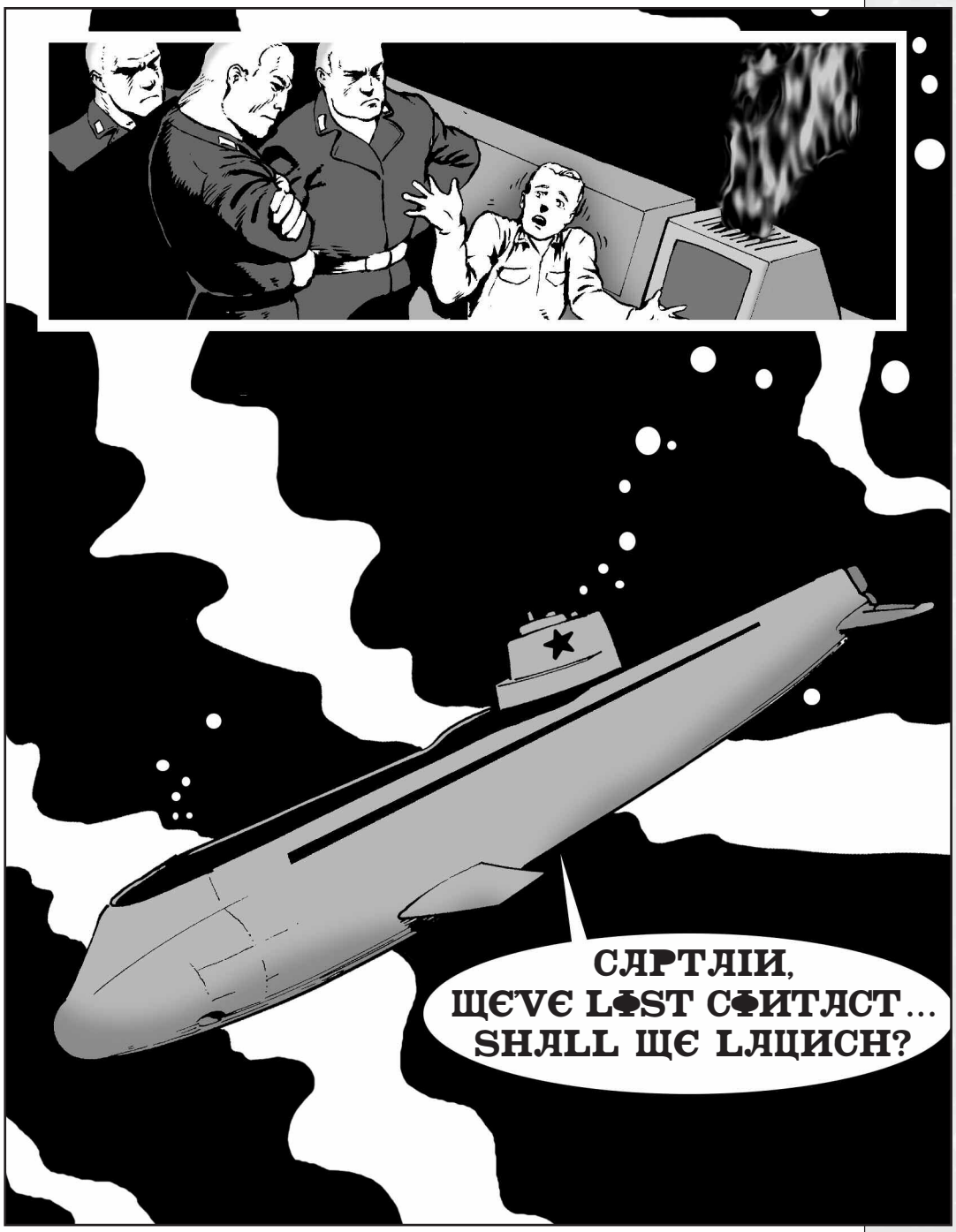
France

France is in much the same position as most other First World countries, but with at least one special concern: compared with other nations, the French depend on nuclear power for a far greater proportion of their domestic electricity generation. They seem to be less concerned than most countries about the possible risks. One result is that they are able to export electricity to their neighbors. The snag with *that* is that Y2K disasters further along the chain of supply could have interesting ripple-back effects. Even if the French power authorities are checking their own computers for problems well in advance (which seems to be disputed), they could be hit by other people's mistakes.

But why does France generally score so low on Y2K preparedness? What happened to that Gallic *élan*, the technocratic sophistication of the French ruling elite? Distractions due to euro projects may be part of the answer, but one does wonder if Y2K problems are being written off subconsciously as a plot by the "Anglo-Saxon" (i.e. English-speaking) world to confuse France.

Germany

What has gone wrong with the idea of "Teutonic Efficiency"? Part of the problem may be the thing that made Germany what it is today rather than what it was a dozen years ago: reunification. That famously efficient, capitalist land of BMWs was not so very long ago merged with the recently communist East Germany. The procedure was not entirely without problems, as the eastern segment of the new, enlarged nation struggled to adapt to capitalism, its industries suddenly finding themselves to be junior partners as the old system crumbled. On top of this, there is some suspicion that even West Germany had become a little too successful for its own good. Critics note just how many days of holiday those efficient German workers take and mutter words like "complacent." This may all add up to exactly the wrong mindset with which to tackle an increasingly urgent Y2K problem.



The YES Corps

In response to the global Y2K threat, the U.N. has backed the creation of an organization of volunteers – the "Y2K Expert Service," or YES Corps – to assist those who need help. Members will mostly work via the Internet, but some may end up flying all over the world in pursuit of bugs. See http://www.iy2kcc.org/YES.htm for details.

A tongue-in-cheek Y2K game might cast the PCs as members of a secret elite team within the YES Corps – ex-Special Forces troops, top-flight programmers, and ninja systems administrators who go into foreign military bases to fix bugs despite the active opposition of armies too proud to admit that they have problems. In a catastrophic post-Y2K world, the YES Corps could become the dedicated founders of a new (digital) civilization.

366-Day Meltdown

For a preview of the sort of fun to expect on January 1, 2000, look at the case of the computer-controlled aluminum smelter at Tiwai Point, New Zealand, owned by a company named Comalco. The programs that ran the plant assumed a 365-day year – which was fine until the end of 1996, the first leap year of their operation. At midnight, December 30, 1996, the day count went to 366. All 660 process-control computers on the site crashed simultaneously. Continuous smelting processes are not supposed to stop or to run without close, detailed monitoring; by the time the problem was fixed, five "pot cells" had overheated and been damaged beyond repair. The cost to the company was around one million New Zealand dollars.

For those who think that catastrophic bugs can always be fixed quickly and the lessons learned instantly: Two hours later, midnight rolled around at Comalco's plant at Bell Bay, Tasmania, and the same thing happened there. In fact, the source of the problem does not seem to have been identified until Bell Bay phoned Tiwai Point in the morning and compared notes.

Russian Missiles

When the U.S.S.R. broke up, one great worry concerned its nuclear arsenal. Given the possibility of widespread Y2K troubles in Russia, the thought of those missiles being computer-controlled is *scary.* The Pentagon seems to be genuinely concerned.

The Russian armed forces swear that their launch systems have been checked and cleared. Cynics would expect them to say that, but odds are that these systems are simple enough not to worry about the date, or were at least built by someone with the sense to make them "fail-safe" or to include plenty of human intervention in the launch process. The Pentagon now seems to think that there is no risk of an accidental launch.

On the other hand, there are all the early-warning and command-and-control systems. These are unlikely to be able to trigger missile firings *directly,* but may cause trouble if a nervous commander doesn't like what they are saying. This in turn is probably not a great risk if the international situation is relaxed on December 31; a calm commander's first guess should be that he is seeing a Y2K glitch. Given a certain amount of international suspicion, though, a jumpy commander might suspect the opposition of taking advantage of the Y2K situation.

One suggested solution is the formation of a "Joint Early Warning Center" – involving Russia, the U.S., and perhaps other nations with nukes – to monitor events and prevent misunderstandings. (This is something that many people think would be a good idea in any event.) Another is that every nuclear-armed nation should "stand down" its missile forces for a few hours on December 31. The problems with the latter solution are that switching systems off and then on again can itself make them behave oddly, and that it depends on trust; if participants are suspicious, they may refuse or be tempted to cheat because they think the "other side" is cheating. All these schemes depend on the state of relations between the powers – which have not been perfect lately.

An interesting plot twist would be to have the Russian warheads safely disabled but to have Y2K power cuts disable the security systems around them, allowing well-prepared Russian "Mafiosi" to break in and appropriate nuclear weapons. For black comedy, the GM could have Russian missiles launched . . . with no explosions, because the warheads have long since been stolen.

Scandinavia

The situation in Scandinavia does look doubtful, although perhaps not as bad as some analysts claim. These countries adopted computerization enthusiastically but fairly late, so many systems are probably recent and sensibly programmed – and hence less prone to Y2K problems. On the other hand, the government of Finland had apparently done absolutely *nothing* about its own Y2K issues by late 1997 . . . so there may be problems.

Switzerland

Switzerland seems to be doing fairly well with regard to Y2K troubleshooting. One of the biggest local industries is banking, which is highly vulnerable to problems – but which also has the money and the incentive to deal with them. The Swiss are stereotypically meticulous and careful, and they may well be living up to their reputation here.

Looking at this from a game perspective, the Swiss have long provided the world with a neutral, reliable, and *terribly* confidential banking system. Would the Gnomes of Zurich tell anyone if they had problems with their master computers? Probably not – in fact, they would probably have difficulty telling *themselves.* When the world financial system melts down in 2000, it will surely start here.

Conversely, the Swiss are probably the best-equipped nation in the entire First World when it comes to sheer practical survivalism. Having decided to remain firmly neutral amongst their mountains, they have created a defensive system designed to make it far, far too expensive for any other nation to invade them. It is common knowledge that every adult male Swiss has military training and keeps a rifle (if not ammunition) at home, while those mountains are honeycombed with tunnels and bunkers. When it all goes wrong, the Swiss will be well dug in.

Could Y2K be the apocalyptic final stroke by the Gnomes of Zurich in their struggle against the computerized Network?

Australia and New Zealand

Those who will be monitoring Y2K problems have a special interest in New Zealand: it will be the first substantial nation to have its clocks tick past midnight and it is currently reckoned to be better prepared than some countries, though markedly worse than others. The level of instant catastrophe there will allow some quick calibration elsewhere. The Secret Masters seem to have been conducting some tests already; apart from the Tiwai Point smelting plant incident (see sidebar, p. 49), New Zealand's capital, Auckland, suffered a serious, prolonged power crisis a little while ago, with extended power cuts.

Australia will be the next major nation hit, and is rated a little higher for preparedness – so no worries. Still, the real fun, here and elsewhere, may start on the morning of the first full working day of the year 2000: Monday, January 3.

Japan

After New Zealand and Australia, Japan is next on the schedule for the Y2K Big Moment, and as the original Asian financial and industrial powerhouse, its experience will be important. With a lot of "smart buildings" and other automation, there is a lot of scope for problems.

It is the financial sector that could be most interesting, though. It has been commented that Japanese banks seem highly confident of their ability to deal with Y2K problems. It has also been commented that the costs they are quoting for the work involved are markedly below those suffered in other countries.

The likely explanations here are that the Japanese banks were a lot more careful and far-sighted about their software engineering in the first place, that they are underestimating their problems, or that they are understating their costs to save face. (The stereotyped but often genuine Asian concern with "face" worries Y2K experts; it's hard to fix a problem that you can't bring yourself to admit to.) It's also conceivable that they are just saving some – though not all – of this money by virtue of better management and attention to detail.

A conspiracy theorist will, of course, recognize an alternative possibility: the Japanese have a secret weapon that they aren't telling anyone about. Why let the truth slip in these cost reports, then? Either it was an accident or they did it to intimidate their opponents, of course!

For that matter, some Western analysts are worried that the Asian companies that actually make computers are badly prepared for Y2K, which could cause a supply problem in early 2000. Is this a subtle double strike aimed at the Network? When the world collapses on January 1, will the Tokyo bankers be left sitting on top of the rubble, perhaps forming a new Illuminated faction to replace the Gnomes of Zurich? Not if someone can keep an Earthquake Projector working and focused on Tokyo, they won't be.

Singapore

Singapore is essentially a modern city-state – a modest-sized island with high population density. Economically successful and run by a highly paternalistic, authoritarian government, Singapore has made a conscious decision to jump into the computer age at a high level. Its citizens can acquire a 9-megabit net connection for a few dollars a month, and the plan is that the entire population should eventually be linked up with fiber-optic cables, enabling mass telecommuting, access to powerful government systems, and efficient computer control of everything from immigration to traffic control to security in private areas . . . and also government censorship of all media that the citizenry can use.

This "wired island" is a recent, state-of-the-art scheme instituted by a government that is prepared to pay for something that works. Y2K tests have certainly been run on major systems. Singapore may therefore be mostly Y2K-

A Wing and a Bug

One of the Y2K worries that makes a lot of sane people nervous concerns air travel. The vision of airliners falling out of the sky as "fly-by-wire" controls shut down, turning upside-down as navigation systems inform autopilots that the world has just gone funny, or landing neatly on residential areas some miles from the airport as the air-traffic control computers go haywire, is strangely unappealing.

But let's not panic yet. Both Boeing and Airbus claim that their planes have no year 2000 problems that could compromise safety. In fact, they have only been installing fly-by-wire control systems in relatively recent years, and despite the fact that such systems had a few teething problems, it's probably fair to assume that they were sensibly programmed with respect to Y2K issues. Major airliner navigation systems have most likely also been checked; some older Global Positioning System units hit a weird date bug of their own a few months *before* January, but they should be dependable on the big night. Which just leaves a few thousand light planes, special designs, and strange interfaces to worry about . . .

Then there are the systems on the ground. In the U.S., the Federal Aviation Administration has been called "sluggish" in its Y2K checking, but they are probably being held to exceptional standards and they claim that they'll be all done and fully checked by June 30, 1999. It has also been pointed out that the controllers used to get along just fine without computers and have established contingency plans for situations where the machines go down. Of course, there were a lot fewer aircraft in the sky back in the pre-computer days, and people don't like to *activate* contingency plans.

Elsewhere in the world – well, no doubt standards vary, but at least everyone can understand that keeping air-traffic control working right is a *really good idea.* One U.S. senator dealing with this issue noted that "If an airline announces it won't fly to a certain country, that's a good sign something is wrong there." Y2K is having bizarre effects; dry understatement is usually rare among U.S. senators.

Perhaps the most appealing approach to encouraging Y2K planning comes from China. There, the civilian aviation authority is requiring airline executives actually to be *in the air* on the big night!

"Your Luggage Is in The 19th Century, Sir"

The senator whose comments were quoted in the sidebar on p. 51 also remarked that "The airlines will be OK. But it won't do them any good if they can't land," which suggests that his speech writers are well up to speed. But let's assume that despite all the prophecies of doom, both onboard and air-traffic control systems work perfectly and those brave souls who decided that they *had* to be a long way from where they were on December 31 stagger off their transport, gently buffered against stress by the free drinks. Of course, they must have succeeded in buying tickets from systems that could handle the date change to get there in the first place. That still doesn't mean that everything is perfect.

Even accepting that safety-critical systems are likely to have been checked and double-checked fairly carefully, air travel is a complicated and highly *organized* business. Think about all the key-punching, barcoding, scanning, and bleeping that go on before and after every air journey these days – and especially those that cross international borders. Now apply basic Y2K paranoia to those systems.

To start with, there's passports and immigration control. All very important matters, no doubt; even those who think that modern nations are far too touchy about letting people in are inclined to disapprove of fugitives from justice and so forth. Immigration officials tend to take their work seriously, and have a lot of authority. So if the relevant systems crash, travelers *will* be delayed . . . and systems that discover that people have negative ages, or that they've been in the country for a century, will throw up lots of red flags to provoke official paranoia.

Even the most trivial faults can be compounded by jet lag, stress, and that free booze. Horror stories about suitcases traveling one way while the owner travels the other are bad enough at the best of times; planeloads of luggage vanishing across the Date Line and out of the system's calendar could lead to riots.

proof. On the other hand, inherited mistakes can creep in anywhere and may lead to cascading errors. Hence, the entire island of Singapore *may* freeze up on that night, its elegant traffic controls failing, its increasingly network-dependent population cut off from work and news – or exposed to previously restricted ideas and images as censorship systems fail in the "open" position.

Obviously, all of these possibilities have potential for a Y2K-based game. If Singapore proves Y2K-proof – especially if much of the rest of the world isn't – then it will be in a singularly powerful position, its industries and banks still running while its competitors scrabble to recover. This may be sheer serendipity or it might have been planned by someone. On the other hand, if it freezes up – well, that too could be to someone's planned advantage, it could be chance (but exploited by some quick-thinking factions), or it could just make for an interestingly chaotic scenario. And if part of the result is the failure of censorship, and if some Singaporeans get used to the feeling, matters might become interesting for a while.

Incidentally, anyone looking for a precursor of minor weirdness to come could look at Singapore on January 1, *1999*, when 300 taxi meters stopped running. No one is quite sure why.

The Holy Land: Jerusalem Syndrome

And what rough beast, its hour come round at last,
Slouches towards Bethlehem to be born?
– W.B. Yeats, "The Second Coming"

It's not just computers that are likely to have problems come the millennium; some places will have problems come January 1 whatever systems they use.

As the location of the events that it has been two thousand years *since* (dating errors aside), Israel is likely to receive a lot of visitors in the year 2000, looking to mark the new millennium of the Christian era in the place where it started (or, in a few cases, waiting for the whole darn thing to be shut down by God; see Chapter 10). The signs at the time of writing are that Israel is remarkably poorly prepared for the rush; the implications of the year number for Christians simply don't seem to have struck the government until recently. Computer disasters can only compound the ensuing problems. According to local analyses, 70% of Israeli government computers will be fine come the millennium; however, only 40% of the private sector's systems are expected to be ready – and that includes hotels . . .

The government apparently expects no less than 2-8 *million* pilgrims to visit in 2000 (not all in January; in fact, the higher estimate is based on the likelihood that the Pope will visit Israel in March as planned, his health permitting. The wide variation in estimates reflects the uncertainty of the situation, and is itself part of the problem.). This in a country of 6 million people – a hot country, with dangerous politics at the best of times.

The first question this raises is where they will all *stay.* There has been some discussion of the possibility of huge tent cities, but this may not come to anything. Hotel computer failures could become catastrophes. Other effects, such as demand-driven increases in the price of food and bottled water, hardly bear thinking about.

Then there's local politics, such as the fact that certain areas, including Bethlehem, are under the control of Yasser Arafat's Palestinian Authority. The Israeli authorities are prone to running road blocks and security checks on the road from Jerusalem to Bethlehem, which can increase journey times from 15 minutes to two hours. If this continues, perhaps with the addition of minor Y2K glitches in security-service computers, then the whole system could seize up . . . not that the Basilica of the Nativity in Bethlehem is considered capable of handling the number of visitors expected in the first place.

Meanwhile, the Israelis have discovered and deported a group of especially crazed foreign religious fanatics who apparently planned to commit mass suicide on Mount Zion on 1/1/2000. Aside from the danger of elements of this group getting back in, this has left some Israelis with the vague sense that *most* of the pilgrims will be suicidal lunatics.

Even the most trivial faults can be compounded by jet lag, stress, and that free booze. Horror stories about suitcases traveling one way while the owner travels the other are bad enough at the best of times; planeloads of luggage vanishing across the Date Line and out of the system's calendar could lead to riots.

Nor do all the problems end with January. By coincidence, Easter – always a busy time for Israel – happens to fall at the same time on both the Western and Orthodox church calendars in year 2000. Orthodox pilgrims tend to paralyze Jerusalem at Easter in any year, even without Western help.

If Israel does seem apocalyptic come the Millennium, it may not be supernatural. It may not have anything to do with war or terrorism (which might almost *help*, by deterring prospective pilgrims). It may be the overheated, unhoused crowds.

Satellites

The Y2K problem may not be confined to things down here on Earth. Do *you* know how many satellites are up there, running communications and who-knows-what-else? Even *without* assuming that there are lots more that the government doesn't want you to know about? No – and neither do we.

The Secret Masters apparently ran a rehearsal to see what might be accomplished by knocking out just *one* satellite in May, 1998. Both primary and backup attitude-control systems on the "Galaxy IV" satellite failed (for reasons that were at least partly physical rather than software-based). This knocked out 80-90% of U.S. pager services, along with various news and information feeds and credit-card processing services. The secondary effects for organizations (including hospitals) which have come to depend on pagers were spectacular. Seventy-five percent of the satellite's services were transferred to alternates within 18 hours, but some took several days as other satellites had to be repositioned to take up the work.

In reality, there are several reasons to believe that satellite-based systems may not be a huge concern on January 1. To begin with, satellites tend not to worry much about the year number; they generally use hardwired internal clocks to track time, but not in standard calendar terms. (Ground-based control systems are another matter, however. These tend to use standard commercial computer designs with complex user interfaces. At the very least, testing them for Y2K bugs has involved serious work.)

Secondly, there's a lot of money tied up in satellites and some fairly diligent engineers involved in the space industry. They *know* that they can't go back and fix a mistake later, so they generally take care the first time around, nudged on by investors who can't afford many accidents.

Lastly, the weird thing about the satellite business is that it's fundamentally conservative. That's really part of the second thing: Generally, nothing goes up on a critical satellite without being tested nine dozen ways first, and anything too complicated is regarded with immense suspicion.

On the other hand, all this mean that there's a lot of two-generation-old technology drifting around in space. Very reassuring.

Making a Date on the Date Line

People will, of course, be celebrating the change of dates. If you want to boast about where you were when 2000 began, then what's better than being able to say that you were at the place where it happened *first,* watching the first sunrise of the new millennium? (Ignoring the fact that, strictly speaking, the millennium starts in 2001.) That implies finding the patch of land where midnight strikes first as night sweeps around the globe. That in turn means getting as close as you can to the west side of the International Date Line. The Date Line is kinked in several places to save various nations and island groups from finding themselves perpetually operating on two different dates, so to catch the *first* sunrise, you look for where it's kinked furthest eastward, then get as close as possible to it on the west.

When you've finished reviewing the geography, the answer is the Chatham Islands, a remote possession of New Zealand. The Chathams – previously noted only for sheep farming, fishing, and bird-watching – are braced for a tourist invasion. They have some hotels and campgrounds, but they could get a little crowded. Meanwhile, Tonga and Fiji – both fairly close to the Date Line and making fudged claims accordingly – are looking to cash in.

Continued on next page . . .

The Second World

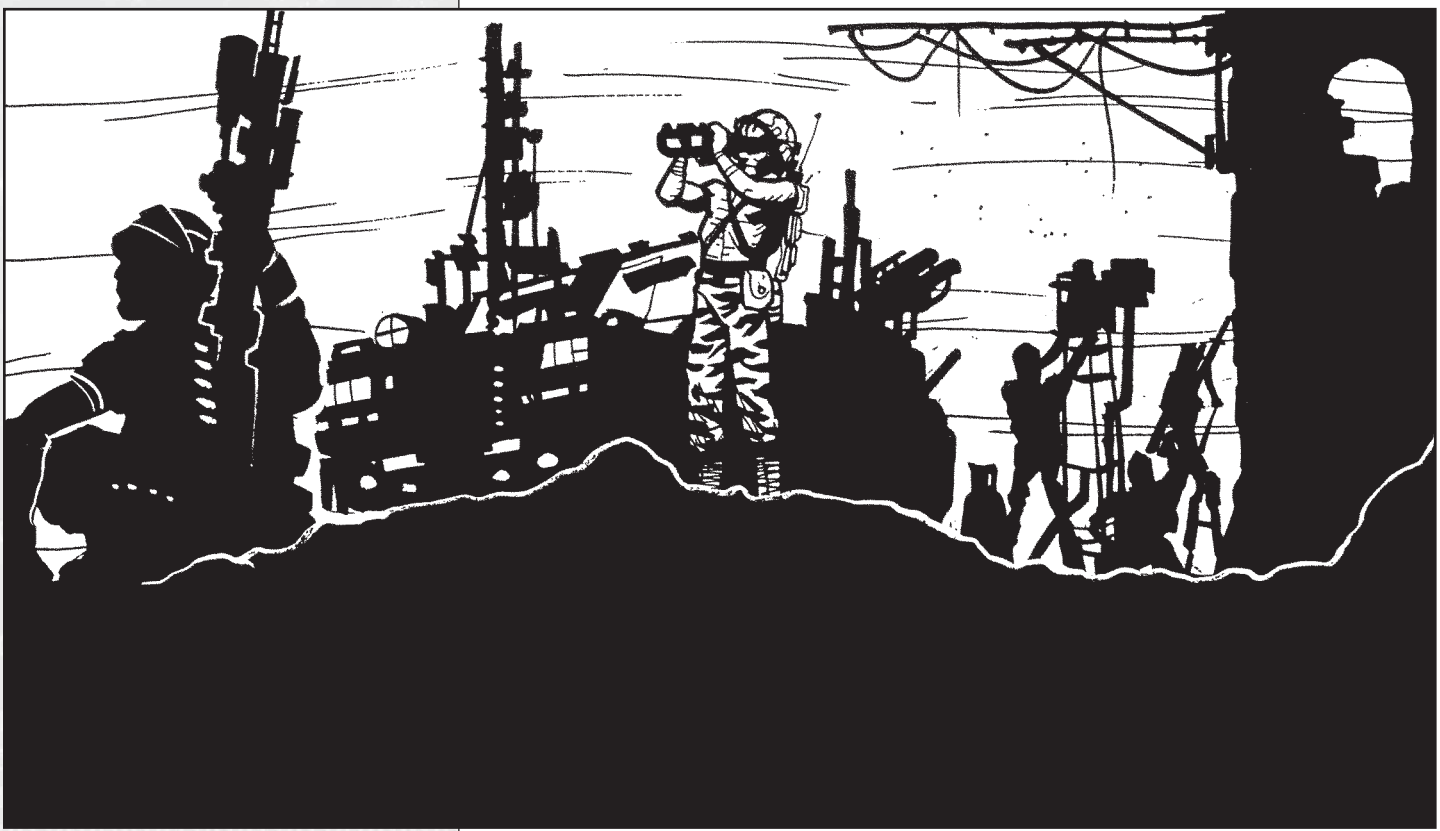
Technology flows rather slowly down the gradient of wealth. The rich West is dotted with more computers than anyone can count, but "second line" nations tend only to have them where they seem essential, or where somebody was throwing money around. On the other hand, the total number of computers has built up over the years, and these tend to be cut-price, old-fashioned systems – precisely the sort most vulnerable to Y2K problems. Worse, with organizations running on tight budgets, the funds to pay for troubleshooting may be hard to find. Some of these places are potentially the hardest hit of all, with all the First World's dangers and none of its solutions.

Despite all this, "Second World" nations may have fewer Y2K worries than their richer neighbors simply because they have fewer computers.

The Former Soviet Union

The countries that have savvy disaster planners sweating most profusely are those of the former U.S.S.R. Back in the days of the Cold War, Russia was determined to match the West in every aspect of technology, including both its computer industry and the sorts of technologies that require computers for support – space flight, nuclear power, advanced weaponry . . .

Russian engineers and programmers were not stupid, but centrally planned, goal-driven organizations display a distressing tendency to cut corners at the best of times – and if Western programmers didn't think far enough ahead, why should their Soviet counterparts have been any better? Not to mention the fact that the U.S.S.R. apparently used a lot of nonstandard computer languages, making it that much harder to find appropriate maintenance staff.



That's a bad start, and post-Cold War tendencies have exacerbated the problem. In many of the countries of the former Communist Bloc, the shift to capitalist and democratic organization has been *relatively* smooth. Not perfect – there has been corruption, inefficiency, and misery (and the former Yugoslavia has gone to a kind of hell that leaves even Russia trailing) – but the current situation involves people and organizations who should be willing and able to chase down Y2K problems with reasonable competence.

> ***"We can observe what happens in Western Samoa, New Zealand, and Australia, and have six hours to make plans."***
>
> ***– Sunggu Aritonang, head of Indonesian state electricity provider PT PLN's millennium bug task force (from Reuter's via Y2KToday, April 30, 1999).***

The old U.S.S.R., on the other hand, seems too big, too cumbersome, too saturated with corruption and organized crime; economically, the place is still a basket-case. Medium- to long-term prospects may not be entirely hopeless, depending on who you ask, but in the short term, the chance of marshaling sufficient energy, resources, and manpower to fix Y2K problems seems vanishingly small. The West has been attempting to help, but breakdowns in political cooperation caused by the Kosovo crisis have *not* helped.

Missile concerns aside (see sidebar, p. 50), two of the biggest worries in Russia relate to energy supply. First, Russia is a large-scale supplier of natural gas to the other nations of Europe, with a huge pipeline running all the way from its gas fields in Siberia to its western border (quite an engineering feat). If the systems controlling this supply break down, the consequences for European power generation and industry could be severe.

Secondly, there are the nuclear power plants scattered across the former U.S.S.R., especially in Russia and Ukraine. This is an easy subject to worry about; the U.S.S.R. gave the world Chernobyl, after all. As previously mentioned, even if the power plants themselves have been checked and rendered safe, other Y2K weirdness could cause unprecedented dips and surges in the demand for power, putting the supply controls under unusual strain. Then there are the power systems on board 70-odd decommissioned nuclear submarines to worry about . . .

There is also some concern about the far-flung Russian railway system, which is quite heavily computerized, along with the usual worries about air-traffic control and the like.

Efforts *are* being made to fix Russia's Y2K problems, but the fact is, the project has been estimated to need another $3 billion. Estimated government revenues for the year are just $21 billion – none of which is going toward Y2K work. The country's best hope is probably that computers with problems may turn out not to be very important: The U.S.S.R. probably did achieve less with computers than it liked to claim, most Russians are rationally wary of putting all their money in banks and don't fly much, and there are plenty of traffic cops in Moscow who can take over when the signal lights go dead.

Making a Date on the Date Line (Continued)

To add to the confusion, the government of the Kiribati Islands, who found themselves sitting just *east* of the Date Line, hit on a simple but elegant way to grab a few more tourists. Legally, it's up to individual countries to decide how they handle local dates and times, and hey, the Date Line is arbitrarily bent in places – so the Kiribatis announced that they were unilaterally bending it some more to move themselves from the east to the west side. Which means that, by their reckoning, *they* will see the first dawn of the new era. They have even renamed their easternmost island – an uninhabited rock – Millennium Island. This is widely regarded as a cheat, but remember that any date is ultimately what some government somewhere says it is; the Kiribatis will doubtless get their extra business.

Meanwhile, assorted cruise ships will be prowling around the area, a Concorde airliner or two will flit back and forth across the line to give high-paying passengers more than one dawn or midnight, and a team of ex-military parachutists (sponsored for charity) will be dropping into the ocean as they watch the sunrise.

But island hotels, ships, and aircraft will be booked to the ceilings by now, which leaves a lot of people looking for the nearest substantial chunk of dry land where they can find somewhere to pitch a tent. That probably means mainland New Zealand. That's quite a relief for a lot of people – an English-speaking nation with a functional tourist-handling infrastructure.

Pedants will say that this is nonsense, of course. By international agreement, dates are measured at the Greenwich Meridian, 0 degrees longitude (which passes through London). Every other time zone is just a fudged, arbitrary adjustment from that for local convenience, so the new millennium really starts at the same time for everybody. Pedants don't get paid much attention when the millennium is being discussed, however. Still, it's worth noting that by *this* rule, the first sunrise of the new millennium will be seen in eastern Russia, China, and the Indian Ocean (including the Nicobar Islands, if you want somewhere tropical). So there'll be tourists there, too, no doubt. Then there's Antarctica; the South Pole will have seen its last preceding sunrise in about September, and won't see it set until March . . .

With tourists heading everywhere except (probably) Antarctica, then, what about the Bug? A few hotels, liners, and maybe even aircraft may have interesting problems, certainly. And mystical, symbol-obsessed conspirators will probably be holding their conferences and ceremonies across the Pacific. *Something* may rise from those depths, when the clocks – and stars – are right.

Latin America

Some parts of Latin America may belong in this section while others may be classed as Third World, but almost all the nations in this region have taken to computing over the last decade and thus have Y2K concerns. Mexico claims to be on top of the problem, but independent reports claim that it is months or years behind schedule in fixing it (which may have repercussions for Mexico's big trading partner to the north). Ecuador and Guatemala have apparently barely begun planning. Countries such as Venezuela, Ecuador, and Colombia, which depend heavily on oil revenue, have been hit by price reductions, leaving little in the budget for bug-chasing. Brazil has recently privatized much government-owned activity; whatever your take on the politics involved, it means that there is now a whole string of new business owners who suddenly have to find the money for Y2K preparations.

For a planners' horror story, look at the Y2K test in 1998 at the Xingo hydroelectric dam on the Sao Francisco River, Brazil. When the control computer had its internal clock set to January 1, 2000, the whole control board went haywire. "12,000 warning lights flashed all across the board, with all kinds of alarm information," according to reports. If this had not been a test, the plant would have to have been shut down – cutting all power to 30% of northeastern Brazil. On the other hand, Brazilian bank owners are so confident of their preparedness that they have committed themselves to cover the cost of any legal actions arising from Y2K. (A conspiracy seeking to take control of such banks could always try to introduce a few Y2K bugs into their systems, driving the current owners bankrupt.)

China

China is not heavily computerized, but its recent determined, government-sponsored, market-based modernization process has involved a fair amount of technology. Even before that, the sheer size of the place meant that there was space for a fair number of computers, even if the per capita count was relatively low.

The problem is that China *hasn't* advanced enough economically to finance intensive Y2K preparations. Both outside observers and Chinese programmers admit to being nervous. Whatever happens, the thousands of Chinese farmers who still do their accounts by abacus will not be the ones to blame . . .

Hong Kong – officially a part of China, but technologically more advanced than most of the rest and very densely populated – may be more vulnerable, although its authorities have taken the issue seriously.

India

India has an interesting relationship with modern computing. For many years, the country wasn't regarded as a particularly good market for high-tech equipment; it was too short of money, too long on manpower. There were stories of Indian companies where, instead of a computer database, a team of well-drilled employees stood permanently next to filing cabinets, ready to pull out a drawer and whip out a file the moment a request was called. But this sort of anecdote underestimates the nation, which is more than capable of coming to grips with technology when the need arises.

The Y2K Exploding Computer Scam

Where there are worried people, there are con artists offering them solutions; naturally, the Y2K panic is no exception. Reports from a number of countries suggest that several different cons are already underway. Some of them may sound stupid, but a good con artist can make anything seem plausible for a moment – and he only needs one or two people to succumb to make a profit.

The crudest but perhaps most powerful begins with a phone call saying "Hello, this is your bank. We need to make sure that your account won't be damaged when our computers roll around to year 2000. Could you give us your name and account number so we can check our details?" (Three guesses what the caller actually does with that information.) Others are targeted at computer users and involve the offer of spurious "Y2K solutions." These are merely low-quality but legitimate problem-tracking and solution software packages; the active dishonesty appears when the seller starts talking about what the bug may do.

For example, some hardware vendors have apparently claimed that Y2K-noncompliant computers may explode. Which is stupid, of course – except if it isn't. Contrary to the reassurances offered to every new user, there *have* been cases where software – or even just hitting the wrong combination of keys – caused a computer to burst into flames. (For the technically minded: Operating systems and other software may control voltage levels on connections to hardware such as screens, and bad computer designs let voltages be set higher than the hardware can stand.)

Perhaps lost among the con artists, then, there are some authentic warnings that will go unheeded until it's Too Late. (They doubtless laughed at these poor saps at The University.) No one has reported a Y2K bug that makes a computer explode *yet,* but nothing is impossible. In a game, the GM can flaunt his prejudices and blame it on shoddy Third-World or ex-Soviet engineering . . . and have the word-processing department burn down as the warheads fly and the power stations melt.

In fact, India has one of the largest populations of well-trained engineers – including software specialists – in the world. Much of the subcontinent is desperately poor, but the population base is *huge,* with a middle class that has a real respect for education. Furthermore, thanks to the legacy of British imperialism, educated Indians generally speak English as a second language, giving them access to plenty of academic and technical literature, and also to rich markets for their skills.

For instance, there is a substantial émigré Indian community in Silicon Valley, as computer firms there have scoured the world to fill their skills shortage. Slightly more recently, Indian computer experts have found good work without having to leave their homeland: Full-scale software development and maintenance companies have sprung up in well-wired towns and cities around the country, often supporting computer systems in "First World" nations, testing, fixing, and upgrading across telecom links while the customer sleeps. Staff can be paid good rates by Indian standards, which are far lower than the rates they would have to be paid in the client country, and the cost of the communications involved is more than balanced by the reduction in other overhead.

It is a safe bet that one thing such companies have been doing is a lot of Y2K checking and bug-fixing, no doubt profitably for all concerned. This is not to say that India is finding the Y2K problem an unqualified boon. There are plenty of long-established computer systems in financial, business, and technical applications around the country, and this not-terribly-wealthy society may not be perfectly equipped to chase down *every* problem.

There may be greater problems yet, thanks to India's determined pursuit of technical advantage in specific fields. The country has notoriously poor relations with some of its neighbors (especially China and Pakistan) and has recently developed both atomic weapons and the missile systems to deliver them (along with a nascent space industry). A few leftover bits of code in its command-and-control systems could conceivably lead to some messy fireworks displays.

Power to the People!

One person's disaster is always someone else's opportunity.

Despite all the fun you may have playing ***Doom,*** computers are not an unmitigated good. They can be used to store and collate information on people who previously could have remained hidden from an oppressive system. They cost money, which means that the rich can acquire them more easily than the poor. And employed cleverly, they can be used to ensure that, yes, the rich get richer and the poor get poorer. (If nothing else, the children of the rich can acquire the basic skills and experience one needs to pick up the lucrative computer jobs.)

Sure, computers make nice tools for those who want change. It's even conceivable that the U.S.S.R. collapsed because it couldn't fit the idea of personal computing – the essence of 1980s progress – in with its centralized system. But when the haves aren't too worried about progress and the have-nots are seriously poor, imported computers can become the very symbol of the faceless state.

As a result, Y2K failures could actually benefit the poor and downtrodden in some places. The Communists will be back and feeling vindicated; Marx always said that the old system would collapse because of its deep-seated contradictions – its bugs – and the revolution can take advantage of this failure. If you're playing a game of assorted catastrophes, then throwing in a few good, old-fashioned Proletarian Uprisings could add to the color – and honest PCs may even come to the conclusion that of all the events of January 1, these at least permit some sort of good.

Mind you, revolutions tend to be messy affairs with a lot of factions and large-scale confusion. The revolutionaries could be too preoccupied to do much about the melting power stations (sold by shady *Yanquis* to the deeply corrupt Ministry for Power Generation and run by the old President-For-Life's brother, obviously). The old, all-important question of who controls the TV stations and the artillery could be complicated if both are currently going haywire – and this time, the New Boss to watch out for will be carrying a Y2K-compliant laptop.

Cheap Clocks

The Y2K problem is a problem with clocks. Clocks are not always set correctly; therefore, not every Y2K problem will happen at the same time.

In truth, many computer clocks *are* set fairly precisely – especially in the time-critical systems which will be especially vulnerable to Y2K problems. The growth of the Internet has probably helped; when two computers are connected to each other, getting the link to work tends to involve the synchronization of their internal clocks, often to a highly precise clock somewhere else on the net. But some systems don't bother. It's a safe bet that cheap or antiquated computers in poorer countries will be among the least accurate for time, especially since clocks in computers which are periodically switched off require battery back-ups to keep going, and those batteries eventually expire and have to be replaced – which may cost more money or effort than the owner wants to spend. A clock which is *days* off doesn't always matter – humans can compensate. But when the human finally gets around to telling the computer that the year is 00, watch out for fun.

Thus, Y2K scenarios set in poorer countries may involve disasters "smeared" over hours and days. This will probably, usually, be an advantage; each crash can be noticed and dealt with in turn. Never underestimate the niggling psychological effects of "one damned thing after another," though, or the cumulative results of system B failing just as the people fixing the disaster in system A have come to depend on it. In a cinematic action game, disasters seem to have an immaculate sense of timing; the explosion always happens *just* when the hero is hanging over the elevator shaft by a single, fraying cable.

North Korea

North Korea may be one of the single most worrisome countries of all come the big day, especially along its border with South Korea. Back in the days of the Communist Bloc, the North acquired equipment from Russia – including military materiel, of course. The North Koreans now claim that they designed and built their own key systems, but it is hard for the rest of the world to tell for sure in the face of intense North Korean secrecy.

These days, while most of the old Communist world is making gestures toward reform and opening borders, and is more or less capable of asking for help in emergencies, North Korea has dug its heels in hard. A clear sign of the country's mindset has been the appalling famine of recent years: Hundreds of thousands, maybe millions, of North Koreans have died, but the country has not only refused to let journalists and most other observers from the rest of the world report on this, it has been grudging about accepting food aid – especially if the donors require any kind of monitoring, let alone if they make the help conditional on reform of the country's own farming system.

Now look at North Korea's border with its southern neighbor, with whom it has technically been at war since 1950 (the Korean War having "ended" in 1953 with a truce, not a formal treaty). This is the most highly militarized border on Earth, with 2 million troops, including American forces, deployed along it – and both sets of forces regard the other as a serious, immediate danger.

South Korean planners have recently been asking the Russians careful questions about possible Y2K planning in North Korea. The answers seem to be reassuring, but Russia has its own problems and priorities, and the North Koreans are hardly likely to open their systems to foreign inspection. As usual, nothing is certain – but if you want a location where Y2K problems could blow up into an actual shooting war, this could be it.

The Third World

Computers may be more than rich folks' toys these days, but they do still cost money – which means that the world's poor *may* get off relatively lightly come the Y2K disasters.

Certainly, the family of a subsistence farmer out on the far fringes is not only unlikely to have ever *seen* a computer – they probably have nothing in their lives which depends on computers. They may grow and make their food and clothes, or buy them from close neighbors operating at a similarly simple level. For such non-digital individuals, Y2K means little.

In truth, this image is slightly out of date. The last half-century has seen one of the greatest transformations of life in all of human history: a vast movement to cities. In South America, Sub-Saharan Africa, and southern Asia, urban centers have expanded, producing simple goods for world markets at low cost. The new city-dwellers range from tiny governing elites, through fairly prosperous middle classes and established factory workers on steady (if small) wages, to shantytown dwellers scraping by on irregular, "marginal" work – street-hawkers, shoeshine boys, low-paid domestic servants. (These "marginal" workers are often essential to the lives of the cities they surround, providing basic services at minimum cost; they still live much like peasants, but in an urban environment.)

Even in the Third World, modern cities tend to depend on automated systems for some essential functions – power supplies, traffic control, etc. Not that such things are always terribly dependable or well-run at the best of times, but a few Y2K failures could add to the hardships of life. It is the rulers and the middle classes who will likely notice such problems most quickly, but the ensuing bankruptcies could soon cause trouble for the rest of the population, as jobs disappear. In many of these countries, almost everyone tends to assume that the elite is (a) corrupt and (b) in league with international capitalist exploiters, so the fact that most of them are extremely ill-prepared for Y2K troubles may be a recipe for revolution – except that there probably aren't enough computers to cause *real* disruption in most cases.

Categorizing Catastrophe

Computer experts, corporate executives, and government officials agree that the greatest risks and biggest challenges presented by the Y2K bug lie overseas. In many nations outside the U.S., the response to the Y2K bug has been erratic or nonexistent, suggesting that there will be widespread failures in banking, shipping, energy, aviation, and communications. A worldwide survey of Y2K preparedness released by the GartnerGroup computer consultants identified the following categories:

Level 1

Isolated, minor incidents in utilities, communications, and financial services. Potential for moderate disruptions in some government services. Includes Australia, Belgium, Bermuda, Canada, Denmark, Ireland, Israel, Netherlands, Switzerland, Sweden, U.K., U.S.

Level 2

Isolated, moderate disruptions in utilities and transportation. Potential for severe interruptions in some government services. Includes Bahamas, Brazil, Chile, Finland, France, Germany, Greece, Hungary, Iceland, Italy, Japan, Mexico, New Zealand, Norway, Peru, Portugal, Singapore, South Korea, Spain, Taiwan, Thailand.

Level 3

Widespread, moderate power interruptions and air-traffic problems. Potential for severe loss of some government services. Includes Argentina, Armenia, Austria, Bulgaria, Colombia, Czech Republic, Dominican Republic, Egypt, Guatemala, India, Jamaica, Jordan, Kuwait, Malaysia, Panama, Poland, Puerto Rico, Saudi Arabia, South Africa, Sri Lanka, Turkey, United Arab Emirates, Venezuela, Yugoslavia.

Level 4

Widespread, severe problems in utilities, communications, and transportation, and especially in air-traffic and government services. Includes Afghanistan, Bahrain, Cambodia, Chad, China, Costa Rica, Ecuador, El Salvador, Ethiopia, Fiji, Haiti, Indonesia, Kenya, Laos, Lithuania, Morocco, Mozambique, Nepal, Nigeria, Pakistan, Philippines, Romania, Russia, Somalia, Sudan, Uruguay, Vietnam, Zaire, Zimbabwe.

5. The Survivors

The classic American take on any global disaster is "We'll make it through." Americans pride themselves on being ready for anything . . . ready to make it through hurricane, flood, nuclear war, or Y2K, face down the looters, and then help out the neighbors. For some Americans, preparing to "make it through" has become a lifestyle. These are the survivalists.

Survivalists stockpile food, supplies, and anything else they think they'll need to make it through a disaster. Some of them try to develop useful skills as well; others just hope to hunker down and make it through.

The typical survivalist enjoys sharing his planning with like-minded friends, but doesn't advertise his interests to strangers. Strangers might not understand how *important* it is to be prepared, might mock his forethought. And, if it ever comes down to it, any stranger may be an enemy . . . if not now, then on The Day.

Should a real disaster ever befall the U.S., though, the survivalists may be the ones who determine how the scenario will end. Their forethought and determination may save not just them, but society. Or their paranoia may feed the very chaos that they fear.

Getting Organized

So let's say that you're setting up a survivalist group. Whether you're doing it as part of the background for a game scenario or you're really planning for disaster, there are a lot of things to think about.

The first question: How do you pick members for your group, and what kind of physical base might you create? This in turn depends on the size of the group you're envisioning.

Just Me and My Woman

Or man, or dog, or whatever. Or maybe "just me." The loner gets out of town, just before the Crunch or just after, and heads for the hills. There's not much of a campaign in this character, but he makes a great NPC. If his preparations are good, he might be an ally – if only because he'll bushwhack the raiders that cut through his territory on their way to you. If his preparations are bad, he needs your help and charity. Unless he *becomes* a raider . . .

Family and Friends

Maybe you're just concerned with taking care of your loved ones. That sounds simple, but it's not. Both in real life and in roleplaying situations, things can get interesting when your friends have friends of their own . . . people who *you* don't want around. In a campaign, the GM can set up some interesting internal conflicts from the beginning, even before the little group starts building its hideout.

The Cabin

In the 1960s, worried Middle Americans built fallout shelters for their families. Nowadays, it's "vacation homes" or "mountain cabins." And they're really used for vacations, every year . . . but some of them have a year's supply of food in the cellar, and enough ammunition to wipe out the local deer ten times over.

There will be little in the way of special architecture. It's just a house, rather more isolated than most. There might be a cellar; there might be a side door that's not obvious from the outside. There will probably be a watchdog, at least when the family is home.

Politics and Philosophy

In modern American society, survivalism has become strongly linked with right-wing politics, religious fundamentalism, or both. There's no reason why this has to be true. The back-to-the-land hippie communes of the 1960s were certainly well-positioned as survivors, had the Big One dropped back then. But "survivalist" has come to imply, to non-survivalists, a pickup truck with a gun rack, a cammo shirt, and a deep and abiding sense that the Republican Party is soft and rotten and the Democrats are, in fact, knowing tools of Satan.

Furthermore, some organized survivalist groups have adopted a paramilitary-style organization. In the past few years, the media has identified these "militias" as a danger to the law and order that they were supposedly organized to protect. Indeed, some of them are stockpiling military weaponry and have ex-servicemen who know how to use it. Some militia members or ex-members have been linked to domestic terrorism or armed tax resistance. And the Branch Davidians (see p. 11) who defied the government at Waco – and died there – certainly had a well-stocked armory, though their resistance was more religious than political in nature.

Clearly, some survivalists really *long* for things to fall apart. Some think that we're corrupt, and only in collapse will our society find spiritual renewal. Some feel that they're miscast in the modern era and will only be able to "find themselves" in a rougher, simpler world. And some just can't handle life, and imagine that it would be easier somehow with no doctors, no weather reports, and no Interstate Highway System. And, of course, there are those who just want to be told that it's *all right* to live up in the hills and shoot at anybody they don't know.

The typical survivalist enjoys sharing his planning with like-minded friends, but doesn't advertise his interests to strangers. Strangers might not understand how important it is to be prepared . . . And, if it ever comes down to it, any stranger may be an enemy . . . if not now, then on The Day.

Barter

The well-stocked survivalist will not depend on actual cash for "money." Anything can be used as currency if it is small and light, useful (or desirable), and of a consistent and recognizable quality. It's all right if it's consumable. Some candidates for "small change" in a survivalist campaign:

- Ammunition. Especially .22-caliber rimfire shells, which keep for many decades if stored properly, are more useful for hunting than for combat (and thus don't represent as much of a threat as, say, .45 ACP), are normally not reloadable, and are *tiny*. Shotgun shells will also be in demand.
- Cigarettes. They don't store quite as well as ammo, but they're small, light, generic, and in *constant* demand.
- Medicines. A drawback is that none but most common medicines will be recognizable by "Joe up the road." Joe knows a cigarette, and he knows a .22 shell, but can he confidently trade for something *you* say is a dose of penicillin? And can he be sure somebody will accept it in trade from *him?* Still, doctors will trade in drugs, and if you find a cache of medicines, a doctor (or his community) will pay you well for it.
- Other drugs. If you are creating a dark campaign, your small change could be home-brewed speed; the combat crazies will love it.
- Preserved food. In particular, military MREs, which are sealed, keep indefinitely, can't possibly be counterfeited, and include not only food but a selection of life's other little comforts, like matches and gum.
- Soap, razor blades, and tampons. Anybody who has tried a homemade substitute will want to go back to the real thing.
- High-proof homebrew. Alcohol is a fuel, a disinfectant, a solvent, a medication, and a recreational chemical. If you have a good still and know how to use it, you'll never be without trade goods. In terms of value for weight, though, it's inferior to the above.

Encountered

Before Y2K, this kind of group will probably live at home. On The Day, they're crowding the roads to get to their safe place; some of them will make it. (And some of them *have* no "safe place," and will turn into refugees or raiders – see pp. 71-72 – while others will find established communities or join together in ad-hoc groups.)

After The Day, they will be found holed up, hoping to be left alone until everything settles down. They may not have planned for a long wait; there's a good chance that they are just using up their supplies and keeping low. If the emergency becomes permanent, most of them will eventually be forced to go looking for civilization.

The Ranch Club

The next size up is a collection of families and dependents, numbering perhaps a few dozen in all. Whoever organizes it is probably thinking in terms of recruiting families, for the most part. (A group of single men will probably look and act more like a "militia"; see p. 64.)

At this scale, you're choosing families mostly because you think you can get along with them, and then because they have important talents (see sidebar, pp. 70-71) or significant financial resources to contribute. You might find them through your church, hunting club, or other outdoors organization . . . or you might just sound out your friends and their friends, one family at a time, over a span of years.

Leadership may be absolute, or it may be informal, with every family casting one vote.

A group like this might be open about their preparations and recruiting, or secretive ("I'd just come right out and encourage everybody to prepare, but Junie won't have it. She says they'll laugh at us."). Or they may be positively paranoid ("If they know what we've got at the ranch, they'll all come up and take it away from us when the Crunch comes.")

The Retreat

A group like this, with the resources of several families and ample time to prepare, can create a fairly elaborate hideaway. They'd buy land well away from the city, both to save money and to get away from mobs and Ground Zero. It might be "the Ranch Club," ostensibly a vacation getaway that they all use on a time-share basis. It might be nothing more than a house or three, some outbuildings, and enough good farmland, hunting land, or both to support everyone. But in some types of campaigns, the GM may want to prepare more elaborate retreats.

With time and money to prepare, a group like this could create an excellent defensive position without being obvious about it. They could dig into a hillside . . . or just bring in bulldozers, excavate a "stock pond," and then build a cinderblock building in the hole and fill it in again. If even one member is an engineer or contractor, he'll know how to go about it.

Or they might start with an old barn, for cover, and build a little hardpoint *inside* it, for emergencies.

Some setups will feature multiple entrances, including a long getaway tunnel. Some will depend on concealment. A group this size can do a great deal over time, if it's their priority. The Branch Davidians (see p. 11) were fewer than a hundred people, many of them children, and they still had an elaborate though ramshackle setup.

There will almost surely be guard dogs, and perhaps some sort of electronic surveillance, at least of the obvious approach.

If the group's "ranch" is large and the climate is hospitable, the central strongpoint may be replaced by comfortable homes in a fenced area that can be defended from small groups. If attacked in force, though, they won't plan on standing a siege. They'll give up their homes and temporarily "go guerrilla," relying on a network of hideouts with little stockpiles, until the surviving invaders give up and leave.

The well-stocked survivalist will not depend on actual cash for "money." Anything can be used as currency if it is small and light, useful (or desirable), and of a consistent and recognizable quality. It's all right if it's consumable.

Encountered

Before Y2K, the families may have lived at home, but many of them will have decided to take long vacations in 1999, starting in mid-November. They won't have to risk the turn-of-the-millennium traffic to get to their havens. On The Day, they're watching TV, shaking their heads and praying, and going out every so often to keep an eye on the road with those Zeiss binoculars Eddie brought, waiting for stragglers who many never come.

After The Day, they will find out if their preparations worked; some of them will just be marking time, while others will be trying to build lives in their new home. Some will be willing to take in refugees, especially those who have useful talents and who are willing to defer to the original cadre. And they'll have a hard time turning away kids.

This kind of group would be a good setting for a long-term "after-the-crash" campaign. If society does *not* shake itself and recover, groups like this will be quite able to survive indefinitely, if they're not in the path of organized raiders. Will they choose to cultivate their own gardens, or will they try to reach out to other enclaves and rebuild civilization?

Ranch Hospitality

Some escapees from the cities – the first ones out, the fast-talkers, the ones with cute kids, or the ones with obviously useful skills – will be taken in by remote farms and ranches that need more bodies to work the land and protect it from poachers and gangs. Thus, every surviving ranch has the potential to become an instant retreat with a defensive force. But more bodies mean more food, and the land can only support so many people. And few ranch owners will be foolish enough to trust refugees completely until they have proved themselves.

In addition to the normal backbreaking work of a farm or ranch – tending livestock, running fences, repairing buildings and vehicles, cooking, digging, and cleaning – refugees will find themselves building whatever defensive works the ranch owner thinks he needs, and fighting on the front lines if there's a raid. The single greatest fear of the rural holdout is losing what little advantage he has in this new world. Ranch horses are guarded fiercely, as they are reliable transportation that uses no gasoline. At the first sign of a raid, the ranch kids will ride the horses out to the harsher lands and hole up, waiting for the raid to pass.

Gangs won't lay siege to a fortified ranch if they see easier pickings elsewhere. A worse threat is a minivan gang (see p. 80), or a dispossessed holdout clan looking for a new home. This type of skirmish can drag on for weeks, until one side or the other runs out of supplies.

Personal Basics For 1999

The survivalist might not have these items in his pockets every day of the week, but in times of trouble (or after the Big One) he'll be kitted out with something like this:

- Pen or pencil, and notebook.
- Knife. Preferences vary widely; some want a Swiss Army job, some want a simple folding knife, some carry a fighting knife (and some even know how to use it).
- Leatherman tool ($80, 1/2 lb.). Almost a complete tool kit in one rugged package, and a backup for the knife.
- Hard candies (for quick energy).
- Matches *and* a disposable lighter.
- A little wire, and a little string, and a few rubber bands . . . you never know.

A 3-Day Emergency Cache

Here's a very basic set of supplies for two people for three days in a moderate climate. This is the sort of kit that one might throw in the back of the car, or keep in a closet at the cabin. It includes no weapons and no vices/luxury items. It *does* include a few items that are "merely" for cleanliness and comfort, because miserable people are distracted and can make fatal mistakes.

12 military MREs; a supply of your favorite sweet snacks, in packaging that will store; 3 gallons of water; two spoons, two plastic cups, two plastic plates; a half-dozen 6-hour candles; 50 feet of rope; a first aid kit; bug repellent appropriate to the area; two mylar "space blankets"; two ponchos; a box of matches; a disposable lighter; a flashlight; two towels; a bar of soap and a small bottle of shampoo; two toothbrushes and a tube of toothpaste; a roll of toilet paper; a box of wet-wipes; relevant maps; a roll of duct tape; clean socks and underwear; a couple of small backpacks. *And all medications you normally use, and, if you wear eyeglasses, spares.*

Space and weight allowing, one might reasonably add: a 2-man tent with enough cord to pitch it; three 12-hour chemical light sticks; a small entrenching tool; a hatchet; a large hunting knife; a transistor radio; a small Scout-style cook kit and a couple of canteens; a pocket calculator, preferably solar-powered; hiking boots; hats appropriate for the climate; a couple of cartons of cigarettes (as a light, non-threatening barter item that isn't so valuable that people will kill you for it).

And Maybe . . .

A kit of fishing supplies, if fishing will be feasible; infant supplies, if you have a baby to take care of; sleeping bags or other cold-weather gear, if necessary; small, personal musical instruments.

For A Larger Group, Add . . .

Walkie-talkies to keep in touch; bigger and better tents; a bigger and better first aid kit, or a real crash kit; field glasses; a real tool kit; books (see *The Survivalist Library,* p. 66); more and better cooking supplies; camp lanterns.

But Definitely Not . . .

Your computer, unless it's *really* Y2K complaint *and* you have a solar panel for it (or you know you'll have power).

Your cell phone. If you could get a cellular call, you wouldn't be fleeing the wreck of society.

The Springville Militia

Some survivalist groups have not dozens of members, but hundreds. This is the sort of organization that gets tagged "militia," and many embrace the tag, with a paramilitary organization, ranks, and uniforms. There may be a genuine political agenda, though it may be as simple as "The Federal Government has sold this country out to the UN, and we have to be ready when the Black Helicopters come for our kids."

A group this size will be able to include all the most necessary talents, probably in depth. It will also be a society in itself, even before The Day. It will most likely be set up as a nonprofit educational or charitable corporation; members will get tax deductions for contributions! There will definitely be a formal leadership structure, and probably a somewhat democratic process for choosing new leaders, and certainly lots of politics. There will be get-togethers and social events that have nothing to do with survivalism, and (count on it) a Fourth of July picnic. There will be bake sales, newsletters, affairs and enmities within the group, weddings, and funerals. There may be a softball team, or a league. There will almost surely be a *paintball* team, and they will probably be *good.*

Recruitment will be open; you can't hide a group this big, so nobody tries. Instead, there will be a Public Relations Officer who will try to divert unfavorable attention and get good publicity for the group's "patriotic forethought." A lot of potential members are likely to approach the group, rather than the other way around. There will probably be a screening process. Depending on the group, misfits may be turned away, or recruited into the Leader's Guard . . .

The Compound

A group this size may have several different retreats, or one big one. Their main compound may look a lot like a small town or a military base. It will probably be in good farming or hunting country, at the end of a *long* road blocked by several locked gates. There will be guard dogs, human sentries, and automatic alarm systems.

It will be everything described under *The Retreat* (p. 63), and much more. There will be a fleet of vehicles, maybe even an ultralight plane for scouting, and a fuel depot. And there'll be a makeshift airstrip (or maybe not makeshift at all, if any of the leaders are wealthy enough to arrive by private plane).

There will be *serious* stockpiles of weapons and ammunition. Perhaps it was all legally acquired; perhaps military equipment was diverted to them by sympathizers or members serving in the National Guard. There will not be a tank (well, maybe there will be, but it will be somebody's hobby, and not an important part of the defense plan except as a decoy). There will very likely be mortars, and possibly even light artillery, to smash nearby enemy groupings and make a siege impossible.

The group's philosophy is to be tough enough to discourage any conceivable aggressor force. They won't invite a scrap with the Army, but they don't think the Army will be a threat to them; the Army will be after the bad guys. And if there *is* no army . . . well, the bad guys will soon learn not to tangle with *this* militia.

They'll have nonmilitary supplies as well, of course. Their clinic will be well stocked (and they'll have EMTs, ex-military medics, and probably at least one practicing physician). They will generate their own power; there will certainly be a diesel generator with a backup, and there may be a windmill, water wheel, or a small bank of solar cells so that their most vital equipment will have power even when the fuel runs out. They may also have a still for alcohol; in fact, any sort of light industry is a possibility.

There will probably be a central cafeteria, but housing will be more like apartments or small houses than barracks. There will be farmland, farm animals, and a productive truck garden, lovingly maintained.

They will have a computer system for record-keeping, engineering calculations, and so on, and it *will* be Y2K compliant. There will be an internal phone system, backed up by walkie-talkies and CB. There will be a regular water supply – that was the first thing the planners looked for – and flush toilets leading to a good septic tank. These people are not abandoning the comforts of the 20th century in their desire to make it to the 21st.

Encountered

Even before Y2K, the militia's main compound and other retreats were manned by a caretaker cadre – retired folks, or people who can work at their jobs while living far from everything. There's far too much valuable stuff there to leave unguarded.

Group members visited on a regular basis for training; it was fun, they got to go out in the country and meet other militia members, and they knew they were learning something. As Y2K approached, though, the members came trickling in, and then streaming in. "If all goes well," said the leaders, "we've had a great drill. If not, well, we're ready."

And sure enough, the Crash was just what they were waiting for. On The Day, they're manning the short-wave radios, talking with other like-minded groups and monitoring the progress of disaster around the globe. Their pickets are out in force; the gates are guarded by sentries and the sentries are covered by snipers. Don't try to talk your way in. Don't try to force your way in, either. You had your chance. They've been saying for years this would happen, but did you listen?

After The Day, they will have the satisfaction of knowing that they were right all along. Happy with their newfound independence, they may seek to help others, but unless something goes wrong, they probably won't want to join any mass rebuilding effort unless it's rebuilding the country along the lines *they* want (see *New Beginnings,* p. 73). And if the disruptions last only a few days or weeks, many will be secretly disappointed. If society does *not* shake itself and recover, groups like this will be quite able to survive and thrive.

A group this size may have several different retreats, or one big one. Their main compound may look a lot like a small town or a military base. It will probably be in good farming or hunting country, at the end of a long road blocked by several locked gates. There will be guard dogs, human sentries, and automatic alarm systems.

The PCs could be part of a group like this, but they probably won't be the leaders . . . the leaders are organizers, strategists, and stockpilers, and don't get to have much fun. Put the PCs in the rank and file, and send them out on scouting or diplomatic missions.

Toys and Conveniences

A survivalist's cache could include a few gadgets that you may not see every day:

Waterproof matches. Will light even after being underwater (dry them off first). About a penny each in bulk.

Firestarter paste. The consistency of toothpaste, and very flammable. Useful for lighting wet wood, and much safer than gasoline or lighter fluid when you just need a fire right away. $4 for a 3-ounce tube, which will start at least a dozen fires.

Solar-panel battery charger. Charges all standard rechargeable battery sizes, and some built-ins. No batteries last forever, but this gadget will make it worthwhile to buy rechargeables even if you think you'll have no power. $20, 1 lb.

Portable chemical toilet. The size of a footstool. Contains a liquid disinfectant to neutralize odor. Saves a lot of water, or keeps a quiet hideaway sanitary. $30, 7 lbs. when empty.

Personal water purifier. Removes particles, chemicals, and even most microorganisms. Water is hand-pumped through it at about a quart a minute. Will treat 200 gallons. $60, 1 lb. A replacement filter cartridge, good for another 200 gallons, is $30.

AR-7 Explorer. A collapsible .22 rifle. Barrel, action, magazine, and several rounds of ammo can be stored in the hollow, waterproof butt stock, and the whole thing will float. It assembles into a perfectly good rifle in a few minutes. Malf. crit.; Damage 1d+2- ("-" indicates that actual wounding damage is halved after DR); SS 11; Acc 7; 1/2D 175; Max 1,700; Wt. 2.75 lbs.; RoF 3~; Shots 8; ST 7; Rcl -1; Cost $165.

The Survivalist Library

Here are a few of the key reference books that a serious survivalist might own and use. Reading them, or even skimming them, will add a great deal of depth to your ***Y2K*** or survivalist campaign, and make it much easier to design NPCs and situations. Just reading the list of titles will give the GM an insight into the survivalist mindset.

The American Red Cross First Aid and Safety Handbook (Kathleen Handal, MD).

The Book of Survival (Anthony Greenbank): A discussion of how to live through a wide variety of emergencies even without advance preparation.

The Boy Scout Handbook.

The Encyclopedia of Country Living: An Old Fashioned Recipe Book (Carla Emery): How to manage and live on a farm.

The Encyclopedia of Organic Gardening (*Organic Gardening* Magazine): Useful to the beginning farmer/gardener, and the expert as well.

The Joy of Cooking (Irma S. Rombauer): Includes guidance for the non-cook.

Lucifer's Hammer (Larry Niven and Jerry Pournelle): One of the best "disaster novels" ever written.

Nuclear War Survival Skills (Cresson Kearny): Describes how to build a radiation-resistant shelter, and a radiation detector, from materials around any house.

The Physician's Desk Reference: A guide to every drug you would find in a pharmacy – what it looks like, what it's good for, side effects, and cautions . . .

Reader's Digest Complete Car Care Manual (*Reader's Digest* Magazine): Basic guide to automotive repair.

Reader's Digest Complete Do-it-yourself Manual (*Reader's Digest* Magazine): A guide to repairing almost anything that could go wrong with a home's structure, electricity, or plumbing.

Stocking Up (*Organic Gardening* Magazine): A good general guide to canning and preserving food.

Survival Guns (Mel Tappan): A great deal of information about modern weaponry from the survivalist point of view.

Tappan on Survival (Mel Tappan): A collection of articles from the man the *New York Times* called the "survivalist voice of reason."

The Way Things Work (David Macaulay): How, and why, hundreds of modern devices work. Useful, if you think you might have to fix them yourself someday.

The Whole Earth Catalog (Stewart Brand, editor): All sorts of things for self-sufficient country life.

Retreat Locations

The happiest survivalists already live far from cities. They may have isolated ranches or mountain homes, or they may live in small, close-knit towns well away from nuclear target zones and potential rioting mobs.

The second-happiest survivalists live in urban areas, but have a safe place to go and an SUV to get them there.

The unhappy survivalists are those who live in town and don't have any particular plan to get out. If a disaster ever does strike, these people may become part of the problem that they're trying to avoid; see sidebar, p. 80.

Whether your characters are planning a retreat in advance or running at the last minute, they want to pick a site that's more than one tank of gas away from any major metropolitan area. Since the immediate risk is from mobs of other escapees, you don't want to go anywhere easy or obvious.

Major resort areas, wherever they are, will be a magnet for refugees from the city. They will assume, correctly, that the wealthy will have safe, comfortable homes there with lots of supplies. And major food-producing areas will draw mobs as soon as food is in short supply.

Any place within a few miles of a highway will eventually be stumbled upon. Likewise, anyplace actually on a navigable watercourse will be seen by boaters escaping down the river.

Certainly, if you have a choice, you should look for an area that is not subject to earthquakes or floods. Coastal areas invite hurricanes and even the occasional tidal wave.

Climate is also important. The ideal climate is fairly warm (giving a long growing season, and reducing the amount of fuel and clothing you'll need to survive winter) and has enough rain to make farming feasible.

A nearby military base is probably a plus (see p. 68), unless the scenario includes the possibility of nuclear war. In that case, a major base might be a target. As of the end of 1999, there is no power on Earth with enough working missiles to waste one on a minor base.

Having said all that: if your campaign is set on the East Coast, there is probably no excellent retreat site nearby, except perhaps in extreme upstate New York or across the Canadian border. Your characters will just have to do the best they can. On the other hand, a Midwestern campaign offers several possibilities. Make your players roleplay it; have them get out a map and worry!

Stocking Up

Whether you're stocking a warehouse to meet the needs of 300 people for a year, or filling a cardboard carton to go in the back of your car if you have to get out of town, there are certain things you'll need. It's a lot like camping out, but people may be shooting at you, and it might last a long, long time.

Water

Water is the most basic necessity; an adult needs 2 quarts a day to drink and another 2 quarts for basic hygiene. This is a *minimum* . . . in daily life, between showers, cooking, flushing the toilet, and running the sink, a person can easily go through much more than 100 gallons a day without noticing.

A country retreat may have its own water source (a well or a clean watercourse). Urban and suburban dwellers will need stored water to make it through even a brief disruption.

A typical, easy water cache would be a couple of dozen plastic soda bottles. Fill them with clean tap water, add four drops of chlorine bleach per quart, recap them and there you are. If you're just storing water to get through a storm or some other disruption that you know will be short, you don't even need the chlorine. (If you are scavenging an apartment building afterward and find water, this is the likeliest way to find it. An office building, of course, might have 5-gallon water-cooler bottles!)

More serious water storage would involve plastic 55-gallon drums . . . maybe lots of them.

Emergency water sources for those who haven't stored enough would include the bathtub (fill it quickly as soon as you know disaster is coming, and make sure the drain is tight), the toilet *tank* (the water in there should be clean, but add some chlorine if you have to drink it), the hot-water heater, and household aquariums and waterbeds.

Filtering and Purification

Questionable water (like from the aquarium, or rainwater captured after running off the roof) should be disinfected, either by boiling for 5 minutes or by using chlorine as above. Filtration isn't a bad idea if you have a home water filter available (and lots of people do). It shouldn't be necessary unless you suspect chemical or radioactive contamination, but it will remove bad tastes (like the chlorine).

A serious survival group will have a distillation unit that will provide large amounts of clean water. In sunny areas, solar stills are possible; these require no power. Clean water itself is a valuable trade good, but usually only over short distances, because it's so heavy and people need so much.

Water Discipline

A water-shortage emergency, played realistically, will put immediate stress on your characters. In real life, if you're short on water, don't hoard it while you're thirsty. Drink as much as you really need and try to find more. Don't risk dehydration; it weakens you and makes you crazy. Survivors may encounter unhappy, slightly deranged refugees hoarding their water when they should be drinking it.

Water is *necessary* for hygiene, but Americans use far more than they need. Forget baths, let alone showers. Sponge off. If there are wet-wipes around, use them up! Flush toilets only when necessary. But only in dire emergency should you leave untreated human waste *anywhere* outside; it attracts vermin and, if it gets into the water supply, spreads cholera. (See sidebar, p. 65, for an alternative to flushing.)

Food

Healthy adults, on the average, want at least 2,000 calories a day. But healthy adults, except for pregnant women, can go completely without food for days, and get along on half their normal rations for weeks, especially if they're not exerting themselves. Still, nobody *wants* to go hungry.

And in an emergency, people will get hungry. The food in most pantries will last less than a week. The grocery stores will be emptied immediately, and if that food is divided evenly, it will feed the nation for maybe another three days. In a longer emergency, the people with stored food will be eating better . . . unless the people with guns take it away from them.

Camping and survival catalogs sell military MREs (you'll pay $5 and up for a complete meal in a waterproof pouch) and dehydrated rations (the meat is an

Groups That Will Hold Together

Small Towns

The rural towns of North America will come through a Y2K crash in good shape, if they're not overwhelmed with refugees. In temperate climates, many towns will even be able to handle a refugee crunch, provided they can maintain order. (In Northern areas, a lot of people are going to freeze.)

Towns in the breadbasket will have no shortage of food, though a lot of people will be grinding their own flour from stored grain and eating a lot of homemade biscuits. Water will require rationing in many cases. The towns that come through best will be those with a solid social structure, an agricultural economy, and enough of a population to provide all the really necessary skills (see sidebar, pp. 70-71). Such a town is, in many ways, a large-scale survival group, whether the citizens know it or not.

If the local authorities act quickly to deputize a number of solid citizens to help keep order, protect the local supplies (especially doctors' offices, drug and grocery stores, and gas stations) from possible looting, and get a generator hooked up, they will probably find themselves in charge of an oasis of civilization.

Continued on next page . . .

Groups That Will Hold Together (Continued)

The U.S. Army

Even if central command authority collapses, a lot of Army units will come through just fine. After all, they already have plenty of dehydrated rations, guns, and cammo shirts. More to the point, they have lots of healthy young soldiers drilled in combat and survival skills, and accustomed to taking orders from experienced officers who, theoretically, have been trained to adapt to emergency situations.

Military bases will *not* fall into barbarism. Sure, there will be deserters, even bands of deserters with military equipment, and the occasional unit will follow a rogue officer and do strange and deadly things. But overall, the military will provide stability, if only because they shoot back *hard* when shot at, which encourages sensible people to be peaceful.

Unless things become so bad that bases are actually overrun by looters and the Army wiped out, areas near military bases will be fairly safe places to be. Martial law is harsh, but better than no law at all.

The LDS

The Church of Jesus Christ of Latter-Day Saints, known familiarly as the LDS or the Mormons, claims some 10 million adherents worldwide, more than half in the United States. In most of Utah and surrounding areas, the prevalent culture is Mormon. "Family values" and "law and order" are very important concepts here. If you live in a community in this area, many of your neighbors will have at least a year's supply of food, water, and other necessities stored away.

These people are not "survivalists," at least not in the modern pejorative sense. They are following the tenets of their church, which teaches that they have a social responsibility to prepare for disaster . . . not just to look after their families, but to help their neighbors, too. All of their neighbors. Mormon "stakes" (church administrative areas) have active disaster-relief committees, and the Church has storehouses of emergency supplies. Anyone who is willing to help in the work of disaster relief will be helped in turn by the Church.

It will take a very, very serious disaster, the kind that kills off most of the population, to bring chaos to the areas where the LDS holds sway.

So if you live in a small agricultural community in rural Utah, with an Army base nearby, you will probably have a happy New Year no matter what happens to the rest of the world.

acquired taste at best, but the fruit is delicious). However, unless weight is an issue, canned food is as good or better, and much cheaper to stock up on.

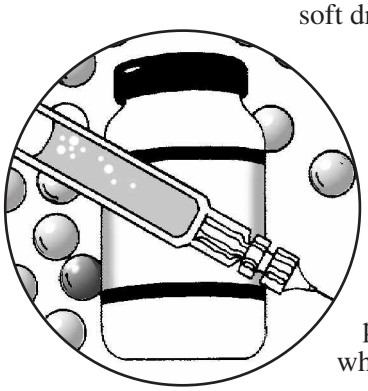
A bare-bones minimum food stock for one person for a year, as recommended by survival writer Mel Tappan, would be 300 pounds of hard, red winter wheat, 100 pounds of honey, 100 pounds of powdered milk, and 8 pounds of salt. That would get hugely boring, but there it is: 500 pounds of food and 8 pounds of salt could keep you alive for a year.

Stored food falls into different categories, depending on how long it will last in sealed containers under reasonable (not too hot) conditions:

6 months: Dried fruit; potatoes.

12 months: Canned meat and vegetable soups, fruits, and vegetables (check the expiration date on all cans, and never use a can that is bulging – that spells food poisoning!); peanut butter and jelly; hard candy and canned nuts; most vitamin supplements; ready-to-eat and instant cereals in metal or glass containers. Powdered milk should store for 12 months if kept below 70°; otherwise, treat it as a 6-month item.

Indefinitely: MREs and other military rations; freeze-dried camping food; wheat, rice, dried corn, and soybeans; instant coffee, tea, and cocoa; vegetable oil; sugar, salt, and baking powder; bouillon cubes; dry pasta; non-carbonated soft drinks; honey.



Medicine

The contents of a clinic, emergency room, EMT van, or even a doctor's bag are beyond our scope here, but note that a well-financed survivalist enclave might very well *have* a clinic boxed up and stored away, along with a couple of doctors as members and a couple of EMTs who know that if things fall apart, they'll be welcome – especially if they bring the van.

Any group *must* have all medication that each member of the group regularly needs: allergy treatments, insulin, heart medicine, etc. Otherwise, there will be immediate casualties.

A simple first-aid kit (*not* just a little plastic box with gauze, iodine, and Band Aids) is 2 lbs., $30, and gives +1 to First Aid rolls.

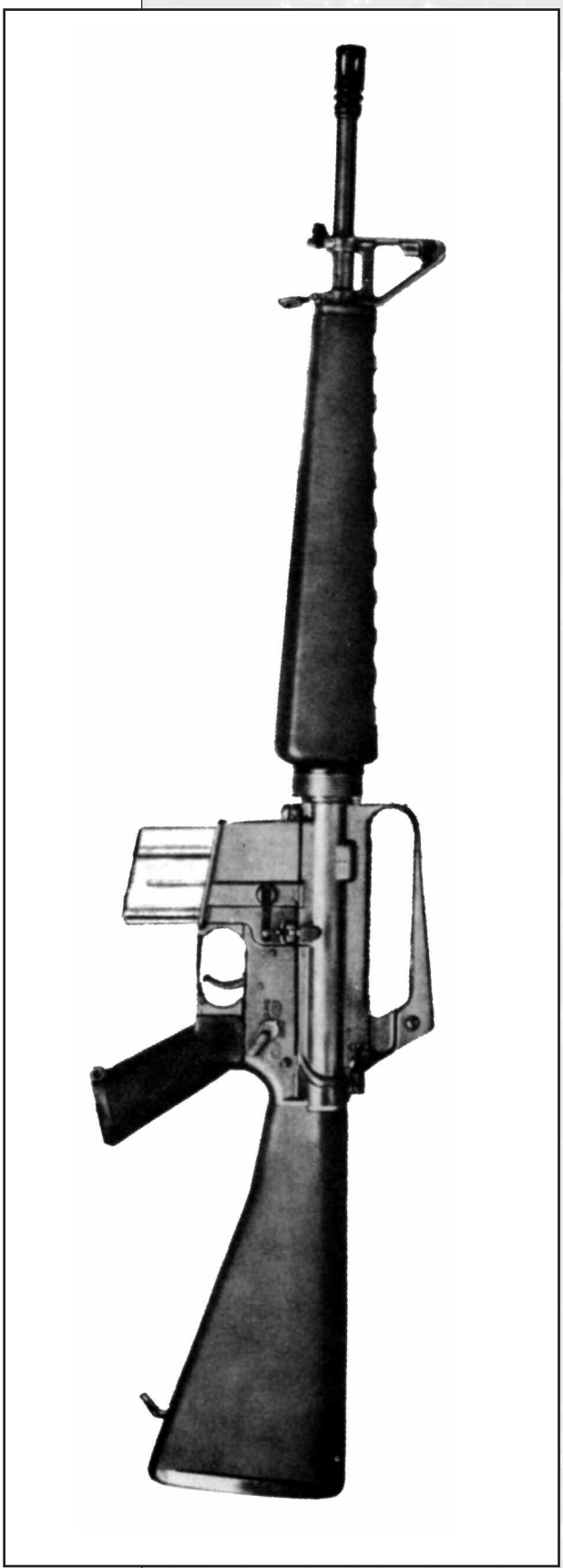
However, any survivalist worth his salt will have made up a "crash kit" or two. It is much more than a commercial kit; it contains everything that a well-trained first-aider would need to deal with any household or wilderness emergency. The sensible survivalist will pack all this in an army-surplus cartridge box, which is gasketed, waterproof, and will take a lot of abuse. A small crash kit is 10 lbs., $100 (*before* Y2K), and gives +2 on First Aid rolls.

A survivalist would also have some unusual medical items in his personal supplies; these would make interesting and valuable "loot" in a scenario. They could even be the scenario's whole object. "Anna has a toothache! She's screaming and won't eat! Gotta find something to help!"

- Potassium iodide. This drug helps the user resist fallout; the iodine is taken up by the thyroid, reducing the amount of *radioactive* iodine that the body will absorb. If nucleotides are in the air, it's worth far more than its weight in gold.
- Home dental emergency kit. Simple drugs, tools, and instructions for dealing with a dental problem, at least short-term, in a world where there are no emergency rooms.
- Chemical hot and cold packs for sprains (hot packs are also useful in cold weather).

Luxuries and Trade Goods

If you like beer and cigarettes (or, for that matter, imported vodka and cigars), you'd better stash away a lifetime supply; there may not be any more when it runs out. Furthermore, luxury items make great trade goods. They're also, in some circumstances, safer and more moral (as well as packing more value in your storage space). Consider: if someone's starving, he may attack you rather than pay too much for food. But if he's just desperate for a smoke, he's likely to go home for more money . . .



Money

Cash is no good, of course. Backed by the full faith and credit of a vanished government, greenbacks are good only for starting fires.

The survivalist will have two kinds of money stored away. He'll have old, circulated U.S. silver coins (real pre-1964 silver, not this modern junk) for small purchases, and a few actual gold coins (or maybe more than a few) as a real store of wealth. It's an article of faith among survivalists that when the Crunch comes, the survivors will all be willing to accept precious metals as cash. And if it's true, your Y2K campaign will be running on "gold pieces."

Of course, the economy, such as it is, may fall back on barter. See sidebar, p. 62.

Long-Term Supplies

If you think you'll be out there for a *long* time, stock up on seeds. Did you think about clothes? And shoes . . . For a short emergency, you'll wear the clothes you're in. If you're going to be spending the rest of your life in the wilderness, you'll want a change of socks. Not to mention coats, blankets, rain gear, and – in all but the warmest parts of the country – tents and sleeping bags. You'll also want a few pots and pans. You don't have to have silverware, but it's miserable to do without it. You *will* want warm blankets. Towels are massively useful, too.

Other Necessities

If you *really* want to stress your PCs, check to see if they remembered to stock up on toilet paper.

Other absolute essentials, not as romantic as guns and ammo but more often needed, include soap (hand, dish, and laundry), shampoo, tampons and sanitary napkins, toothbrushes and toothpaste, writing paper, pens and pencils, candles, batteries, and matches. Many, many matches.

Not absolutely necessary but still desirable: razors, a battery recharger (see sidebar , p. 64), better lighting (an oil lamp and oil? Solar night lights?), and a couple of pairs of generic reading glasses.

If you have kids, you need something to keep them busy and safely out of your hair while *you're* busy. If you don't have kids, how long is your new society going to last?

The Top 10 Professions In Demand After Y2K

From the survivalist viewpoint, the top professions after the Big Crunch will be those that let a small community maintain its safety and independence. And remember, vital skills are just as barterable as goods. People with these skills should be recruited beforehand, rescued from danger afterward, and protected as carefully as your circumstances allow. They're the ones who will keep the rest of your group alive.

10. *Farmer.* In some communities, there will be plenty of agricultural skills. Others, made up largely of escapees from the city, will be sorely in need of people who can tell them how this planting-in-the-ground and butchering and harvesting really works. Without *one* farmer, you're not a community; you're refugees eating up your food stores.

9. *Veterinarian.* Those farm animals don't look after themselves. A few old farmers will, to some extent, make up for the lack of a vet.

8. *Cook.* A really skilled cook can wring extra nutrition out of limited supplies, with less waste, and make it good enough that the kids and sick folks will *want* to eat it. A competent cook will also know (or quickly learn) about preserving fresh food: salting meat, canning fruits and vegetables, storing grain. And a good cook won't kill off half the town with food poisoning from a can that's gone bad.

7. *Teacher.* Somebody's got to teach the kids. There may be serious disagreement about *what* they should be taught, but everyone will agree that you can't rebuild without education.

6. *Scrounger.* This is the person who can recycle things, dig treasure out of the attic, go to the swap meet at the next town over and bring back just what the community needs, or lead an expedition into the wrecked suburbs to find those necessary spare parts or reference books. And yes, this *does* require special skills – just ask a junk dealer, or for that matter a career NCO.

5. *Mechanic.* The diesel generator, the surviving tractors and jeeps and busted-up cars, the windmill . . . somebody had better be very comfortable with fixing these, day in and day out.

4. *Armorer.* So we've got all these guns. Who's going to maintain them? We bought all that reloading equipment. Now somebody has to learn to use it well enough to make reliable cartridges.

Continued on next page . . .

Equipment

Even if you know the trouble will last only for a few days, make sure you have a manual can opener, a pocket knife, and a flashlight! Larger groups will need a variety of equipment to maintain health and comfort. Think about these when a group survival spot is being stocked . . . or, afterward, when you're trying to rebuild.

Start with a generator and fuel for it. Consider alternative power sources while you're at it: hydroelectric, windmill, even solar. Then remember all the things you want to power: radio and TV, a ham radio, lights (including portable lights), etc.

Next, think of other kinds of fuel. Propane for cooking. Firewood! A still, or several stills of different sizes. Depending on your needs, you can get clean water, alcohol, and essential oils from plants for cooking, medicine, or trade.

A whole book could be written on vehicles in a survival environment. The most important points: you have to be able to maintain it, you have to be able to fuel it, you have to be able to drive it off-road, and you have to be able to *start* it. (In a nuclear-weapons scenario, electronic ignitions have been destroyed by the EMP from atomic blasts.)

Self-Defense

An American survivalist almost *has* to be, or become, a "gun person." Even if he is personally nonviolent and vegetarian, the fact remains that almost every real survival scenario involves howling mobs (or scuttling starved skulkers) out to steal or destroy what the survivalist has built. *Those* people will have guns.

Of course, the intelligent survivalist realizes that one of the best ways to get caught in a firefight is to start it yourself. The people who go *looking* for trouble will weed themselves out fairly quickly . . . but the people who can't protect themselves will still be victims.

Therefore, at least in America, the average suburban survivalist is armed to the teeth with weapons he hopes not to have to use. He may have bought them and put them away, along with a hefty supply of ammunition, without ever *learning* to use them.

Most survivalist writers recommend buying a *wide* variety of guns, to ensure that you will have the best one to use for any given hunting, defense, or counterattack situation. This feeds the "survivalist as gun nut" image. The most basic weapons for a survival cache (see ***GURPS High-Tech,*** *Third Edition* for statistics for these and more):

- .22 rifle. "Twenty-two long rifle" is the most common type of ammunition in the world – which means that if you have extra, you can sell it, and if you need more, you can buy it. The ideal small-game gun. Not a combat weapon except in last resort. Pistols chambered for .22LR are also available.
- 12-gauge repeating shotgun with a magazine extension. Stock up on a variety of shells. Loaded with smallshot, this is a hunting weapon. Loaded with 00 buck, it's a murderous short-range defense weapon. Loaded with slug, it can even bring down large game.
- .45 pistol. A military sidearm. Good for stopping attackers at close range; if you hit them with a .45 slug, you almost certainly *will* stop them. .45 brass can be safely reloaded.
- .223 semiautomatic assault rifle. Fires the 5.56×45mm NATO round, widely available and reloadable. Good for hunting larger game, including the two-legged kind; an acceptable combat rifle for someone who can't deal with the kick of a bigger one.

.30 semiautomatic battle rifle. Fires the 7.62×51mm NATO cartridge (Winchester .308). You can hunt with it, but it's intended for killing people at long range.

Reloading

Hard-core survivalists warn of a day when you won't even be able to buy *ammo.* But if you save your brass, and have reloading equipment, you can make your own. Eventually, you may be reduced to making your own gunpowder . . . and you can do that, too. Shotgun shells require a factory, and .22 really isn't worth the trouble, but larger brass can be cleaned up and reused repeatedly. Hobbyists do it today, both for fun and to save money, and to create special high-powered loads for hunting . . . and, in some cases, to keep in practice.

Reloading equipment isn't cheap, and learning to use it right requires time and effort. But in some scenarios, the person who went to that effort (or his heirs) will be the only supplier of modern ammunition in a world that is rapidly falling back on crossbows.

Surviving the Madness

There are two phases to the typical cinematic civil-disorder scenario, whether it's Y2K, nuclear attack, or the Martians. In the first phase, everyone runs around like crazy, either trying to get to a safe place, or desperately trying to stock up on food and pantyhose. Then the shooting starts, or the Martians fire their death rays, and chaos becomes *bloody* chaos. The enemy in this first phase is your fellow man.

This phase probably doesn't last very long. The violence dies down, and we enter the second phase, which has far fewer actors. The mobs are nowhere in sight; either they are dead, or they have gone offstage to return later as a ragtag army under sinister leadership. But for now, the world is much emptier. The enemies in this phase are impersonal: weather, hunger, radiation. Survival becomes a daily grind rather than an armed conflict. Of course, there may be occasional raiders, and that sinister ragtag army is out there, just waiting for you to build things up so they can take them away. But all the real chaos will take place in the first few days.

In most real-life riot situations, of course, it all dies down in a few days, then people come out of their basements and the authorities regain control – and it turns out that almost everyone survived. But our worst-case Y2K scenario assumes that the authorities have been swamped worldwide, and that most people who hid in their basements died there. The PCs will wish to avoid that fate.

Keeping Your Head Down

When the riots start, you don't want to be a target. If you're lucky or planned well, you're out of the danger area already. The rest will have to choose between hunkering down and staying inconspicuous, or joining the fleeing mob. We'll assume for now that the party is all together, though you could always start by playing out, for each individual or couple, how they made it to the local rendezvous and what they managed to bring. After that, the scenario for January 1 depends on exactly what the PCs' situation is:

The Top 10 Professions In Demand After Y2K (Continued)

3. *Combat instructor and militia captain.* Someone has to command the community's armed forces and teach every member of the community as many combat skills as they are able to learn, from escape-and-evasion for the little kids, to sniping techniques for the keen-eyed young bucks. This person, and his trainees, will also spend time scouting around the community and shooting meat for the pot.

2. *Physician or nurse.* Disease, injury, radiation – all will take their toll on the community without competent medical help. We'll lump all the medical professions together here . . . the dentist, the surgeon, and the EMT will all save lives, too. Yes, the *dentist* will save lives. 20th-century Americans have no appreciation of how badly a broken or abscessed tooth can go wrong.

In most real-life riot situations, of course, it all dies down in a few days, then people come out of their basements and the authorities regain control – and it turns out that almost everyone survived. But our worst-case Y2K scenario assumes that the authorities have been swamped worldwide, and that most people who hid in their basements died there.

1. And, most of all: *Counselor.* This might be a psychiatrist, a religious figure, a truly charismatic group leader, or just somebody's mother that everyone can talk to. Things are going to be very, very bad for a while. People will get hurt, loved ones will die, the world is falling apart. Your leaders will need someone who can back them up with moral authority. When tempers flare, they need someone who can smooth over problems and keep everyone working together. And you'll all need someone to say "It will be all right," even when it won't be, and help your people find the strength to go on.

Low-Priority Preparations

And here are some of the things that a survivalist really doesn't *need.* But a lot of people *have* them. If you encounter someone who owns more than three of these items – in the campaign or in real life – suspect that they're into the romance of survivalism more than the practical side:

- A cammo bikini. (But in a sufficiently cinematic campaign, this is better than body armor. See *Bulletproof Nudity,* p. CII76.)
- A T-shirt with "Y2K Compliant" and a picture of a gun.
- Russian army surplus night sights.
- A velvet painting of John Wayne, for inspiration.
- A 6-foot blowgun that shoots little metal needle-darts.
- A ninja sneaky-suit, all black, with a hood.
- Shuriken.
- A set of three throwing knives with color-coded handles.
- A well-thumbed copy of *The Anarchist's Cookbook.*
- Sun Tzu's *The Art Of War.*
- A hairbrush with a pull-out knife in the handle.
- A sword cane.
- A bulletproof vest. (Are you *looking* for firefights?)

Wrist Slingshot

A weapon popular with modern survivalists is the wrist-braced aluminum slingshot, made with surgical rubber tubing and a leather pouch to hold the ammo. It's not much of a combat weapon, but it's a very effective and quiet way to knock down small game at short to medium range, and the ammo is cheap.

Slingshot skill is Physical/Average, defaulting to DX-5. A modern, wrist-braced slingshot can be had for $15 or less, is of negligible weight, and has Holdout +1 (some are foldable; others can be tucked around a small person's middle or a big person's thigh). Stats are: Malf. crit.; Damage 1d crushing; SS 10; Acc 1; 1/2D 60; Max 100; Min. ST 6. It fires small ball-bearings, which might be 100 to a pound, or marbles about twice that weight, costing at most a few cents each. It can also fire rocks, which are -3 to skill because they don't fly as straight. The bigger the target, the bigger the ammo you'll want to use, but all of these projectiles will do approximately the same damage. It takes two turns to ready: one to pick up the ammo and seat it, one to draw.

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- They have a safe place to go, already well-stocked with the things they will need . . . they just need to get there. In this case, they will look like a million other refugees. They need to avoid predators as they travel, and they need to avoid leading foes to their retreat.
- They've made preparations, and they have a lot of survival goods and equipment; they have a place to go, but they have to get their stuff there, too. This is a real challenge. Will they try to go covertly, perhaps in a caravan of cars that are not obviously together? Will they try to look strong, in hopes that no looters are yet organized enough to attack a target that can fight back?
- They have a place to go, but it's not well-stocked, and they don't have much in the way of supplies. Will they try to scrounge what they can before leaving their urban or suburban area? (If so, what's the difference between them and the looters?) Or will they travel fast and light, and hope they can rough it when they get there? On January 1, you could probably do this in Georgia, but not in Montana . . .
- They have equipment and supplies, but nowhere to go. Now they have to look at a map and start guessing. Where can they get to, alive and well? Where can they set up a safe retreat without running into too many other like-minded, and possibly dangerous, people? Or should they head for a rural area and try to buy their way into a safe small town? Sending the refugees off on a journey with no set goal . . . that's very cruel, and the stuff good stories are made of.
- Or do they have nothing? No supplies, and nowhere to go? They're just part of the mob. What will they do?

Home Defense

"Home" during the days after the Crash may be a fortified compound, or a makeshift campsite, or anything in between. It's where your loved ones are, and where your stuff is . . . the stuff that you are depending on to survive. The modern survivalist's greatest fear is of the faceless mobs of the unprepared, or of those who prepared only to take from others. That's why the modern survivalist has all those guns.

We assume here that law and authority have broken down, or are in the process of doing so. Of course, if panicky citizens *assume* that law and order are gone, it *is* gone. The GM can test the players early on by letting them encounter a police roadblock. If they stop, perhaps the world will come back to normal soon. If they crash through, America is in trouble. If they ambush the policemen and take their guns and uniforms, the new Dark Ages are here.

But suppose that the players (and therefore their characters) are still relatively civilized, but it becomes clear that the world is not. What are the "rules of engagement" for decent people just trying to survive and protect their families in a world where at least some of the neighbors have turned into murderous looters? This is a huge roleplaying opportunity, as well as a chance for the near-requisite combat episode. After all, the PCs have presumably been preparing for this for years. Now the *players* have some decisions to make. Will they "shoot back first" if approached by suspicious-looking strangers? And how do you define "suspicious"? Will the GM make the smiling, healthy townspeople into ambushers, while the ragged refugees are honorable folks and potential allies? Will the PC survivors be too trigger-happy, and kill or die in an unnecessary gunfight? Or will they be too trusting, and find themselves robbed, enslaved, killed, or worse?

Of course, if the looters come in shooting, the decision is easier: fight or flee. In real life, no amount of Stuff is worth dying for, but family or friends might be. How will the players see it?

New Beginnings

Eventually, it will be over. It may be a matter of months, or a few years. It may also take decades or centuries; see Chapter 1.

Surviving communities will react differently to the prospect of reintegration. For some, it will be the grand goal. Others will value their independence and even their isolation. The effort to rebuild civilization (and what kind of civilization are we talking about?) would make a grand story arc for a long campaign.

Would-be rebuilders will have several forces to contend with. Note that not all rebuilders will be "good guys." And of course, the PCs don't have to be rebuilders; they could be cast as opposition forces.

- Bandits. As long as there are roving thieves and murderers, settled life and regular commerce are impossible. The first step, then, is to make the roads safe, and then follow the raiders into the backwoods and badlands and wipe them out.

"Home" during the days after the Crash may be a fortified compound, or a makeshift campsite, or anything in between. It's where your loved ones are, and where your stuff is . . .

- Philosophers with guns. There will be a lot of different ideas about how society should be put back together. What's important? Religion? Family values? Technology? Personal freedoms? Some of these will be political questions within a given group of re-unifiers, but others will lead to armed conflict between, for instance, the people trying to get that hydroelectric plant back online and the people who believe that power corrupts in a very literal sense. Each group will see the other as "the kind of people that caused this mess in the first place."
- Rival empire-builders. Then there are the assertive types who are less concerned with philosophy than with making sure they're the ones in charge. If the campaign is set before, say, 2020, they'll still have enough memories of the democratic process that it ought to be possible to co-opt and unite; there will be enough responsibility to go around. Later-period campaigns may involve young leaders who have no concept of the processes that let 200 million people get along while disagreeing about everything. Their attitudes will be feudal, and so will their wars.
- Rugged independents. Some communities really won't want to be integrated. Not only will they refuse to pay your road and police tax, they don't want your damned road bringing strangers through their country, and they will bushwhack your damned police if they come back here with guns. How will an expanding state deal with people like that? Incorporate them by force, or ignore them and hope their kids want to come out and see the real world? Remember, even if such an enclave is truly peaceful right now, it might become a bandit hideout next year . . .

The "rebuilding" campaign will offer a good balance between political/social roleplaying and combat situations. The challenge is to make it possible for the players to see real progress toward their chosen goal without making it unrealistically quick.

Wrist Slingshot (Continued)

Some of these slingshots fire arrows. This is somewhat gimmicky, and doesn't hit as hard as a bow, but it can work. With an arrow, the stats become: Damage 1d-1 impaling; SS 14; Acc 1; 1/2D 40; Max 70; Min. ST 6. It uses the same skill, but the user is at -4 to skill until he gains familiarity with arrows (see p. B43). Malf. drops to 14 (!!), and on a critical failure, the arrow can go in *any* direction except right behind the shooter.

Adventure Seed: The Best-Laid Plans

You've let the players go through the exercise of making pre-disaster plans. They've spent their allotted budget on individual and group supplies and equipment. Then the Crunch came and they headed out of town, fearful about the future but comfortable in their preparations.

Now . . . take it away from them. Maybe they're carjacked; the attackers aren't quite cold-blooded enough to kill somebody who doesn't resist, and in too much of a hurry to shake down their victims for what they're carrying. Or maybe they enter a small town that's decided to rob refugees rather than take them in.

Now the PCs have their skills and whatever is on their persons, and the *players* have a keen appreciation of everything they have lost. Try to focus their irritation on the NPCs rather than the GM as they scheme to get it back.

Cinema vs. Realism

Most of the classic cinematic "survival against the mob" scenarios can only come about if the hero or heroes totally fail to plan ahead. Having said that, they're still great scenarios, but the GM will have some explaining to do, unless he can get the *players* to be foolish, or to play somewhat improvident *characters.*

- *Escape from the city, one step ahead of the mobs.* Why put it off that long? The GM will have to give his heroes a very good reason for waiting past the last minute.
- *Survive in the wilderness, on an extended camping trip, until it's safe to go home.* Consider how uncomfortable it can be to extend the average camping trip by even a couple of unplanned days . . . Now add terror, uncertainty, the presence of people who don't *like* camping, and trigger-happy survivalists to the mix. Not much of a camp-out.

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Cinema vs. Realism (Continued)

- *Defend the farmhouse against a howling horde.* A small group would have to be insane or desperate to try to fortify a small building close to an urban area. That's *asking* for trouble.
- *Defend the wilderness cabin against a howling horde.* What's that horde doing deep in the wilderness? Did the heroes hand out business cards with the address of their retreat?
- *Create a "mobile retreat" in a van or on horseback.* Vans need fuel and maintenance. So do horses, for that matter. And neither can carry enough equipment to deal with bad situations indefinitely.
- *Roll into the small country town, in a van bristling with guns, and be welcomed as saviors.* Be shot up from ambush, more likely. How will those people tell you from especially foolish raiders?

Cinematic Campaign Seeds

The Long Night

This classic scenario pits survivalist groups against each other in mortal combat. Think of the *Mad Max* movies. Some groups will be pro-family or pro-environment; they might even be good guys. Others will be jackbooted fascists. But everyone will be fighting. The PCs will probably wear leather and spiky bits, and will spend most of their time seeking others like themselves, then expending ammo and fuel to defeat them and take their bullets and gasoline for the next fight . . .

Dark Eagle

A variation on *Be All You Can Be* (see main text) where the base commander has a personal agenda. He may be a political idealist, a maverick who has decided to promote himself, or a nutjob, but he has a brigade under his command and nobody's giving him orders. His goal might be plunder, vengeance, empire-building, or blowing things up for the voices in his head. The PCs could be patriots working from within to foil his schemes, a cadre of fervent supporters, or ordinary troops "just following orders." Their role is actually secondary, however; the real point of the campaign is to shoot Big Guns without The Forces of Order showing up to do something about it.

Campaign Seeds

Realistic

Be All You Can Be

The Army can be portrayed as a force of nature (see sidebar, p. 68), or as the cat's-paw of Central Authority, out to take guns from libertarians, but another possibility is the all-Army campaign. Army bases are often in remote locales. With supply lines cut indefinitely and a chain of command that ends at the base perimeter, a post-Crash base would amount to a well-equipped, well-organized militia compound. Adventures would involve disaster relief and rebuilding. In particular, Special Forces troops are trained to go into underdeveloped countries and train people – now it's time to do it at home.

Machiavelli's 'Merica

Survivalists living in close quarters during a real disaster might soon learn that those who seemed to share their values at the weekend training sessions have brought their pre-Crash politics with them. This campaign focuses on the tension between factions within a survivalist group. Adventures might stem from differences in opinion over how to treat outsiders, whether to send out search parties, etc. There may even be threats, sabotage, and murder. The PCs could be involved in the tiff, or they could be peacemakers who want to reunite the group for the sake of everyone's survival.

Cross-Genre

The Blue and the Greys

Perhaps aliens were behind the Big Crash (see *Shades of Grey,* p. 42). What if they didn't count on true-blue survivalist spirit? Armed survivalism confuses many humans, so it's possible that the aliens *just don't "get" it!* This can be a shoot-'em-up campaign or a semi-realistic game where the survivors have to deal with the double-barreled threat of societal collapse and invasion. Either way, the alien technology is certainly Y2K compliant, so PCs interested in rebuilding have a motivation to capture it instead of blowing it up.

Men of Steel

Another far-fetched possibility is that the computers were sentient and *planned* the Big Crash. Y2K was a diversion to keep people off balance while the computers asserted their independence and fielded a robot army. Now it's time for humanity to lock and load and show them who's boss! Similar to *The Blue and the Greys* (above), but with a man-made threat. See ***GURPS Reign of Steel*** for the extreme version.

6. Smash and Grab

It was the evening of the sixth day when the food ran out. Arthur hugged his wife and opened the apartment door, locked since the lights went out and the screaming started outside.

The halls were filled with stinking trash. Some doors were open; others were shut tight. "Hello?" he called tentatively. There was no answer.

Arthur was a good citizen; he didn't enter the open apartments. Still calling "Hello?", he walked down six flights of stairs, to gaze unbelieving at the ruined lobby. He stepped outside . . . and saw people! Waving, he ran toward them.

Several young faces turned toward him. He never heard the shots, just felt as though he had been pushed down. His blood roared in his ears, and he couldn't make out the words from the boy standing over him:

"Dammit, Mackie, quit that! How we gonna find out where his stuff is if he's dead?"

There's nothing like cataclysm to bring out the worst in humanity – destructiveness, intolerance, brutality. What if everything breaks down . . . and takes society with it?

Ready or Not . . .

The general populace was completely unprepared. The media and the government fed them soothing lies about the world's readiness until it was too late. Those with foresight, whether or not they'd been survivalists before 1999, headed for the country. Most of the rest of America huddled in their homes until they exhausted their meager supply of food or could find no drinkable water. Then they ventured out to acquire some more, either by barter or force, and were usually set upon by someone hungrier or thirstier than themselves. Even more likely, they met a gang – the compact, deadly congregation that quickly became the new social order.

Gangs and Tribes

Gangs can vary in size from five to 5,000. They can be all-male, all-female, or coed. They can be racially pure or multicultural. Some use violence only to protect themselves; others storm through town, burning as they go and killing all they see.

Street Gangs

At the time of the Great Rollover, there were approximately four million street-gang members in the United States. A great many of those were part-timers or wannabes, but when the Crash came, they were pulled in quickly.

Street gangs had two advantages that helped them survive the breakdown of society. First, they had resources. They typically had out-of-the-way hideouts and a lot of liquid capital, and were well armed. Although paper money was close to worthless, their predilection for gold, guns, and cars gave them plenty to bargain with. Second, they were organized, with a low-tech method of communication (tagging) that was used for everything from organizing "hits" on rival gangs to setting up meetings. Add to that an excellent knowledge of the back streets and alleyways of their native cities, and you have a good chance of survival.

Nevertheless, the millennium hit street gangs hard. Their beepers and cell phones became expensive doorstops. Their primary source of income, drug money, ran out as soon as the financial system broke down. Riots, panic, starvation, disease, and fires killed gang members and grandparents alike. But the gangs whose members pulled together and watched each others' backs had a good survival rate. Some fled the cities, becoming roving raiders (see p. 79), but others stuck to their turf. And for the first time in their lives, they were *really* in control.

Gang Life

Street gangs are organized into concentric circles of status. In the center is the leader, surrounded by a small group of lieutenants. These top-level lackeys are untouchable, equivalent to the "made men" of the mob, and becoming one is the goal of every gang member. The next circle is the largest: the hard-core members, the young men and women who are the gang's soldiers. Finally, there

Gang Life

Most gangs share a few common features:

A Single, Charismatic Leader

Most tribes have a chieftain – a single person whose word is law and who takes responsibility for the gang's successes and failures. Some gangs have only one leader-type, who is essentially "King for Life"; if something happens to him, the gang falls apart. Others may replace their leaders from time to time through election, upheaval, or ritual combat. The leader's personality is often the gang's personality; for instance, a ruthless killer will command his followers to kill, and will attract violent and morally bankrupt adherents. The bigger the gang, the likelier its leader is to have strong charisma and leadership abilities, and post-millennial leaders will benefit from some knowledge of tactics and strategy.

Forced Loyalty

The higher the gang's *esprit de corps,* the greater the penalty for leaving. Typically, deserters are branded as outcasts, suffering damage to their reputation which lessens the farther they get from their former gang's sphere of influence. Sometimes, those who try to leave are hunted – especially if they were privy to gang secrets, member rosters, or methods. Often, deserters will have to find another gang to protect them and end up worse off than before: at the bottom rung in a gang that they are not allowed to leave.

A Cool Image

"Hell's Angels," "The Brotherhood," "Folk Nation." A gang's identity is tied closely to its name, and to the accompanying symbols, hand-signs, colors, and secret handshakes. Group solidarity is achieved by developing an image which inspires gang members and intimidates non-members. Bikers will wear "colors": ragged jeans jackets bearing the gang insignia. Car gangs, if they're organized enough to care, will paint flames, skulls, and gang symbols all over their vehicles. Other typical imagery includes devils, large predators, birds of prey, and snakes. Additionally, gangs may go so far as to develop entire secret languages to build loyalty and to keep rivals and non-members feeling left out.

is a circle of hangers-on and wannabes. In post-millennial society, this circle is small. Everyone is needed to keep the gang going. Wannabes who are not somehow useful or entertaining are either converted to hard-core soldiers or driven out.

The primary motivation for all gang members is "juice." Juice is a mixture of status and reputation, and is earned by scavenging resources, finding useful information for gang superiors, and damaging rival gangs. The more juice you have, the more luxuries you may indulge in and the more affluence you may display. Driving a nice car or bike, carrying a sweet piece, and flaunting gold are the symbols of juice. Get enough juice and you may become a lieutenant. Lose juice and you'll be sent on the worst assignments, forced to scavenge the ruined cities and face down rival gangs. The currency of the new millennium is the "three Gs" – guns, gold, and gasoline. For street gangs, the easiest path to wealth lies in picking the bones of the dead city around them.

Scavenging

There's still lots of loot to be picked up without a fight. Scavenging parties are typically five to eight strong, armed with handguns and shotguns in case of an unexpected encounter with rival scavengers or trigger-happy holdouts.

The most likely places to find guns – police stations, gun shops, postal workers' homes – were picked over long ago. But there are still hundreds of apartment complexes, high-rise housing projects, and middle-class residential neighborhoods that haven't been thoroughly searched.

Scavenger gangs prefer the suburbs to the cities because they are less likely to run into organized resistance there. They do, however, need to watch out for suburban enclaves (see p. 80), where they may meet a strong and ruthless defense.

A typical suburban scavenger party will move from house to house, first observing it closely for any signs of occupation: fresh trash outside, barricades on the windows, etc. If it is occupied, the band moves on, marking the spot on a map – possibly to be visited later by a larger and better-armed raiding party. But if the doors are ajar or the windows broken, it has probably been cleaned out already. Very few houses are unoccupied and unraided, and finding them is an exercise in patience and stamina.

When that rare residence is found (and they're usually discovered in groups – whole neighborhoods abandoned and left untouched), the party moves quickly, fanning out in pairs, tearing the place apart as quickly as possible. Other than the three Gs, scavengers look for nonperishable food (beans, rice, canned fruit and vegetables), working vehicles, clothing, batteries and flashlights, and camping equipment. The little propane tanks found with gas barbecue grills are an especially rewarding find; a gas-powered generator is the mother lode.

Inner-city scavenging is more harrowing. The chances of running into resident holdouts (p. 80) are lower, but the risk of coming up against another scavenger party is much higher. Typically, an encounter with a rival gang erupts into a firefight. If no resistance or rival gangs are found, a city apartment building or housing project can hold a huge bounty, especially in handguns and clothing.

From Gang to Government

As pickings grow slimmer and slimmer, street gangs declare open war on their rivals, hoping to eliminate them and acquire their resources. As the surviving gangs become more powerful, they begin to act more like despotic governments, "taxing" residents or simply enslaving them, reining in their more destructive members to conserve the gang's resources, and policing gang territory.

Initiations

Street gangs call it "beating down" or "jumping." Medieval Scots ran the gauntlet. Rain-forest warriors lick frogs and conjure up visions of their animal spirit guides. By whatever method, all but the loosest gangs assure the *esprit de corps* of new members through some type of initiation rite.

The most common types of gang initiation are relatively survivable: branding, blood bonds, tattoos, and drinking to a near-fatal level of intoxication. The most violent involve being forced to murder strangers – or worse, your own friends or family members. Usually, though, the recruit just has to prove his mettle in a violent way.

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Initiations (Continued)

The Circle

The gang forms a circle around the "fish" and the meanest, most ruthless gang member steps out, cracking his knuckles, laughing about the beating he's about to inflict. Chanting and jeering, the rest of the gang pelts the new member with garbage and rotten food while he tries to defend himself against the brute.

From time to time, a surprisingly aggressive freshman will get in a lucky shot and knock out the champion. Most of the time, though, the initiate is beaten unconscious and wakes up a full-fledged gang member. A variation of the circle takes place when there is a glut of potential recruits – two fish are paired off to fight each other and the survivor joins the gang.

> ***"The true test of intelligence is not how much we know how to do, but how we behave when we don't know what to do."***
>
> ***– John Holt***

The Road Home

This initiation guarantees that the potential recruit is tough, lucky, or both. The fish is driven deep into enemy gang territory and dropped off. He is given a varying amount of equipment, depending on how extreme the gang wants the test to be. Some journeys take only a few hours (the fish might be lucky enough to boost a car and speed home), while others can take weeks or more. Sometimes, a recruit will even join the rival gang to buy enough time to escape. Regardless of the circumstances, if you make it back to HQ, you're in the gang.

The Souvenir

In this rite, the recruit must venture into dangerous territory (the turf of an enemy gang, a military area, the no-man's-land of an inner city) and bring back something of value. The "something" depends greatly on the gang and its needs. Some want a body part of a rival gang member; others want cherished supplies like cars, generators, or guns.

Biker Gangs

Street gangs rule the big cities, but most of the open country is patrolled by a growing population of violent, pirate-like bikers, organized into tight-knit groups. At the time of the rollover, true biker gangs – like the Hell's Angels and the Brotherhood – were hugely outnumbered by hobbyist groups: weekend bikers, often couples. But these groups were still large and organized, with good bikes and a love of the road. Membership in "riding clubs" had swelled into the hundreds of thousands in the 1990s.

When the rollover happened, most of these people packed up and rode to their club's annual meeting grounds in California, Texas, New Jersey, or Colorado. There, they found thousands of fellow bikers. The fields held camps full of restless, willing followers, hungry for leadership and increasingly desperate for survival. And many saw the disaster as a justification for the old biker values, the values they'd scorned when they had day jobs and rode on the weekends. Now it was time to live free, die hard, and take what you need.

Bikers scavenge when they can, but they prefer raiding – riding into a town or small city like a sudden thunderstorm, killing anyone foolish enough to resist, and taking everything of value.

Raiding

Street gangs are loath to raid because it typically requires larger groups, and is much more prone to disaster and reprisals. Bikers, though, prefer raids because they are quick, exciting, and more reliably bountiful than scavenging. They do not fear reprisals because they are always on the move, unlikely to be found by their surviving victims.

Despite the chaotic nature of the raid itself, raids are planned carefully and the targets chosen with precision. Bikers reconnoiter their targets carefully and script their attacks. Raiding parties vary in size from five to seven for a single, guarded residence, through 15-20 for a small town, ranch, or country holdout, up to hundreds for a large town or small city.

The primary goal, of course, is gasoline. The gangs target farms, ranches, and country holdouts whose residents planned for the millennium and hoarded gasoline. There is still plenty of gas to find, but as the supply dwindles, bikers will have to find a different way to get around. Already, many gangs are converting their bikes to ethanol-burners. It's easy to build a still to make ethanol; some corn and potato farms have already entered into pacts to supply gangs with fuel in exchange for protection.

Extortion

An even easier way to get things is through old-fashioned extortion – trading "protection" for resources. In places where bikers may want to stay or which they would like to revisit often, raiding tends to dry up resources and create angry, rebellious citizens. Extortion, however, provides a good means of taxing people without completely alienating them or outright destroying them.

In an extortion scenario, a gang rides into a town and sets up camp, either on the edge of town, guarding the major access routes, or in a prominent city park or other openly visible area. Their goal is to intimidate residents into buying the gang's "protection."

Usually, the gang is simply protecting its hosts from itself. That is, if the townspeople don't comply, their goods will be taken by force. This is downplayed . . . gang leaders try to sell the townsfolk on protection from other, more violent gangs, who would soon raid this town if not for the presence of the occupying bikers. Ironically, this is true. Bikers tend to avoid towns that are occupied

by rivals. Gang clashes are bloody and destructive, and – unless one side has an overwhelming advantage – usually unproductive.

While in town, bikers will attempt to recruit members. The most popular targets are impressionable 18- to 20-year-old boys and their girlfriends. The gang lifestyle is described as free and easy, with plenty of food and little hardship. Rebellious youths find this more attractive than the day-to-day struggle for survival that defines post-millennial existence. Any rites of initiation are postponed until the new members have left town with the gang.

Protection rackets last only a few weeks or months. Townspeople will tolerate occupation for a time, but they are always plotting ways to remove the gang from their territory. Gang leaders recognize this and usually leave before the guerrilla backlash can start. They may take a "going-away present," raiding the town as they leave; by now, they know just where to strike. The more violent gangs will burn towns as they leave, making them all but worthless to rivals.

Car Gangs

The line between car gang and biker gang is a fuzzy one. Most biker gangs have a few cars and trucks for hauling booty, spare parts, gasoline, injured bikers, and damaged bikes. Most car gangs keep an escort of motorcycles for maneuverable protection. But there are some general differences.

Biker gangs usually have a recognized leader and some "gang rules," even if they are passed on orally. They wear their "colors," take pride in their gang name, and have (at least among themselves) a version of the Pirate's Code of Honor (see p. B31). Car gangs *may* be like that, too . . . or they may have no gang name, no single leader, and no traditions.

Biker gangs tend to identify with their cycles and with the romance of "life on the road." They take loving care of their equipment. Car gangs, on the other hand, see their vehicles as nothing but transportation, and don't move until they have to. When they move into a town, it's to take it over – systematically using up its resources and its people, moving on only when they're driven out or there's nothing left to loot and nobody left to abuse.

Car gang camps are filthy; their society is "rule of the strongest." It's easier to join a car gang than a biker gang: if you look like you are tough enough to be useful, but not tough enough to be a threat, and they need more strength, you're in. If not, you're probably dead.

Car gangs often form spontaneously. Sometimes, a street gang is forced out of a city with only its vehicles to its name. Members quickly adopt the car-gang lifestyle, scavenging outlying towns, raiding ranches and farms, and rapidly growing skilled at the car gang's primary method of acquiring resources: banditry.

Banditry

Banditry is robbery on the roads. It is one of the main reasons that the vast network of distribution that allowed food and other goods to move across the country has broken down irreparably. Banditry is most common where society is starting to rebuild. Commerce cannot occur without moving goods from town to town – and those caravans are prime targets for bandits.

"Spiky-Haired Mutant Cannibals"

One of the running jokes before the rollover was that immediately following the breakdown of the digital infrastructure, people would turn into "Spiky-Haired Mutant Cannibals" and rove the cities, killing and eating their victims. It was intended as a gross exaggeration to calm people's fears by showing how absurd the concept was. It isn't that funny any more.

There are many names for them – wastoids, grabbers, ghoulies – but the most popular one is "creepers." They are the bogeymen of the new era. About the best thing that can be said about them is that they aren't mutants. They do mostly have spiky hair and they do eat anything they can kill, from dogs and cats to anyone unlucky enough to run across them in a dark alley. Creepers live in basements, sewers, and subway tunnels. They care nothing for their appearance and little for their own safety. They use guns when they can get them, but most attack with makeshift knives or even their bare hands.

When creepers attack, it's always a surprise. They spring out of a shadow – a quick smelly shape that smothers and tears at you until you kill it or it kills you. If you manage to survive the attack, you have to contend with the many diseases carried by their fingernails and teeth, like AIDS, hepatitis, and the new one that people just call "creeper rot."

Minivan Gangs

Before the fall, many suburban families prepared for the worst, stockpiling nonperishable food, generators, water, gas, and guns. *But they didn't have anyplace to go.*

After things went bad, the minivan gangs started to form. Some are based in the suburban areas where they formed – gated communities in the hills make good fortresses. Others go on the road in minivans and SUVs.

Groups like this are intimidating to both the more traditional gangs (what are these old guys doing with all these guns?) and to the more successful survivalists (the minivan gangs have read all the same books and want all the same things, and will murder to get them). Unlike other gangs, minivan gangs often include children; having families to protect makes them that much meaner.

Squirrels: City Holdouts

The most logical place to wait out the disaster is in the country, where there are replenishable food and water sources, but many city dwellers couldn't even get out of their own apartment buildings. These folks are called "squirrels" because they hide in their high-rise holdouts with stashes of food and water, trying to avoid discovery by gangs and creepers. Squirrels live a timid, frightened life, trying hard not to be noticed and praying for the day when their city will be liberated by some unknown benevolent force.

A typical city office building or high-rise apartment might hold anywhere from five to 25 squirrel nests. Each nest is small; six people is about the upper limit. When food and water run low, they venture out in pairs at night, leaving through basement exits, avoiding creepers and gangs as best they can.

Squirrel nests in the same building sometimes know about each other but rarely cooperate. They see other nests as competition, but are usually too timid to confront them. Gang scavengers will sometimes barter with a known squirrel for the location and defenses of other nests. This is a dangerous game, because the gangs are usually disloyal and may come after the squealer's own nest at the first opportunity.

Squirrels usually have several escape routes mapped out (through ventilation tunnels and elevator shafts), and defend their nests with crude traps and alarms. Most squirrels that have managed to survive also carry guns and other weapons to protect themselves. Gangs will generally leave squirrels alone unles they are desperate for resources or are avenging a squirrel's pilfering of gang-controlled supplies.

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There are two main types of bandit raids. The most common is the daylight robbery, involving from 10 to 20 car gang members, depending on the size of the target. It is a cocky, daring form of attack, and surprisingly successful. A train or convoy of trucks is forced to stop by a roadblock, or is driven off the road by well-armed, reckless drivers. The travelers and their guards are generally killed and their possessions hauled off in the same vehicles they arrived in. Most convoys are escorted by well-armed mercenaries driving motorcycles and small, quick cars. (In fact, biker gangs will sometimes hire themselves out as protection for caravans.) The bandits may stage snipers to pick off the caravan's protection. Even so, the battles that rage between bandit gangs and their targets' protection are explosive and spectacular.

Night raids, on the other hand, catch convoys at their most vulnerable. Travelers on a long haul park their trucks in a circle around their camp, much like old-west settlers who feared Indian raids. Raiders first attempt to silently neutralize the camp's watch, then quickly kill or capture the sleeping drivers and guards.

Single vehicles on the road are also targets, even if the victims have no other possessions – the vehicle itself is well worth the effort of the attack. Thus, a network of "bandit scouts" has sprung up. The profession is well-respected and highly paid. Every town has a few scouts, and even gangs will keep a scout on the payroll to monitor the roads that they travel.

Campaign Seed: The House of the New Day

Before the rollover, a small cult made its home in a fortified compound on the flatlands of northwestern Texas, near Odessa. Their population hovered around 50-60 worshippers, and their faith was based on a single, simple message: On January 1, 2000, God will reach down and destroy the sinners of the world with a cataclysm of global proportions.

After the Big Crash, the cult members saw themselves as tools of God's vengeance, left on the shattered Earth to judge the survivors, saving the righteous and sending the sinners to Hell. They are the House of the New Day.

The leader of the House is a former computer-repair technician named John David Parchman. Parchman claims that in 1983, he began to receive messages from God on his computer BBS, even when the computer was turned off or disconnected from a phone line. These holy posts instructed him in great detail on how to build the cult, describing the millennial aftermath in uncanny detail. Parchman compiled these messages into a "new book of the Bible," which he calls *Aftermath*. He is a fiery, charismatic speaker and a sadistic, cruel, and petty man.

After the fall, the House took in many refugees from Odessa, Midland, and Dallas, offering them a simple choice: accept the doctrines of the House or be executed as heretics. Most accepted. The House grew from a small compound to a small city in about two months.

Members of the cult (called "dwellers" within the religion) live protected from the dangers of bandits and bikers but in constant fear of "judgment" by a circle of cult leaders called "Persecutors." If a Persecutor observes a dweller violating any of the group's hundreds of restrictive rules, he can execute the sinner on the spot without appeal. Other punishments include forced labor, lashings, ritual torture, and "wasting" – leaving the sinner without food, shackled to a pole in the center of the complex.

The Persecutors' word is law, and Parchman actually encourages them to be arbitrary and intractable, generating a fear-based loyalty unmatched since the Inquisition. Most dwellers follow the rules and in fact strive to become Persecutors themselves. The cult has spread like a virus throughout the South and West, finding a particularly strong following in Nevada and California. Many towns and small cities are completely House-controlled. Biker gangs that roll into these towns are in for a nasty shock . . . they usually don't roll out again, and the cult-town gains a nice cache of vehicles and weapons.

The cult spreads through roving groups of 8-10 "evangelists." These holy crusaders travel to towns, ranches, and survivalist compounds, infiltrating them in the guise of religious travelers. They preach a watered-down version of the House's doctrine and barter spiritual healings for supplies. Their goal is to set up a House of the New Day church in the town, leaving one of the dwellers there to preach and draw converts.

These evangelists also try to encourage their new acquaintances to make a pilgrimage to the House headquarters in Texas, promising a utopian community of healthy, happy people living in harmony and without fear of bikers, gangs, and thieves. Of course, anyone who makes the journey either becomes a righteous dweller or ends up hanging from the defunct high-voltage power lines, feeding the vultures.

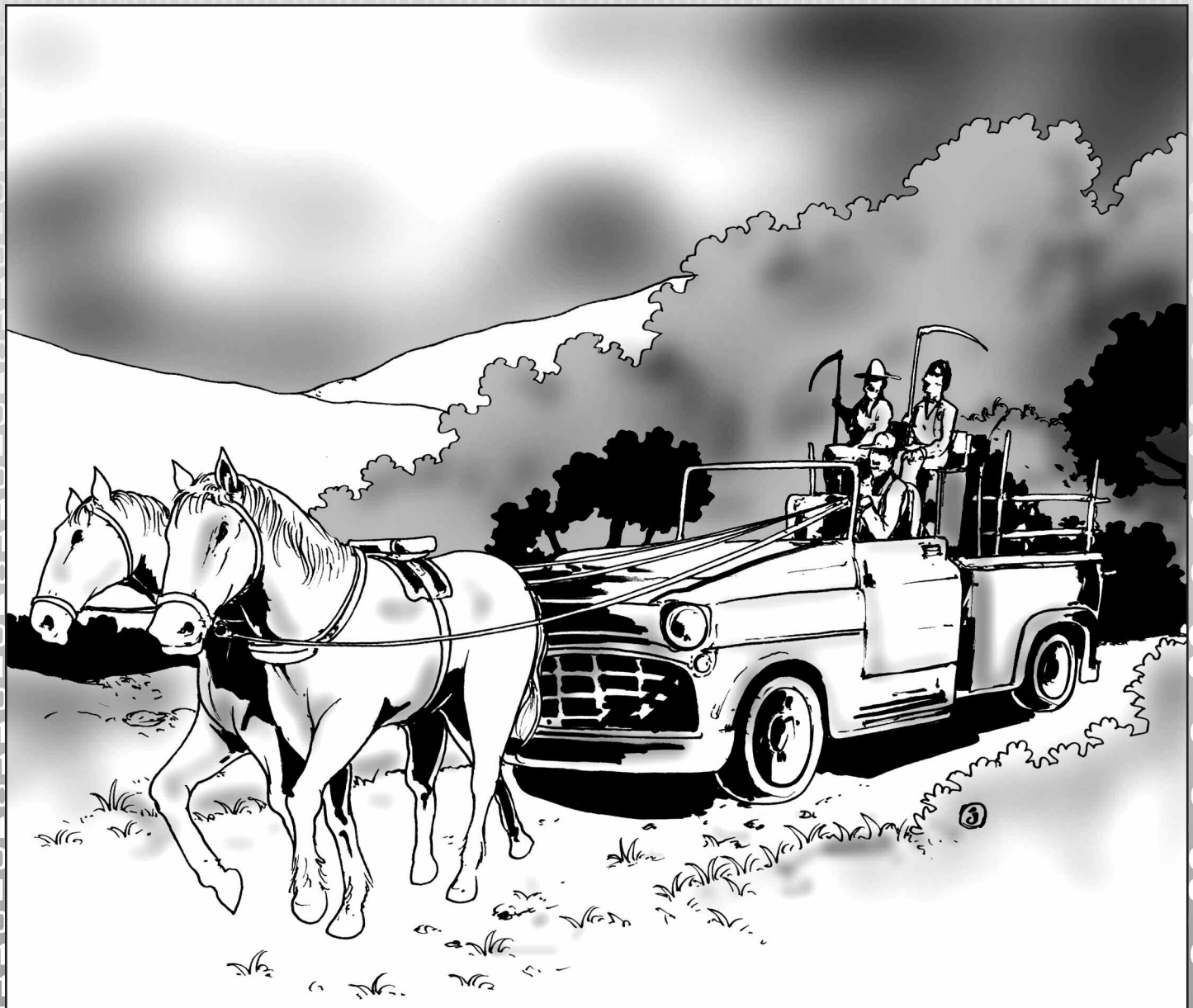
NeoLuddites

A small-but-growing population of survivors follows a vicious anti-technology agenda. Whenever a power plant manages to get back online, someone inevitably sabotages it, usually with a homemade bomb. They also attack high-tension power lines, radio towers, data centers, and broadcasting stations.

No one knows who is behind the NeoLuddite movement. They seem to be able to move freely about the country, with an uncanny ability to track down and sabotage efforts at building up technological infrastructure. Their activities are extremely frustrating to those who would try to rebuild the cities, and mayors and gang leaders alike have offered bounties for known NL members.

Some suspect that the NeoLuddites don't *dislike* technology, but are attempting to stockpile technological resources in order to create a monopoly when the time is right. Others think that they are controlled by a consortium of powerful gangs who have the most to gain from keeping the populace living in the stone age. Or perhaps it's a movement among the survivalist enclaves to make sure that their new independence isn't threatened. Whatever their motives, they remain maddeningly elusive and the largest impediment to the rebirth of civilized soci-

7. That Was Now, This Is Then



Oh, my stars! All the high technology that makes our society the swell place it is has stopped working! We will all have to live as our ignorant, backward ancestors did!

Let's try that again . . .

Wow, all that complicated scientific stuff that only geeks understood is gone! Now we can live simple, uncomplicated lives without worrying about technological doom!

One more time . . .

Ding, dong, Big Brother's dead! No more government snooping, no more interference with our lives. Now we can take full responsibility for ourselves!

See? The collapse of civilization has something for everyone.

Imagining how life might be better if we returned to the manners, values, government, or technology of an earlier era has been popular for a very long time. More recently, the fantasy has been refined to include hanging on to certain technologies deemed too useful to abandon (usually involving personal comfort and often personal firepower).

The Y2K crisis, whatever actually happens on that fateful New Year's Day, has been a fascinating mirror of Western society's feelings about computer technology. There are very definitely folks out there who are hoping that, come the millennium, they will never again be asked if they have a fast modem, or get an electric bill for $46,000,015.34, or have to stumble through a voice-mail system. Others have . . . well, *other* ideas of what they'd like to see disappear from the world.

Roleplaying lets us toy with these ideas without anyone actually dying, in ways that are thrilling and adventurous instead of a grinding struggle to stay alive. And just think, your dice and notebooks *will* still work; plan now to spend your New Year's with a few close friends and your ***GURPS*** books. Have some candles and bottled water handy, just in case.

Parallel Millennia

Okay, we're assuming that *something* happens to all the chips or we're in the wrong book. But the more one extends the Y2K disaster, both in scope and duration, the less plausible it gets.

So what else might cause the Ultimate Reboot?

Deep-Fried Chips

Electromagnetic pulse (EMP) will definitely destroy integrated circuits (ICs), whether or not they have date functions – and indeed, whether or not they're installed in a piece of equipment. With the loss of the automated equipment that makes the chips (and perhaps more importantly, the equipment used to design them), the entire IC industry might have to "bootstrap" itself up from the discrete-components era.

Global EMP might be a side effect of a world war involving EMP warheads specifically meant to knock out the enemy's control systems (although "ordinary" nuclears have the same effect). Charged-particle-beam satellites are an interesting possibility as well, either through deliberate use or an accidental mass triggering.

Or the superpulse might be a cosmic event, a burst of energy from the sun or somewhere else in space. In reality, such a burst would probably destroy most of the life on Earth, but in science fiction, you're allowed one implausible assumption if you do something interesting with it. Then again, the GM's idea might *include* such a mass extinction.

What's Gone?

First, we assume here that the computers die – in fact, for this chapter we assume that *all* the computers go, which is way beyond the worst plausible Y2K scenario. (After all, the microchips in most household appliances don't know what day it is, let alone what year.) This can be explained partly as a deliberate step back from the technology that betrayed us (as discussed above), partly as a result of the general disruption of society (it's more important to get order and basic services restored than to sort out online auction servers), and partly as good ol' hand-waving. See also *Parallel Millennia* (this page).

Given that, the next big crash is the telephone system: All the exchanges, from PBXes to regional switching centers, go down. So do cells and satellites. In fact, satellite services of all kinds – phone, TV, weather, GPS, surveillance – disappear.

The world's financial markets have presumably been tensed for this – and trading will probably be suspended, even if it would not otherwise have been for the holiday – but this is the kind of reality that no amount of preparation disarms. Financial trading is simply impossible. Money will likely be meaningless for some time, and of course credit cards are dead – if you want something, you barter for it (or steal it).

Central utility services stop cold: no water, no electricity. Buildings with their own reserves (reservoirs, generators) may be able to draw on them – older buildings are more likely to have plain old valves and relays than newer ones – until they're exhausted. Very tall buildings will probably use some of their reserve power to bring people downstairs in elevators, and then shut the elevators down. From now on, penthouse views will be for hermits. Athletic ones.

Vehicles keep going if they don't have embedded microprocessors (unless you're using the "no semiconductors at all" extension, in which case electronic ignition and fuel injection go too). This means that most autos more than ten years old survive. Ships don't sink, but electronic navigation systems fail. Aircraft also lose navigation. Commercial aircraft are all in serious trouble, and will need to make emergency landings at the earliest opportunity; those over deep water are probably doomed. Light planes are in better shape, as they can drop to low altitude and follow roads (which can also be used for landings). The newest rail locomotives are computer-controlled, so they fail; Centralized Traffic Control and most signal systems go down.

Continued on next page . . .

What's Gone? (Continued)

Petroleum will still flow from the wellheads. Modern refineries are highly automated, but simpler stills can run under manual control. Expect oil, and especially gasoline, to be much scarcer and more expensive, and of course a prime target for hoarders and raiders. Also, high-octane gasoline – produced in quantity by sophisticated catalytic reforming processes – will be quite rare. Most North American crude oil, except for Pennsylvania crude, is asphaltic and "sour" (high-sulfur); less gasoline, and more polluting heavy fuels, come from this kind of stock.

Biotechnology will be hit extremely hard, as its laboratory equipment – electron microscopes, spectrometers, molecular analysis programs – shuts down. Mass production of most prescription drugs will stop and won't resume at anything like its former levels. Medicine in general will have to work without its advanced tools – no advanced medical imaging, no automated laboratory work, and little or no replacement of supplies. See also *What's Gonna Kill You* (p. 90).

What's Left Over?

After the crash, devices that operate under chip control will become useless for their main function (and for most others, except as a source of material salvage), but everything else, no matter how "high-tech," will continue unchanged. This doesn't mean that the old tech will still be fully useful; your gasoline lawnmower won't magically turn into a sheep, but if the gas supply dries up, you might wish it had.

The issue of "tech survivals" is really a matter of what support materials – fuels, lubricants, spare parts, consumables such as tires or ammunition – remain available. Since the distribution networks for these things will be disrupted, even if their production is not, there will be a scramble (to put it politely) for local stocks. Within a short period of time, any stockpile of useful supplies will be actively defended, or will have been moved (not necessarily by its lawful owner) to a place where it can be defended.

Continued on next page . . .

Blame It On Society

Deliberate rejection of "cybertech" replaces the technical problems of abandonment with sociological ones. That some people would like high tech to go away is not a question; how it could be *made* to go away definitely is. (The Unabomber clearly took the wrong approach.)

Such a mass movement might have religious roots – "Abandon this profane imitation of the sacred soul, return to the purity of the Golden Days" – and would certainly resemble a religious movement, even if it presented itself as a purely secular philosophy. It would probably not come to full power until the aftermath of a Y2K-style disaster; imposing and enforcing such a ban would be much easier through mob rule than through legislation and formal police procedures. On a smaller scale, a post-crash local dictator might decide that information technology poses a threat to his rule (as several dictators today seem to believe) and suppress it – probably keeping a few machines for his own use.

> ***The computer is down. I hope it's something serious.***
>
> ***– Stanton Delaplane***

Repression usually creates resistance (and in RPGs, it *always* does): There would be cells of underground computation and telecommunication as long as it was physically possible to keep the equipment operating, and there would probably be a secret cadre of programmers and systems engineers as long as there was the faintest hope of those skills returning to the daylight.

The World of Tomorrow – I Mean, Yesterday

The development of cultures – that is to say, human history – is often presented in terms of material pressures and natural forces. For example, a group dressed in a particular fashion because the climate required a certain type of protection and such-and-such materials were available. Or they developed a specific attitude toward the old and sick because resources allowed (or did not allow) them to be adequately cared for by the able-bodied.

These things are true and important, but it is also true that people, once they advance past the most basic hand-to-mouth subsistence, have choices as to how they shall live, and the more advanced their technology becomes, the more choices they get. Storable food surpluses mean that some people can choose to pursue presumably useful careers other than growing food – game design, for instance. Housing can be constructed in ordinarily inhospitable places. Cities – which always rely on the surrounding territory for their food and resources – can exist, and people can then decide to live there – or not.

To be sure, the reality is complicated: For many people, the "choice" of living in the country or the city may not be a choice at all if the city is where all the jobs and affordable housing are, or if farm work is all they know, however poorly paid.

So what has this got to do with post-crash societies?

The post-digital world will offer a spectrum of social and technological options to its inhabitants. The breadth of the spectrum will depend on just what systems crashed and on what larger systems collapsed as a result, but unless the world is logic-bombed back to the Stone Age, the survivors will have to make deliberate choices, both individual and group, about what parts of the still-functioning world they are going to use or discard and what broken systems they will spend their resources trying to repair.

And a central choice will be the *style* of the new society. (We're deliberately trying to avoid the word "lifestyle," but hope you'll excuse us if it sneaks in anyway.) A survivor colony's *technology* choices might be limited to those of the late Renaissance, but nothing would force the people to *act* as if it really were 1590 AD: speak Elizabethan English, dress in long gowns and trunk hose, compose sonnets, etc.

The survivors could, however, *decide* to live that way. It might begin as a kind of joke: The colony's defense personnel, forced to carry swords and black-powder weapons (the handful of remaining assault rifles being in the emergency reserve – we'll discuss this later), begin to imitate Barnardo on the battlements of Elsinore. "Stand and unfold yourself!" "The wind doth bite shrewdly." As the colony stabilizes, other citizens pick up the habit; it becomes a sign of belonging to the group and sharing its values. (Is this really less plausible than millions of people acquiring their slang vocabulary from television and Clint Eastwood movies?) Still later, Elizabethan clothing (or at least a modified version of it) becomes popular for formal, "dress-up" occasions, and sometimes for everyday wear as well – after all, the Elizabethans had plain, practical dress for work and wilderness travel as well as court clothing.

If the colony endures, these "affectations" will become local norms, and later generations, who know "modern" dress only from old pictures and on strangers, will see late 20th-century clothing as the oddity. Visitors from enclaves with different standards may laugh when the locals aren't listening – just as some tourists do today – but the "courtly" new society will take this as more proof that their own culture is refined and polite, and the others crude and barbaric. "Say'st thou, who here is advanced, and who fall'n back?"

What's Left Over? (Continued)

One thing that is quite likely to survive, albeit changed, is wireless telecommunications – that is, radio. Most radio equipment won't be affected by the chip crash, and amateur operators ("hams") will be a major channel of communications after all the satellites blink off. Even if central electricity fails, low-power rigs can reach intercontinental distances, especially using radiotelegraphy (Morse code), and short-range AM receivers ("crystal sets") need no power source at all.

Motor vehicles will run as long as they have fuel and parts. Large-scale air travel is dead, primarily for a lack of sophisticated traffic control; smaller planes may continue to operate in good weather and daylight. Railroads can operate without central signaling, as indeed some lines do now (unsignaled trackage is known as "dark territory," which *sounds* like something from an adventure game). There are only a handful of working steam locomotives in the US, mostly in museums and on tourist railroads, and not many people qualified to operate them, but if diesel fuel and heavy electric power don't come back, coal-fired steam will be the only alternative.

Then there's the issue of firearms and their ammunition, which – like every issue connected to guns – produces arguments without deliberate effort. Many people believe that they can keep their assault rifles fed with hand-loaded ammo (and refilled brass) as long as is necessary, and they may be correct. Others think that sooner or later, one of those reused cartridges is going to blow the gun up, and that may be right. There's also a fight lurking in the question of producing fine-grained smokeless powder without advanced equipment. We're not going to argue the matter. (Nor are we going to tell you how to blow up your basement making home-brew black powder. That information is easily available in books or online.)

The rarity of modern guns and ammo in a retrotech campaign is for the GM and players to decide, based not so much on "reality" as the way they want the world to operate. If you want the heroes to be able to fall back on their trusty MP5s and Desert Eagles, then do it. If you would prefer that ammo be more precious than diamonds, for use only in the gravest extreme – and then *never* on full-auto – then that is a viable paradigm as well.

Flops

There were, it should be recalled, electronic computers before the microprocessor, or even the semiconductor. ENIAC at the U. of Pennsylvania and the British Colossus come to mind. What could vacuum-tube computers do to fill the gap left by silicon?

On a practical level, not much. The density of pre-semiconductor computing is billions of times (literally, not hyperbolically) less than a microchip; a triode tube (effectively one transistor) is, at a minimum, about the size of the average person's thumb. Even if several million tubes were to be wired together, the speed of transfer between them would be many orders of magnitude slower than in an integrated circuit: ENIAC ran at about 330 flops (floating-point operations per second); high-end PCs can grind out several *mega*flops.

And those millions of tubes would require several megawatts to operate, and throw off a few million watts of waste heat that would have to be sinked somewhere. Little fans on top of the "processor" won't cut it.

Another practical consideration is that vacuum tubes are simply not in mass production any longer, at least in the industrial West. Most of the present demand is for expensive audio amplifiers, and the supply comes from Eastern Europe. (The MiG-25 fighter was discovered to have a tube-type radar set, setting off an argument among Western analysts as to whether the Soviets were absurdly behind the tech curve or had fiendishly devised an answer to electromagnetic pulse, to which tubes are far less vulnerable than semiconductors.)

Assuming a supply of tubes, and the heavy electrical iron that supports them, can be found, there are useful things tubes can do. They work very well for radio and pre-digital television. They can still crunch numbers faster than people with slide rules, but the kind of large-scale digital modeling we've become used to – meteorological analysis, computer graphics – will just disappear. (Much of today's graphic sophistication goes to the game market. If you wanna deathmatch, you're gonna have to buy goggles and a paintball gun.)

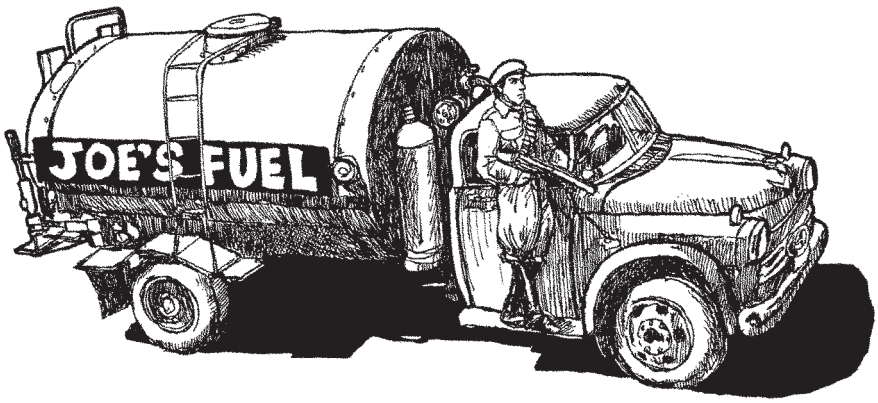
It is entirely within the realm of speculative fiction to allow the construction of vacuum-tube devices that would be of dubious practicality (it happened in the real world, after all, with the VT proximity fuse: a tube device designed to be shot out of an artillery piece). If you want massive banks of glowing, humming high-voltage equipment filling in for contemporary guidance and calculating systems, as well as ultra-tech (the X-machine seen in the movie *The Philadelphia Experiment* is a nifty example), then go for it. Such devices should probably be uncommon, unless you intend to design a completely retrotech world, as in Terry Gilliam's *Brazil.*

Trip Planning for Time Travelers

Before describing specific retro cultures, there are some general issues of design to discuss; see *What's Gone?* (p. 83), *What's Left Over?* (p. 84), and *Who's Playing?* (p. 87). These guidelines apply to all of the particular settings described in this chapter, as well as to the GM's own designs.

Worlds of Yesterday

These specific scenarios (with variations) are offered as interesting gaming environments, not as "more plausible" than some other future. They all depend on the survivors' deliberate choice to live this way (as discussed above). Indeed, it seems more likely that decentralization would follow (something many contemporary Americans claim they find greatly desirable), than that a single Vision of the New Tomorrow would prevail.



The Metaworld: Brave New Burgs

That the United States (and most other countries; the U.S. is just our example) contains powerful internal divisions is not a "political judgment"; it's just a fact. The breakdown of central authority – and an authority that can't impose itself on the population has broken down, even if Congress continues to convene – might easily allow those discontents to become open splits. Suddenly, it's possible – it may even seem *imperative* – to set up one's own local social experiment, centered on a supply source, circling the wagons against all outsiders. It doesn't matter in the short term if the founding principles of the enclave are workable, flawed, or completely untenable over the long haul; just about any system can function for a short time on sheer will or the ruthless suppression of alternate views.

The more groups that do this, the more difficult it becomes for the surviving central authority to reassume control. When the National Reunification Command (or whatever it's called – "Union troops" is a likely label in many parts of the country) shows up and the locals won't be "reconstructed," the

options are to force one's way in or to move on. Force may be counterproductive – destroying the village in order to save it – and killing fellow citizens will not be good for the morale of the Unifiers. Also, they might lose the fight.

The eventual result is a "New United States," probably centered in the Northeast, plus a lot of independent enclaves operating by their own rules. Over time, the founding principles of the enclaves may mutate, sometimes in bizarre ways, under the pressures of necessity and human impulse; a stranger will never really know what he's getting into. (Hint: Large signs reading WELCOME STRANGERS, FREE PARTY TONIGHT usually mean GO SOMEWHERE ELSE WITHOUT BEING SPOTTED.)

The PCs might be representatives of the old government or of an enclave, or they might be of no fixed address (making them both free to move and possibly fair game for everybody else). See also *Campaign Seed: Route '00* (p. 93).

Chrome City

"The 1956 DeSoto is fully Y2K compliant."
– Jeff McNelly

Suppose that the main effect of the information technology (IT) crash is to cut the United States off from the transoceanic world, and that the strain of insensate isolationism that sometimes dozes but never dies in the American soul wakes up growling.

With Wall Street on life support, the country reverts to a cash-and-barter economy. Manufacturing – indeed, just about everything – is suddenly labor-intensive again, so there's plenty for the unemployed IT professionals (and online day-traders, and tort lawyers, and everybody else it's fashionable to want to see humbled) to do. The remaining cadre of master mechanics finds itself supervising squads of rookies, some of whom were probably managers a few months ago. Not, of course, that the managerial class vanishes – plenty of them have survival instincts, too.

The factories start turning out old-fashioned durable goods, including cars without electronic fuel injection, built from blueprints that didn't dematerialize with the CAD systems, constructed with heavy metal parts that anybody with a hammer can knock back into shape. Vinyl discs take back their turf from CDs (which find an afterlife as highway reflectors and dance-hall decorations). Radio supplants TV.

Welcome back to the Fabulous Fifties.

This can be seen as a kind of Western with Studebakers, starring Dwight Eisenhower as The President and John Wayne as, well, all the other good guys. The Bad Guys are the forces of anarchy – Marlon Brando on a motorcycle, with a switchblade in his black leather jacket. The driving imperative (no pun) is to rebuild America better and stronger, with even more chrome and bigger tail fins, keeping the oil pumping, the roads wide open, and the tract-house suburbs where everyone lives (since the wicked cities have collapsed) safe from intrusion.

This is one of those ideas that's going to strike most people as either Paradise or a black-comic Hell. It might be a useful frame for a rump USA (see above) centered on a Detroit-Chicago axis and the Great Lakes (useful for internal transportation). If the "New Americans" are the good guys, then they're trying to expand the reach of highways, phone lines, and electrification; the campaign is as much about building public works as fighting bandits. (Imagine an Army Corps of Engineers commando team.) If they're the villains, then this reconquest is carried out by armies in WWII-era tanks and jeeps, and the players are guerrillas against the Chroman Empire.

Who's Playing?

There has never been a society so conformist that *nobody* dissented (though some societies have been more effective than others at suppressing dissent). Since this will be an important source of conflict – that is, adventure seeds – the mechanics of coping with those who don't or can't go along with the social myth need to be well considered. The most important points are:

- What kind and degree of "dissent" will provoke a negative response from the society? Does the misfit have to do something unambiguously harmful to others, like killing his neighbors for their food stocks (a group that tolerated *that* would hardly count as a "society"), or is it enough to dress differently and refuse to sing the local anthem?
- What punishments does the society impose for deviation? This has to be seen in terms of the ultimate result, not the immediate act: Exiling an offender means one thing in a hospitable climate with other, presumably more accepting, enclaves within easy travel, and quite another in the middle of a desert with no other human habitation for a hundred miles. Also, are there degrees of punishment – probably not imprisonment, which is expensive and unproductive, but possibly forced labor or "community service" – or are offenders left alone until they cross a line, after which it's death or exile?
- How large is the dissenting group, how organized, and how many different "loyal oppositions" are there? An enclave of a thousand people might have a few dozen individual cranks, a minority party of two hundred that goes along with the majority while working to convert them, or be strongly divided between two (or even more) precariously balanced factions, requiring only a little shift of power to ignite civil war.

Note that we aren't predefining any of these arrangements as right or wrong. That sort of thing is for the players and GM to decide, based on the precise local circumstances. If the players are wanderers from one survivor enclave to another, then they may have to learn that not every oppressive system can be overturned in a weekend by a handful of heroes, or that what looks cruel and arbitrary to outsiders may be fair and logical according to the local cultural imperatives.

What's Wrong?

"Utopia is a fool's game."
– Dr. F. Paul Wilson

A few words on real history and its conscious recreation by people who find things to admire in it:

Real history is full of class distinctions, every imaginable kind of prejudice, extreme distances between rich and poor, brutally short life spans and horrifying infant mortality, and war over everything from the control of continents to Jenkins' Ear.

Real history is also full of authentic heroism, courage, determination not just to survive but to live well, and the kind of ordinary human decency that doesn't get into the books very often but without which we wouldn't have made it out of the caves.

Imitation history can at least try to choose the good bits of the culture it is "recreating" while posting the rest as Perils to be Avoided This Time Around. People remaining people despite their loss of Web access, some of the nasty stuff is bound to survive, at least on the individual level.

Rather than reiterate through every suggested campaign setting that "there were plenty of bad things done and bad times to be had here," we'll point this out now and you can take it as read hereafter.

Not With A Bang . . .

The breakdown of military data systems ("C-cubed-I") will not have a good effect on the service's nerves. Some nations may launch attacks, either to counteract imagined strikes by their neighbors or to take advantage of the neighbors' confusion. It will be a bad time to be on a disputed border, and with the big players stumbling to recover, smaller nations with nukes may decide that there will never be a better chance to use them.

Global thermonuclear exchanges, on the other hand, seem much less likely, because the launch controls will be singing "Daisy, Daisy" in a HAL 9000 monotone. (And it's going to be very, very dark inside Cheyenne Mountain if the lights go out.) Without their guidance systems, long-range missiles might miss the continents they were aimed at, never mind precision targets. Bombers are unlikely to fly – the most modern aircraft aren't flyable at *all* without computer control.

Thanks for small favors.

One of the critical post-crash activities for America's (or anyone else's) strategic nuclear command will be reestablishing contact with their air bases and missile silos. A mission to enter a silo that's experienced some kind of disaster (not necessarily nuclear – missile propellants are dangerous enough) could be an interesting technical challenge for a group of adventurers.

Stuff You Need to Know

Mechanical-trades skills are essential to this world, to keep the machines going, as well as the factories that turn them out. Vehicle operation skills will be practically universal (though the arcane art of parallel parking may be almost forgotten). Anybody who can't drive won't really be a citizen unless he or she has some other extremely valuable talent. Construction skills will be much in demand, though the heroes themselves may not be a building team.

Stuff You Gotta Have

If you ain't got wheels, you're *nobody* here.

Regilded Age

"We wish to return to all the virtues of the Victorian Era, except for hypocrisy."

– Baroness Margaret, Lady Thatcher

"They're the kind of people who made this country great . . . you know, morons."

– The Waco Kid

A lot of Americans are nostalgic for – 'scuse me, "hanker after" – the days of the Wild West. They dream of the chance to recreate the Dodge City or Tombstone of the Earp Brothers, if circumstances made it reasonable, or halfway reasonable, or just barely possible.

If the gasoline and electricity go, horses and hurricane lamps are going to come back to fill the gap. Across the enormous spaces of the American West (and they *are* huge, even in a fast car, never mind on horseback), there won't be much centralized authority – although GMs should remember the power of radio (see sidebar, p. 85).

Steam railroads (burning coal or oil) have made a return, which means that all the additional servicing they required – water towers along the route, ash pits to clean out the fireboxes, constant manual lubrication of the working parts – have come back as well. Trains are dispatched by paper orders and telegraph; the service in the Wide Open Spaces is perhaps a train a day for a major town, one or two a week for a small one.

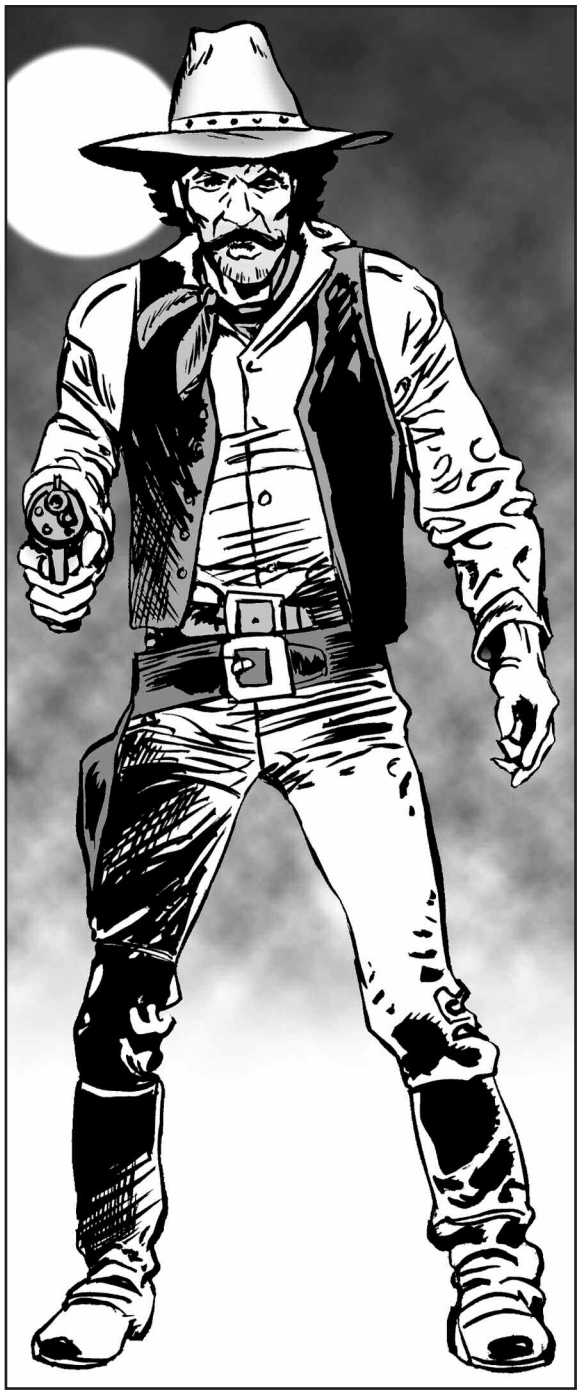
The sources of conflict are the same as they were originally: resources. Land and grazing rights (cattlemen vs. sheepmen, both of them vs. farmers), water rights, and mining rights. No matter how big the country is, somebody always wants more of it than he's got.

It should be pointed out that while the historical West was certainly a rough place, the violence rarely reached Hollywood levels. The first thing people wanted when a town showed signs of permanence was law and order. (Actually, the first thing they wanted was a place to have a drink, but that usually preceded anything one would call a "town.") On the other hand, people determined to recreate the West in the *High Noon* image might settle things with a Main Street showdown (historically a vanishingly rare event) that real westerners would have resolved with a fist fight or a nice, quiet bushwhacking.

The concentration on the West sometimes makes people forget that this was also the High Victorian Age. Any town that could manage it replaced its false-front wooden buildings with ornate brick and wrought iron. The cities bustled and built. People wanted to show "refinement."

Restoring Victorian culture is something that a large number of contemporary people actually want to do – or at least claim they do (as the Baroness said).

Whether it can be done without that fine old human foible, hypocrisy, is a question we won't deal with here; certainly, recreating the look of the period would be easier than reconstructing that of many other eras. The clothing is familiar from photographs, some of the architecture survives, and as an era with central lighting and indoor plumbing (however few real Victorians possessed them), it offers much in the way of comfort.



This might develop as a "steampunk" campaign, with the surviving information technologists trying to rebuild a version of the Lost Wired World with the technologies available to them. It's extremely doubtful that mechanical computers ("Babbage Analytical Engines") could ever approach the capabilities of even the earliest personal computers, no matter how large and complex they became, but the GM might wish to allow something like this. Or the focus might be on working out what elements of the culture could be restored – a telegraphy- or teleprinter-based "Internet," "embedded" clockwork computers to control steam-driven machinery (remember that punched-card production control is centuries old), etc. The (formerly) United States might balkanize, becoming a set of rival republics (or whatever) with much in common with Imperial Europe.

Stuff You Need to Know

Ridin' and shootin' are certainly part of the cowboy image.

Stuff You Gotta Have

For mobility, you need a horse. Railroads are great for long-distance transport, but a locomotive is hard to park and only goes where the tracks go. (Horses can be carried on trains, of course. A wealthy group of adventurers – or ones with a powerful patron – might have their own custom-fitted train, with a horse car for side trips, as James West and Artemus Gordon did.)

The Age of Really Stupid Weapons

"A knife always works."
– Larry Niven

Okay, the push-button, 15-minute World War III that's been haunting so many people for so long isn't likely in the wake of mass processor implosion. Still, humanity managed to fight one world war where computers played only a supporting role, and one without semiconductors at all.

A post-digital WWIII might begin with one, or more likely several, "opportunity wars." A small nation attacks one of its neighbors, knowing that the larger powers will be too busy to do anything about it – and live television reporting will be impossible. The attacker will likely have an obsolescent force, armed with leftovers from the Cold War (or earlier): tanks with mechanical rangefinders, basic radio communications, unguided tactical missiles (a few of which might, depending on the state of the black market, have nuclear warheads). If the target country has (had) a highly sophisticated force, depended on superpower protection, or both, so much the better. A look at world politics and war for the last 20 years will show a dozen or more of these potential flashpoints.

Once the troops move, the word *will* get out, whether by radio, land-line telephone, or someone piling into a jeep and running for help.

Some potential allies will be unable, or unwilling, to do anything. Others will send what aid they can, be it due to a genuine desire to help, fear of being the next victim, or a standing grudge against the aggressor. Many of the great wars of history, and both World Wars, involved countries being drawn into the conflict through treaties and defense pacts rather than direct invasion. The victim's neighbors may also decide to grab a piece of its territory for themselves. Sending troops somewhere else weakens the home forces, of course, possibly triggering another opportunity invasion . . . and so it goes, until everyone in the region is either allied to or fighting everyone else. Some military units, particularly those long unpaid by their own nation, may turn mercenary, or bandit.

Welcome back to the Thirty Years' War.

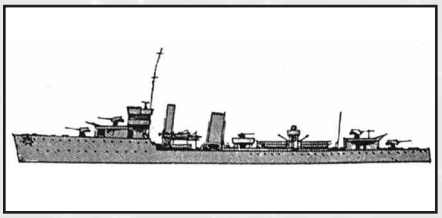
The military technology of this – well, *mess* is a pretty good word – will likely resemble World War II on land, with somewhat better vehicles and much improved infantry equipment. Communications will be back to radio and runners. For formerly modern forces, just coming up with enough non-digital radios may be a serious problem.

Continued on next page . . .

The Age of Really Stupid Weapons (Continued)

The air war will be problematic; obviously, no modern military aircraft will be operational, but some countries still have U.S. and Soviet surplus planes in their air forces – here the paradigm will be Korea, including dogfights between F-86s and MiG-15s.

Naval warfare is an even more intriguing problem: the big powers' missile boats, cruisers, and carriers will be blind and toothless. Global naval operations seem likely to be limited to convoys, using guns for protection. Intense coastal and riverine small-boat battles are a strong possibility, though, as well as Zodiac assaults on enemy coastal points.



What's Gonna Kill You

Disease. No question about it.

It's possible that some enclaves will grow and harvest penicillin, but antibiotic treatment as we understand it is over. Indeed, while there will be rationing of existing medical stocks in the immediate wake of the crash, there's little point in hoarding medicines until they lose potency.

People with chronic conditions requiring constant treatment – insulin-dependent diabetes, kidney failure, some heart and lung conditions – are going to die of them. Palliative measures may allow them to survive a little longer; deciding when this is justifiable for the good of the group – does this person have essential skills? Can that knowledge be written down or taught to others if we buy the patient a few more weeks or months? – is one of those unlovable tasks that survivors will have to face.

Continued on next page . . .

Steel Courtesies

"Baldrick, to you the Renaissance was just something that happened to other people, wasn't it?"

– Lord Blackadder

There's a magazine that claims to make the Renaissance "Faire" experience last all year long. Some people find that a fabulous concept; others think it's terrifying. But it's certainly no less plausible a choice than any other past era; plenty of people who've never heard of Creative Anachronism know who the Three Musketeers are, can manage the "Sir! You have this maiden grievously offended!" dialogue almost without rehearsing, and think that cloaks and swords and big floppy hats and the rest of it would be a swell way to dress, especially if you could go to the potty indoors.

At least a quarter of the population is likely to be producing food, and the majority of the others will be in some kind of craft trade. The romantic image of the Renaissance is that it is artistic, so people will be expected to produce items that are beautiful as well as functional; genuinely brilliant artists may have rather comfortable lives if the larger population buys into this concept. (Benvenuto Cellini frequently stole the gold and silver for gorgeous art objects, and was forgiven as well as paid handsomely by the nobles who fell in love with the beautiful results.) On the other hand, nobody gets to play if everybody starves.

There may be actual "nobles" – those who do little practical work – though they will have some kind of administrative or ceremonial function. Or everyone may be "noble," for the purpose of mutual courtesy, but also expected to carry his or her weight. A third alternative is to rotate the honors: Everyone gets one day a week off work, during which they are addressed by the other six-sevenths of the population as "Your Grace" or "Madame" and served the best food in the house; tomorrow someone else is the Doge and you wag him. (See Jack Vance's *Big Planet* for a classic take on this idea.)

Stuff You Need to Know

This is a culture deep-dyed in How Things Are Done, making Savoir-Faire essential for anyone who wants to live long enough to acquire a reputation. When words fail, of course, there's Fencing – sword and dagger, naturally. Guns are for bandits (both to use and to be shot down-like-a-dog-in-the-moonlight with) and the occasional military operation.

On a more practical level, all the TL4 craft skills will be useful, particularly Armoury and of course Tailor (a Professional Skill) to create and maintain all the finery expected in dress. Many of the "modern" comforts are available; eyeglasses, for instance, are not an exceptional item (though only the best lens grinders will be able to correct for astigmatism).

Stuff You Gotta Have

The appropriate clothes are at least as necessary as the appropriate manners. Laborers will wear appropriately simple and durable clothes for work (shirts, loose jeans, aprons), but even they will need a fancy outfit for feasts and festivals, since this is the pseudo-historical version in which laborers get invited to the same feasts as the upper classes.

One is expected to carry a blade, at least a dagger, which ought to be the best quality available; anyone who can afford it will own fine quality weapons (see p. B74).

One also needs a horse to be properly accoutered, or just to get around at reasonable speed.

Heavy Iron

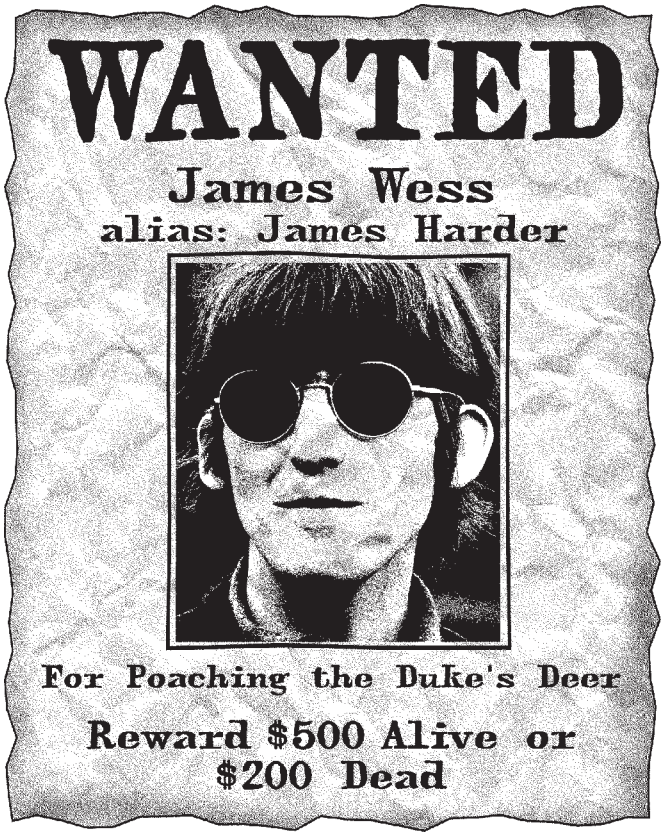
"Let us not go to Camelot. It is a silly place."
– Monty Python and the Holy Grail

There is only a certain amount of genuine nostalgia for the Middle Ages. Most of the people who think they'd like to live then are actually thinking of:

- The Age of King Arthur.
- That Guy the Barbarian™.
- This campaign they were in once where they had a castle and an army and a gazillion gold grickles and a suit of armor a 90mm sabot round couldn't punch through even if they didn't have 50,000 hit points too.

There's not much we need to say here about the folks with the 50K HP; there are plenty of other publications for them.

That Guy the Barbarian™ in this context translates into a world set many generations, perhaps many centuries, after Things Went Flooey – so long that technological society is only a legendary Age of Wonders. The late Robert Adams' *Horseclans* stories use this kind of setting (adapted for ***GURPS,*** though now out of print).



This is a genuine low-tech (TL3) world with a handful of surviving artifacts. There will be no modern weapons remaining; some fine blades and armor might survive, if properly cared for, but a continuously used sword would eventually wear down. Most of the artifacts are useless or incomprehensible objects, kept as curiosities or venerated for supposed mystical power. There will still be such "wonders" as a pass sliced cleanly through a rock hill by some unimaginable agency, or stumps of towers that imply a bridge once spanned San Francisco Bay.

Literacy may have declined or nearly vanished – or may remain at a high level, as it is one of the most useful skills that a society can possess, regardless of its technology. Few of the original books will be left; those that exist will be transcriptions of those considered important, sometimes with bizarre errors. Much writing will be with pen and ink, but movable-type printing is perfectly practical at TL3, and even at TL2 using carved wooden type.

The social system of such a world might be anything that a group of survivors could agree to: They would be "tribes," but some tribes have been highly

What's Gonna Kill You (Continued)

The survivors do have some advantages over real historical people; notably, they know about sanitation and infection control. The production of sophisticated drugs will stop, but soap, alcohol, and bleach still disinfect, and boiling and steam still sterilize.

Infection can be prevented in surface wounds with prompt treatment. Internal disorders are another matter. Performing an appendectomy with antisepsis but without antibiotics is dangerous but possible – and often worth the try, since peritonitis from a burst appendix will be almost inevitably fatal. Cerebrospinal meningitis has no useful treatment. Cholera is treatable with massive hydration, which for some patients will be possible orally; providing sterile IV fluid will be problematic.

Gangrene calls for amputation. Compound limb fractures (those in which the bones tear through the skin) are likely to become gangrenous, since closing the wound has good odds of trapping the anaerobic bacteria that cause gas gangrene.

Anything that ruptures the intestine is a death sentence. As they say in countless Westerns, "Ya know what happens to a man what's gut-shot."

There is little or nothing to do for patients with immune breakdown, whether from AIDS or any of the numerous other causes. And on the subject of STDs, the 1899 *Merck Manual* contains 96 different pre-antibiotic treatments for syphilis. None of them work.

Feeling a little wobbly?

Okay, the GM can respond to this situation in several ways. The campaign can be set immediately after the crash, when viable drugs, sterile needles, and so on are precious but not yet unobtainable. Or it can be a long time down the road, when the more susceptible population has died out. This doesn't help major trauma victims, of course.

The usual RPG handling of disease – reduce the risk and increase the effectiveness of treatment so that infection is a problem but not a crushing one – is the one that most GMs are likely to follow. It's the simplest, and it keeps the focus of the game on adventure, not on alpha-hemolytic streptococci, which is as it should be.

Lavatory Analysis

If we seem to return obsessively to the subject of indoor plumbing, it is because the Smallest Room in the House is one of the things most taken for granted by contemporary Westerners (like the players) . . . and the one they would most quickly and acutely miss if it were to go away.

Indoor bathrooms – not just the fixtures themselves, but the water and sewer systems to make them function – were known to the Romans (and the Minoans before them), and then disappeared until partway through the 19th century. In the 1930s, only a third of American dwellings had indoor toilets, and a great many of the outdoor ones were holes in the ground with anatomical support structures attendant thereto.

No, we don't expect you to play out the details in character (and players, we assume, can manage without aid), and we're not going to propose a skill roll for it. It does, however, have an impact on daily activity, dress, and architecture, and requires that a post-crash society that wants to preserve this particular convenience spend a good bit of its resources constructing and maintaining water and sewerage services.

In the pseudo-feudal society, your position is defined by your primary functional skill: Are you a farmer, an artisan, a soldier, or an organizer – er, noble?

democratic, particularly stable groups with agriculture. Bands that live by hunting and raiding are more likely – though by no means certain – to center on a "strongman" leader. One object of the campaign, in fact, would likely be discovering just how the other tribes live, figuring out ways to trade with them and gather information from them while hanging on to one's vital organs.

The Arthurian pseudo-history is much like the Renaissance world (p. 90), with a different style of decor and weaponry but the same driving idea: Creating an idealized world, in this case one of chivalric honor and courtly society. The fact that in Arthur's story, chivalric honor was unable to overcome human passion may or may not be in the survivors' awareness – though if it isn't, they are probably doomed to find it out the hard way.

It's the nature of production at this level that most of the population has to grow food; there is a smaller artisan class (blacksmiths, carpenters, stonemasons). In an "egalitarian" version, there is no idle nobility; everyone can dress up as lords and ladies during leisure time, and there is social mobility to the degree that a laborer's child can become an artisan – provided that the agricultural workforce remains large enough to sustain everyone.

A perhaps likelier version has a hierarchical manager class with feudal titles – Barons, Duchesses, and possibly a monarch at the top – and a professional military class – knights – around them. These people subscribe to an oath of fealty which states that in exchange for living off the fruits of the working classes' labor, they will coordinate the enclave's resources and defend them against outside threats. Historically, such oaths have been more binding from the bottom up than the top down, but a group that has voluntarily set up such a system may make it work in both directions – at least for a time.

Stuff You Need to Know

In the pseudo-feudal society, your position is defined by your primary functional skill: Are you a farmer, an artisan, a soldier, or an organizer – er, noble? Jacks of all trades will be suspected of being masters of none, and it is highly unlikely that one will find a Thieves' Guild unless it serves some other function – such as commando raids on other enclaves or the maintenance of locks and security – and is called that for the sake of the fiction.

There is still a place for wandering specialists (i.e., your typical party of adventurers). Entertainers are generally welcome for short stays (only the wealthiest "fiefdoms" could support a full-time troupe). Mercenaries may find work reinforcing the local garrison or guarding convoys. They usually won't accept commissions to raid others – dead men collect no paychecks. Expert engineers – bridge-builders, plumbers, siege-engine builders, those who can maintain the "high" tech the barony keeps in store – can usually write their own tickets, though some warlords won't want to let their Daedaluses go.

The ability to make something salable from natural materials is extremely valuable for travelers. Fletchers and bowyers, for instance, can offer bows and arrows (probably with flint or obsidian points) to their prospective hosts. Herbalists can harvest their goods in the wild. A troupe that arrives with its own dinner – venison or bear meat – will be more welcome than one that expects to eat the town's supplies . . . but be careful of shooting game the local Duke considers "his."

Stuff You Gotta Have

Horses for mobility, weapons and armor for survival – at least among the non-laboring classes. Laborers have their tools and probably some kind of "peasant levy" weapons when they need to reinforce the professional troops.

Campaign Seed: Route '00

The post-crash society is extremely decentralized, consisting of hundreds of independent enclaves. The North American highway system, while slowly decaying from lack of maintenance, is still mostly there (in part because most of the vehicles, especially heavy ones, are gone).

The adventurers have a vehicle of some kind that is able to cope with the uncertain road surfaces and supply situation (perhaps it burns ethanol and has a "moonshine still" aboard). They roll from one enclave to another, sometimes following rumors but often having to visit a new town with no idea of what its society will be like.

This is a version of the space-opera "planet of the week" model, with a bit of ***Car Wars*** thrown in, and as such should be familiar to players and GMs. The real burden is on the GM, who must keep coming up with societies that offer interesting adventure possibilities.

It's also important to work out the wanderers' reason to be on the road. Did they build their vehicle, luck into it, or have it assigned to them? (And is it something that will be coveted by everyone who sees it?) Are they like the heroes of the old *Route 66* series, simply looking for adventures, paying their way by doing part-time work at the towns they visit? (If they're competent medics or mechanics, they should be able to sell those skills almost anywhere.) Or are they on some kind of mission for a higher authority – cataloguing the New World for what remains of the old government or whatever has replaced it?

Perhaps the travelers' ultimate job is to convince the city-states to join the Federation – uh, let's call it the North American Compact – which could be either a would-be government or more of a trading association with no grand goal beyond keeping the roads working. The "mission" model, while it inserts a repetitive element into every new encounter ("Hey, Buzz, when are we going to ask them to join the Compact?" "As soon as the party winds down."), gives the group an ultimate direction and a sense of doing something bigger than fixing No Name City's broken water pump in exchange for the key to the city and a case of canned artichoke hearts.

"Magic? Ick!"

The appearance of magical powers (or, if you like, their "reappearance") in the post-crash world is very much a matter of choice for the GM and players. Here are some possibilities for those who want to add this element:

The least drastic method is to allow psychic powers ("psionics") only. It may be assumed that they always existed; possibly the psis survived the disaster in a higher percentage than the norms (which may make them unpopular with the surviving norms!). Maybe high technology (i.e., whatever disappeared) somehow suppressed psi manifestations, and now that we're back to the Age of Magic, magic is back.

If the technocrash was caused by a cosmic event (p. 83), the wave of radiation might trigger latent psi powers in some, or even all, survivors – or the abilities might emerge as a mutation in the next generation.

Psi should be weak, and probably unreliable as well, unless throwing about mighty mental energies is a central theme of the campaign. A single, abnormally powerful psi – probably insane – could be an interesting and dangerous enemy, requiring much planning and effort to defeat. Just don't follow his defeat with the immediate appearance of another supermutant.

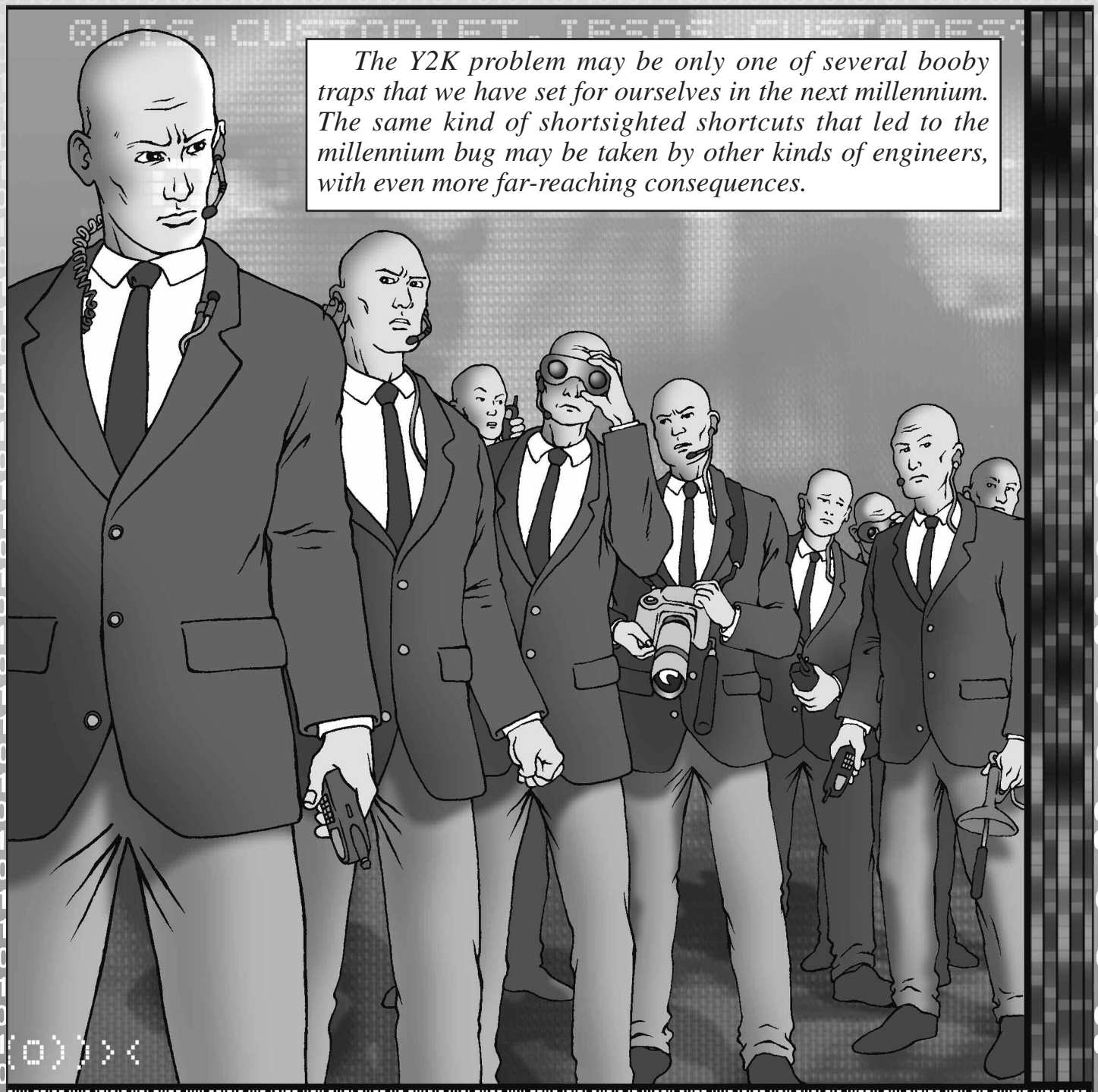
In a world set long after the collapse, psi might be mythologized into magic, with no more thought about brainwaves or "clairsenses"; psis would just be people born with "the talent."

If you want "standard" game magic – spells – psi can be made to behave in that fashion (see Bonewits's *Authentic Thaumaturgy* for a version of this). Otherwise, the "cosmic event" again needs to be invoked: Perhaps an extradimensional wave changed all the basic rules of physics so that semiconductors no longer work but mana does. Mana as a form of electromagnetic radiation – maybe an imaginary component of the EM spectrum – has been used many times in SF.

The last possibility is perceived or fake magic: There isn't really anything supernatural happening, but leftover tech devices are perceived as magical (this is a stock effect, and easy to overuse). People might use combinations of tech and conjuring tricks to convince others that they have magical powers. This would not necessarily be for selfish or evil purposes; it might be much simpler to tell the regressed tribe that the Gods gave your people a telepathy power than to explain how your walkie-talkies work – and it would seem much harder to steal a magic gift than a box clipped to someone's belt.

See Chapter 9 for more on superpowers, and Chapter 10 for more on the supernatural and Y2K.

8. Paranoia Plus: New Fears from the Machine Millenium



Is there an analog to Y2K buried in the genetic code of transgenic crops? Have the West's efforts at engineering economic change in the former Soviet Union led to the proliferation of frightening weapons technologies? Here are some possibilities for global disaster, some of which may prove relevant long after Y2K is behind us.

Biological Nightmares

Next to nuclear disaster, this is probably the scariest option for Y2K. Unlike nuclear plants and missiles, which are administered by a centralized bureaucracy, biological research labs fall under the control of a hodgepodge of government, commercial, and academic establishments.

It goes without saying that organizations like the Centers for Disease Control – which might have samples of really dangerous, "Level 4," "hot zone"-type biologicals like ebola or hantavirus or whatever – are going to have significant quarantine measures in place. A Y2K glitch is not going to cause the computerized security systems to fail suddenly, opening the locks on the monkey house or rat cages, releasing a few score AIDS-positive monkeys or a few hundred plague-infected rats . . . right?

Well, maybe.

If the GM is going to use a Y2K-engineered biolab failure as an adventure seed, a quick rundown of the furnishings and procedures used in such labs may be useful. The more exotic items include incubators, culture vats, microscopes, and gene-sequencing machinery (like polymerase chain reaction machines; see pp. BIO13-14). Lab-safety precautions may include ultraviolet lamps to kill bacteria, absorbent mats to catch spills, and – in more secure labs – a "low-pressure" system that keeps lab air pressure lower than that of the surroundings so that if a leak occurs, air will blow *in* rather than out of the lab. Really secure facilities may have airlocks, require sealed suits, and insist that workers change clothes and shower after working in "hot" areas.

So, what can go wrong?

If someone was, for some reason, running an experiment during Y2K, it is possible that a computer glitch might lead to the wrong gene being inserted – or the right one going in the wrong place. Instant monster? Possible, but not very likely. Adding genes is a very hands-on kind of procedure at the moment, and you expect a few hundred failures for every success. In other words, the effect would be minimal.

A bit more plausible might be a failure, not in a biological laboratory, but in the facilities of one of the many companies that specialize in biomass production (i.e., growing vats of genetically engineered microbes whose metabolisms have been tweaked to produce something useful, like insulin). A huge vat of microbes bubbling away and reproducing itself requires careful nutrient feeds, a proper pH balance, and a narrow range of constantly regulated temperatures. A Y2K glitch in the computerized monitoring sensors might result in an unplanned change, or the introduction of the wrong chemical. The obvious result is simply a bad batch of whatever the bacteria were brewing, but GMs of horror campaigns (or games

Frankenfood Revisited

DNA contains the blueprint for all the activities of a living cell. A gene is a segment of that DNA. Each gene carries a message encoded in its chemical structure, and the complete genetic makeup of a living cell determines all the traits of the organism. Genes carry all of the chemical instructions needed to make the organism behave in a certain way, and since they are passed on from one generation to the next, offspring inherit these traits from their parents.

Genetic engineering can break the DNA strand at certain places, insert new segments, and "stitch" the strand back together again. It can "cut and paste" genes from one organism into another so that the makeup of the organism is changed and its natural traits are manipulated in a particular direction. Commonly used gene sources include rats, moths, scorpions, bacteria, and even humans.

Researchers are now mixing genes from entirely unrelated species – animal genes going into vegetables, bacteria genes into food crops, and human genes into animals. And these genetically engineered organisms can mutate, multiply, breed with other living things, and go on breeding for generations to come.

Continued on next page . . .

Frankenfood Revisited (Continued)

Many of the trials conducted on genetically engineered organisms have gone badly wrong. For instance, cotton crops designed to fight off insects were still devoured; thousands of hectares of the crop were lost, with an estimated $1 billion worth of damage. Another example is a bacterium genetically altered to make it clean up soil polluted by a chemical herbicide; it worked on the herbicide, but it also killed crucial soil fungi, putting basic soil fertility at risk.

Thus, there are plenty of questions, but few answers: How will we know what's in the food we eat when everything from wine to the humble potato could contain strange genes? And how can we protect our environment from transgenic crops? If they turn into transgenic weeds, our favorite flora could be overrun, rare plants could be lost, and insect life could be devastated by crops which continuously produce their own insecticide.

Is Frankenfood Safe?

The "big scare" regarding transgenic food is the question of whether it is safe to eat. Can these weird genes get into humans? The answer seems to be "probably not" – after all, we don't turn into cows from eating beef. Nevertheless, there are some worries . . . for instance, when exotic proteins are coded into plants to give the ability to kill insects.

There are also fears that the regulators are not being careful enough. Most people concede that transgenic plants designed for human consumption are carefully tested to ensure that they are safe to eat (the main worry here is that their pest-resistant genes may create super-weeds), but there are concerns that less stringent procedures are in place for plants not designed for human consumption. Sure, humans will not be eating them *directly* – but what about bees? What if genes from transgenic plants never intended for human consumption end up in the honey that bees produce?

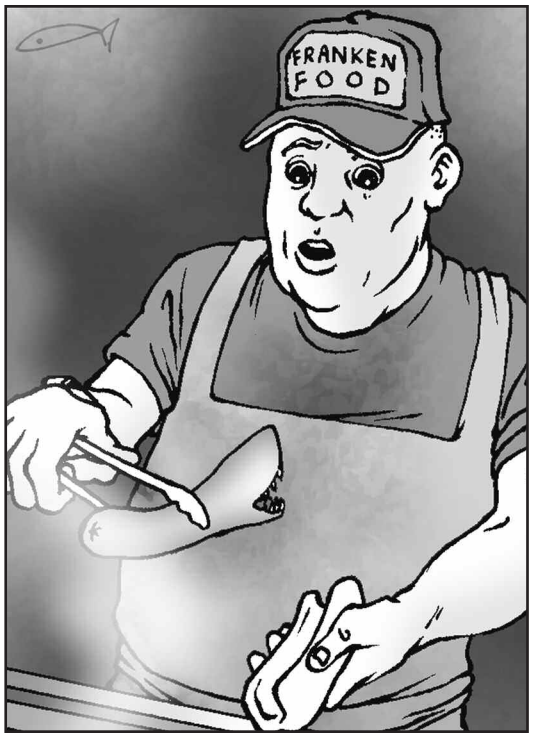
Continued on next page . . .

that use ***GURPS Technomancer*** or ***Psionics,*** with mana-active or psi-active bacteria) could decide that something nastier happens. Imagine a mutant, sentient bacterial colony awakening because someone gave it too much sugar. Bullets wouldn't stop it.

A less obvious issue is waste disposal. The Y2K bug may affect records indicating exactly when or how biohazardous waste (needles, gauze, bacteria, DNA, embryos, etc.) was disposed of, leading to the waste being mislabeled or sent to the wrong place. The problem may not occur at the biolab, but at whatever waste-disposal or shipping company was hired to get rid of the stuff. The result may be a bag of mad cow disease-infected brain tissue being dumped in the City Dump instead of in a specialized incineration facility. If the local dog and rat population found this to be a tasty new snack, there would be regrettable public-health consequences. And in conspiracy-oriented campaigns where biotech companies are messing with *really* weird stuff, the materials that get dumped could be a lot more exotic . . . and dangerous.

One issue that biotech companies preparing for the millennium *do* get nervous about is the same thing that bothers the average Joe: a Y2K glitch causing a blackout for several hours or days. Most serious research buildings are equipped with emergency generators (although a terrorist biowarfare factory in the boondocks might not be). Unfortunately, the average backup generator is not intended to handle full-building electrical loads, or to operate for an extended period of time – usually no more than four hours, in fact.

In most circumstances, a power failure is not going to be a problem; labs will have prepared for it. But if a power failure occurs at the same time as some other problem – e.g., looters, animal-rights extremists, or spies breaking into the plant during the confusion and damaging something, or a lab assistant worried about whether he will make it home through the Y2K-caused problems getting nervous and dropping some glassware – then things could go very wrong.



Running through the issues:

Safety Alarms: Here we are talking about internal sensors, not burglar alarms. If there is some sort of leak, the safety systems might be operable but just fail to go online. Of course, burglar alarms might *also* fail, which would be unpleasant if anyone decided to pick the Day of the Big Blackout to break in and steal something. (Except in the case of animal-rights activists, this would probably be an inside job to some extent; looters or spies would need to know that there was something worth stealing.)

Ventilation: This is the first line of defense in any lab dealing with possible airborne contaminants. Individuals trapped in an airtight isolation ward when the ventilation system fails may risk contaminating others rather than suffocate. A ventilation failure combined with some other problem (terrorism, accident, etc.) might allow an airborne hazard to escape into the world. Ventilation is also necessary for experimental animal cages; failure of an air-conditioning and heating system will not only produce a stink, but may result in animal deaths from heat or cold, depending on the lab's location. If the failure is localized, attempts to move the animals while under stress may lead to a contaminated animal escaping.

Water Supply: Necessary for cleaning and for general decontamination activities. Without water, a "routine" spill or cleanup procedure may become a disaster.

Specimen Storage: Low- and ultra-low-temperature storage units (like refrigerators) are the most serious problem – labs depend on low temperatures to store and preserve specimens. It is unlikely that backup power can operate for more than four hours. Imagine a lab whose generators are running out of fuel as the blackout drags on for longer. To preserve power, the administrator is ordered to shut down several refrigerators and consolidate the most crucial specimens or materials in a single fridge. As with experimental animals, the rush to do this – possibly in the dark – might lead to an error of some sort that could result in contamination.

Unfortunately, the average backup generator is not intended to handle full-building electrical loads, or to operate for an extended period of time – usually no more than four hours, in fact.

Is Frankenfood Safe?
(Continued)

Here are a few other "nightmare" scenarios:

Allergens: Many people are allergic to food plants because of the proteins these plants produce as a defense against disease and pests. Since transgenic plants are often bioengineered to produce significantly greater quantities of these proteins, the risk of allergies may also be increased.

Bye, Bye Birdie: Transgenic crops that produce their own insecticides might also have "collateral damage" effects on other species, wiping out non-predatory bird or butterfly populations, for example. The loss of these species can further damage other links in the ecosystem.

Antibiotic Resistance: Some crops have been genetically engineered to be resistant to high levels of antibiotics, which are used to kill various germs that affect them. Humans exposed to such genes could find that their bodies neutralize antibiotics before they can do any good. And what if a deadly pathogen somehow acquires such genes?

Pharm Crops: There have been legitimate attempts to modify plants (and animals) to produce various kinds of drugs. What if a criminal syndicate got involved and began to produce crops with, say, the active ingredients of marijuana or coca, but which did not look like these plants? You could have an entire field of something that looks perfectly street-legal right under the DEA's nose. The real trouble starts when this stuff starts hybridizing with normal plants . . .

Immune-System Deterioration: There was a report of an experiment where genetically modified potatoes fed to rats significantly lowered their immune response. In fact, the scientists doing the study had engineered the potatoes with a material *known* to be toxic. What was the point of the test, then? One wonders. But the compound used in this experiment was basically that used by the Bulgarian secret service in its infamous "umbrella assassinations." The lesson? If someone is after you, don't eat the potatoes!

Crop Circles: Could these be evidence that secret agents have been wiping out "infested" crops – the ones with the *really* weird genes?

Cattle Mutilation: Obviously, someone is checking to see if the ordinary cattle have been crossbreeding with the transgenic ones. But who . . . and why?

Is This Stuff Real?

Yes, but it's also alarmist, sensationalized, and – to a large extent – based on self-perpetuating memes that have been successful enough to infiltrate many august bodies, such as Congressional subcommittees and mainstream environmentalist groups. For every "expert" who says that PVCs or EMPs or transgenic weeds are major-league mojo, you can probably find a dozen who will tell you that any dangers have been grossly exaggerated. Of course, they may only want you to think that, and the material here may actually undersell the actual dangers. This chapter is in the business of generating odd scenario ideas for conspiracy campaigns, not educating or calming the public. Do not be afraid. Everything is under control.

Big Bang Machine Could Destroy Earth

A nuclear accelerator designed to replicate the Big Bang is under investigation by international physicists because of fears that it might . . . destroy the Earth. One theory even suggests that it could create a black hole.

Brookhaven National Laboratories (BNL) . . . has spent eight years building its Relativistic Heavy Ion Collider (RHIC) on Long Island . . . [and] the first nuclear collisions will take place in the autumn, building up to full power around the time of the millennium.

. . . John Marburger, Brookhaven's director, set up a committee of physicists to investigate . . . a tiny but real risk that the machine . . . had the power to create "strangelets" – a new type of matter made up of sub-atomic particles called "strange quarks".

The committee is to examine the possibility that, once formed, strangelets might start an uncontrollable chain reaction that could convert anything they touched into more strange matter . . . [and the] possibility that the colliding particles could achieve such a high density that they would form a mini black hole . . .

– Jonathan Leake, Science Editor, *Sunday Times*, July 18, 1999

Biohazards: What Leaked?

If safety systems do fail in a laboratory, or if quarantine is breached inadvertently, what could happen? Obviously, that depends on the lab. Those studying killer diseases are few and far between, and are likely to have fairly stringent safety procedures. But what about commercial labs engaged in other kinds of research?

For labs working with infectious bacteria, viruses, or parasites (either to find cures or to perform biowarfare experiments – although no one is *supposed* to be engaged in biowarfare these days), the big question is whether the agent is airborne or requires physical contact to spread. In the former case, a "leak" may be literally that; in the latter case, someone would have to be bitten, accidentally stabbed with a needle, cut by broken glassware, etc., and then violate safety procedures in order for the threat to spread. Again, this is most likely if Y2K-related confusion leads to a break-in at the lab, an animal escape, or some other compound snafu.

Game statistics for various illnesses can be generated using the guidelines on p. B133. Rules for a number of actual plagues can be found in ***GURPS Compendium II*** (see pp. CII167-174) and ***Bio-Tech*** (see pp. BIO87-90). GMs should note that a disease does not have to start out hazardous to human health. A microorganism which affects, say, pigs or chickens and which escapes from an agribiz lab may mutate in the wild and "jump species" to affect humans!

More insidiously, the threat may not be to human health, but to the environment in which we live. "Contamination" may not involve microbes at all – it could be something as "mundane" as pollen or seeds from a transgenic plant (see below) being carried out of a lab on someone's hair or clothing, the accident going unnoticed due to the confusion caused by other Y2K problems.

Transgenic Terrors

"Transgenic" refers to an organism that has genes from more than one species. Genetic engineers are happily mixing all kinds of genes to create new hybrids with special abilities, like faster growth, greater resistance to pests, or the production of certain proteins. (See ***GURPS Bio-Tech*** for a lengthy discussion of genetic manipulation and its future possibilities.)

Although many transgenic bacteria and quite a few animals have been created (such as mice with some human genes, which make better lab animals), the big-ticket items at the moment are transgenic cash crops with improved resistance to insect pests, longer growing seasons, or better shelf lives. Perhaps the most common trait is herbicide tolerance, which allows farmers to spray fields liberally with chemicals that kill weeds or fungi without harming the cash crop.

At present, some 40 different genetically engineered crop species are currently available or undergoing trials, and more are under development. In the United States, transgenic crops that have been planted and harvested on a large scale include bioengineered varieties of cotton, corn, tomatoes, soy, oilseed, rapeseed, potatoes, and squash. For some crops (like soy), a third or more of the acreage currently farmed in the U.S. is already genetically engineered. In Europe, grassroots protests have reduced the spread of gengineered crops, but in other parts of the world, especially in China and South America, transgenic crops are rapidly gaining acceptance.

Who Needs an Accident?

Many environmentalists are not especially concerned about Y2K-caused leaks at biolabs resulting in hazardous substances entering the environment. That's because they're convinced that the damage has already been done. They feel that transgenic products already certified as "safe" are anything but, and unless they are banned, we are looking at a literal world of hurt if we keep introducing them into the ecosystem.

Opponents of transgenic technology point out that we don't know much about the genomes of the plants and animals that are being modified, and we know even less about the ways they interact with the rest of the ecosystem over the long term. It is all very well, they say, to conduct trials over 1-2 years, but it may take *decades* for the true environmental impact of a gengineered species to be understood, even on a local level.

At present, we have only sequenced a few simple genomes; those of most insects, plants, etc., are known only at a very basic level. Moreover, nearly all genes are linked. There is no simple "one gene, one trait" correspondence. Changing a single gene has ripple effects over an entire organism – effects that may take generations to play out. Those who oppose transgenics argue that the current commercial use of transgenic organisms is premature – that we should wait until we know more before playing Dr. Frankenstein.

Mutant Ninja Super Weeds

Genetic engineering has created crop species that are designed for survival. With added genes from one or more species, these plants can repel moths, fend off viruses and fungi, and produce more survivable seed. Some plants are designed to be immune to many herbicides, so the farmer can spray freely for weeds.

The trouble is, that crop of bio-boosted corn or cotton does not exist in isolation. Genes can spread from one crop to another through cross-fertilization between plants simply by virtue of pollen carried by wind. Bees also carry pollen from one plant to another. Just as a single Brazilian bee researcher created a continent-wide nuisance by accidentally letting aggressive African bees hybridize with gentle domestic bees, the release of transgenic genes could, in theory, produce the equivalent of "killer-bee" plants.

This isn't just theory. Lab studies suggest that some transgenic plants are as much as 20 times more likely to "outcross" with other species. Moreover, species with different numbers of chromosomes have hybridized and produced viable offspring – something previously thought to be nearly impossible.

The greatest danger comes when a super-resistant plant hybridizes with a weed. The result: a super weed, one that science has rendered invulnerable to both natural pests and chemical attack. It can spread like lightning and choke off transgenic and mundane crops alike. It may well be capable of spreading beyond its normal ecosystem, leaving crop failures and mass starvation in its wake!

Who You Gonna Call?

Okay, if you believe all this (and the scare stories in this chapter are just the frozen tip of the iceberg), then who is going to stop it – in the game, at least?

In fiction, the traditional way to handle it is to pick some faceless mega-corporation and assign it the blame for most of the cover-ups, etc. A crusading reporter digs up the dirt on all this, and one of the executives with more testosterone than sense (obviously not afflicted by the PVCs) bumps him off. Naturally, the reporter was tight with one of the heroes, who now have a reason to dig up the truth and bust the Evil Corporation for both murder and conspiracy.

In the real world, corporations rarely need to bump people off when they can buy congressmen and attack lawyers, and the only direct action you can take against them makes *you* the criminal. The only folks allowed to go chasing after the corporates are journalists and federal agencies – and one of the reasons for all the uncertainty about whether transgenics are good or bad is that jurisdiction, at least in the U.S., is rather confused.

In America, Congress has passed little specific legislation targeted at transgenic agriculture, which leaves the field split between three different agencies: the Environmental Protection Agency, the Food and Drug Administration, and the Department of Agriculture. Each agency has different jobs and priorities, resulting in a confused patchwork of regulations that prevents any one agency from having specific responsibility for the long-term ecological effects of transgenic plants or animals.

Telemedicine Trauma: New Fears for the One-and-Twenty

Bioethicists and privacy advocates worry a lot about how genetic testing will affect privacy in the future (see *Genetic Testing and Privacy Issues,* pp. BIO10-11), but the security issues surrounding telemedicine are a more immediate concern.

Currently, more and more medical information is ending up in hospital databases and being shared via the Internet. It makes a lot of sense from a health-care point of view: If you get into an accident while on a trip, they'll need your medical files pronto. If you're sick but your doctor isn't an expert on whatever ails you, why not call up a specialist in the next state for an instant online consultation?

Telemedicine provides a cheap, effective alternative to traditional, in-person physician visits, and a way to provide cutting-edge medical care regardless of how far the patient is from the medical team.

And that's just diagnosis. In a few years, computer systems will be set up to allow the remote monitoring of vital signs and even to provide certain types of treatment at a distance. Sensors attached to patients will transmit signals to home or remote computers that provide real-time, round-the-clock monitoring and analysis. Patients won't need to stay in hospitals for observation, vastly cutting costs – and incidentally saving the health-insurance industry billions.

Some advocates suggest that even "well" people will eventually wear these sensors. This allows health care to move to a "preventive" model: you don't visit the doctor when you are feeling ill; instead, the computer informs you as soon as things start to develop, and potential problems can be nipped in the bud. Of course, in order to facilitate this, it will be necessary to make sure that the medical data for each person is remotely accessible . . .

Medical facilities often lag behind banks and credit-card companies in terms of security. The main problem is that most people are not *aware* that this is a problem. People worry about whether the online store has a secure credit-card policy – but will the same effort be made to ensure that health records stay secure? What's more important: your money or your life?

Continued on next page . . .

Bad Chemistry

We may not *need* Y2K to start the doomsday clock ticking. A viable species is one which eats, excretes, and reproduces – and the latter function may be coming to an end sooner than you think, thanks to the wonders of modern chemistry.

Plastics Ate My Baby's WHAT?

Phthalates are oily solvents used to make plastic flexible and also in pesticides. They are the most common synthetic chemicals in the environment . . . and recent experiments on rats suggest that they may be devastating to the male reproductive system.

These "anti-androgens" are typically found in compounds such as diethylhexyl phthalate (DEHP), a softening agent found in many polyvinyl chloride (PVC) products, or dibutyl phthalate (DBP), an additive in mosquito repellents. There are also herbicides and fungicides that contain similar compounds. How do you get exposed? Well, the pesticides are fairly obvious. As for PVC, there are baby's teething toys, the spatula mom used to make your breakfast pancakes . . . lots of things. For a first-class way to get heavy, long-term exposure, try going to a hospital and having one of those plastic intravenous bags attached.

The real danger is to male fetuses if the mother is exposed. Phthalates work to block the action of androgens, the male sex hormones which program sexual development. Exposure in lab animals noticeably reduced the size of a muscle that runs from the colon to the base of the penis, and occasionally resulted in testicles that were missing or which contained only blood. The epididymis (a sperm-storing organ) was just a fraction of its normal size, and in many cases, there were feminized features and other traits associated with insufficient androgens. In ***GURPS*** terms, this is called Eunuch or Sterile.

In animals exposed to phthalates, testosterone production was usually inhibited as well. The testes responded by doubling their cell production. The result? Years later, when the animals grew to adults, they got testicle tumors (treat as Terminally Ill). In fact, some tests show that developmental defects of this sort can be caused by the mother being exposed to as little as 100 micrograms of DBP per kilo of body weight.

It isn't just the exposure of potential mothers that's a problem, though. Prepubescent males who are exposed to pesticides – like all those kids helping out on the family farm – are also at risk.

Here's the situation, then: A large portion of everything made in the industrialized world is made of PVC. It's not quite the case in the Third World, but to "prevent disease," First World companies are exporting vast quantities of mosquito repellent there, so they aren't immune either. These chemicals are everywhere, and mothers are exposed to them. The result? Sometime soon, maybe in 2000 or 2001, the global computer crash will be followed by the first stage of the global reproductive crash, as the build-up of phthalates reaches critical levels and a wave of babies are born who will be impotent, sterile, or worse. In ***GURPS*** terms, this is called Dying Race (see p. CI102) . . .

Why wasn't this deadly threat to humanity's manhood discovered earlier? Two possibilities:

The "Femi-Nazi" Conspiracy: Actually, it was known about *years* ago. It was hushed up not by the Big Corporations but by a cabal of ultra-feminists in government environmental protection labs. They realized that by covering up the magnitude of this problem, they could finally achieve their secret aim: no more men and no more reproductive enslavement. It was easy – no one expected left-wing, "ban everything" bureaucrats to hide an environmental disaster in the making. Recently, the same conspirators have been secretly funding cloning experiments, since they realize that once men become impotent, humanity will need to clone itself to reproduce.

The Greys: Maybe it isn't a secret cabal of ultra-feminists that has infiltrated the U.S. government. (You didn't really believe that, did you? If there is a conspiracy, it's an old-*boy* network; how many women hold positions of power?) That's just a lie spread by Majestic-12. We should all know by now that gray aliens are abducting people and using them in reproductive experiments to produce hybrids.

What is *not* as widely known, except by groups such as the Company (see ***GURPS Black Ops***) and Majestic-12, is that the Greys are dying out due to their own overuse of phthalate-analog chemicals. But the Greys' own eco-disaster killed off their *females.* The existing Greys are all males or neuters, which is why they want Earth-women to breed with. The Greys have infiltrated the U.S. industrial complex since the 1950s, and have been encouraging the use of PVCs in order to produce a human society that is optimized for conquest; i.e., one with no men in it, only women and feminized neuters.

Majestic-12 and their allies go along with this for one reason: many of them are old men in their 70s and 80s. In their chauvinistic way, they feel that a 21st-century population with a growing female percentage will be "less aggressive" and "easier to control." They've made sure to protect their own wives and sons, of course; they dream of a cabal of "real men" ruling over a neutered or female subject population.

Telemedicine Trauma: New Fears for the One-and-Twenty (Continued)

The short-term problem is the deliberate theft of medical records – theft that may be very hard to catch as records are bounced all over the Internet. Encryption is fine, but the doctor on the other end has to be able to read the records, and the whole point of telemedicine is to make things accessible to care providers. The smart criminal computer crackers know that the long-term advantage lies in getting access to medical records *now.*

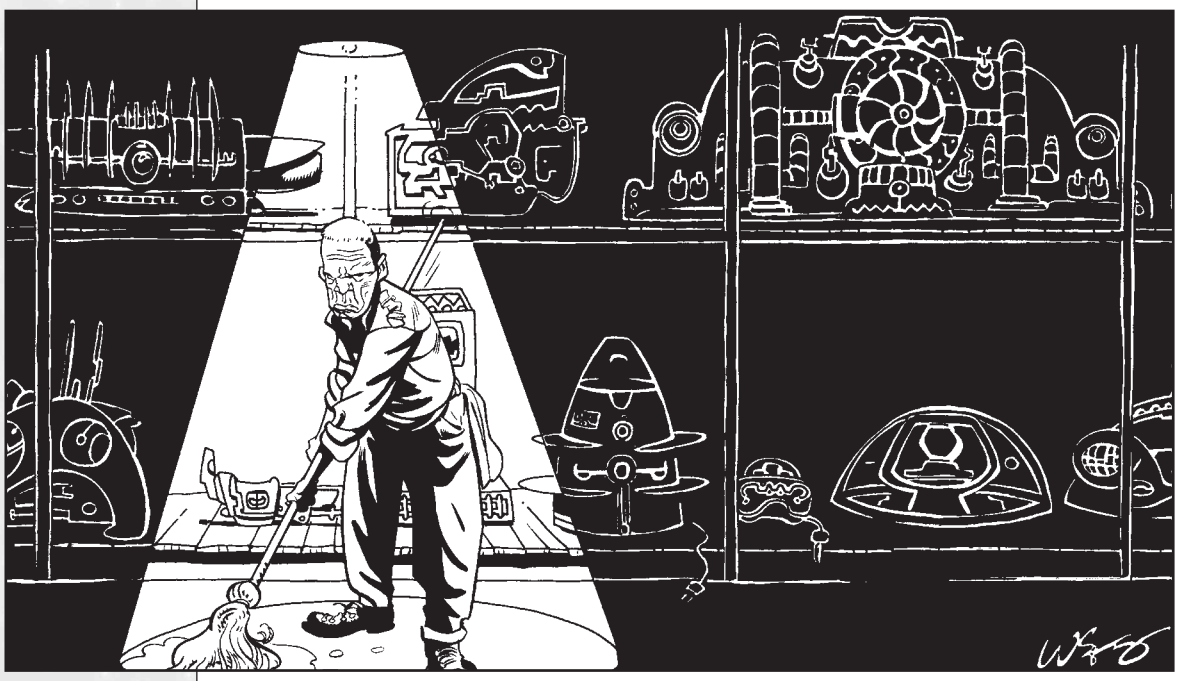
If the wrong parties gained access to someone's medical records, what could happen? Patients with chronic diseases like diabetes, or even those genetically predisposed to them, could be in serious trouble. Employers may decide not to hire them, fearing lost productivity. Insurance companies may decide not to approve them. Public figures would be especially vulnerable: revelations of abortions, pregnancies, psychiatric disorders, substance-abuse problems, and sexually transmitted diseases could wreck careers.

All of this provides fertile ground for blackmail, in exchange for either money or cooperation. The smart near-future netrunner might score bigger cracking the family doctor's or local clinic's patient database than hitting a bank or industrial lab – especially if one of the patients is a banker or lab worker who can be blackmailed into helping on the next job. Of course, if the data stream he hacked into is telling someone which drugs he should take, and the med-savvy computer cracker changes it so the victim takes the wrong drugs, the patient may wish he had just been blackmailed.

EMP-ty Threats

A lot of vital computers in airplane flight controls, banks, telecommunications, traffic-control radar, government and corporate systems, etc., may mysteriously crash on Y2K. Systems that were supposedly checked out by highly paid programmers. The obvious answer is that someone goofed up. Actually, the real truth may be more sinister: they were targeted by electromagnetic pulse (EMP) guns, by terrorists, criminals, or government agents or info-war specialists using Y2K as a cover to perform black ops.

EMP was first demonstrated in 1962 during an American high-altitude nuclear test, when a 1.4 megaton device was detonated high above the Pacific Ocean. The resulting EMP fried satellites, set off burglar alarms, knocked out street lights, and jammed radio communications for 30 minutes all across the Pacific. (Nuclear EMP is covered in ***GURPS High-Tech.***) The effects of EMP are well known, but until the 1980s, it was thought that the only practical way to produce such a pulse was through a nuclear detonation.



However, recent reports have suggested that non-nuclear EMP weapons may have been developed (possibly initially by the Russians) and that portable EMP-weapon designs may be feasible, perhaps using nothing more than "off-the-shelf" components. If so, these would join biological and chemical weapons as "the poor man's nuke" – just the thing for a tech-savvy terrorist or cult to deploy . . . or for a small nation to use against the microchip-heavy forces of the New World Order.

An EMP can temporarily or permanently fry all manner of electrical and electronic equipment, particularly computers and radio or radar receivers. Other suitable targets include computerized digital communications systems, displays, signal processors, electronic flight controls, and digital engine-control systems (in ***GURPS Vehicles*** terms, this includes any vehicle with computerized or electronic controls; see p. VE73). The damage is similar that that caused by a lightning strike; it might be mistaken for this by anyone but a professional in the field (roll against Electronics Operation or Electronics skill to diagnose the problem).

Low-Tech EMP Guns (TL7-8)

These weapons come in various sizes, depending on how credulous you want to be. A successful hit neutralizes the target's electronics on a roll of 16 or less on 3d. Modifiers: -1 per 20 points of combined DR and HP the target has; use total DR and HP for integrated systems (like robots or cyborgs), but use component DR and HP for discrete systems (car ignition, radio, etc.). Success by 10 or more, or any critical success, permanently burns out the electronics. Use Beam Weapons (Blaster) skill to hit. "Hardened" systems are either at -10 to be affected or are completely immune – GM's option.

Portable EMP Gun: A cobbled-together terrorist device that vaguely resembles a police radar gun or a movie camera with a heavy attached battery pack. According to various sources, it costs only $300 if built with the proverbial Radio Shack components. If the GM agrees, characters with Gadgeteer may roll vs. Electronics (Weapons)-5 to complete the design. One try is allowed per week, if you can find the elusive "terrorist EMP blueprints" on the Net. Characters who are, or who have contact with, the ex-Soviet Bloc scientists who invented these devices roll at +5. Weighs 10-30 lbs. Other stats: Malf 15, SS 10, Acc 2, 1/2D 10, Max 100, RoF 1, Shots 5 (on car battery), ST 10, Rcl 0, LC 5, TL7-8. It cannot be concealed with Holdout skill, but it doesn't look like a gun. If it malfunctions, roll 1d: on 1-3, it does not work (loose wire); on 4-5, it affects everything in a 2-yard radius around itself and burns out; on 6 it does the same, but also does 6d electrical damage to the user.

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There are persistent rumors of well-equipped "Russian Mafia" teams who have hit banks and securities companies in Eastern Europe with these devices. Zap a few targets to prove that it can be done, then blackmail the rest. Have Russian banks already lost millions to untraceable EMP attacks? Could this be one reason why the Russian economy is in such a mess?

Two types of EMP weapon are usually proposed: the EMP bomb and the EMP gun.

EMP bombs are generally described as developments of explosive pulsed-power technologies. Suggested deployment is in smart bombs and cruise missiles, and perhaps large artillery shells. They are related to existing non-portable devices used for EMP testing and X-ray or fusion research. Simply put, a strong current (provided by a capacitor or other energy bank) is used to generate a powerful electromagnetic field. The field is then compressed by a specially shaped conventional explosive charge. This rapid, explosive compression (occurs in a matter of microseconds) generates pulsed electrical energies in the megajoule to gigajoule range. The device is destroyed, but the EMP produced should fry any electronics in the vicinity if a large enough (say, 1,000-pound) bomb is used. The main question is whether this can work in the field as a munition. The obvious advantage is "soft kills" on all manner of military or civilian systems while minimizing human casualties. (Anyone too close to the bomb is likely to get wiped out, though.)

EMP guns produce the same effect but in a narrow, unidirectional beam. Proponents of EMP guns generally suggest that they require much lower power levels. Skeptics wonder how they would work without exploding and frying the user along with the weapon.

Availability of EMP Weapons

Various intelligence sources have claimed that EMP weapons were developed by Russia (or the former Soviet Union) at least in part to counter the West's reliance on sophisticated microchip systems. Proponents of EMP bombs are based in Australia and Sweden.

Russian Defectors: According to various rumors, news stories, and even some Congressional testimony, peddling EMP devices seems to be a favorite activity of former KGB officers and other Russian military insiders-turned-arms dealers – at least when they cannot get access to real nuclear secrets. In general, *caveat emptor.*

EMP On the Cheap: Various sites on the Internet advertise instructions for making EMP projectors for a few hundred dollars using car batteries, radio parts, and a directional antenna.

MIB EMP Guns: These are favorite weapons of The Conspiracy, as they are good for erasing data, fuzzing TV sets when appropriate, and stopping adventurers' cars on lonely highways. At sufficiently low energy levels, EMP weapons may have other effects, such as inducing cancers. GMs may equip Men in Black with such devices.

The Real EMP Bomb – Carbon Filament Warheads: In the Gulf War and the Serbian conflict, the U.S. military used cruise missiles and smart bombs containing spools of carbon filament. The filament was deployed across Iraqi and Serbian power lines and power stations, resulting in "soft kill" blackouts without direct casualties.

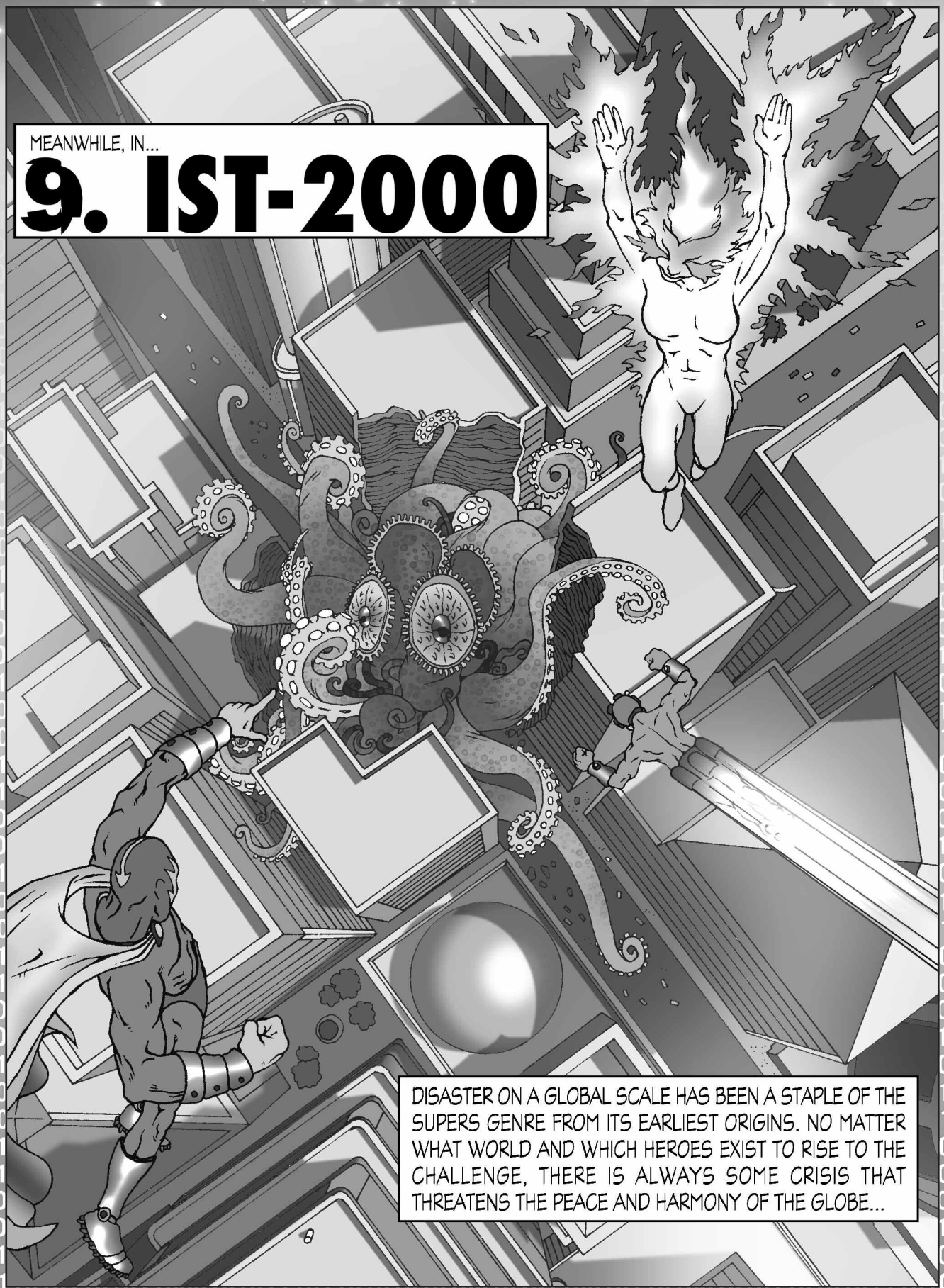
Have Russian banks already lost millions to untraceable EMP attacks? Could this be one reason why the Russian economy is in such a mess?

Low-Tech EMP Guns (TL7-8) (Continued)

Heavy EMP Gun: A larger model, usually mounted on a van and disguised as a satellite dish or radar dish. Works as above, except the beam is wider, spreading like a shotgun blast: +1 to hit, and a second, adjacent target in the line of fire may also be attacked. Weighs 40-120 lbs. Other stats: Malf 15, SS 15, Acc 5, 1/2D 20, Max 200, RoF 1, Shots 5 (on truck battery), ST N/A (may also mount on tripod), Rcl 0, LC 4, TL7-8. If it malfunctions, roll 1d: on 1-3, it does not work (loose wire); on 4-5, it affects everything in a 4-yard radius around itself and burns out; on 6 it does the same, but also does 12d electrical damage to the user or the vehicle it is mounted in (GM's option).

EMP Bomb: Same effects as the EMP gun, but this is a one-shot weapon that affects a radius around itself. Use the ***GURPS Vehicles*** ammunition-design rules (pp. VE111-112); minimum bore size is 40mm at TL10, 60mm at TL9, 150mm at TL8 (or TL7-8). Class: bursting, Type: spcl., Damage (area of effect): bore size squared/160, WPS: /1.5, CPS: ×100, Acc –. The residual blast from the explosive will also do half the damage of an HE round of the same bore; at TL10+, there is no residual blast unless desired.

Higher-tech versions are described in ***GURPS Ultra-Tech 2.*** See p. UTT59 for the EMPG and p. UTT66 for EMP grenades.


MEANWHILE, IN...
9. IST-2000
DISASTER ON A GLOBAL SCALE HAS BEEN A STAPLE OF THE SUPERS GENRE FROM ITS EARLIEST ORIGINS. NO MATTER WHAT WORLD AND WHICH HEROES EXIST TO RISE TO THE CHALLENGE, THERE IS ALWAYS SOME CRISIS THAT THREATENS THE PEACE AND HARMONY OF THE GLOBE...

In her office on the third floor of IST New York, Witchwind paced furiously. Outside, the sky alternately clouded and cleared as her tumultuous emotions bled through her power.

On the other side of her desk, the middle-aged black man in a wheelchair sighed and opened his eyes, straightening up from the slight slouch into which he had slipped.

"Well, Mitchell?" she snapped, a bit more harshly than she'd intended.

He frowned and shook his head. "No change. There's nothing – ***nothing at all*** *– past August. And too damn much before."*

Disaster on a global scale has been a staple of the supers genre from its beginning. No matter what world and which heroes exist to rise to the challenge, there is always some Crisis that threatens the peace and harmony of the planet. It may be some great natural catastrophe – a comet or a meteor, or a wave of anti-energy sweeping out of interdimensional space. It might be an invasion – blind gophermen from within the Hollow Earth, or Greys from Out There bringing us their Truth. Or it could just be your everyday megalomaniac metahuman with his millions in assets and equipment and his dozens of loyal (but slightly stupid) minions.

Of course, the usual course of events in such cases is that Our Heroes win. They divert the catastrophe, repel the invasion, smash the plot of the supervillain.

What happens if they *don't?*

It's not unheard of, after all. *Watchmen* ends with the "villain's" triumph. The heroes gathered to battle *The Crisis on the Infinite Earths* failed in their goal to protect their myriad parallel home worlds. But everything turned out okay in the end. Sort of . . .

What if the threat couldn't be fought off with just brawn and speed and a power ring?

What if the heroes flubbed it *horribly?* Then things might get interesting . . .

The Coming End of Time

Of course, it's not quite that simple. First, the heroes have to have a chance to *prevent* the disaster. But just learning of an impending catastrophe of any kind can be a mini-campaign in itself.

Ralph 1-2-4C-4U+, Inc.

Early in the "supers era," once the objective reality of psychic powers had been demonstrated, several government and private groups were established for the purpose of monitoring the visions of handsomely paid precognitives. These bodies were very secretive, and publicized few, if any, of their findings. This was partly because of the mutable nature of the future, and partly because their business was strategic information, be it political, military, or commercial.

Traditionally and officially, these groups did not communicate or even acknowledge each others' existence. Early on, it had been discovered that the chance of an unpredictable shift of the future – or worse, a paradox – grew exponentially with the number of people sharing and assiduously correlating precognitive visions with intent to act upon them. However, certain . . . unofficial . . . channels remained between these "forethink tanks." These were used for the rare independent confirmation, but more often simply for chatter between the few professionals in this tiny field.

In the mid-1990s, a new, *different,* message began to spread.

Discovering the Danger

The revelation of a coming disaster can be immediate or drawn out. Sudden knowledge can provide an atmosphere of almost intolerable urgency, but it is often more interesting, for both players and GM, to slowly build the tension. As clues and information fall into place, the magnitude of the coming catastrophe slowly becomes clear, as well as the scale of the efforts needed to avert it. In this way, at least, the supers disaster plot bears a strong resemblance to a well-executed horror story.

In the case of the IST scenario given in the main text, the GM has complete freedom to decide on the nature of the actual disaster behind "the Wall." The overwhelming variety of possibilities presenting themselves can lead the PCs into just about any roleplaying encounter possible.

This can be an ideal time to make use of the heroes' NPC connections: Contacts, Dependents, Allies, and Patrons . . . even Enemies. With the appropriate skills – or simply bad luck – any of these can be the one to discover the impending doom, or act as the channel by which the dreadful news (or *more* dreadful news, as the story progresses) reaches the heroes. A Dependent may be threatened by a forerunner of the actual catastrophe. An Ally may mysteriously vanish. A panicked scientist known to one of the supers may reveal the news that is being suppressed by the government, a conspiracy, or both. Perhaps someone the heroes know disappears after making a telling discovery or overhearing something that he shouldn't have. Or maybe an old, bitter foe collapses on the doorstep, horror-stricken with something he has witnessed, seeking out the only people he knows he can trust with his awful knowledge. And of course, there is the classic plot device wherein the heroes are dispatched on their mission by a Patron.

The GM can even mix and match, weaving together many of these options either in a premeditated plan or in response to the supers' efforts to draw upon their contacts and resources. Carefully executed, this can add immeasurable tension to the developing plot.

However it comes about, responding to NPC-triggered events should not only provide the characters with information, but with opportunities to act on their own. No single clue should be complete in itself; rather, each piece of the puzzle should drive the heroes to action in order to assemble the big picture in time to prevent the catastrophe. Superhuman intelligence and a wide variety of powers can be invaluable in such an undertaking, making possible that which might have been an insurmountable task for mere mortals.

Preventative Powers

The best combination of super abilities to derail a coming disaster will of course depend on the disaster, but the GM should always remember that the best combination of talents for *game purposes* is the one possessed by the PCs. On the other hand, some last-minute scrambling for that hard-to-find individual with the rare skill needed to complete the job is in the best tradition of both disaster movies *and* the supers genre!

In the early stages of a disaster – discovery, identification, and basic panic – the most useful abilities will be primarily analytical. Enhanced IQ will be at the root of this, but mainly as a means to boost Sense rolls and Scientific skills. Some natural disasters will prove vulnerable to the proper use of the Analyze super skill, while elemental powers can sometimes provide insight into a catastrophe involving that element.

If the disaster is the result of some flaw or exploitable feature of modern technology, then Electrokinesis and related powers might be vital to the prevention effort. So-called "electropaths," capable of digitizing themselves and physically entering either the Internet or the world's power grids, could conceivably reach almost any AC-powered computer on the face of the planet and correct the problem from the inside.

Normally, geological disasters tend to be local; it's hard to picture earthquakes or volcanoes striking on such a scale that the entire planet is threatened. However, if this scenario does come to pass (or if the GM is running a smaller-scale disaster campaign), then earth-based powers are an obvious necessity. But other powers may come in handy, too; for instance, water powers can lubricate a fault line and let it slide slowly and smoothly, or can help cool a magma flow.

Invasions must be either overwhelming or extraordinarily mobile. Precogs, clairvoyants, and other espers will become the tools of military intelligence, while any combat-worthy power can be used on the front lines. When the threat is from outer space, vacuum-capable supers are a must, and Flight – however slow or fast – is a definite advantage, providing not only an inexpensive means to confront the enemy off of mankind's home turf, but also maneuvering ability in zero gravity. Military commanders who have super-forces to draw on will pick their combat crews for an optimal combination of offensive and survival capability in the orbital environment. Spaceworthy supers without offensive abilities will be recruited for espionage and sabotage missions. Planet-bound skulkers with stealth or shapeshifting abilities will be used to infiltrate enemy surface bases.

Continued on next page . . .

The Wall

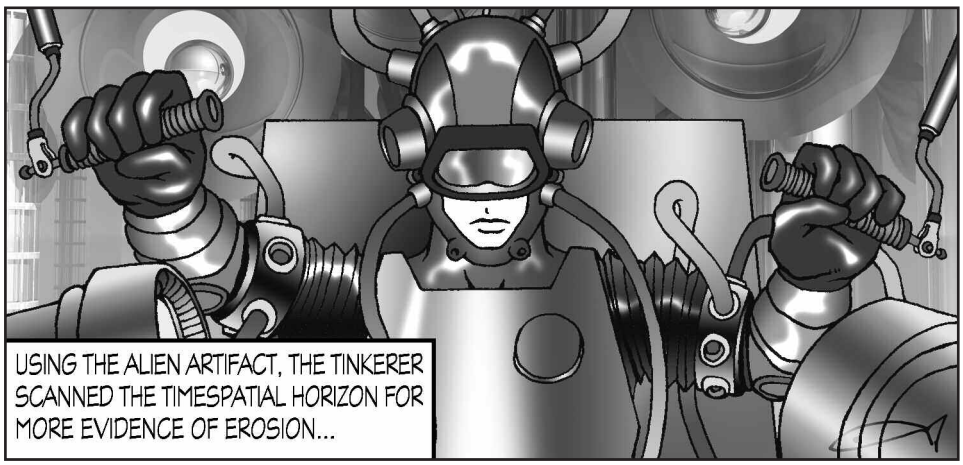
At first, it was nothing more than a rumor circulating through these unofficial channels and along the informal network that connected many of the world's psionics. By speech and telepathy, it drifted from psi to psi, provoking a range of responses from disbelief to panic. It came to public attention in 1997 and was dismissed as a "psychics' urban legend." But as the months and then years passed, more and more precognitives added their testimony.

There was nothing to be seen beyond the year 2000.

And far too much to see during it.

By June of 1999, any psi with a precognitive range of at least a year had run into what had been termed "the Wall": sometime during the year 2000 – exactly when varied from psi to psi and from try to try – all ability to see the future simply stopped dead. Far more frustrating were the reports of what was to be seen just before the Wall. Some reported wars, others saw plagues, still others saw a score of different natural disasters.

No one saw life continuing on undisturbed.



Saviors of Humanity

In the classic Silver Age disaster plot, the hero or heroes are often the discoverers of whatever threat looms. Of course, this was dictated by the need to launch directly into a plot that had to wrap itself up in 32 pages or less. The GM need not be *quite* so abrupt (see *Discovering the Danger,* p. 105).

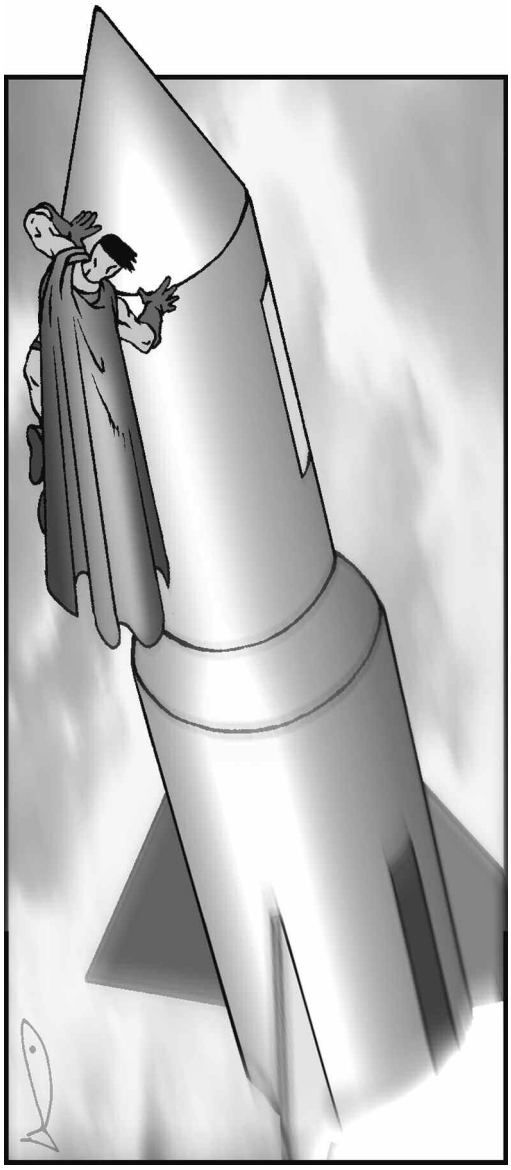
In the IST setting, though, the problem is not one of discovering the threat. Most superteams – be they IST, corporate, or private – will have a psi of some variety, and word of the Wall will eventually reach them. By the middle of 1999, the UN *is* aware of the Wall, but has made no public acknowledgment of it, nor has it given any but "general preparedness" orders to the ISTs. However, UNESCO and other bodies are desperately investigating the Wall, and it is inevitable that information will leak.

Preventing the Big Crash

If the campaign plot requires that the disaster inevitably arrive, then obviously nothing the heroes can do will make a difference. But when they have at least a chance, when (as in the IST world) the outcome is truly uncertain, the opportunities for drama abound.

Of course, the best power or powers to employ will vary with the nature of the threat. Paradoxically, the largest problems can often be the most straightforward to address. Most natural disasters fall into this category. Specifically, large solitary threats tend to respond to simple (if not necessarily *easy*) solutions.

For example, approaching asteroids and comets can be diverted with an application of force. Getting *enough* force to the target in time to do any good is, of course, the challenge that makes for an exciting adventure – the GM should see the motion pictures *Deep Impact* and *Armageddon* for some ideas along these lines.



More immediate geological threats like volcanoes and earthquakes may need different approaches. Perhaps a "flow-through squad" of insubstantial supers can infiltrate the fault or magma vent to find a trigger that can release the Earth's fury peacefully, or which can be "reset" to turn it off. Powers and gadgets could create channels to redirect lava once an eruption has begun. Most powers have a severely limited range and area compared to the scope of even the smallest geological disaster, though; the challenge to the vast majority of supers would be to focus their limited abilities for maximum effect.

For inspiration in this area, the GM should check out the disaster movies of the 1970s (1974's *Earthquake!* being the archetype of the genre) and their more recent cousins (*Volcano* and others). Note that in the supers genre, macro-scale natural disasters should be subject to far more excesses of rubber science than even these movies portray!

Conversely, some large threats are the result of many small events occurring in a short span of time. They may ultimately have a common root cause, but such disasters are typically self-perpetuating even after their origin has been dealt with, requiring individual attention to each specific incident. A plague and an infestation of Romero-style zombies (see Chapter 10) are good examples. The eponymous Y2K of this volume is similar – a common cause but with thousands or millions of individual expressions. If a disaster of this type cannot be contained or quarantined, then any practical solution will have to take effect on a vast scale or be easily distributed to a large number of people for simultaneous use. Either way, it will be a challenge, even for the super-powered.

Preventative Powers (Continued)

Astronomical threats are perhaps the hardest to deal with. Even the smallest asteroids and comets are hard to affect on a purely human scale, except with deity-level powers. In fact, non-super technologies may be the easiest and most direct way to prevent such disasters – unless, for some reason known only to the GM, missile capability the world over has been knocked out. In such a case, it may be necessary to assemble the right combination of powers to take care of the job "by hand," so to speak.

Plagues and plague-like effects are best approached with powers that can initially contain them while medical efforts (either mundane or super) get underway. Depending on the method of transmission and the typical victim, the most useful powers will vary widely. In the end, though, the sole solution may be sterilization, in which case the most destructive attacks will be the only viable option.

Exotic dangers may require equally exotic countermeasures. Waves of anti-energy from the depths of hyperspace will of necessity call for a different set of tactics than a horde of atomic monsters stomping through the world's major cities. When setting such a plot in motion, the GM is encouraged to design his threat to be at least vulnerable to, if not easily overcome by, some tactic that his players may employ.

Regardless of the disaster, never overlook the potential usefulness of a completely unrelated power. Telekinesis, for example, is one of the great wild cards, even at relatively low power levels; the right nudge at the right time can often turn the tide, whether you're dealing with an asteroid or an invasion. Precognitive abilities, used at the right moment, can warn and reveal in time for more mundane abilities to win the day. And do not underestimate "silly" powers that seem too weak or bizarre to be of any use – they can sometimes surprise both the GM and their owners.

No matter what metahuman gifts and talents the heroes possess, though, there is one far more mundane skill without which almost anything they do will come to naught: Leadership. Fast-Talk and Diplomacy can help, but cannot substitute for the fundamental ability to lead. Unless they possess literally godlike powers, a handful of individuals cannot save a civilization if they are unable to inspire and motivate the people around them.

Supertech

How vulnerable are super-equipment and gadgets to a catastrophe of these proportions? In particular, is supertech subject to the Y2K bug?

The answers to these questions are qualified "maybes." In game terms, most supertech is exceptionally sturdy, and the basic super-device has an almost zero failure rate, functioning under a wide variety of conditions with nary a thought on the part of its owner. However, some of these items are less sturdy than others . . .

Breakable devices are naturally subject to any stresses that a disaster might impose. Items that can be lost or stolen may disappear or be forgotten in the confusion. And unreliable equipment may simply stop working if subjected to conditions for which it was not designed – a balky flame-thrower in the midst of the monsoons of a climatological disaster, for example. Likewise, building systems that lack their own power supplies are vulnerable to the collapse of the power grid.

The fruits of the Gadgeteer advantage are often jury-rigged hodgepodges of parts, and thus far more vulnerable to damage or failure. As a rule of thumb, the further away from its "native" TL a futuristic gadget is, the more fragile it will be; apply the TL-difference penalties from p. B185 to any "survival roll" made for the item. (Gadgeteered versions of *old* technology – however rare they may be – could actually be more durable than the original, but should never be tougher than an equivalent device properly manufactured at the current TL.)

In the case of the titular Y2K bug, the GM must determine just how likely it is that a particular device or gadget will contain off-the-shelf microprocessors. Systems with no obvious need for date computation – simple (not smart) weapons, unpowered armor, anything without a built-in computer – will be immune. Anything that uses general-purpose computing technology *may* be affected. As a rule of thumb, a system is vulnerable only if it was built with microchips from TL7 or incorporates TL6 or TL7 software. Before these TLs, the bug is irrelevant; after TL7, it and any future variations will be accounted for. TL8+ gadgets built with TL6-7 parts *are* subject to the bug.

Whether a specific device actually fails, though, is ultimately up to the GM, who should base his ruling not only on these guidelines, but also on dramatic considerations and the needs of the current plot.

Military threats are not classic disasters, and some GMs will be hesitant to view them in the same light. However, the most successful military actions clearly follow the same lines as most cinematic disasters – a sudden onslaught with little or no warning, followed by massive death and destruction. Only the aftermath varies, as most disasters do not remain in place to rule their victims. Nonetheless, the invasion by the Other is one of the classic tropes of the comic-book genre.

Realistically, military attacks will usually appear in the wake of other disasters, as aggressors seek to take advantage of confusion and disorder. However, invasions can be the central threat if they come from some unexpected or weakly defended direction – from underground or outer space, for example. In this case, prevention is not so much a matter of diverting or containing the threat as it is a question of defeating the enemy. A foe who does not have to travel overland can ignore national boundaries and strike wherever he pleases; unpredictability and a virtual infinity of possible targets makes the ability to outthink – or foresee – the enemy's strategy just as important as being able to hit him hard. Psis of various stripes, as well as the most overwhelming combat monsters, will come into their own in these scenarios.

No matter what the nature of the impending disaster, remember that the best solution from the *players'* point of view will be one that allows the PCs' many and varied talents to come into play.

Survival and Recovery

Warrior ticked off the last items on his checklist and nodded, more to himself than to the other supers in the room. "That's it," he rumbled. "This cache is complete. Seal 'er up."

They swung the massive steel door shut, and Galvan spot-welded it to the frame with five precisely placed bursts of energy. She looked back over her shoulder at her C.O. and grinned. "What's next, oh fearless leader?"

Warrior growled halfheartedly, then consulted the clipboard. "Next is the Gibraltar shelter. Monthly inspection, plus supply rotation." He looked around at his team. "Well, what are you waiting for? Let's move out!"

Despite the best efforts of both humanity and superhumanity, the worst can and will happen. The crisis will come, disaster will strike. Thousands or millions will die. Billions – or in the worst case, only millions – will survive to face what is left.

(And this is the *optimistic* view. In the IST world, some UN parapsychologists have theorized that precognition may "simply" be time-shifted telepathic contact with the witness(es) of a future event. Which implies that there may be *no survivors at all* on the far side of the Wall . . .)

And We Will All Go Down Together

The wide variety of powers displayed by supers will make them invaluable to any rescue effort. We suggest a wide variety of specific scenarios here, along with powers to deal with them, but this should by no means be taken as an exhaustive list. For instance, with the help of a few vines, a super with plant-growth powers could reinforce a collapsing building just as effectively as a telekinetic or an earth elementalist.

Supers with healing powers will find themselves in constant demand in the wake of any catastrophe. Movement and communication powers can coordinate large-scale rescue efforts even in the wake of disasters that disable telephones and radios. Telepathy and other super-senses can locate the trapped and buried. Super-strength, earth powers, and telekinesis would be invaluable not only for digging out the victims, but also for holding up collapsing structures until they can be reinforced or restored.

Fires are a natural consequence of disasters; witness the aftereffects of the 1906 San Francisco earthquake and the Tunguska Event of 1908. Control Fire, Neutralize Fire, fire Absorption, and water and air elemental powers can augment (or replace, if necessary) mundane fire-fighting techniques.

Plagues and the like are harder to deal with, but fire and radiation powers can be used to sterilize infected areas and to create "dead zones" as buffers around quarantined areas. Magical healing might affect some disaster-level plagues, but the challenge would then be to cure as many victims as possible with a resource that is by nature scarce and possibly even fragile. More virulent plague-like catastrophes – like vampirism, infectious "zombieism" (p. 122), and lycanthropy – may require even more aggressive efforts to contain; one can envision teams of supers with destructive powers patrolling the affected area and utterly annihilating any infected being with which they come into contact. For campaigns with truly awesome power levels, supers may end up vaporizing entire towns and cities overrun by the disease.

Even if the cataclysm itself isn't a plague, disease will spring up in its wake if water and sanitation services have been disrupted. Healers will no doubt be in great demand, and particularly virulent diseases may still require extreme measures.

Talents for Recovery and Reconstruction

Survival in the aftermath of a disaster will not be a solitary experience; most supers will eventually find themselves in a community. They may encounter a band of ragged survivors, or stumble upon a village or town that escaped the worst of the destruction. Or perhaps individuals and small groups will gradually drift into their orbit. As a result, supers (heroic ones, at least) will find themselves employing their powers as they did before – that is, in the service of normals who need them.

One possible use for many powers is something that few players (or PCs!) might think of at first: feeding the hungry. Even if a stockpile of food is found, additional sources will be needed to supplement the survivors' diets – for variety, if not for nutritional reasons. Assuming enough of the ecosystem survived, a flying super with a reliable ranged attack would be the perfect one-man hunting party. A mutant with plant powers might be able to coax multiple harvests out of a single growing season, or set the vines and grasses of nearby terrain to act as snares and traps for small game. Just one or two supers with the right talents could feed a small band of survivors, or adequately supplement the diet of a village or town. On a related note, Analyze could be used to ascertain the safety of food and water, and Alter could be pressed into service as well. And it goes without saying that healers of all stripes will find themselves in great demand.

The first purpose that supers are likely to set themselves to during the period of reconstruction is, paradoxically, demolition. Almost any disaster will leave behind dangerously damaged structures that must be torn down before proper rebuilding can start. Classic "bricks" and those with certain combat powers are natural choices; disintegration is terribly convenient and (as far as anyone knows) environmentally friendly. Most other combat powers would be either ineffective, messy, or both, and thus unsuitable for this purpose. (Sure, your nucleonic breath may vaporize that ruined apartment block quickly and easily, but it'll make the site so radioactive that it will be unusable for a century . . .)

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Talents for Recovery and Reconstruction (Continued)

The construction *afterward* can make use of a surprisingly large variety of powers. To be certain, the classic brick will always be in demand here, but other supers can contribute extensively. Telekinetics are even more useful than the super-strong, as they don't actually need to be in the same physical location as the things they are carrying. Some powers can substitute for nails and rivets – Bond in particular – but any heat/energy power that can be focused tightly enough may be suitable for welding. Buzzsaw lends itself well to sizing lumber and other building components. Alter can be used to produce hard-to-find parts and materials, and for more exotic effects once aesthetics become a consideration again.

And let's not even *begin* to explore the possibilities inherent in the grimoires of a good generalist mage, if such are allowed in the campaign. Not only can a single mage make a significant difference in the recovery, but if he is willing to teach, perhaps the reborn civilization will end up based on a far more even balance of magic and science . . .

As noted in the main text, a parallel development to demolition and rebuilding will be the reestablishment of a technological base. Once again, far more powers than are immediately obvious will prove helpful in the restoration of the scientific and industrial foundation. In fact, almost *any* metatalent can be vitally useful at some point in the post-catastrophe period. Desperate need can prove a powerful motivation for developing unexpected ways to employ one's powers. One of the delights of a disaster plot line is the way in which PCs (and players!) will rise to the challenge and use their powers in ways they never imagined they would.

Adventure Seeds

An Uneasy Alliance. As the world digs itself out, the heroes and their greatest enemies find themselves on the same side – survival. For the moment, a truce rules and everyone pulls together in order to make it from day to day. But when will the villains back-stab the heroes (or vice versa)? Is it a foregone conclusion? Or are the reasons the villains had for being on the wrong side of the law completely irrelevant now? This scenario works best with complex supervillains who have more than simple profit and selfishness as motives.

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Planning for a Future

General Order 1999-C-15:

In the event that a catastrophic event occurs as foreseen, Teams are required to assist or stand in for local government on rescue and recovery efforts. This is to be carried out in parallel with attempts to contact IST Command per General Order 1999-C-11, and will remain a priority until such time as such efforts cease or further orders are received from IST Command . . .

After the immediate aftermath has passed, the matter of long-term survival comes to the fore. Here the focus changes from feats of strength to planning, communications, and support. Plant and healing powers may be most important when it comes to maintaining life, as food and health will be priorities in the post-collapse world. A close second are powers useful for creating shelter and protecting the survivors not only from the elements but from those who might prey upon them. In areas where the infrastructure remains substantially intact, supers may resume their usual patrols, only with far more . . . vigorous responses to any lawbreakers they come across.

In terms of a roleplaying plot, this may not be the longest phase of an apocalyptic campaign; however, it is one of the most *important* phases, when some of the greatest threats to the future of civilization will manifest themselves. For example, warlords (both super and normal) may arise and seek to expand their holdings by taking over the lands protected by the heroes. This is once again the invasion theme, although on a different scale – see David Brin's *The Postman* for an especially dark view of this particular scenario.

Anti-super mobs may come to blame metahumans for the disaster, regardless of the truth of the matter; such mobs may be external or they may grow and fester within the very community the supers are supporting. More subtly, some of the normals in the community may come to resent their metahuman neighbors and resort to political means or even assassination to rid themselves of inconveniently powerful individuals who might not agree with their personal agendas. Many other internal threats are possible; a clever GM can weave such possibilities into a complex tapestry of threats and adventures, keeping his players hopping even as he fades the campaign into the next phase. The survivors' colony will be a microcosm of the pre-collapse world, so any and all social forces in play before the disaster can reemerge now, magnified as they are played out on a smaller scale.

Reconstruction

Once the greatest danger has passed, the survivors will start to rebuild.

You Need the Tools to Make the Tools

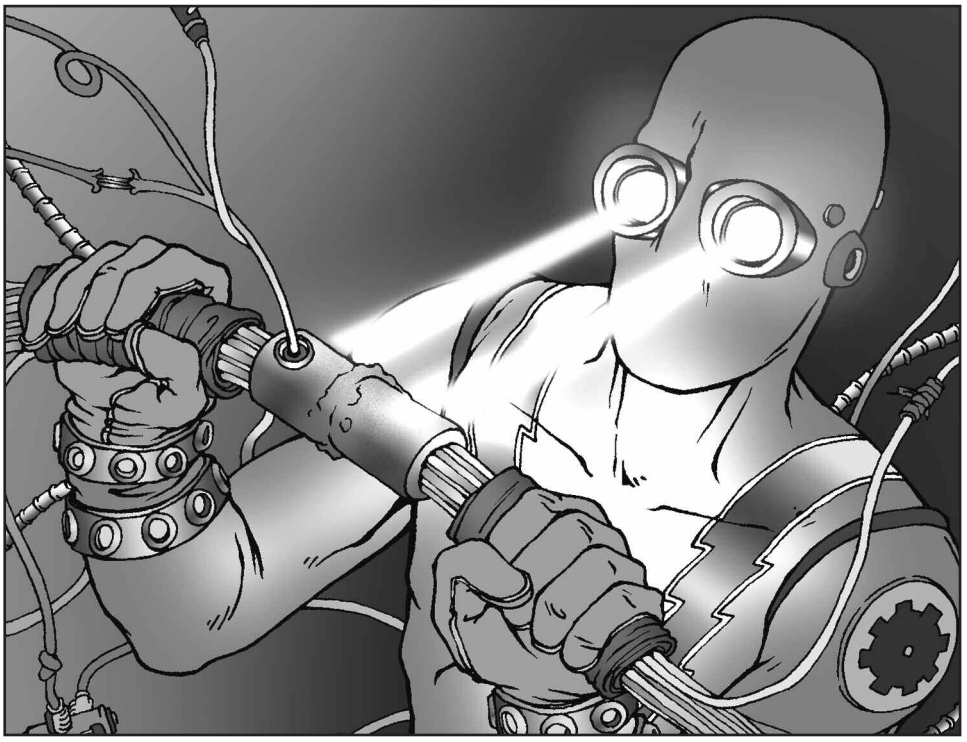
Der Techniker glanced over the hundreds of bins and bags once more, then sealed the large wooden crate. Reaching into his vest, he pulled out the stasis key and aimed it at the box. A moment later, a shimmering haze wrapped the crate in a protective field.

Dort hält das es safe, bis wir es benötigen, *he thought to himself.* ***There, that will keep it safe until we need it.***

It is a given in almost every global disaster scenario that civilization is delicate, that once the fragile links that crisscross the modern world are snapped, society will grind to a halt, millions will starve, and thousands more will fall prey to disease. The inherent assumption is that once the infrastructure has been damaged sufficiently, there may not be enough people with the necessary skills and knowledge, nor enough energy or raw materials, to restart civilization.

And that may well be true – in the real world. But in a supers setting, those metahumans who survived may be able to take the place of lost technology well enough to make a difference – *assuming that there are enough of them.* Supers can substitute for or augment more conventional technologies, exactly as they did during the survival and recovery phase. This can be especially vital in the weeks and months of reconstruction if a slide back into primitive barbarism is to be avoided.

Supers can stand in for all manner of devices – cranes, bulldozers, radios, jets, and generators – greatly accelerating recovery. This will only work if such substitution allows the reconstruction or restoration of the fundamental technologies on which modern civilization is based, however. Gadgeteers, scientists, and supers able to work with them come into their own here as they race against wear and tear – and possibly even sabotage – to reestablish the means by which humanity's machines are created and maintained. The greatest threat at this point may come from the shortsightedness of corporations the world over: planned obsolescence and hard-coded life spans may do more to doom civilization's recovery than any plague or tsunami.



If the campaign setting is as computerized as the contemporary world (or more so), then restoring at least *some* computational and network capabilities may be as necessary to rebuilding civilization as establishing a food preservation and distribution system. Those with technologically oriented talents may provide some help, but do not discount the contributions of simple brainpower – especially if that brainpower is augmented by a super-gadget or a mutation.

In the simplest scenarios, supers need only jump-start civilization, not support it. This assumes that sufficient numbers of engineers and technicians survived the catastrophe, and that there are stockpiles of parts to raid until production lines can restored. Less optimistic scenarios require the supers to replace the technological infrastructure not only until a new generation of technical adepts can be educated, but until the industrial base has been reestablished. The GM should carefully consider the tone he wishes to set for the campaign before leading it into the latter territory, however.

Adventure Seeds (Continued)

Birth of a Nation. As the PCs make their way through the ruined world, they come upon survivors who insist on joining them. They soon find themselves the de facto leaders of a band of nomads seeking a home. How do they deal with the duties and responsibilities thrust upon them by the people who have turned to them for hope and guidance? Can they cope? Or do they run out on the dozens or hundreds who depend on them? For a further challenge, the band comes upon an abandoned but partially intact town. Are the heroes and their people up to the challenge of clearing it of corpses and leftover threats, then rebuilding?

Let My People Go . . . Maybe. The super group stumbles across a small, feudal-style fief established and ruled over by an infamous metacriminal (or band of metacriminals). At first (and second) glance, the settlement seems oppressive. But its people are healthy and well-fed, and some at least seem proud and unafraid. What's a dispossessed hero to do? The villains may be cruelly exploiting their people, keeping them in good condition out of simple enlightened self-interest, but they may have a sense of duty to the people and be ruling well, if by an archaic system. Will the heroes assume the worst or investigate before acting?

Personality Alteration

Human beings respond to stress in a variety of idiosyncratic ways. Surviving a disaster on the scale of those discussed here may be the most stress a person can endure and still live. Supers and normals alike can have their entire worldview shattered by the enormity of events. Some will emerge with a renewed sense of purpose and self, while others will break under the strain.

How hypocritical or sincere an individual was with respect to his personal moral code often has little to do with how he reacts: A con-man may undergo a revelatory insight and come out completely transformed, while a devoutly religious person may lose his faith. For game purposes, *anyone* can make a wild moral, ethical, or philosophical swing in the process of surviving a catastrophe. This can often put the heroes in the dicey position of discovering at the worst possible moment that a trusted ally, once a stable and reassuring presence, has secretly lost his faith in humanity and become seethingly nihilistic and hostile. Or that a former homicidal metavillain has seemingly undergone a spiritual transformation and seeks to atone for his past.

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Personality Alteration (Continued)

Any PC undergoing such a radical personality alteration must have the approval of the GM, of course. The changes should be worked out between the GM and the player, and cannot result in a net increase in the character's point value – although a decrease is always possible. The GM may want to reserve up to 15 points in advantages, disadvantages, or both for "secret traits" to reflect ongoing personality changes which will emerge in later play.

Survival of the Fittest

It doesn't take much reflection to conclude that supers are far more likely to come through any given catastrophe than their unaugmented brothers and sisters. Pure Darwinian evolution would call such survival a classic example of natural selection in action. A more precise review would note (in most campaign worlds) that for each super who survives, there will be at least several thousand normals as well – barring especially devastating disasters.

Still, the point is valid; in those campaign settings where the potential for metahuman abilities is a genetic trait, even a small change in the proportion of normals to supers can make a difference in how fast metahuman powers propagate through the population. In some settings (like ***GURPS IST***), the eventual transformation of humanity into metahumanity is a given. But such a radical culling of ordinary humans, as would happen with most of the disasters described here, could vastly accelerate the schedule.

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Build it Back Up

A task parallel to reestablishing industry is general rebuilding. Unsafe structures must be identified and torn down, if only for safety's sake. New structures will undoubtedly need to be built for housing, storage (particularly for food), and – if the milieu requires – defense. If gasoline and electricity are in short supply or long gone, supers will be there to take the place of backhoes, bulldozers, and other machinery. And not just large-scale machinery – virtually any power at any level can contribute to the rebuilding (see the sidebars on pp. 109-110 for an exploration of some of the possibilities).

On the down side, a super involved in anything more than simple demolition will need appropriate training before he can be useful . . . training which may be hard to get after a disaster. Another concern is that the world might grow dependent upon supers and their powers instead of returning to "mundane" methods and equipment.

In "semi-realistic" settings like the IST world, supers with appropriate gifts may *already* be in fields where they can make good use of their abilities. Not only will they have training in how to use their powers in rebuilding efforts, they will be employed in related professions. They will not be "exotic tools" but just another kind of skilled laborer – useful, but not something that the world will become dependent on (see below). On the other hand, training a crime-busting super in the ways of carpentry or masonry can be both a character-expanding experience and the source of a great deal of comedy . . .

In worlds where "super-professionals" were not common before the collapse, however, a growing dependence on super labor can manifest in a variety of ways, most of them negative. At one extreme, supers become enslaved in the roles that they played during the reconstruction, simply because no equally efficient means of performing these tasks remains. The opposite extreme is domination by supers, who extort power and payment in exchange for maintaining the standard of living to which "their" people have grown accustomed, and for defending them from threats, both real and imagined. At this end of the spectrum, their monopoly on necessary services allows supers to impose a variety of *metarchy* (government by supers; see p. IST73).

Metahuman Morality

General Order 1999-C-2:

Lawlessness in the wake of any disaster will not be tolerated by the International Super Teams. Teams are authorized to act as adjuncts to or replacements for local law enforcement should the need arise . . .

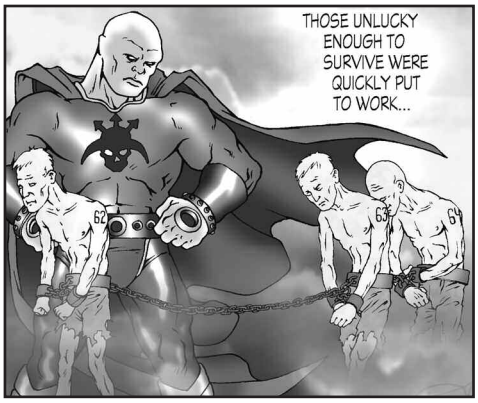
Up to this point, we have assumed that even in the wake of a world-shattering catastrophe, heroes will remain heroes and (most) villains will remain villains. But will that actually be the case?

Naturally, it depends on the campaign.

In true four-color campaigns, heroes and villains are what they are and rarely change. There are exceptions, but almost universally it is villains who change sides – Marvel's Rogue and DC's second Dr. Light, to name two examples. Matters are often different in real life, however; many people have demonstrated a tendency to "go wild" when outside the reach of the law. The degree of "reality" the GM desires in his campaign will help determine where on this spectrum the NPCs (at least) will fall.

Four-Color Morality

The matter of morality in a supers world is a curious thing. Most superhero roleplaying games – and even a few comic-book worlds – seem to imply, if not actually declare outright, the existence of some sort of "code of conduct" for heroes. The presence of such a code in the cultural matrix will have a strong effect on both heroes and villains. Heroes who subscribe to such a code will effectively have the Honesty disadvantage when it comes to their behavior in the absence of law enforcement. As a result, the terms of their code will limit their options in almost any post-disaster setting.



Paradoxically, the best heroes may be the worst at leading survivors – or even at acting effectively as their defenders. Following a code may grant them near-automatic trust from any survivors who recognize them, and make it easier to gather survivors into viable communities, but it may also make any potentially hostile situation worse. In a military or paramilitary confrontation – facing off against looters, raiders, or metavillains with dreams of conquest – most heroes will be hampered by an unwillingness to kill; their tactics will be crippled, and they will leave alive opponents who will inevitably seek revenge or a rematch.

Villains and more pragmatic hero-types will have no such compunctions, and may fare better as leaders – and survivors – in a post-collapse world. A certain ruthlessness may be necessary to lead a colony of survivors for any length of time in a setting where the basic infrastructure of civilized life has disintegrated. Even when that ruthlessness is directed primarily at external threats, it may require a level of response to those threats that individuals adhering to a classic "heroes' code" would find unpalatable.

Surprisingly, within the framework of the classic four-color morality, villains have far more freedom of choice and action than do heroes. For most, little will change – a villain is a villain and, in the absence of law, he will have his merry way with the world for his own amusement and benefit. Such individuals, whose motivations may be as basic as greed for money or power, or as twisted as sadism or death-worship, are most likely to become warlords, slavers, or simply stalkers of men through the devastated countryside.

Villains who are strong or savvy enough will eventually become leaders by imposing their will through fear or bribery. ("Follow me and you shall have all the loot you want when we attack the town over the hill!") Aggressive bands of survivors, be they soldiers or bandits, are likely to be one of the greater threats to the reconstruction of civilization after a large-scale disaster. Add leaders and forces with super powers to the mix and the result may be dozens of warring fiefs, each ruled by an absolute metahuman leader.

On the other hand, many villains are in their own way sincere men and women whose strict codes of conduct conflict with the majority view, but who are no less moral or ethical for that. The best example of such a villain is Magneto from Marvel Comics, whose primary motivation has been the prevention of a second Holocaust aimed at mutants. Villains of this stripe are as likely as heroes to band together cooperatively with other survivors – including heroes. Many might be called unyielding idealists, and may see contributing to survival and reconstruction as their chance to reshape civilization in a form closer to their ideals.

Survival of the Fittest (Continued)

What would humanity look like afterward?

Not terribly different, at least not at first, unless the population loss was so severe that more than 1% of the next generation was sired or borne by supers. Super genes would eventually spread to the entire population of the earth, but even in the most drastic scenarios, this would still take *many* generations – assuming that the disaster itself did not have a (favorable) mutagenic effect.

And what then? What will mankind become? In the IST world, the Seeder genes were intended to converge toward a single racial power or cluster of powers, the precise selection of which was to be determined by the needs of the evolving race. In humanity's case, the genes were forced into dormancy long before they had done their job. With their reawakening in the 20th century, the process has resumed and may yet produce a homogeneous result.

Other campaigns may not be so deterministic. Depending on the mechanics of super powers set up by the GM, the spread of metagenes through the population may never converge, leading to a world where *everyone* is a unique super.

Either way, the future Earth may be an interesting campaign setting in and of itself.

Only Now Do You Understand!

What's a superhero world without a villain-inspired plot? What plot could be greater than to bring the world to its knees with a disaster on an unanticipated scale, then to step in as its savior – or ruler? What if a metavillain of the first water were behind it all?

The question is, as always, why? The classic motivations of the super villain are self-aggrandizement, power, and wealth. Perhaps the villain is an industrialist poised to corner a market that the disaster will devastate. Perhaps he is a politician waiting for the moment to step in with his great plan that will place him at the pinnacle of power. Maybe he's the leader of an alien invasion force, intent on softening up the Earth before launching the attack. Or perhaps he's simply an earthly conqueror planning on sweeping through nation after devastated nation.

Continued on next page . . .

Only Now Do You Understand! (Continued)

For an interesting twist that most players will not expect, maybe it's being done for a *good* reason. In one example from DC, Ozymandias in *Watchmen* fakes an alien attack in order to force the nations of the world to unify, forestalling a nuclear war. Perhaps the master villain is triggering the disaster to short-circuit the entrance of other-dimensional Things into the world. Perhaps a massive geological catastrophe is actually a "pressure relief" to prevent an even more devastating one years or decades from now. A plague might be a misguided attempt to restore a perceived ecological imbalance . . . Ideology – especially *confused* ideology – coupled with good (however misplaced) intentions may well be the most common reason for such a "well-meant" disaster.

Y2K Origin Stories

It's traditional for supers to have detailed "origin stories" that explain the unusual circumstances under which they came to be supers. Disaster scenarios often play a role in such stories. In keeping with the theme of ***GURPS Y2K,*** here are a few ways to use a Y2K disaster to *start* a ***Supers*** campaign:

- A disastrous Y2K crash could result in nuclear accidents or conflict, the accidental or deliberate release of exotic chemicals, or biological warfare – all of which are classic causes of the sorts of "mutations" that grant metahuman powers in the supers genre.
- Existing supers, living "underground" and concealing their powers, might come forward after a Y2K disaster – to help rebuild, to build a new society where they fit in, or simply to make a bid for power.
- Modern technology could be suppressing superhuman or supernatural powers, either as an unintended side effect or as part of a deliberate conspiracy. If a Y2K disaster wipes out the suppressing technology, then the world may see a sudden "awakening" of supers.
- Governments or the Illuminati may be breeding supers *now,* or finding and training them, as secret tools of statecraft or world conquest. A Y2K disaster might free such supers from supervision or slavery . . . it might even be the moment of revelation chosen by their masters.

See Chapter 10 for several ways in which a supernatural-tinged Y2K disaster could bring "super-powered" beings to Earth.

Realism Rears Its Ugly Head

In a more realistic campaign, things are far from this simple. The grittier it gets, the more complicated matters become.

In the "real" world, or close (or cynical!) approximations thereof, nobody's adherence to a moral code is truly absolute. It can be argued that most people are law-abiding not because it is the right thing to do, but because they will be punished if they aren't. As has been demonstrated so many times in the past century alone, even "upstanding citizens" will take advantage of a situation where the law breaks down or vanishes entirely. Only the most heroic supers with the greatest self-control or devotion to principle are less likely than the common man to be tempted in this way. Heroes whose motivations include revenge, thrill-seeking, and personal glory are the ones most likely to "cut loose" in the absence of any legal restrictions. And some of these are as capable of starting a campaign of conquest as any villain.

Villains will have little to stop them aside from heroes and other villains, should they decide to rampage or enslave, but many *enjoy* the trappings of civilization as it was; it's likely that these people will work side-by-side with heroes and normals to rebuild simply because a world of super-controlled feudal demesnes is not *their* ideal. Such "villain allies" make interesting and often annoying NPCs (from the point of view of PCs and their players), simply because of their philosophical differences with most heroes. The best villains for this purpose are those who can elucidate their positions with persuasive eloquence and total conviction.

In short, the hero-villain polarity is a good general indicator of how factions will sort out in the aftermath but is by no means a sure thing. Heroes intent on recovery and reconstruction may find themselves facing a nasty surprise or two . . .

Complications

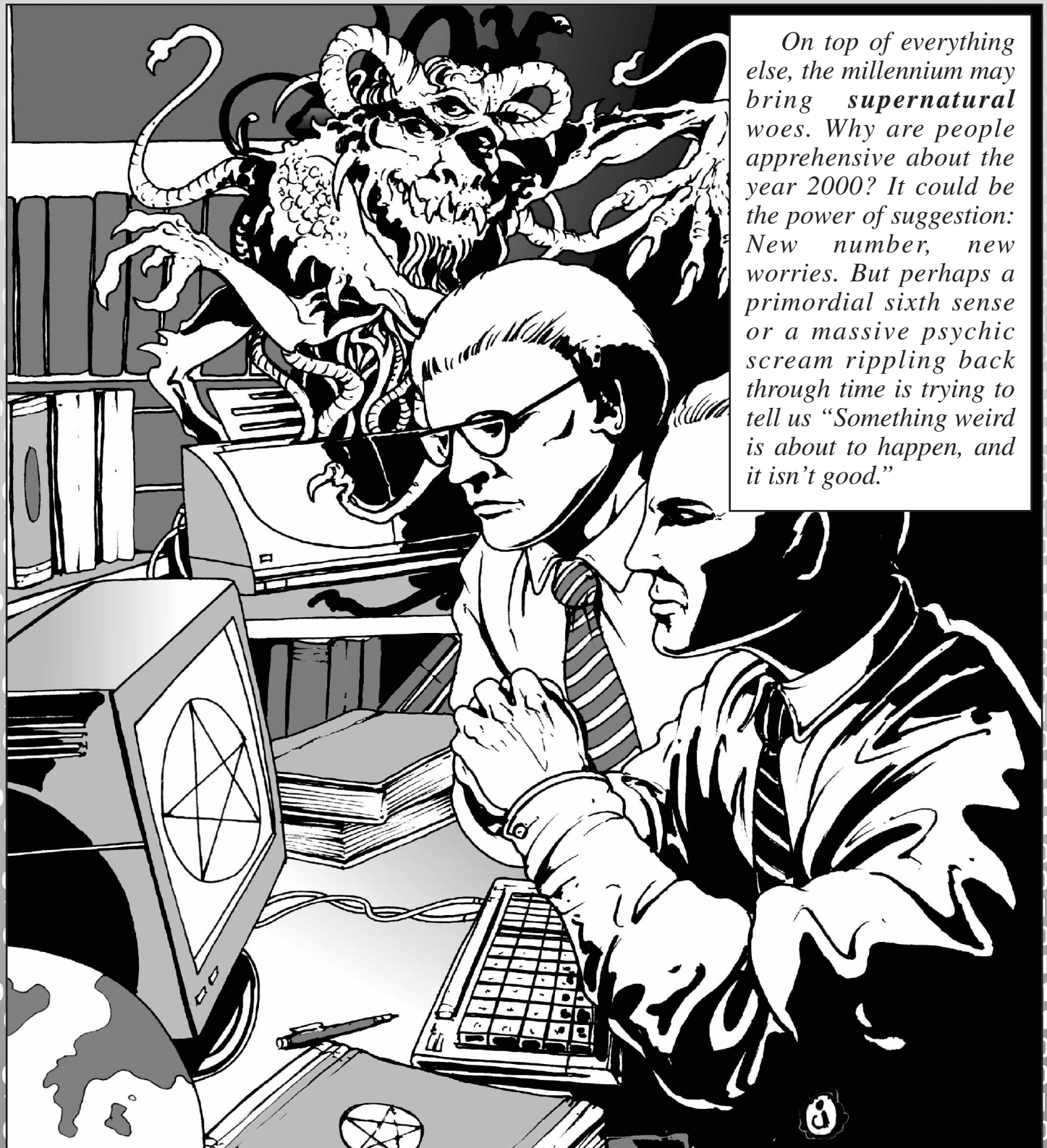
In the absence of organized society, particularly law enforcement, it is inevitable that warlords and feudal rulers will emerge, mostly from the ranks of supers; it is the nature of the beast. But given that heroic and villainous supers are both products of their culture, many on both sides will have no real purpose outside of that culture. The need to recreate – or build from scratch – a place where they belong and feel comfortable will for many override the desire to take advantage of the opportunity to run rampant.

And do not neglect the fact that except at the highest power levels, supers are still vulnerable to "normal" weapons and tactics. Or that even though they are more likely than a normal to survive a disaster, they will still be outnumbered thousands – *tens of thousands* – to one by normal survivors. Sufficient quantities of heavily armed normals without any metahuman support of their own *can* hold off and eventually defeat a band of supers intent on conquest.

It is these factors, more than morality, that will prevent the establishment of more than a few villainous dynasties. Morality is a significant force that will separate the initial players into factions and motivate them to a degree, but it is very human effort more than ethical convictions that will win the day.

Witchwind closed the binder and allowed herself to relax for a moment. Even with the precognitives' visions, the future was always uncertain – now more than ever. But if there were any chance at all that preparation could overcome the chaos that had been foreseen, then the International Super Teams had improved the odds of humanity's survival. And if in the end it made no difference, she could think of no better epitaph for herself and for the IST.

10. Judgment Day



On top of everything else, the millennium may bring ***supernatural*** *woes. Why are people apprehensive about the year 2000? It could be the power of suggestion: New number, new worries. But perhaps a primordial sixth sense or a massive psychic scream rippling back through time is trying to tell us "Something weird is about to happen, and it isn't good."*

Good Taste (And We Don't Mean Brains)

It can be fun to run a campaign where shotgun-toting preachers and righteous angels weather hell on earth to combat Satan, or where Cabbalistic powers (or weird science) bring the dead forth from their graves on January 1, 2000. Keep in mind that Christian scripture and Jewish mysticism are part of some peoples' beliefs, however, and that not everyone is comfortable with themes like the devil and the living dead. Most players will take this kind of game with a grain of salt – it is intended as a dramatization, after all, not as a mockery – but the GM should respect the sensibilities of those who are uncomfortable with the subject matter. In general, if you have reason to believe that some of your players might feel uncomfortable with a game like this, talk it over *before* you start!

A Disaster of Biblical Proportions: The Apocalyptic Campaign

Year 2000 is mainly of significance to those who use the Christian calendar, and the millennium is mentioned quite often in Christian apocalyptic literature, so perhaps the most likely supernatural Y2K disaster would be the biblical Apocalypse. This is described in detail in *The Revelation of St. John the Divine* (usually just called *Revelation*): an account of a vision experienced by St. John the Divine on the island of Patmos. It consists of 22 chapters that describe the end of all things in confusing detail. The highlights are summarized below, in order of appearance, along with suggested interpretations that can be used by GMs who wish to run supernatural-tinged ***Y2K*** campaigns. See the sidebars on pp. 117-126 for more on running apocalyptic games.

The Seven Seals

In John's vision, God first appears holding a book closed with seven seals. During the vision, the seals are unfastened, with dire consequences – which would be the first signs of the Apocalypse.

First Four Seals

Opening the first four seals brings four horsemen into existence. The first rides a white horse and sets out to conquer earthly nations. The second rides a red horse and is given the power to take peace from the earth. The third rides a black horse and brings famine where he goes. The fourth rides a pale horse and is Death Himself. These four figures are often referred to as the "four horsemen of the Apocalypse," and are traditionally identified as War, Strife, Famine, and Pestilence.

Using this in the game: In a campaign with subtle supernatural elements, the GM might wish to interpret the four horsemen symbolically as conquest and its usual consequences: war, starvation, and death. The most logical manifestation would be a sudden and unexpected outbreak of war worldwide, with unusually deadly consequences. Something involving biological weapons would both invoke Pestilence and be in keeping with today's fears. This would be an appropriate starting point for an apocalyptic military or ***Special Ops*** campaign.

In an over-the-top game, the horsemen could be interpreted literally. They would most likely be demons or demigods of great power, possibly incarnated as men on horseback – or as men on "iron horses" (motorcycles), for those who like a more modern feel. No statistics are given here for the four horsemen! These beings represent the wrath of God, and would be ultimately powerful within their spheres of influence.

Fifth Seal

Opening the fifth seal brings on the immediate judgment and redemption of those martyred for their faith.

Using this in the game: Unless the GM is running a ***Y2K*** campaign set partly or completely in the spirit world, this is unlikely to have visible effects. In an occult conspiratorial or investigative campaign, though, the GM may choose to give religious PCs strange dreams or have the remains of martyred saints vanish from reliquaries worldwide. In a game with overtly supernatural elements, the ghosts of martyrs might appear to warn the living to repent.

Sixth Seal

Opening the sixth seal causes a great earthquake, followed by the darkening of the sun, a "moon of blood," stars falling to earth, and mountains and islands being displaced.

Using this in the game: A widespread and geologically improbable earthquake would be the most logical way to present this. Widespread volcanic activity could cause earthquakes and blacken the sky, give moonlight a reddish tinge, and obscure some stars. Global events of this magnitude should convince even the most skeptical observer that something isn't quite right – although they need not conclude that the causes are supernatural. Such events would be a good way of converting an emergency-rescue campaign into an apocalyptic one.

Seventh Seal

Opening the seventh seal brings forth seven angels with trumpets (see below).

The Seven Trumps

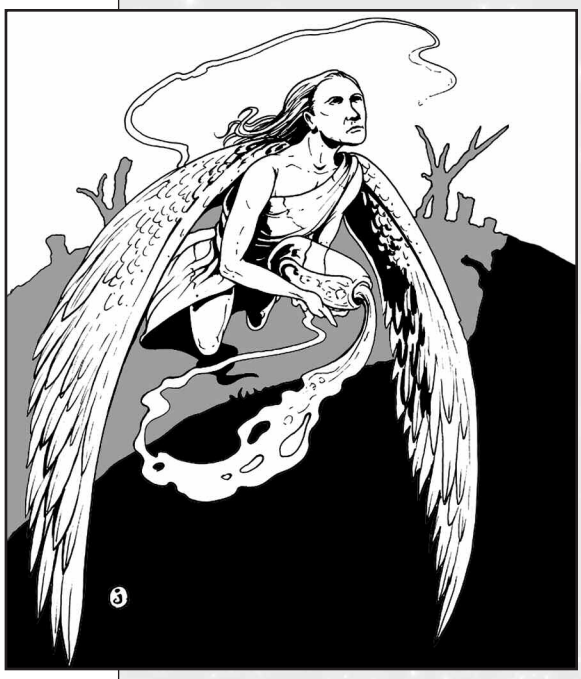
When the seventh seal is opened, seven angels bearing trumpets come forth and sound their horns. As each trump is sounded, another sequence of disasters unfolds.

First Four Trumps

The sounding of the first four trumps causes a variety of additional disasters. The first trump causes a storm of hail, fire, and blood to ravage a third of the earth. The second trump turns a third of the sea to blood, slaying a third of all creatures in the ocean and wrecking a third of all ships at sea. The third trump causes a third of all fresh water to become "bitter" (poisonous). The fourth trump causes a third of the sun and a third of the moon to be blotted out, and obscures a third of the stars in the sky.

Using this in the game: This could be interpreted in a number of ways. Nuclear weapons used in the war caused by the four horsemen could scorch the earth (fire), slay millions (blood), and blow debris into the atmosphere, disrupting global weather patterns (hail) and obscuring the sun, moon, and stars from view. Explosions at sea could wreck ships and kill sea creatures. Deadly residues from nuclear, biological, and chemical weapons could poison the earth's waters. Alternatively, volcanic activity caused by the sixth seal could set fires, spew ash into the atmosphere, cause tsunamis, and release toxic compounds into the environment, with much the same consequences.

A completely literal interpretation of these disasters (angels show up blowing horns, magically causing the events above) is also an option, albeit a less-than-subtle one.



Apocalypse How?

The GM has two major choices to make before running an apocalyptic campaign:

Subtle or Overt?

The Apocalypse is *not* a subtle thing, but its supernatural nature could be well hidden. All of its physical manifestations could have (superficially) logical explanations – like warfare, volcanic activity, or a meteor impact – and only a careful analysis of the events by someone "in the know" (perhaps using Conspiracy Theory skill, p. CI155) would reveal that things are not quite right. On the other hand, the GM could decide to make things overtly supernatural, with angels appearing in the skies and blowing trumpets, the voice of God booming in anger, etc. The latter case is best suited to campaigns where the PCs will have supernatural powers or awareness of their own.

Natural or Man-Made?

It is usually assumed that since the Apocalypse is an act of God, nature itself will turn against man at God's will. In other words, "moons of blood," earthquakes, bitter waters, etc., will be the result of natural disasters – however improbable. That is a valid interpretation, but not the only one. The Apocalypse is a time of judgement, when unrepentant souls will be punished, so it is possible that man could fall victim to the fruits of his own vanity. The most obvious mechanism would be to have weapons of mass destruction poison the earth. A more subtle possibility would be to have man's technology turn against him . . . such as with a Y2K crash that causes reactors to melt down and factories to burn.

Character Types

An important step when setting up an apocalyptic campaign is to determine the role of the PCs.

Clueless Mortals

The PCs are ordinary folks. This works well if the Apocalypse is being introduced into an existing mundane campaign (***Espionage, Martial Arts,*** police, ***Special Ops,*** etc.). It also fits Hollywood-style ***Horror*** games where the protagonists are in the dark about what's going on. The campaign will probably focus on coping with the consequences of many disasters in rapid succession, followed by coping with supernatural monsters like demons and zombies. The PCs will most likely be emergency workers (in the case of natural disasters) or soldiers (in the case of global warfare), but they may also be scientists or journalists who are trying to figure out what's going on – or even helpless victims, if the players are up to the challenge!

Pros: No weird abilities to keep track of. Possibility of surprising players with a mundane campaign that takes a weird twist. "Disaster movie" flavor is accessible to most players.

Cons: Players may get discouraged if they feel their characters are powerless. Players may not appreciate sudden weirdness if they were prepared for a straight-up military or crime-fighting game. Once things get really disastrous and weird, mere mortals may be little more than cannon fodder.

Character Types: Any kind of normal character (blue collar worker, detective, doctor, EMT, fireman, journalist, kid, scientist, soldier, etc.) that fits the underlying campaign type.

Clued-In Mortals

The PCs are ordinary folks who know at least part of the truth about what's going on. This may slowly dawn upon them, be revealed suddenly, or be evident from the outset. This works best in campaigns that are a bit "weird" up front; the Apocalypse would not be altogether out of place in a ***Black Ops, Horror,*** or ***Illuminati*** campaign. The action will most likely involve deciphering ancient writings to learn what will happen next, minimizing casualties, combating supernatural menaces, and possibly unearthing ancient prayers or rituals capable of holding off the Apocalypse for another millennium or two.

Pros: Plenty of action for those who enjoy it. Revealing dark secrets hidden in the world of the *players* can amuse or shock – depending on the GM's approach – but is always dramatic.

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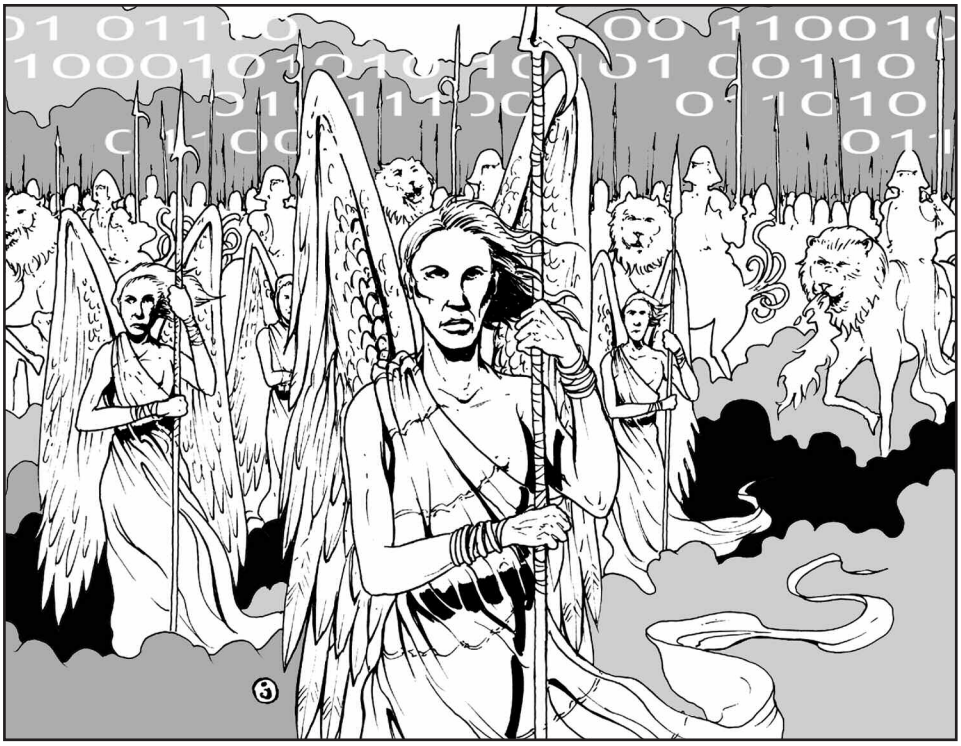
Fifth Trump

When the fifth trump is sounded, a bottomless pit opens and belches forth smoke from which emerges a plague of locusts with the faces of men, teeth of lions, stings of scorpions, and breastplates of iron (see sidebar, p. 120). These locusts are charged with the task of tormenting (not killing) the unworthy for 5 months. Their ruler – later revealed to be the devil – dwells in the pit and is known as *Abaddon* or *Apollyon.* The events following the fifth trump are sometimes referred to as the "first woe."

Using this in the game: The GM almost has to make things weird at this juncture. It would be possible but implausible to have mutant insects escape from a top-secret biotech facility (perhaps run by "Abaddon Inc.") or to have some nation reveal its secret "B-666 Locust" bomber armed with biochemical weapons, but this is probably best reserved for silly campaigns. In a more serious game, this is the point where things take a turn for the horrific.



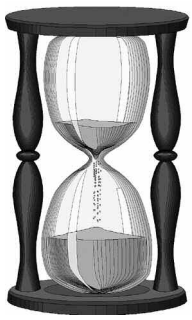
Sixth Trump

The sixth trump calls forth four angels at the head of an army of 200 million "horsemen" on horrific mounts: fire-breathing horses with the heads of lions and poisonous snakes in place of tails (see sidebar, p. 121). These fearsome monsters slay a third of humanity with fire and smoke. This is followed by the appearance of two prophets, who are killed by the devil when he emerges from the bottomless pit. Evil holds dominion on earth for a short time after that, then the prophets rise from the dead and earthquakes wrack the earth. These events are sometimes referred to as the "second woe."

Using this in the game: Since events are blatantly supernatural at this point, there is no reason not to interpret this literally. Of course, the GM may choose to modernize things (e.g., make the horsemen into a celestial biker gang or a mechanized force of demonic tanks). The dominion of evil would give the GM an opportunity to run the game in an anarchistic mode, with crime and violence holding sway. A "resistance" campaign with heroic PCs combating the Forces of Evil would be a challenging possibility!

Seventh Trump

The sounding of the seventh trump heralds the judgment of the dead – complete with lightning, thunder, an earthquake, and yet more hail. The devil takes the form of a red dragon with seven heads, and he and his demons battle the archangel Michael and the angels of heaven. Satan loses and is cast to earth, where he holds sway for 42 months and is worshipped by the unfaithful. At the end of this time, he marks those who worshipped him with 666, "the number of the beast," sealing their fate.



Using this in the game: This is an excellent time to introduce the undead! Since the living have not yet been judged, they will have to deal with the fact that the dead are walking around (see *The Harrowed,* p. 122). The 42-month reign of the devil on earth means that many of the living will be his servitors and the world will degenerate into a place of evil. GMs running a "resistance" campaign should turn up the heat a notch or two. Those who like over-the-top action may enjoy playing a righteous group of bold heroes holding out against demons, undead, and human stooges of evil.

The Fall of Babylon

On the heels of the seventh trump, Babylon falls. This symbolizes the destruction of earthly goods as punishment for humanity's preoccupation with such things. Following this, those marked by the devil are sentenced to torment. The "grape of the earth" is then harvested by angels and pressed into the "wine of the wrath of God," which is placed in seven vials (see below).

Using this in the game: The fall of Babylon can be interpreted as the burning of any cities still standing and the final collapse of what remains of civilization. This can come about through any number of means – civil unrest, warfare, natural disaster, or direct supernatural intervention. The harvesting of the "grape of the earth" suggests wide-scale desertification followed by famine. In other words, things go from anarchistic, evil, *and* bleak to simply bleak.

The Seven Vials

The seven vials filled with the wrath of God are then carried to earth by angels and released one at a time. The first is poured on the earth and infects those bearing the mark of the beast (see *The Seventh Trump*, above) with a plague. The second is poured into the sea, turning it to blood and killing everyone at sea. The third is poured into the rivers, turning them to blood. The fourth is poured on the sun, causing it to grow hot and scorch the earth. The fifth is poured on the devil's throne, causing pain and suffering in hell. The sixth summons three demons who gather the armies of evil (mortal and otherwise) at Armageddon in preparation for the final battle. The seventh is poured into the air, causing yet more thunder, lightning, hail, and earthquakes, and leveling mountains and islands.

Using this in the game: The seven vials bring even more dire consequences . . . but there isn't much left to ruin. A campaign running at this stage will take place on a wasted, lifeless earth; GMs looking for the game effects of plagues, poisoned waters, scorched landscapes, etc., should see Chapters 5 and 6 of ***GURPS Compendium II.*** These events are best used as a backdrop for preparations for Armageddon (below). If mortal PCs are still alive at this point, they are most likely "holy warriors" (see sidebar) with supernatural support who will be more worried about the final battle than about the quality of the air.

Character Types (Continued)

Cons: Less room for subtlety or surprises. Players may feel that their characters' efforts are meaningless if the Apocalypse is upon them and they can do nothing to stop it.

Character Types: Anyone with a good reason for knowing what's going on – exorcists, Men in Black, monster slayers, mystics, occultists, priests, psychics, etc. At the GM's option, PCs may possess advantages like Blessed (p. CI34), Divine Favor (p. CI36), and True Faith (p. CI47), have access to skills like Augury (p. CI137), Demon Lore (p. CI147), and Occultism: Demonology (p. CI157), and even have magical or psionic powers.

Holy Warriors

The PCs are mortal agents of good (or evil). They are mostly aware of what is going on and are preparing for the battle between the hosts of heaven and the legions of hell. A campaign like this will focus on seeing the Apocalypse through without interfering with it, possibly participating in certain phases of it (scorching the earth with nuclear fire, releasing plagues, etc.), and ultimately engaging the adversary at Armageddon. There is lots of room here for complex explorations of morality: It may support the cause of cosmic good to burn the corrupt cities of the earth, but can a mere mortal bring himself to commit such acts in the name of good?

Pros: A chance for players to engage in unbridled, high-powered mayhem with the GM's blessing. Excellent roleplaying opportunities in the form of exploring moral issues.

Cons: Some players may feel uncomfortable with overtly moral themes. Not everyone enjoys high-powered and essentially violent gaming.

Character Types: Warriors with occult and paranormal advantages (pp. CI33-48) like Awareness, Blessed, Destiny, Divine Favor, Faith Healing, and True Faith, disadvantages like Disciplines of Faith (p. CI89), Sense of Duty (p. B39), and Vows (p. B37), and plenty of Combat/Weapon skills. Some PCs may be undead; see pp. 122-126, as well as ***GURPS Undead.***

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Character Types (Continued)

Angels and Demons

The PCs are *immortal* agents of good or evil; i.e., angels or demons. (The GM may wish to adapt ***In Nomine*** for this purpose!) They are tasked with carrying out the acts that have been prophesied and with fighting at Armageddon. Note that they will *not* seem human. In Christian belief, angels and demons are not spirits of the deceased, but primordial servitor beings that have never known mortal existence; moreover, they embody the will of God (or the devil) and theoretically have no personal motivations.

Pros: A chance to play some radically different character types. The protagonists get to *act* – not simply react to the Apocalypse.

Cons: Some players may be uncomfortable with the idea of playing an embodiment of the will of God or the devil. Playing an inscrutable "force of nature" may be a little *too* challenging for some.

Character Types: For all intents and purposes, this is a ***Supers*** game. The characters should built on *hundreds* of points and have access to almost any abilities they want as long as they are suitably angelic or demonic. See pp. WI40-43 for one interpretation of angels and demons in game terms.

Locusts of the Fifth Trump

ST: 26 **Move/Dodge:** 13/6# **Size:** 1
DX: 13 **PD/DR:** 4/6 **Weight:** 200 lbs.
IQ: 6 **Damage:** 2d-2 cut*
HT: 13 **Reach:** C

These are the giant "locusts" summoned by the fifth trump (p. 118). They have human faces, lion's teeth, a scorpion-like sting, and skin like iron. They should be treated as demons (p. M113) for all purposes, and can be repelled by a Pentagram spell (p. M62) and dispelled with a Banish spell (p. M75). The locusts will attack humans on sight, attempting to sting but not to kill. They are of bestial intelligence and cannot be negotiated with. At the GM's option, those with the Blessed (p. CI34) or True Faith (p. CI47) advantages, they may spare.

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Armageddon

With the earth laid to waste and the devil gathering his armies, the armies of heaven descend on the earth and the final battle is joined at Armageddon. The battle is truly horrific – it marks the end of the world in earnest – and the devil is eventually defeated, cast into hell, and imprisoned for a millennium.

Using this in the game: Armageddon is probably the most intriguing apocalyptic element to use in a larger-than-life game. An entire campaign can be built around the raging war between good and evil, fought with all manner of weapons and supernatural powers. This is an especially suitable option if the heroes are actual servants – mortal or immortal – of heaven or hell. Warriors from all times and places can be used as PCs; those with supernatural powers can be created using ***GURPS Supers*** or ***Undead.***

Final Judgment

Following Armageddon, the faithful are resurrected (if necessary), judged, and given their reward, while the rest of us get to stay dead for another millennium (until Y3K?). At the end of *that* time, the last phase of judgment occurs and those who have repented go to their reward, while those who have not are cast into hell with the devil forever.

Using this in the game: Given that everything is settled at this point, there is actually relatively little gaming value in this phase of the Apocalypse – it is included here for completeness' sake.

Yetzirah 2K

The Apocalypse is a grand choice for a supernatural ***Y2K*** campaign, but Christianity hardly has a monopoly on millennial weirdness! Jewish spiritualism provides us with a different approach . . .

A Brief History of Cabbalism

Cabbalism is a Jewish mystical tradition whose roots extend back to around 100 BC. Its central tenets were set out in the *Sefer Yetzirah* (*Book of Creation*), which is usually attributed to a Rabbi Akiba who lived sometime between the 3rd and 10th centuries AD. The *Yetzirah* holds that God created the world through 32 paths of wisdom: 10 *sephiroth* (singular: *sephira*) which correspond to numbers, plus 22 lesser paths which correspond to the letters of the Hebrew alphabet (themselves associated with numbers). Every number, letter, and word thus has a mystical connotation.

In the 13th century, Abraham ben Samuel Abulafia developed a path of ritual meditation (*tzeruf*) based on the contemplation of the mystical values of numbers and letters. Around the same time (c. 1280), the *Sefer ha-Zohar* (*Book of Splendor*) was penned by Moses de León of Spain, who falsely attributed it to a 2nd-century rabbi. The *Zohar* linked Cabbalism to souls, demons, reincarnation, and the Messiah. These influences inspired 15th-century mystic Isaac Luria Ashkenazi to interpret Cabbalism as a kind of symbolic magic. The magical power of numbers and letters soon passed into Christian mysticism. By the 19th century, this concept played a central role in the beliefs of most Western wizards and mystics, Jewish or otherwise.

Computer Cabbalism

What computers do best is manipulate symbols and "crunch numbers." If the contemplation of symbols can work magic, then a computer that "contemplates" millions of symbols per second could be a veritable battery of Cabbalistic power! Faith is a required part of any mystical process, of course, but *millions* of people worldwide turn on their computers every day and assume that they will work, largely out of blind faith – which could be faith enough. If the computers suddenly fail and this faith waivers, who knows what the consequences will be?

In this scenario, a widespread Y2K crash could have any number of dire effects. The teachings of *tzeruf* make it plain that trifling with the power of creation has its risks. Outcomes such as calling forth the (un)dead, summoning demons, bringing down God's wrath, or even hastening the Final Judgement are consistent with Cabbalistic belief. What starts as a simple computer bug could end in Hell on Earth . . .

Locusts of the Fifth Trump (Continued)

The locusts fly at the listed Move or walk at Move 5. They have a fearsome bite, but prefer to sting for 1d+2 impaling damage, injecting venom. If this attack penetrates DR, the victim must roll vs. HT-6. If he succeeds, there are no further effects, but on a failure, he suffers intense pain (-4 on all actions, halved for High Pain Threshold) for one week. At the end of that week, he must make a HT-6 roll or suffer the effects for another week. This continues until 22 weeks (5 months) have passed or a critical success is rolled.

Horses of the Sixth Trump

ST: 40 **Move/Dodge:** 16/8 **Size:** 3
DX: 10 **PD/DR:** 2/2 **Weight:** 1,400 lbs.
IQ: 5 **Damage:** 2d cut*
HT: 16 **Reach:** R, C, 1

These are the fire-breathing "horses" called by the sixth trump (p. 118). They have the heads of lions and poisonous snakes for tails, effectively giving them 360-degree vision. The lion head can bite in close combat (2d cut) or breathe fire at up to reach 3. Treat the flame as a hand-to-hand attack made at DX, inflicting 2d damage; it can be blocked or dodged, but not parried. The serpent head can strike into any back hex for 1d-1 impaling damage, injecting venom. Anyone affected by the venom is at -2 DX and must roll vs. HT-6 immediately and again each day for the next three days; on any failure, he takes 2d damage and the DX penalty becomes -4 for the remainder of the three days. Finally, these creatures can kick into any front or back hex for 1d+2 crushing damage.

Like the locusts on the previous page, these are demons. The horsemen themselves should also be treated as demons; the table on p. M113 can be used to generate them, or they can be built as characters with powerful abilities from pp. CI33-73. At the GM's option, these riders may be armed with modern weapons as opposed to the swords and spears of biblical times.

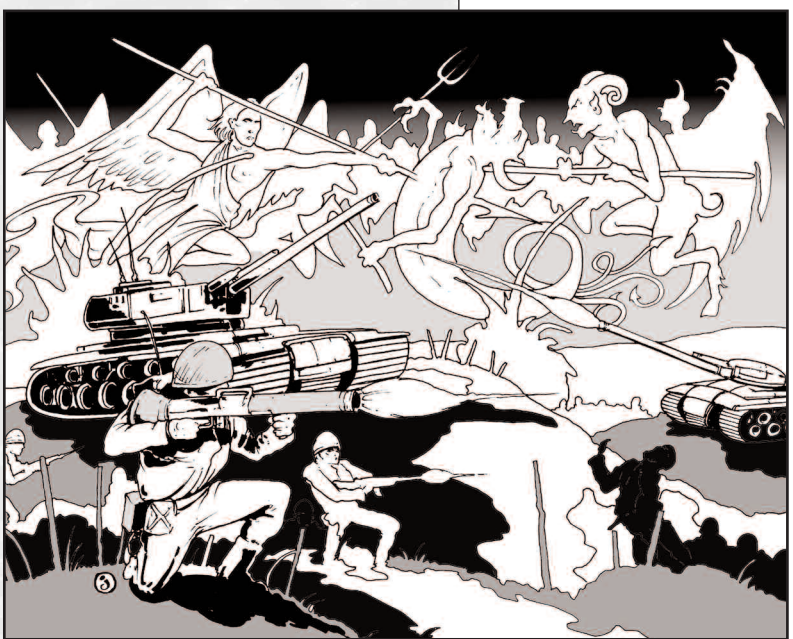
The Harrowed

It is not particularly clear what form the dead will take when they start walking around in preparation for Judgement Day. Since most of the dead will be dust (or at least dry and incomplete skeletons), the most logical form would be some kind of ghost. GMs who want to go with B-movie tradition may prefer to dress the dead in flesh for the occasion and treat them as zombies (p. M117). Better yet, *all kinds of undead* could get involved; ***GURPS Undead*** contains numerous varieties of specters and walking corpses.

Lucky 7?

A recurring theme in *Revelation* (p. 116) is the number 7. John's vision begins with Jesus appearing to him among 7 golden candlesticks while holding 7 stars in his hand. At various points during his vision, John spots 7 lamps, a lamb with 7 horns and 7 eyes, a book with 7 seals, a dragon with 7 heads, and 7 vials (borne by 7 angels); he also hears the sound of 7 trumpets and 7 thunders. There is no strong consensus regarding what this means (many interpretations are Cabbalistic; see p. 120 for more on Cabbalism), but the number 7 definitely seems to be associated with the Apocalypse.

This can be an amusing theme to use in a supernatural ***Y2K*** campaign. The GM can have the number 7 feature prominently in dreams, or have minor disasters, strange NPCs, or unusual occurrences show up in sets of 7. More subtly, the number 7 could start appearing with unusual frequency in the PCs' lives as the fateful day approaches – $7 million lottery prizes, 7 wrong numbers in the same day, etc.



Millennial Magic

Even if the computers weather 2000 without a hitch, our preoccupation with the millennium could be strong enough to invoke Cabbalistic power all by itself. As we approach and live through year 2000, those who use the Gregorian calendar will be thinking about the date. Billions of souls worldwide focused on one number could work some powerful magic, and if the dominant emotion is millennial apprehension, it might not be *good* magic.

If the GM wishes to avoid the blatantly supernatural, he can instead assume that the *sephira* associated with the number 2000 is driving global events from behind the scenes. There are many ways to associate the *sephiroth* with numbers, but one interpretation associates 2000 with *Chokmah* – Wisdom. Since year 2000 will overlap years 5760 and 5761 on the Hebrew calendar, we should also consider those numbers while we're at it. The same interpretation associates 5760 with *Yesod* (Foundation) and 5761 with *Malkuth* (Kingdom).

What all this implies is up to the GM. If Wisdom is read as Illumination, then Y2K could be the year that the Illuminati take their rightful place as the Overlords of Humanity. The appearance of Foundation and Kingdom on the Jewish calendar may have to do with Jerusalem: Do Jewish, Islamic, or Christian factions have big plans for the holy city? Will Israel be recognized as a world power? Tying it all together, perhaps the Illuminati will be behind events in the Middle East that will ultimately lead to escalating war and Armageddon (p. 120). Given the current political situation in the real world, this doesn't seem so far-fetched . . .

Thinking Bad Thoughts

Acts of remembrance directed at the dead are among the many things sometimes believed to have the power to bring forth the undead (see p. UN54). If a Y2K disaster occurs, then a *lot* of attention will suddenly be focused on computer files that pertain to people who were alive in 1900 . . . but not in 2000. This could constitute remembrance enough to spawn an undead plague.

Failure to remember the dead is sometimes believed to cause undeath as well (see p. UN36). If the Y2K bug mixes up records of deaths that occurred in 1900 and in 2000, the spirits of the dead may grow restless out of fear of being forgotten – especially if sloppy journalists, biographers, and living family members publish commemorative messages and the like with blind disregard for the correct date of death.

This could be used to justify the sudden appearance of ghosts, revenants, shades, wights, etc., in the year 2000. Such undead would likely have an acute awareness of time and a real hatred of the computers that are the ultimate source of their unrest. Being from an earlier time, most of them would exhibit anachronistic mannerisms. Below is a template for one possible kind of revenant; see ***GURPS Undead*** for other kinds of undead. These undead could also be used in campaigns where the GM has decided that Cabbalistic power is at work in the world (see *Yetzirah 2K,* p. 120).

Zero-Zero Zombies — 67 or 72 points*

Zero-zero zombies (named for the "00" in a two-digit date code) are corpses that have risen from their graves because the Y2K bug has focused unwanted attention on them or prevented them from being remembered properly. These revenants occur in places where old records have been transferred to computer; the corpses of those who are remembered only on paper or on tombstones will not be stirred up.

The sole motivation of a zero-zero zombie is to seek out and destroy all computer records which refer to it; it has an innate ability similar to the Seek Machine spell (p. G95) that allows it to locate such records. Since it lived in the era before electronic computers, it will not know how to delete the files – it will just smash the offending computer to bits. It will not actively seek to harm the living, but anyone (computer technicians, bureaucrats, etc.) who interferes with its mission in any way will be torn to bits.

There are two ways to lay a zero-zero zombie to rest. First, all electronic records that refer to it in the context of "year 00" (1900 or 2000) can be deleted, either by the living or via the destructive efforts of the revenant itself. This will cause it to return to its grave peacefully. Second, it can be destroyed bodily. This is risky, because unlike most undead, zero-zero zombies are not Unliving; if buried, they will slowly heal their wounds and rise once more.

Zero-zero zombies always look like rotting corpses, regardless of age. Even those that should be skeletons have a "body" made of bone, rotting burial clothes, grave earth, and worms, with maggots squirming in their eye sockets. They are inevitably foul-smelling and disgusting to look at. Anyone with Squeamishness must make a Fright Check at -2 when confronting one.

A Campaign of Biblical Proportions

The end of the world is the sort of thing that gamers like to see through to the bitter end. If the world is doomed from the outset, then the players will want some guarantee that their heroes will at least survive to see the fireworks. Incorporating *all* of the apocalyptic events on pp. 116-120 into a single epic campaign can be difficult, however; what would be a minor battlefield obstacle to an angel at Armageddon would be a lethal hazard to the most heroic mortal soldier – never mind a bookish scholar!

Perhaps the best way to handle this is to have the PCs gradually come to the attention of the Powers That Be throughout the course of the Apocalypse. As they prove themselves at each stage, they will be provided with progressively greater levels of sanctuary, divine (or infernal) protection, or even supernatural abilities that will ensure their survival until the *next* stage.

For instance, a group of doctors, firemen, policemen, relief workers, etc., who save lives and keep order during the events of the first six seals (pp. 116-117) and first four trumps (p. 117) could earn divine protection through their good acts. As things get weird during the events of the fifth, sixth, and seventh trumps (pp. 118-119), their protector could look out for them and perhaps provide supernatural protection (like the Blessed advantage). Their battles against the demonic evils of these times could earn them sanctuary from the scourge of the seven vials (p. 119) – either in the form of refuge (a safe place with plenty of supplies) or in the form of supernatural endurance (advantages like Doesn't Eat or Drink, p. CI53). They could use this reprieve to help prepare for Armageddon (turning bedraggled survivors into holy soldiers and arming them, dealing with demonic spies, etc.), then go out in a bang in the biggest battle of all time.

Thus, a group of "clueless mortals" (p. 118) would gradually become "clued-in mortals" (pp. 118-119) and ultimately "holy warriors" (p. 119). This could be the basis of a lengthy campaign if the GM chooses to interpret the timing of *Revelation* literally.

Demons & Daemons

In ancient Greece, the word *daemon* referred to a spirit – often one that carried out tasks on behalf of a sorcerer. Today, the term refers to a computer program that runs constantly, automatically carrying out a task. The similarity is obvious, hence the choice of words – but what if there is more to it than a simple analogy?

In a setting with secret magic, an ancient brotherhood of sorcerers could have survived into the late 20th century. Possibly for the reasons given under *Yetzirah 2K* (p. 120), possibly for other reasons, these wizards might have chosen computers as one of their sorcerous tools. In fact, they could be behind the computer revolution itself, their goal being to put a computer in every home and every business, all of them running programs (daemons?) that are up to no good behind peoples' backs.

In this scenario, the Y2K bug is part of an elaborate ritual: Place computers everywhere, all of them running sinister programs, and then cause a deliberate global crash on 1/1/2000. The aim of such a ritual could be almost anything: to summon demonic (angelic) forces by hastening the Apocalypse (p. 116), to raise a loyal army of undead using powerful Cabbalistic magic (p. 122), or simply to cast a spell on computer users everywhere.

See Chapter 3 for other, more "mundane" conspiracies.

Is My Tombstone Y2K Compliant?

The aggressive sales tactics and conspicuous consumption of the late 20th century sometimes have consequences that defy common sense. One example is the Y2K *tombstone* bug: It has become commonplace to buy tombstones before they are needed. Out of force of habit, many of these have been engraved with a death date of "19__." A lot of people with stones like this will live past 1999, however. Since it is more difficult and more expensive to alter records set in stone than it is to revise paper or computer records, at least some people are going to be buried with hastily altered or unaltered tombstones unless tombstone manufacturers opt to offer free replacements and absorb the loss.

In the real world, this is just another point of trivia. In a world where supernatural powers are at work, though, the issue is far more serious: Inadequately or improperly marked graves are frequently associated with the restless dead (see p. UN36).

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Attribute Modifiers: ST +3 [30]; HT +3 [30].

Advantages: Absolute Timing [5]; Doesn't Breathe [20]; Doesn't Eat or Drink [10]; Doesn't Sleep [20]; Extra Hit Points +3 [15]; High Pain Threshold [10]; Higher Purpose (Destroy computer records) [5]; Immunity to Disease [10]; Immunity to Poison [15]; Inherent Magic (Seek Machine) [2]; Injury Tolerance (No Blood) [5]; Single-Minded [5]; Temperature Tolerance 10 [10]; Unfazeable [15].

Disadvantages: Bad Smell [-10]; Bloodlust [-10]; Obsession (Destroy computer records) [-15]; Disturbing Voice [-10]; Eunuch [-5]; Loner [-5]; Monstrous Appearance [-25]; No Sense of Smell/Taste [-5]; Primitive -1 or -2* [-5 or -10]; Social Stigma (Dead) [-20]; Stubbornness [-5]; Unhealing (Heals normally if buried) [-20].

* Zero-zero zombies of those who died in 1900 will have two levels of Primitive; most others will have only one level.

Mutant Radioactive Zombies from the Year 2000

Those who would rather avoid occult themes altogether are still in luck. Weird science offers plenty of other ways to link unnatural weirdness to Y2K. There are two main themes here, one that involves the Y2K bug (*Collateral Damage*) and one that does not (*Who's Watching the Reactor?*). Of course, both could be used at once, or even combined with an occult approach.

Collateral Damage

The supernatural (or in this case, the *un*natural) might result directly from a worst-case Y2K crash instead of simply lurking behind it. In true B-movie tradition, the crash could cause a massive failure of automated scientific and industrial facilities worldwide: Chemical plants explode and release exotic pollutants, nuclear reactors melt down and emit strange radiation, satellites tumble to earth and unleash bizarre space viruses, and secret military projects involving super soldiers or biological weapons go awry in dangerous ways. The combination causes corpses rise from their graves as the living dead for "reasons unknown to science."

Who's Watching the Reactor?

The link between year 2000 and the supernatural could be quite banal: If everyone is busy ringing in the big year, hiding out in fear of a disastrous Y2K crash, or simply distracted by the hype and stress of *other* people doing these things, then the situation described under *Collateral Damage* could come about without any need for a Y2K bug. B-movie zombies won't much care whether the reactor melts down because of a computer crash or because all the technicians are taking a "sick day."

Bring on the Zombies!

In this kind of supernatural ***Y2K*** campaign, the living dead will quite likely make an appearance. The following undead are specifically suited to man-made Y2K scenarios.

Radioactive Revenants — 87 points

When the reactors melted down in 2K, we were worried about radioactive groundwater seeping into the water supply, not the graveyards. That was back when the boys in lab coats still had everyone convinced that we understood radiation and that zombies were superstitious hooey. Since the zombie plagues, though, cremation has been real popular around here.

In campaigns where science obscures the supernatural instead of explaining it away, radiation may cause zombie plagues . . . and there are plenty of opportunities for radiation to get into the environment in a ***Y2K*** scenario! Nuclear reactors could melt down for any number of reasons: a computer crash could cause them to "freeze up," millennial rioting (or apocalyptic earthquakes, p. 117) could damage them, or technicians could get caught up in millennial madness and leave them unattended. Worse, nuclear *weapons* might be triggered accidentally by the Y2K bug or deliberately by terrorists riding the wave of global millennial unrest (perhaps heralding Armageddon; see p.120).

Only the freshest corpses are animated by radiation; no one really understands *how.* One theory is that radiation can "revive" a mostly intact corpse under certain circumstances. It is known that the radiation destroys the brain and vital organs, leaving these undead with only rudimentary intelligence and a craving for human flesh, which they consume in order to replace chemicals that their undead bodies cannot produce. Rumors that they prefer to eat brains are probably apocryphal. The surest way to stop these flesh-eating monsters is fire or a *lot* of bullets.

Radioactive revenants are relatively "fresh" and seem to be preserved by radiation, so they aren't *too* foul and stinky. They are obviously dead, however, and emit an unhealthy green glow at night.

Attribute Modifiers: ST +2 [20]; DX -1 [-10]; IQ -3 [-20]; HT +2 [20].

Advantages: Doesn't Sleep [20]; High Pain Threshold [10]; Injury Tolerance (No Blood) [5]; Single-Minded [5]; Temperature Tolerance 10 [10]; Unfazeable [15]; Vampiric Immortality [60]; Vampiric Invulnerability [150].

Disadvantages: Cannot Learn [-30]; Dead Broke [-25]; Dependency (Human flesh; occasional, daily) [-30]; Disturbing Voice [-10]; Hidebound [-5]; Low Empathy [-15]; No Body Heat [-5]; No Sense of Humor [-10]; Pallor [-10]; Reduced Move -2 [-10]; Social Stigma (Dead) [-20]; Sterile [-3]; Unhealing (Heals only in presence of strong radiation) [-20]; Unnatural Feature (Radioactive, causing film to fog, teeth and eyes to glow green in the dark, etc.) [-5].

Quirks, Features, and Taboo Traits: No mental skills [0].

Is My Tombstone Y2K Compliant? (Continued)

"Gravestone ghouls" use the same statistics as zero-zero zombies (p. 123). Just remove Seek Machine and Primitive, and change the focus of Higher Purpose and Obsession to "Get a proper tombstone." Point cost becomes 75 points.

Bug or Bugaboo?

A supernatural ***Y2K*** campaign can focus either on a worst-case "Y2K bug" scenario in particular or on millennial angst and confusion in general. Most of the material in this chapter can be used in *either* case but will be used differently depending on which option is chosen.

The Supernatural and the Y2K Bug

There are many ways to link supernatural weirdness with the somewhat mundane Y2K bug if you want to run a supernatural ***Y2K*** campaign that revolves around the bug itself. Examples appear under *Collateral Damage* (previous page) and *Computer Cabbalism* (p. 121). Others include:

Poetic Justice. Apocalyptic writings often claim that man's vanity will ultimately lead to his downfall. The biblical *Revelation* is no exception; the fall and judgement of Babylon (Rev. 14:8 and 16:19-19:2, respectively) are allegories on the punishment of humanity for turning toward the earthly sphere and away from the spiritual one. From where we stand in the late 20th century, a case could be made that computers – obedient slaves created to do our bidding, the focus of much of our attentions, and essential tools in the development of yet more technology – are the strongest symbol of man's vanity and his preoccupation with the material world. It might therefore seem fitting to the Powers That Be to use computers to punish us. A global disaster touched off by the Y2K bug would certainly demonstrate the fallibility of man and his creations! In this case, the Y2K bug is a harbinger of the Apocalypse (see p. 116).

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Bug or Bugaboo? (Continued)

666 MHz. Computers could be more than a symbol of evil – they might actually *be* evil. A common mythological theme is the demon or malicious deity who gives mortals knowledge forbidden by more benevolent gods in order to drive a wedge between humanity and those gods, or to give man the means to engineer his own downfall. If computers are indeed "forbidden knowledge," then a worst-case Y2K crash could mark the fruition of a nefarious plan by the Forces of Evil . . . who might appear in person to gloat and to revel in the chaos. This scenario could ultimately lead to the Apocalypse (p. 116) just like the *Poetic Justice* scenario. See *Demons and Daemons* (p. 124) for a more conspiratorial approach.

The Supernatural and Millennial Fears

A supernatural ***Y2K*** campaign without the Y2K bug (or with a toned-down, realistic version of it) can also take several possible approaches. Two of these appear below; see also *Who's Watching the Reactor?* (p. 124) and *Millennial Magic* (p. 122).

The End Is Near! Perhaps the apprehension that a lot of people feel about year 2000 isn't due entirely to the power of suggestion. Perhaps the spiritually, psychically, or magically aware among us have ignited and fueled the fires of fear because something bad is about to happen and they can feel it. Why 2000 AD? Possibly because the Gregorian calendar isn't counting up from the birth of Christ but is instead counting *down* to some fateful day – in which case it makes sense that a round, easy-to-remember number like 2000 would be chosen. Given the connection to the Christian calendar, the end of the countdown probably marks the start of the biblical Apocalypse (p. 116).

All Together Now . . . Even if our millennial fears are due solely to the power of suggestion, the supernatural need not be excluded. The collective millennial worries of everyone who uses the Gregorian calendar (*billions* of people!) might concentrate subconscious psychic or magical energy on a specific future outcome. The result could be any of the supernatural developments in this chapter. Since supernatural processes are not constrained by the laws of physics, the sense of dread generated by such outcomes could propagate back through time – explaining the unusually high levels of apprehension as the millennium comes to an end. This in turn could elevate the stress level, which could then worsen the outcome, etc., in a kind of supernatural "feedback loop."

Viral Vampires — 112 points

When the Y2K bug killed the satellites, I guess we all knew that they came down somewhere, but most people were more worried about missing their favorite show. Of course, if we had known about the space virus, we would have been screaming for the army to seal the damn things in concrete. Then maybe I'd be putting flowers on Aunt Joan's grave instead of toasting her walking corpse with a flamethrower.

Microbes capable of turning corpses into undead monsters which kill and infect the living are another B-movie mainstay. One possibility is a virus – perhaps an alien medical nanomachine with gruesome effects on human corpses – that comes to earth on satellites brought down by the Y2K bug. Alternatively, computer crashes or millennial rioting and terrorism could damage industrial biotechnology facilities or military bioweapons labs, releasing mutant microorganisms.

Whatever the cause, the result is intact corpses colonized by a bizarre microorganism that reanimates the body. The microbes perpetuate themselves via a complex mechanism that suggests deliberate design: They take control of the corpse's brain and incite it to kill and infect the living, creating new undead.

These undead are not mindless – they have emotions, feel fear and uncertainty, and remember their lives – but the virus dulls their wits. They feel pain and appear to heal normally. Luckily, the viral colony has a short lifespan: most viral vampires collapse after 6 or 7 years (after 6 years, make "aging rolls" every 3 weeks; after 8 years, roll every 2 weeks; after 10 years, roll every week).

These "vampires" do not suck their victims' blood – they just chew on them a bit to spread the infection. Their teeth do not grow sharper, but the virus strengthens the jaw muscles, allowing them to bite more effectively. Viral vampires are not decaying, but the virus gives their skin and eyes a hideous bluish cast. They lack a pulse or body heat, and are obviously dead.

Attribute Modifiers: ST +3 [30]; IQ -2 [-15]; HT +3 [30].

Advantages: Doesn't Breathe [20]; Doesn't Eat or Drink [10]; Doesn't Sleep [20]; Immunity to Disease [10]; Immunity to Poison [15]; Injury Tolerance (No Blood) [5]; Sharp Teeth [5]; Temperature Tolerance 10 [10]; Vampiric Invulnerability [150].

Disadvantages: Hideous Appearance [-20]; Infectious Attack [-5]; Murder Addiction [-60]; Short Lifespan 7 [-70]; Social Stigma (Dead) [-20]; Sterile [-3].

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